Deploying Avaya Session Border Controller for Enterprise

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Contents

Chapter 1: Introduction 8
Purpose 8
Change history 8
Warranty 8
Chapter 2: Hardware overview 9
Avaya SBCE servers 9
Supported device types 9
Supported capacity 10
Panel descriptions 12
Front panel (Dell R210–ii, Dell R210–ii XL) 12
Rear panel (Dell R210–ii, Dell R210–ii XL) 14
Front panel (Portwell CAD-0208) 15
Rear panel (Portwell CAD-0208) 15
Front view of Portwell CAD-0230 16
Back view of Portwell CAD-0230 17
Front view of Dell R320 Server 18
Back view of Dell R320 server 19
Front view of Dell R330 server 20
Back view of Dell R330 server 22
Front view of Dell R620 Server 23
Back view of Dell R620 Server 24
Front view of Dell™ PowerEdge™ R630 Server 25
Back view of Dell R630 server 27
Front view of HP DL360p G8 Server 29
Rear view of HP DL360p G8 Server 29
Front view of HP ProLiant DL360 G9 Server 30
Rear view of HP DL360 G9 31
TILEncore-Gx36 Intelligent Application Adapter rear panel 32
Specifications 33
Processors 33
System memory 33
On-board storage 34
Ethernet port labels 34
Interfaces 38
Chapter 3: Deployment process 43
Deployment process 43
Deployment checklist 43
Chapter 4: Deploying options 45
Single server 45

Multiple servers ... 45
Chapter 5: Preparing for installation ... 48
Introduction ... 48
Hardware safety ... 48
Ground the equipment ... 49
Do not operate in an explosive atmosphere ... 49
Keep away from live circuits inside the equipment ... 49
Observe all cautions and warnings in the manual ... 49
Flammability ... 49
EMI caution ... 50
Lithium battery caution ... 50
Equipment inventory ... 50
Meeting site requirements ... 51
Building and electrical code requirements ... 51
Physical system protection requirements ... 52
Rack requirements ... 52
Meeting cabling requirements ... 54
Cabling standards ... 54
Cable labeling and record keeping ... 55
RJ-45 connector jackets ... 55
Connecting cables to the server ... 55
Meeting power requirements ... 56
Preparing a USB device or DVD for installation or upgrade ... 56
Preparing a USB device on Windows ... 56
Preparing a USB device on Linux ... 57
Preparing a DVD ... 57
Chapter 6: Installation ... 59
About installation ... 59
Mounting the server to an equipment rack ... 59
Connection of the server to the VoIP network ... 60
Avaya SBCE installation ... 61
Chapter 7: Avaya SBCE configuration ... 67
Configuring an EMS plus Avaya SBCE deployment ... 67
Configuring EMS ... 70
Configuring Avaya SBCE ... 72
Field descriptions ... 75
Appliance Configuration field descriptions ... 75
Management Interface Setup field descriptions ... 76
Console and SSH passwords complexity ... 77
Grub database password complexity ... 78
Remote access ... 78
Chapter 8: Verifying EMS operation ... 79
Logging on to the EMS web interface ... 79

Logging in to EMS through console..... 80
Logging in to EMS through a serial console..... 80
Logging in to EMS through VGA connection..... 81
Logging in to Avaya SBCE through SSH connection..... 81
Chapter 9: Licensing requirements..... 82
Avaya SBCE license features..... 82
License installation..... 83
Installing a license on WebLM server on System Manager..... 83
Installing a license file on the local WebLM server..... 84
Configuring WebLM server IP address on EMS..... 84
Chapter 10: Resources..... 86
Documentation..... 86
Finding documents on the Avaya Support website..... 87
Training..... 87
Viewing Avaya Mentor videos..... 88
Support..... 88
Appendix A: BIOS recommendations..... 89
Changing boot mode for HP DL360 G9..... 89
Configuring BIOS settings for HP DL360 G9..... 89
Dell PowerEdge Server 90
HP ProLiant Servers..... 90
Appendix B: Acronyms and abbreviations..... 91

Chapter 1: Introduction

Purpose

This guide provides information about how to install and configure Avaya Session Border Controller for Enterprise (Avaya SBCE) in an enterprise having Session Initiation Protocol (SIP) trunks.

This document is intended for anyone who wants to install, configure, and verify Avaya SBCE. The audience includes and is not limited to implementation engineers, field technicians, business partners, and customers.

Change history

Issue	Date	Summary of changes
1	November 2014	Release 7.1 document
2	June 2017	Updated the Capacity and Scalability specification table.
3	January 2019	Added SFP module related information for Dell 630 and HP DL360 G9 server.
4	July 2019	Updated Configuring WebLM server IP address on EMS topic.

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Chapter 2: Hardware overview

Avaya SBCE servers

The Avaya SBCE servers are fully integrated, user-installable chassis. Avaya SBCE supports the following hardware:

- Portwell CAD-0208, Portwell CAD-0230
- Dell R210 II, Dell R210 II XL, Dell R320, Dell R330, Dell R620, and Dell R630
- HP DL360 G8 and HP DL360 G9

For specification of the servers mentioned in the preceding list, see the Specifications section.

Supported accessories and specific add-on devices

- CDROM/USB

Note:

Dell 210 servers and CAD 0208 servers do not have a CD/DVD drive. However, all servers support USB.

Supported device types

The following table lists the device types supported by each server. The table also contains information about the number of NICs available and the hardware category for each server.

Hardware model	Number of NICs	DVD drive	Hardware category	Device type supported		
				EMS	Avaya SBCE	EMS+Avaya SBCE
CAD 0208	4	Unavailable	110	Not supported	Not supported	Supported
CAD 0230	4	Unavailable	110	Not supported	Not supported	Supported
Dell R210	2	Unavailable	EMS	Supported	Not supported	Not supported
Dell R210	6	Unavailable	310	Not supported	Supported	Supported
Dell R320	6	Available	310	Supported	Supported	Supported
Dell R330	6	Available	310	Supported	Supported	Supported

Table continues…

Dell R620	6	Available	310	Supported	Supported	Supported
Dell R630	6	Available	310	Supported	Supported	Supported
HP DL360 G8	6	Available	311	Supported	Supported	Supported
HP DL360 G9	6	Available	311	Supported	Supported	Supported

For information about the Avaya port matrix, see *Avaya Port Matrix: ASBCE*.

Supported capacity

This section describes the capacities supported for Avaya SBCE Release 7.1.

Server Type	Non-encrypted Sessions with Trunking	Encrypted Remote Worker Users Registration	Encrypted Sessions with Presence	SIPREC with SIP Trunking	Scopia Video Sessions	Transcoded Sessions
	Standard	Advanced		Advanced		
Dell R630	14,000 sessions	10,000 registrations	4,000 sessions	6,000 replicated sessions	800 sessions	1,000 sessions
Dell R630 with TILEncore Gx36 Intelligent Application Adapter	20,000 sessions	20,000 registrations	10,000 sessions	6,000 replicated sessions	800 sessions	NA
HP DL360 G9 (High Capacity)	14,000 sessions	10,000 registrations	4,000 sessions	6,000 replicated sessions	800 sessions	1,000 sessions

Table continues…

HP DL360 G9 with TILEncore Gx36 Intelligent Application Adapter	20,000 sessions	20,000 registrations	10,000 sessions	6,000 replicated sessions	800 sessions	NA
Dell R320 **HP DL360 G9 (Mid-Range Capacity)**	6,000 sessions	5,000 registrations	1,800 sessions	3,000 replicated sessions	200 sessions	300 sessions
Dell R330	6,000 sessions	5,000 registrations	1,800 sessions	3,000 replicated sessions	200 sessions	300 sessions
HP DL360 G8	6,000 sessions	5,000 registrations	1,800 sessions	3,000 replicated sessions	200 sessions	300 sessions
Dell R210 II XL	6,000 sessions	5,000 registrations	1,800 sessions	3,000 replicated sessions	200 sessions	300 sessions
Dell R620	6,000 sessions	5,000 registrations	1,800 sessions	3,000 replicated sessions	200 sessions	300 sessions
Portwell CAD 0208	500 sessions	500 registrations	250 sessions	Not Applicable	Not Applicable	Not Applicable
Portwell CAD 0230	500 sessions	500 registrations	250 sessions	Not Applicable	Not Applicable	Not Applicable
VMware	2,500 sessions	5,000 registrations	1,800 sessions	1,000 replicated sessions	200 sessions	100 sessions

Panel descriptions

Front panel (Dell R210–ii, Dell R210–ii XL)

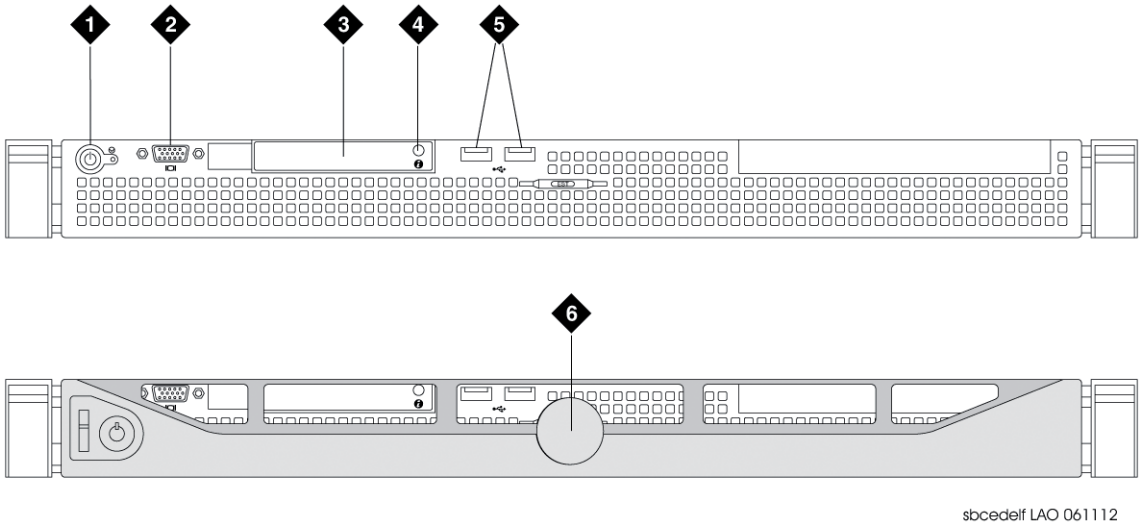


Figure 1: Front panel (Dell R210–ii, Dell R210–ii XL)

Component	Number	Icon	Description
Power-on indicator, power button	1		The power button turns the system power off and on. **Note:** If you turn off the system using the power button and the system is running an ACPI-compliant operating system, the system can perform an orderly shutdown before power is turned off. If the power button is pressed for more than 4 seconds, the system power will turn off regardless of the current operating system state. If the system is not running an ACPI-compliant operating system, power is turned off immediately after the power button is pressed. The power button is enabled in the System Setup program. When disabled, the button can only turn the system power on. The power-on indicator lights or blinks to indicate the status of power to the system. The power-on indicator lights when the system is on. The indicator is off when the system is off and power is disconnected from the system. The indicator blinks when the system is on but in standby state, or when the system is off but is still connected to the power source. Briefly press the power button to exit the standby state.
NMI Button			The NMI button is used to troubleshoot software and device driver errors when using certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
Video connector	2		The video connector button connects a monitor to the system.
Diagnostic indicators (4)	3		The diagnostic indicators aid in diagnosing and troubleshooting the system.
Hard-drive activity indicator			The green hard-drive activity indicator flashes when the hard drives are in use.
System status indicator	4		The blue system status indicator lights up during normal system operation. The amber system status indicator flashes when the system needs attention due to a system problem.

Table continues…

Component	Number	Icon	Description
System identification button			You can use the system identification buttons on the front and back panels to locate a particular system within a rack. When you press one of these buttons, the blue system status indicators on the front and back panels blink until you press one of the buttons again. You can also use the systems management software to cause the indicators to flash to identify a particular system.
USB connectors (2)	5		The USB connector button connects USB 2.0-compliant devices to the system.
Bezel (panel cover)	6		The Bezel button protects the front panel.

Rear panel (Dell R210–ii, Dell R210–ii XL)

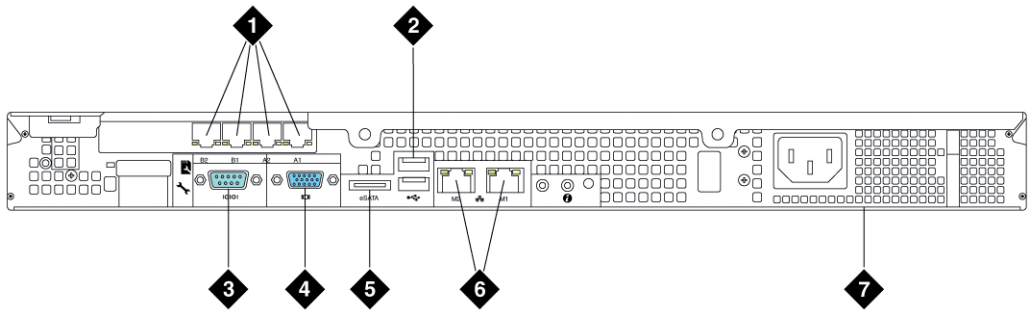
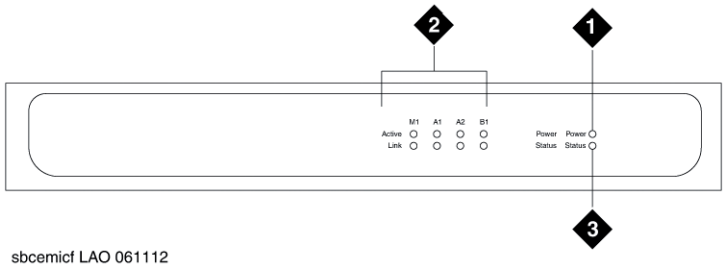


Figure 2: Rear panel (Dell R210–ii, Dell R210–ii XL)

Number	Description
1	4X 100/1000 Ethernet Ports (PCI Card) used for data network **Note:** A blank plate is in the place of these ports on the EMS configuration of the Dell R210–ii XL.
2	Two USB ports used for installation only
3	Serial Port used for Command Line Interface
4	VGA Port
5	E-SATA Port (not used)
6	Two 100/1000 Ethernet ports used for management interface
7	Non-Redundant Power Supply

Front panel (Portwell CAD-0208)



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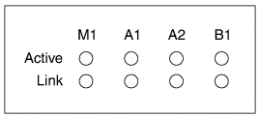
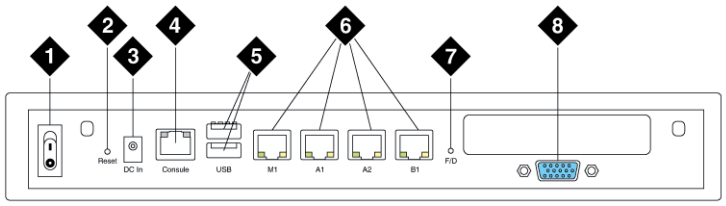
Number	Component	Description
1	Power LED	This LED is illuminated when power to the unit is turned on.
2	Network Activity LEDs	Four pairs of Active/Link LEDs labeled M1, A1, A2, and B1. 
3	Status LED (D2)	This LED flashes to indicate hard-disk-drive activity.

Rear panel (Portwell CAD-0208)



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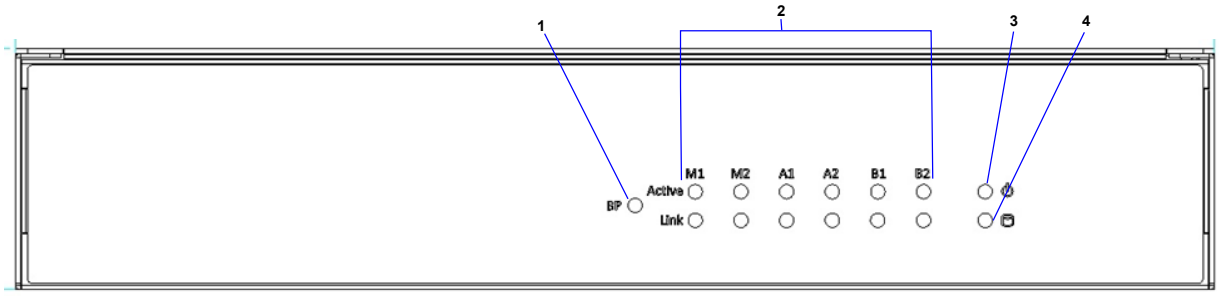
Number	Component	Description
1	Power On/Off Switch	The Power On/Off switch turns system power on and off.
2	Reset Button	The system reset button. This button is recessed and can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the product documentation.
3	DC In Jack	The DC Power Jack (15V).

Table continues…

Number	Component	Description
4	Console Port	A standard Ethernet RJ-45 connector jack for use in connecting a system console.
5	USB connectors	USB connectors connect USB 2.0-compliant devices to the system.
6	Network Ports	Standard Ethernet RJ-45 connector jacks labeled M1, A1, A2, and B1 for use in connecting to the network.
7	F/D Button	The Factory Defaults (F/D) reset button that is normally used to reset the device to its original factory default settings. **Note:** This feature is currently not supported.
8	VGA Connector	A standard 15-pin female video graphics adapter (VGA) connector used for connecting a monitor to the system.

Front view of Portwell CAD-0230

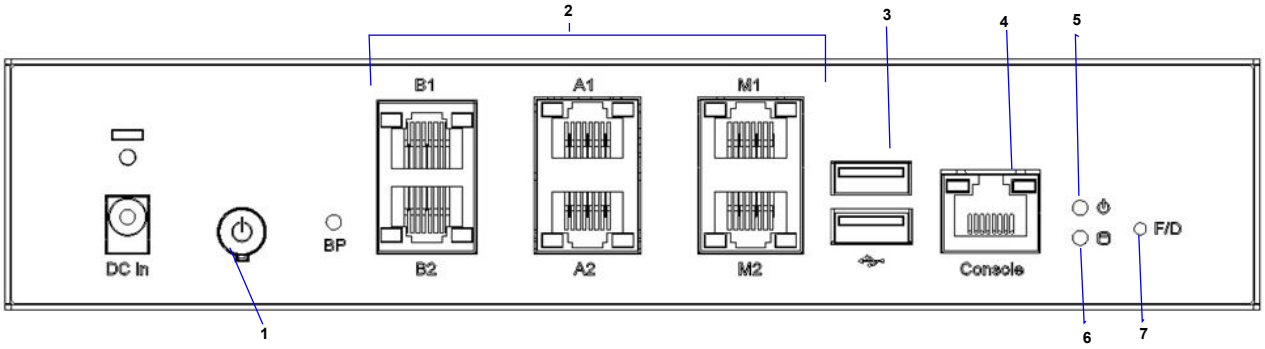


Name	Description
1	The Bypass LED. This LED lights: • Green for normal mode • Red for bypass mode • Off for open mode

Table continues…

Name	Description
2	The Ethernet LEDs. The upper LEDs light green to indicate link or active LED. The lower LEDs light: • Green for speed of 100 MB • Orange for speed of 1 GB • Off for speed of 10 MB
3	The power status LED. This LED lights: • Green to indicate that power is on. • Orange to indicate that power is off.
4	The data access LED. This LED blinks red to indicate data access.

Back view of Portwell CAD-0230

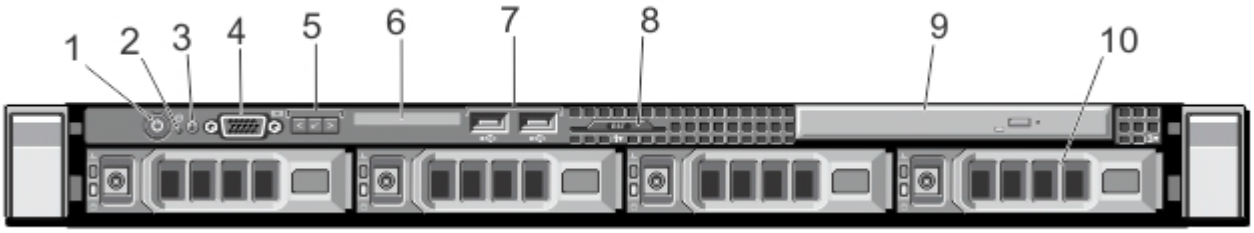


Number	Description
1	The power button used to switch the system on or off.
2	The ethernet ports. Every port has two LEDs. The Link or activity indicator when switched on or flashing, indicates that the port is linking and active in data transmission. When the indicator is off, the port is not linking. The speed indicator lights orange when the connection speed is 1000 Mbps. The indicator lights green when the speed is 100 Mbps, and the indicator is off when the speed is 10 Mbps.

Table continues…

Number	Description
3	The USB 2.0 ports.
4	The console port from which you can connect the server to a computer by using an RJ-45 to DB-9 female cable, for diagnostics or configuration. You must configure this port with the following terminal configuration parameters: 19200 baud rate, 8 data bits, no parity, 1 stop bit, and no flow control. For more information, see *CAD–0230 Series Communication Appliance User's Manual*.
5	The Power LED that indicates whether the system is turned on. This LED is turned on when the system is turned on.
6	The HDD LED that indicates whether data access activities are in progress. This LED blinks when data access activities are in progress.
7	The factory default button to reset the software to factory default settings.

Front view of Dell R320 Server



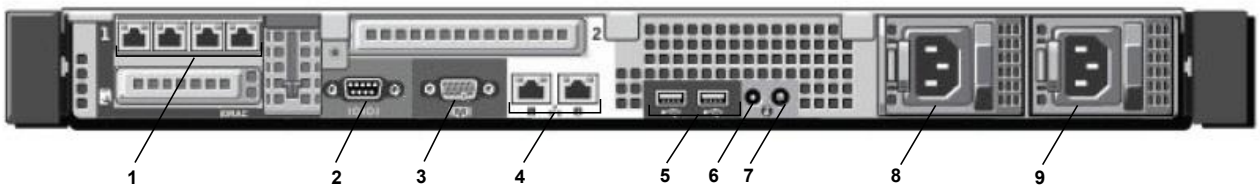
No.	Item	Description
1	Power-On Indicator, Power Button	The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI Button	Used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.

Table continues…

No.	Item	Description
3	System Identification Button	The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset the iDRAC (if not disabled in F2 iDRAC setup) press and hold the button for more than 15 seconds.
4	Video Connector	Allows you to connect a VGA display to the system.
5	LCD Menu Buttons	Allows you to navigate the control panel LCD menu.
6	LCD Panel	Displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber and the LCD panel displays an error code followed by descriptive text. **Note:** If the system is connected to AC power and an error is detected, the LCD lights amber regardless of whether the system is turned on or off.
7	USB Connectors (2)	Allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
8	Information Tag	A slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
9	Optical drive (optional)	One optional SATA DVD-ROM drive or DVD+/-RW drive. **Note:** DVD devices are data only.
10	Hard Drives	Two 2.5 inch hot-swappable hard drives.

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

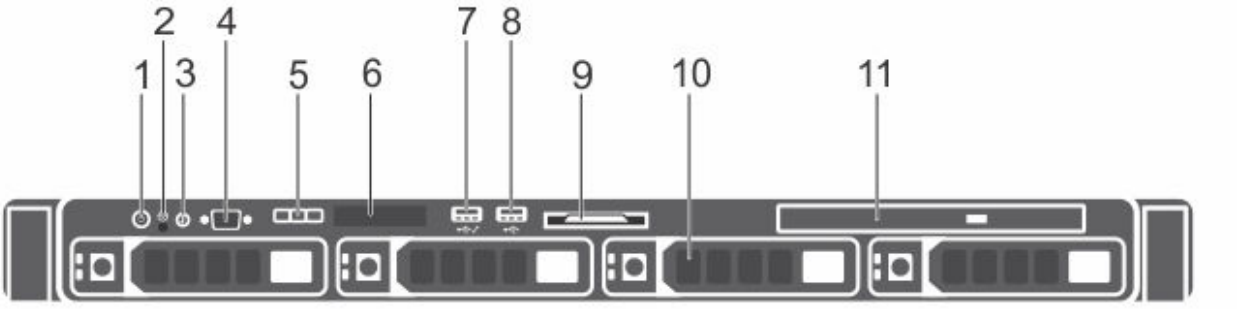
Back view of Dell R320 server



No	Item	Description
1	Ethernet connectors	Four 1Gb Ethernet connectors.
2	Serial connector	Connects a serial device to the system.
3	Video connector	Connects a VGA display to the system.
4	Ethernet connectors	Two integrated 10/100/1000 Mbps NIC connectors (Avaya Standard).
5	USB connectors (2)	Connects USB devices to the system. The ports are USB 2.0-compliant.
6	System identification connector	Connects the optional system status indicator assembly through the optional cable management arm.
7	System Identification Button	The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset iDRAC (if not disabled in F2 iDRAC setup) press and hold for more than 15 seconds.
8	Power Supply (PSU1)	AC 350W
9	Power Supply (PSU2)	AC 350W

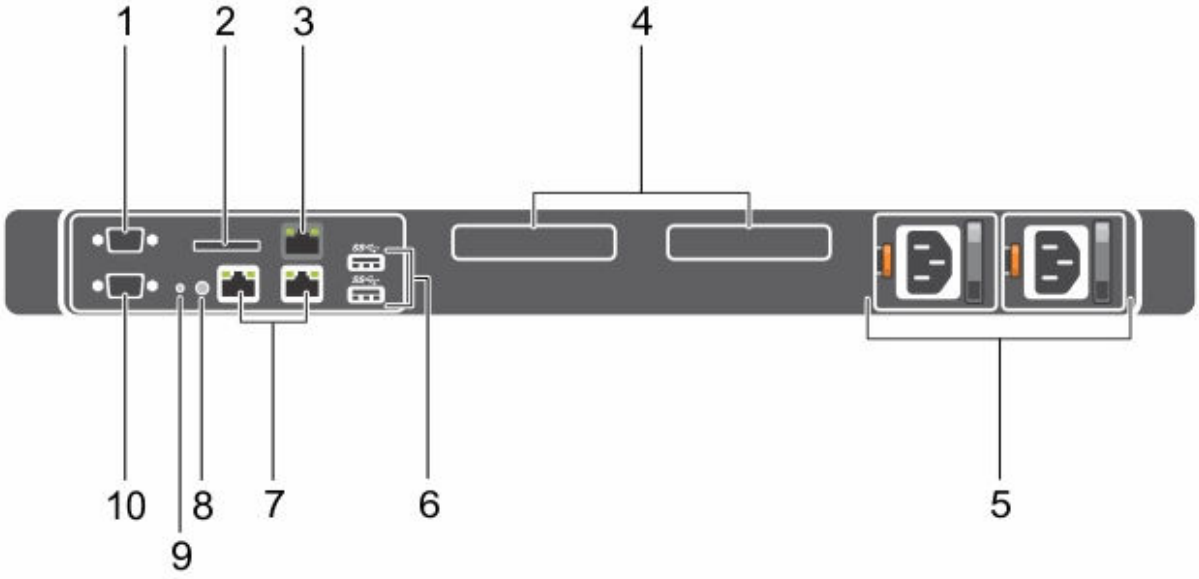
For more information, see the Back Panel Features and Indicators section in the Dell Owner's Manual.

Front view of Dell R330 server



Number	Description
1	The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI button used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	The System identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset the iDRAC (if not disabled in F2 iDRAC setup) press and hold the button for more than 15 seconds.
4	The video connector allows you to connect a VGA display to the system.
5	The LCD menu button allows you to navigate the control panel LCD menu.
6	The LCD panel displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber. **Note:** LCD panel is not available in a cabled hard drive chassis.
7	The USB management port or iDRAC managed USB port functions as a regular USB port or provides access to iDRAC Direct features.
8	The USB 2.0 port allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
9	The information tag is a slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
10	The hard drive slots enable you to install up to four 3.5–inch hot-swappable hard drives or four 2.5–inch hot-swappable hard drives in 3.5–inch hard drive adapters.
11	The optical drive slot enables you to install one optional SATA DVD-ROM drive or DVD+/-RW drive.

Back view of Dell R330 server

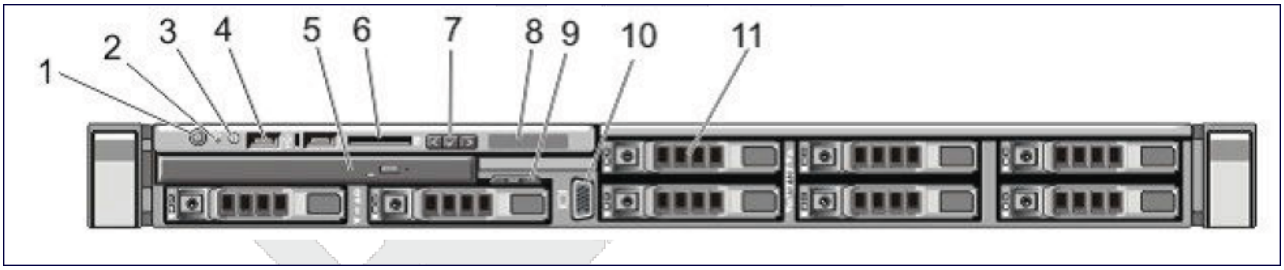


Name	Description
1	The serial connector enables you to connect a serial device to the system.
2	The vFlash card slot enables you to connect the vFlash card.
3	The iDRAC port enables you to install a dedicated management port card.
4	The PCIe expansion card slots enable you to connect PCI Express expansion cards.
5	The power supply unit enables you to connect up to two 350W redundant AC power supply units.
6	The USB 3.0 connectors enable you to connect USB devices to the system.
7	The ethernet connectors enable you to connect integrated 10/100/1000 Mbps NIC connectors.
8	The system identification button on the front and back panels enables you to locate a system within a rack. When the system identification button is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons is pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the button for more than five seconds to enter the BIOS progress mode. To disable iDRAC, if not disabled in F2 iDRAC setup, press and hold the button for more than 15 seconds.

Table continues…

Name	Description
9	The system identification connector connects the optional system status indicator assembly through the optional cable management arm.
10	The video connector enables you to connect a VGA display to the system.

Front view of Dell R620 Server



Note:

The server is shipped with two hard disk drives. The remaining hard drive bays will not be operable.

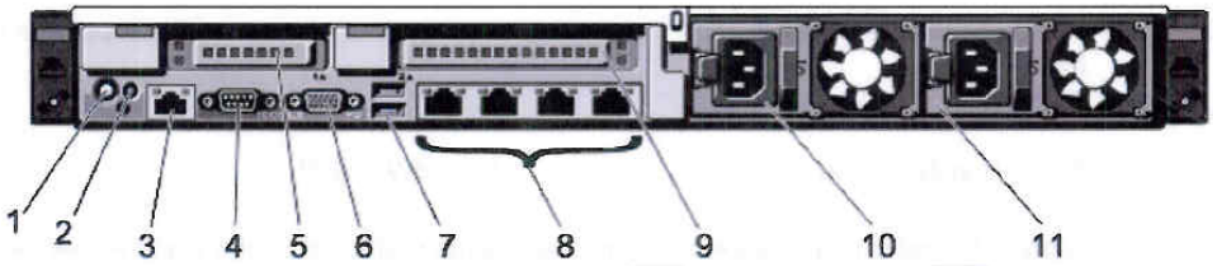
No.	Item	Description
1	Power-On Indicator, Power Button	The power-on indicator lights when the system power is on. The power button controls the power supply output to the system.
2	NMI Button	The button to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	System Identification Button	The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode.
4	USB Connectors (2)	The button to insert USB devices to the system. The ports are USB 2.0-compliant.
5	Optical Drive	SATA DVD-ROM drive or DVD+/-RW drive.
6	vFlash Media Card Slot (Not populated for Avaya)	The button to insert a vFlash media card.
7	LCD Menu Buttons	The button to navigate the control panel LCD menu.

Table continues…

No.	Item	Description
8	LCD Panel	The button to displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. The LCD lights amber when the system needs attention, and the LCD panel displays an error code followed by descriptive text. **Note:** If the system is connected to AC power and an error is detected, the LCD lights amber regardless of whether the system is turned on or off.
9	Information Tag	A slide-out label panel. Service Tag, NIC, MAC address is located here.
10	Video Connector	The button to connect a VGA display to the system.
11	Hard Drives	A typical Avaya configuration has two 5 inch hot-swappable hard drives. The other hard drive bays will not be operable.

For more information, see the Dell Owner's Manual, in the Front Panel Features and Indicators section.

Back view of Dell R620 Server



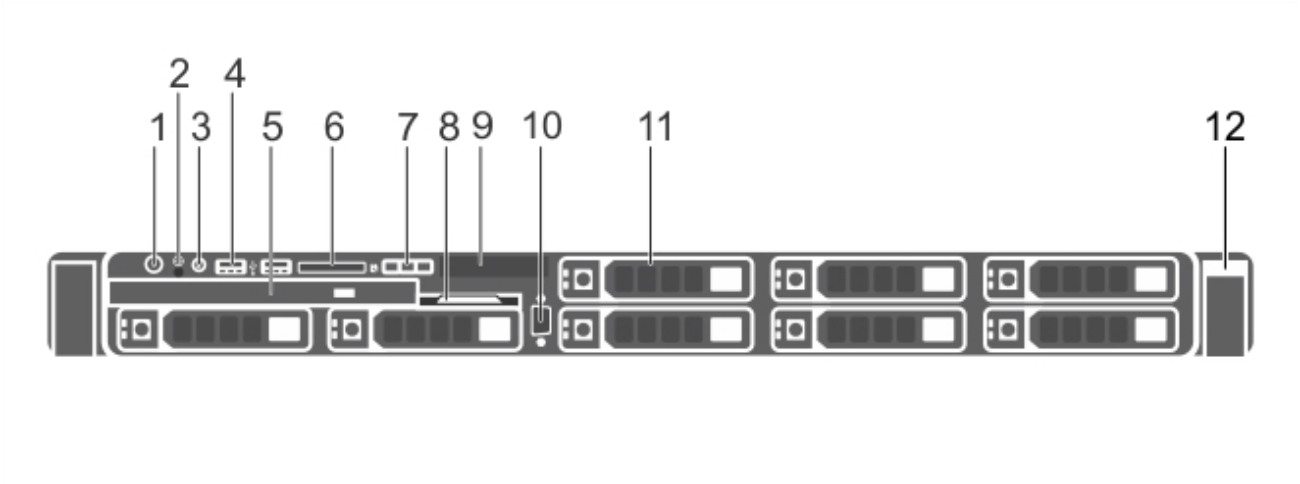
No.	Item	Description
1	System Identification Button	The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons is pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset iDRAC (if not disabled in F2 iDRAC setup), press and hold for more than 15 seconds.

Table continues…

No.	Item	Description
2	System Identification Connector	The button to connect the optional system status indicator assembly through the optional cable management arm.
3	iDRAC Enterprise Port	The button for dedicated management port. **Note:** The port is available for use only if the iDRAC7 Enterprise license is installed on your system. (Not normally used in Avaya systems)
4	Serial Connector	The button to connect a serial device to the system.
5	PCIe Expansion Card Slot 1 (riser 2)	The button to connect a PCIe expansion card.
6	Video Connector	The button to connect a VGA display to the system.
7	USB Connectors (2)	The button to connect USB devices to the system.
8	Ethernet Connectors (4)	Four integrated 10/100/1000 Mbps NIC connectors. **Note:** Dell R620 NIC port numbers are read from left to right, starting with Port 1, then continuing to port 2, 3, and 4.
9	PCIe expansion card slot 2 (riser 3)	The button to connect a PCIe expansion card.
10	Power Supply (PSU1)	AC 495W, 750W
11	Power Supply (PSU2)	AC 495W, 750W

For more information, see the Dell Owner's Manual, in the Back Panel Features and Indicators section.

Front view of Dell™ PowerEdge™ R630 Server



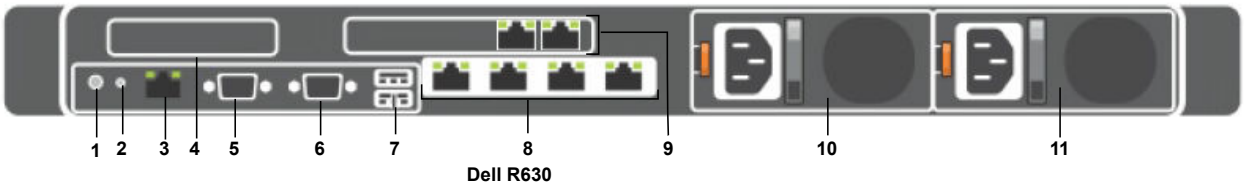
No.	Item	Icon	Description
1	Power-On Indicator, Power Button		The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI Button		Used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset the iDRAC (if not disabled in F2 iDRAC setup) press and hold the button for more than 15 seconds.
4	USB Connectors (2)		Allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
5	Optical Drive		One DVD+/-RW drive. **Note:** DVD devices are data only.
6	vFlash Media Card Slot		Not used in Avaya configurations.
7	LCD Menu Buttons		Allows you to navigate the control panel LCD menu.
8	Information Tag		A slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
9	LCD Panel		Displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber and the LCD panel displays an error code followed by descriptive text. **Note:** If the system is connected to AC power and an error is detected, the LCD lights amber regardless of whether the system is turned on or off.
10	Video Connector		Allows you to connect a VGA display to the system.

Table continues…

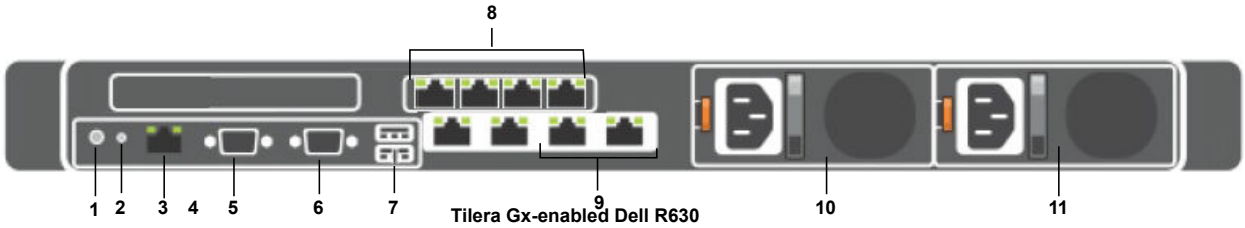
No.	Item	Icon	Description
11	Hard Drives		Support for up to eight 2.5 inch hot-swappable hard drives.* * The first 2 HDDs are placed in the slots under the DVD Drive and read left to right, the remaining HDDs read top to bottom, left to right.
12	Quick Sync		Not used in Avaya configurations.

More information can be found in the *Front-panel features and indicators* section of the Dell Owner's Manual.

Back view of Dell R630 server



Dell R630



Tilera Gx-enabled Dell R630

From Release 7.1, Avaya SBCE supports TILEncore Gx-36 Intelligent adapter in the Dell R630 server. The A1, A2, B1, B2, M1 and M2 interfaces for a Tilera-Gx enabled R630 server are different from a R630 server.

TILEncore Gx-36 Intelligent adapter requires four SFP+ modules which can be either of 1 GbE or 10GbE. 1GbE SFP+ modules support RJ-45 copper cable connections, whereas 10GbE SFP+ modules support optical fiber connections.

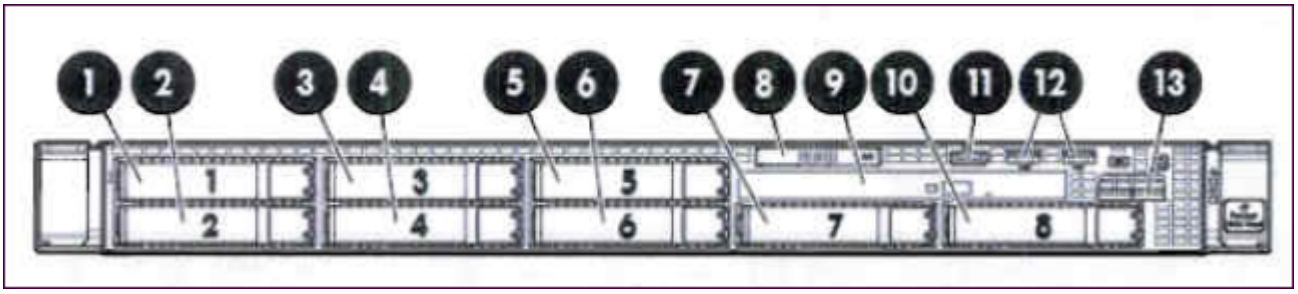
No	Item	Description
1	System Identification Button	Used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset iDRAC (if not disabled in F2 iDRAC setup) press and hold for more than 15 seconds.

Table continues…

No	Item	Description
2	System Identification Connector	Connects the optional system status indicator assembly through the optional cable management arm.
3	iDRAC8 Enterprise Port	Dedicated management port. **Note:** The port is available for use only if the iDRAC7 Enterprise license is installed on your system. (Not normally used in Avaya systems)
4	PCIe Expansion Card Slot 1 (riser 2)	Connects a low profile PCIe expansion card. **Note:** If the server is equipped with 6 or 8 NIC ports, this slot can contain two port 10/100/1000 Mbps NIC connectors or two 100 Mbps/ 1Gbps/10 Gbps SFP + connectors.
5	Serial Connector	Connects a serial device to the system.
6	Video Connector	Connect a VGA display to the system.
7	USB Connectors (2)	Connects USB devices to the system. The ports are USB 3.0-compliant.
8	Ethernet Connectors (4)	• Without the Tilera card: Four integrated 10/100/1000 Mbps NIC connectors (Avaya Standard). These are data interfaces A1, A2, B1 and B2. Dell R630 NIC port numbers are read from left to right, starting with Port 1, then continuing 2, 3, and port 4. • With the support of Tilera card: Four 1GbE or 10 GbE SFP+ ports. These are data interfaces B2, B1, A2 and A1 from left to right.
9	Ethernet Connectors (2)	• Without the Tilera card: Two integrated 10/100/1000 Mbps NIC connectors (Avaya Standard). These are management interfaces M1 and M2. • With the support of Tilera card: Four 1GbE or 10 GbE SFP+ ports. These are management interfaces M1 and M2.
10	Power Supply (PSU1)	AC 495W or 750W DC 1100W
11	Power Supply (PSU2)	AC 495W or 750W DC 1100W

For more information, see the Back Panel Features and Indicators section in the Dell Owner's Manual.

Front view of HP DL360p G8 Server

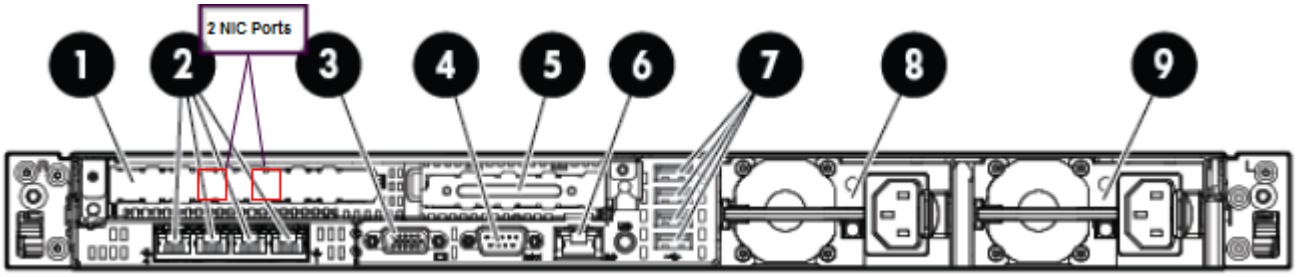


Note:

Servers ship with two hard drives.

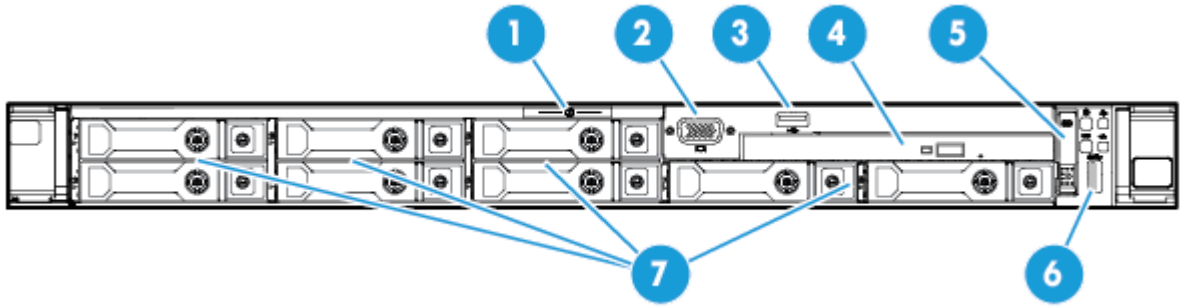
No.	Description
1	Hard Drive Bay — Drive 1
2	Hard Drive Bay — Drive 2
3	Hard Drive Bay
4	Hard Drive Bay
5	Hard Drive Bay
6	Hard Drive Bay
7	Hard Drive Bay
8	Slide-out System Insight Display (SID)
9	Optical Disk Drive Bay
10	Hard Drive Bay
11	Video Connector (requires Front Video Adapter Kit)
12	Two (2) USB Connectors
13	Active Health and Network Status LEDs

Rear view of HP DL360p G8 Server



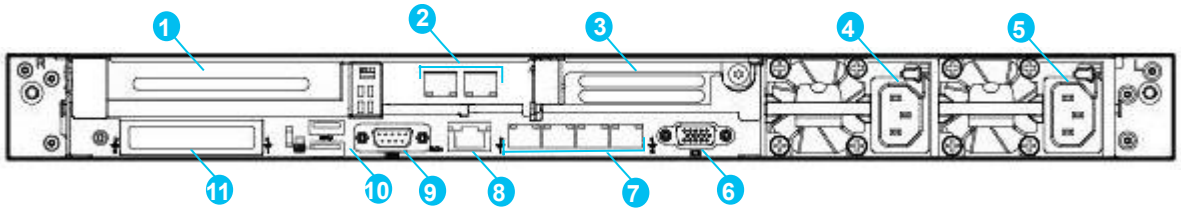
No.	Description
1	PCIe 3.0 with two NIC ports (1 GB each)
2	Flexible LOM ports (4 ports 1 Gb each)
3	Video connector
4	Serial connector
5	PCIe 3.0 Low Profile x8 expansion slot
6	iLO Management Engine NIC connector
7	Four (4) USB connectors
8	Power supply bay 2 (Shown populated: Optional Power Supply for Redundant Power)
9	Power supply bay 1 (Primary Power Supply)

Front view of HP ProLiant DL360 G9 Server

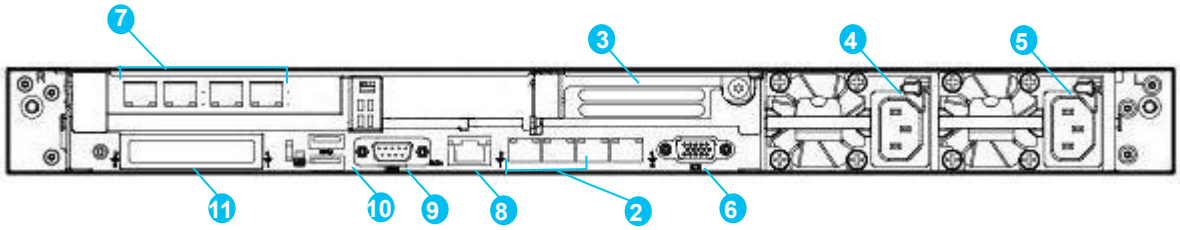


No.	Description
1	Serial label pull tab
2	Front video connector
3	USB 2.0 connector
4	Optical drive
5	Systems Insight Display (Not used in Avaya configurations)
6	USB 3.0 connector
7	Hard Drive bays* * The HDDs read starting with top left, then bottom left, and continues to the right.

Rear view of HP DL360 G9



HP DL360 G9



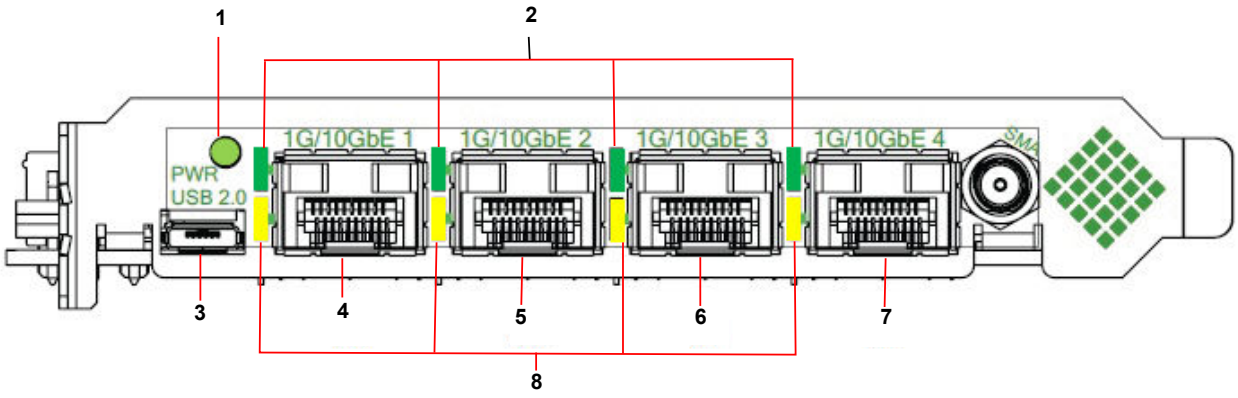
Tilera Gx-enabled HP DL360 G9

From Release 7.1, Avaya SBCE supports TILEncore Gx-36 intelligent adapter in the HP DL360 G9 server. The A1, A2, B1, B2, M1, and M2 interfaces for a Tilera Gx-enabled HP DL360 G9 server are different from the HP DL360 G9 server.

TILEncore Gx-36 Intelligent adapter requires four SFP+ modules which can be either of 1 GbE or 10GbE. 1GbE SFP+ modules support RJ-45 copper cable connections, whereas 10GbE SFP+ modules support optical fiber connections.

No	Description
1	Slot 1 PCIe3 x16 (16, 8, 4, 1)
2	Ethernet management ports (2) without Tilera card support. Four 1GbE or 10 GbE SFP+ ports, with the support of Tilera card.
3	Slot 3 PCIe 3 x16 (16, 8, 4, 1) The slot 3 PCIe 3 riser is optional and requires a second processor before installation.
4	Power supply 2
5	Power supply 1
6	Video connector
7	NIC connectors (4)
8	iLO 4 connector
9	Serial connector (Not used on Avaya configurations)
10	USB 3.0 connectors
11	Flexible LOM bay

TILEncore-Gx36 Intelligent Application Adapter rear panel



Name	Description
1	Power LED The power LED is lit only when all major board components are powered and functional.
2	Link LEDs The green Link LEDs are lit when the Ethernet link is functional.
3	Micro USB port The micro USB port provides a console connection to the card.
4	B2 network interface This network port operates at 1 Gbps or 10 Gbps depending on the SFP+ type module installed in the port.
5	B1 network interface This network port operates at 1 Gbps or 10 Gbps depending on the SFP+ type module installed in the port.
6	A2 network interface This network port operates at 1 Gbps or 10 Gbps depending on the SFP+ type module installed in the port.
7	A1 network interface This network port operates at 1 Gbps or 10 Gbps depending on the SFP+ type module installed in the port.
8	Activity LEDs The yellow activity LEDs are lit when the Avaya SBCE network interfaces are enabled.

Specifications

Processors

Server	Processors
Dell R210–ii XL (core)	Intel Xeon E3-1220 3.10 GHz Quad Core/4T
Dell R210–ii (core)	Intel Xeon E3-1230 3.20 GHz Quad Core/4T
Dell R210–ii XL (EMS)	Intel Pentium G850 2.90 GHz – Dual Core/2T
Dell R320	Intel Xeon E5–2430v2 2.5 GHz – Six Cores – 80W
Dell R330	Intel Xeon E3–1200v5 3.6 GHz – Four Cores – 80W
Dell R620	Intel E5-2630, six core 2.3GHz (Sandybridge)
Dell R630	2 x Intel Xeon E5–2640 2.6 GHz – Eight Cores – 90W
Portwell CAD-0208 (core)	Intel® Atom D510 1.66GHz – Dual Core
Portwell CAD-0230	Intel® Atom C2000 1.7 GHz – Dual Core
HP DL360p G8	Intel E5–2630, Six Core / 2.3 GHz (Sandybridge) 4 memory channels per CPU with up to 3 DIMMs per channel
HP DL360 G9	2 x Intel Xeon E5–2640 2.6 GHz – Eight Cores – 90W

System memory

Server	System Memory
Dell R210–ii XL (core)	4 GB (DDR3 1333MHz)
Dell R210–ii (core)	4 GB (DDR3 1333MHz)
Dell R210–ii XL (EMS)	2 GB (DDR3 1333MHz)
Dell R320	8 GB DDR4 1600MT/s UDIMM
Dell R330	16 GB DDR4 2133MT/s UDIMM
Dell R620	4 GB (DDR3 RDIMMs)
Dell R630	32GB DDR4 2133MT/s RDIMM
Portwell CAD-0208 (core)	2 GB (SO-DIMM DDR2 667MHz)
Portwell CAD-0230	2 GB (SO-DIMM DDR3L 1333MHz)
HP DL360p G8	4 GB DDR3 RDIMMs
HP DL360 G9	32 GB DDR4 2133MT/s RDIMM

On-board storage

Server	On-board Storage
Dell R210–ii XL (core)	500 GB (3.5-in SATA 3Gb/s – 7.2K)
Dell R210–ii (core)	500 GB (3.5-in SATA 3Gb/s – 7.2K)
Dell R210–ii XL (EMS)	2 x 500 GB (3.5-in SATA 3Gb/s – 7.2K) Hardware RAID 1 (always active)
Dell R320	2 x 300 GB 10K (SAS)
Dell R330	Up to four 3.5–inch hot-swap HDDs or up to eight 2.5–inch hot-swap HDDs
Dell R620	Up to 10 TB
Dell R630	2 x 300 GB 10K (SAS)
Portwell CAD-0208 (core)	320 GB (2.5-in SATA 3Gb/s – 7.2K)
Portwell CAD-0208	One 2.5–inch HDD
HP ProLiant DL360p G8	Hot Plug SFF SATA 10.0TB, Hot Plug SFF SAS 12.0TB
HP ProLiant DL360 G9	2 x 300 GB 10K SAS

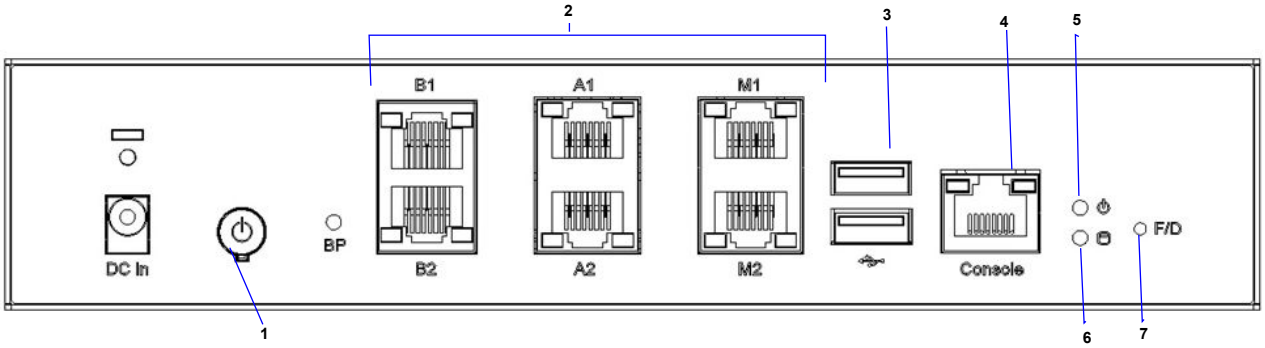
Ethernet port labels

Portwell CAD 0208 server

The Portwell CAD 0208 server is used only for single server (EMS plus Avaya SBCE) deployments.

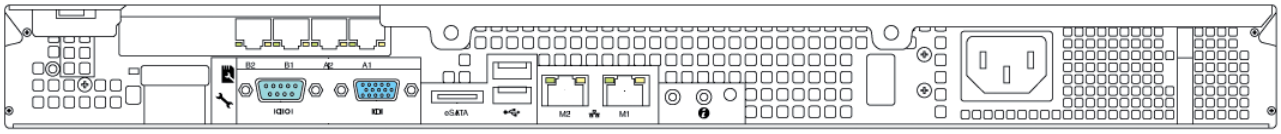
Ethernet port labels	Number of ports
M1, A1, A2, and B1	4

Portwell CAD 0230



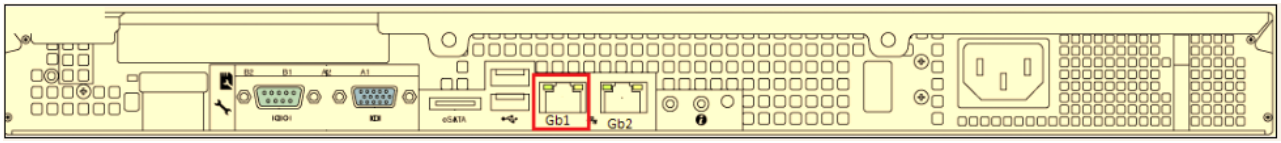
Ethernet port labels	Number of ports
M1, M2, A1, A2, B1, B2	6

Dell R210-II



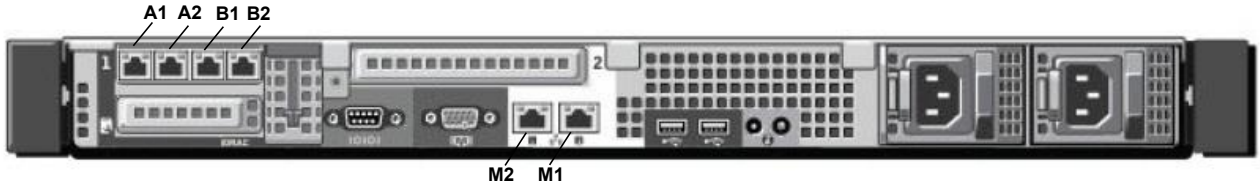
Ethernet port labels	Number of ports
M1, M2, A1, A2, B1, and B2	6

Dell EMS



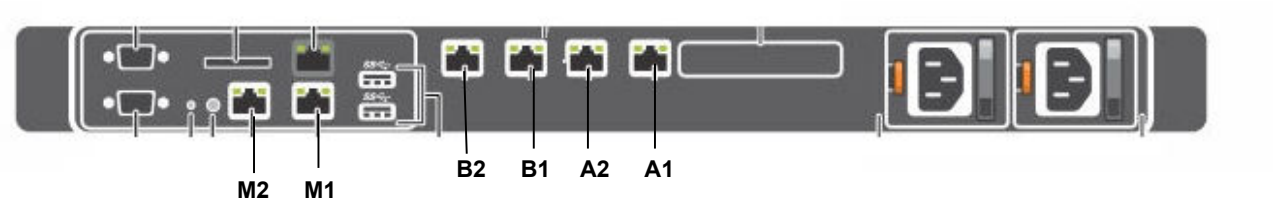
Ethernet port labels	Number of ports
Gb1	2 (1 unused - the right port is unused)

Dell R320



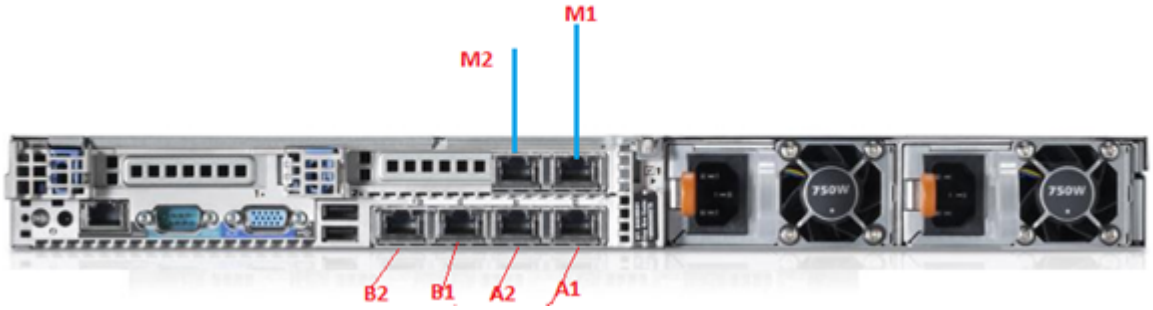
Ethernet port labels	Number of ports
M2, M1, A1, A2, B1, and B2	6

Dell R330



Ethernet port labels	Number of ports
M2, M1, A1, A2, B1, B2	6

Dell R620

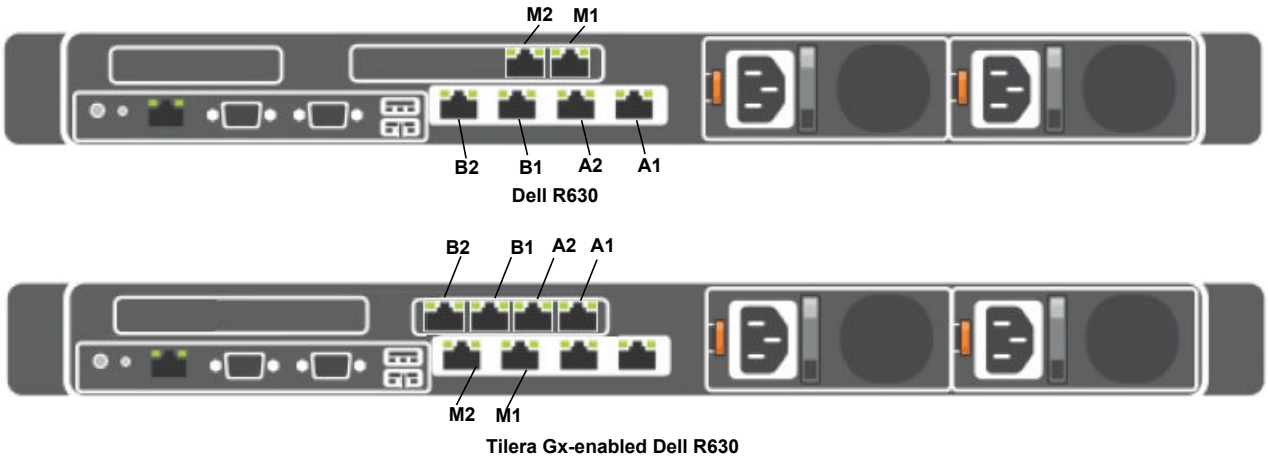


Ethernet port labels	Number of ports
M1, M2, B2, B1, A2 and A1	6

Note:

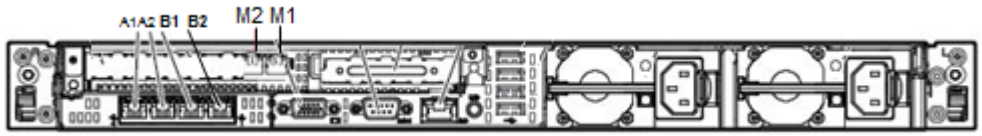
When you configure the server as EMS, A1, A2, B1, B2, and M2 are not to be used. For more information about hardware specifications, see *Deploying Avaya Session Border Controller for Enterprise*.

Dell R630



Ethernet port labels	Number of ports
M2, M1, B2, B1, A2, and A1	6

HP DL360 G8

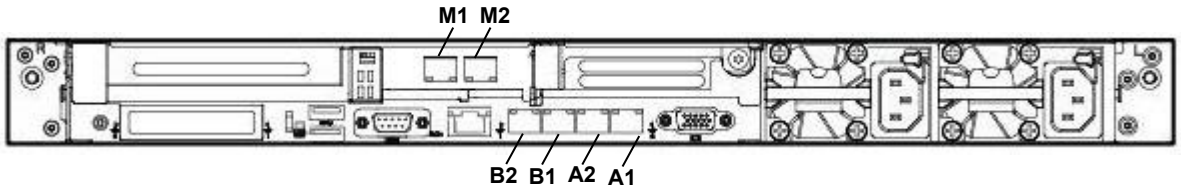


Ethernet port labels	Number of ports
M1, M2, B2, B1, A2, and A1	6

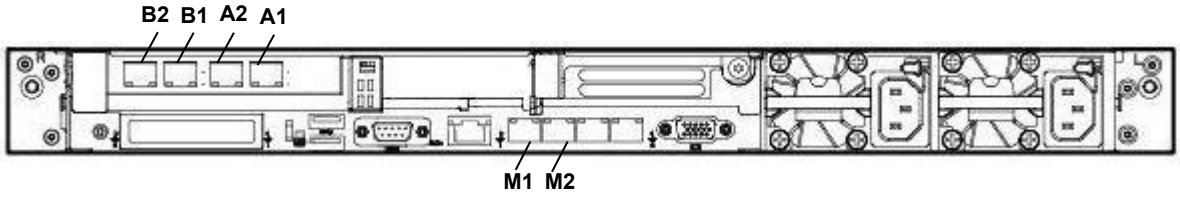
Note:

When you configure the server as EMS, A1, A2, B1, B2, and M2 are not used. For more information about server specifications, see *Deploying Avaya Session Border Controller for Enterprise*.

HP DL360 G9



HP DL360 G9



Tilera Gx-enabled HP DL360 G9

Ethernet port labels	Number of ports
M1, M2, B2, B1, A2, and A1	6

Interfaces

The following sections describe the interfaces on the supported servers.

Dell R210–ii (core) & Dell R210–ii XL (core)

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible 32-bit gigabit Ethernet ports

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interface M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One rear-accessible DB9 serial port for system console
- One rear-accessible eSATA port (not supported with this model)
- One front and rear-accessible VGA for system monitor
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports

Dell R210–ii XL (EMS)

- Rear-accessible 32-bit gigabit Ethernet

Port	Purpose
Gb1 (left)	Management interface
Gb2 (right)	Not used

- One rear-accessible DB9 serial port for system console
- One rear-accessible eSATA port (not supported with this model)
- One front and rear-accessible VGA for system monitor
- One rear-accessible eSATA port (not supported with this model)
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports

Dell R320

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interfaces M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One front- and rear-accessible VGA for system monitor
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports

Dell R330

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interfaces M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One front- and rear-accessible VGA for system monitor
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports

Dell R620

Four integrated 10/100/1000 Mbps NIC connectors (Avaya standard).

Note:

Dell R620 NIC port numbers are read from left to right, starting with Port 1, then continuing to port 2, 3 and 4.

Dell R630

- Rear-accessible gigabit Ethernet ports (RJ-45 connectors). The interfaces on the TILEncore Gx-36 can be of RJ-45 type or optical fiber type depending on the SFP+ module associated with the card.

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interfaces M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One iDRAC 8 Enterprise port (Dedicated Management port)
- One front- and rear-accessible VGA for system monitor
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports
- One front-accessible SD vFlash media card slot (Not supported)

Portwell CAD-0208 (Core)

- Rear-accessible 32–bit gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
A1	Data interface
A2	Data interface
B1	Data interface

Note:

A1 ports are used for internal connection and B1 ports are used for external connection. To prevent routing problems, the management interface (M1) must be configured on different subnets than the subnets assigned to the A1, A2, or B1 data interface.

- One rear-accessible RJ45 serial port for system console
- One rear-accessible VGA for system monitor
- Two rear-accessible USB 2.0 ports

Portwell CAD-0230 (Core)

- Rear-accessible gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interfaces M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One rear-accessible RJ45 serial port for system console
- Two rear-accessible USB 2.0 ports

HP ProLiant DL360 G8

Four integrated ENET Gigabit NIC ports with TCP offload engine (included on motherboard).

HP ProLiant DL360 G9

- Rear-accessible gigabit Ethernet ports (RJ-45 connectors). The interfaces on the TILEncore G9 version and later can be of RJ-45 type or optical fiber type depending on the SFP+ module associated with the card.

Port	Purpose
A1	Data interface
A2	Data interface
B1	Data interface
B2	Data interface

- Rear-accessible PCI-Express gigabit Ethernet ports (RJ-45 connectors)

Port	Purpose
M1	Management interface
M2	HA link

Note:

To prevent routing problems and to meet security best practices, configure the management interfaces M1 and M2 on a different subnet than the subnets assigned to A1, A2 or B1 data interface.

- One iLO Enterprise port (dedicated management port)
- One rear-accessible VGA for system monitor
- Two front-accessible USB 2.0 ports
- Two rear-accessible USB 2.0 ports

Chapter 3: Deployment process

Deployment process

The following figure shows the deployment process for Avaya SBCE.

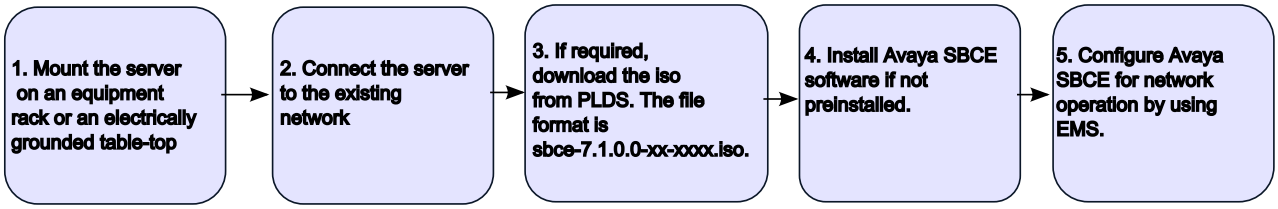


Figure 3: Deployment process

Deployment checklist

No.	Task	Notes	✔
1.	Mount the server on an equipment rack or an electrically grounded table top.		

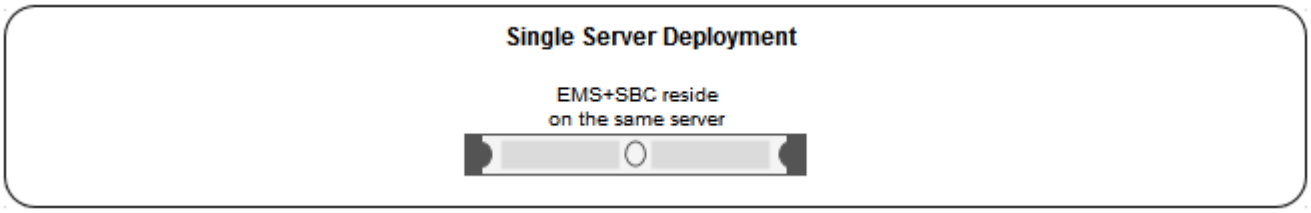
Table continues…

No.	Task	Notes	✔
2.	High availability requires Gratuitous Address Resolution Protocol (GARP) support on the connected network elements. When the primary Avaya SBCE fails over, the secondary Avaya SBCE broadcasts a GARP to announce that the secondary Avaya SBCE is now receiving requests. The GARP announces that a new MAC address is associated with the Avaya SBCE IP address. Devices that do not support GARP must be on a different subnet with a GARP-aware router or L3 switch to avoid direct communication. For example, to handle GARP, branch gateways, Medpro, Crossfire, and some PBXs/IVRs must be deployed in a different network from Avaya SBCE, with a router or L3 switch. If you do not put the Avaya SBCE interfaces on a different subnet, after failover, active calls will have one way audio. The devices that do not support GARP continue sending calls to the original primary Avaya SBCE. Ensure that you have a license file with the following feature: FEAT_SBCE_HIGHAVAILABILITY_CONFIG_1 **Note:** You can enable and use the high availability feature only when the license file contains an HA license.	Applicable only to multiple server HA scenarios.	
3.	Connect the server to the existing network.	Perform steps 4 and 5 only if the server does not have the software pre-installed.	
4.	(Optional) Prepare the USB device or a DVD for installing Avaya SBCE. Avaya ships the Avaya SBCE servers preinstalled with the software. You must perform this step only for reinstallations.	Thumb drives are shipped separately if ordered by the customer.	
5.	(Optional) Download the iso file from the PLDS website at https://plds.avaya.com/ and install it on the server if the software is not pre-installed. Avaya ships the Avaya SBCE servers preinstalled with the software. You must perform this step only for reinstallations.		
6.	Configure the appliance.		
7.	Configure the management interface.		
8.	Configure the time zone.		
9.	Configure a self-signed certificate.		
10.	Configure date and time.		
11.	Configure passwords.		

Chapter 4: Deploying options

Single server

In this deployment, Element Management System (EMS) and Avaya SBCE are colocated on a single server.



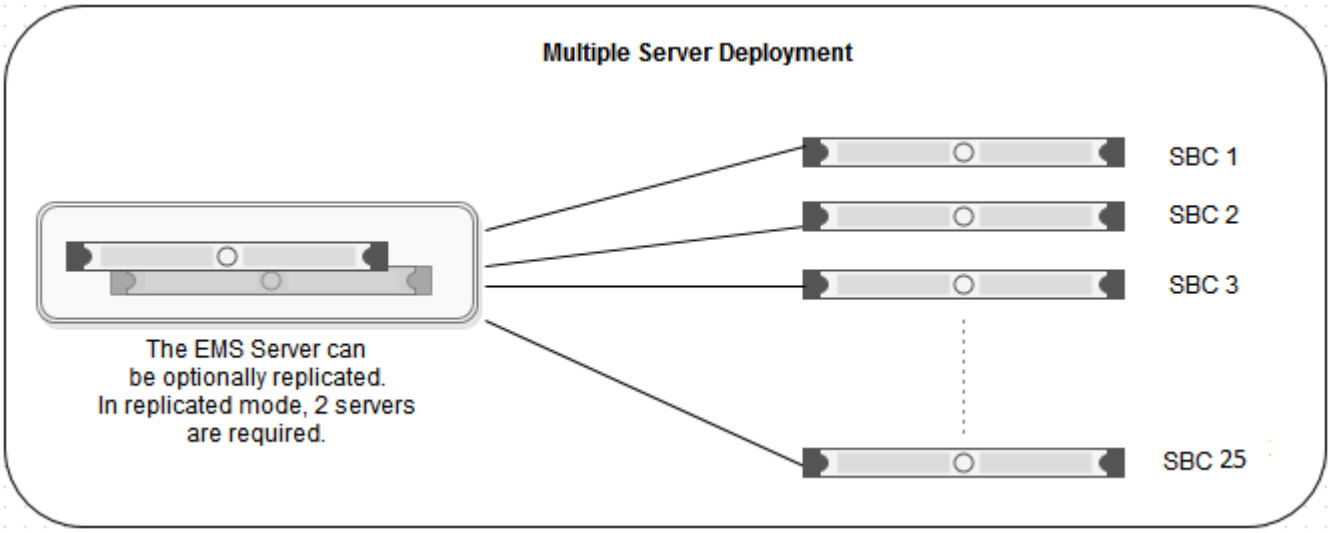
Multiple servers

In this type of deployment, EMS and Avaya SBCE are installed on separate physical servers.

The EMS can be replicated optionally. In that case, EMS is installed on two servers and one EMS is configured as Primary and the other as Secondary. If using a single EMS server, that EMS is configured as Primary.

Non-HA configuration

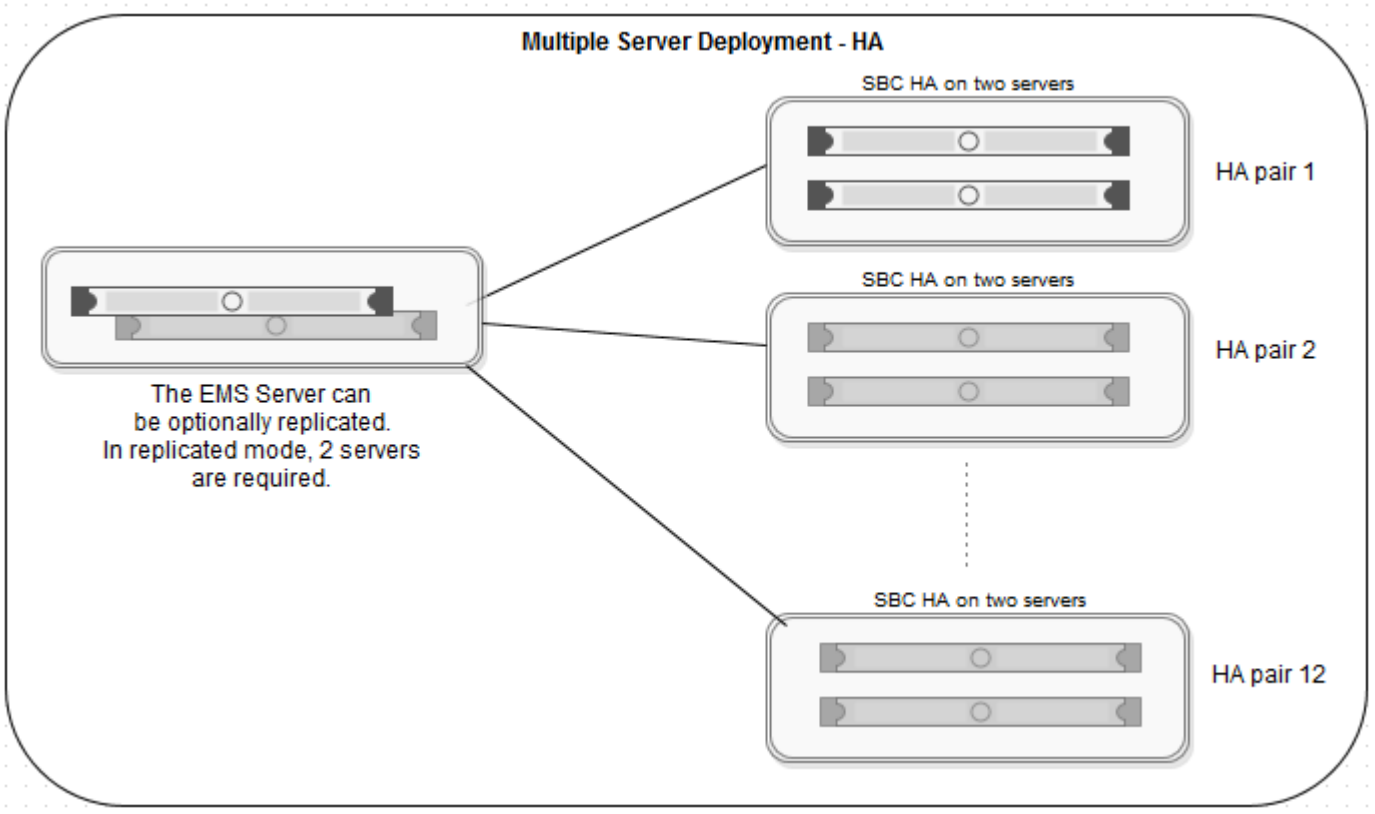
In this deployment, you can have one or more Avaya SBCE servers controlled by a single Avaya Element Management Systems (EMS) device or a replicated EMS pair. You can have up to 25 Avaya SBCE servers.



HA configuration

In the High Availability or HA configuration, Avaya SBCE servers are deployed in pairs. Each pair has one SBCE server acting as primary while the other is secondary. Both servers are controlled by a single Avaya Element Management System (EMS) device or a replicated EMS pair.

One EMS server or a pair of EMS servers in replicated mode can control up to 12 separate pairs of SBC servers.



Although the HA pairs and non-HA deployments are shown separately in this figure, EMS can control both an Avaya SBCE HA server pair as well as a single Avaya SBCE server.

You can enable and use the HA deployment feature only if the license file contains an HA license.

Chapter 5: Preparing for installation

Introduction

This chapter presents the recommended placement, installation options, and preparations required for proper physical installation of the equipment chassis.

Throughout this document, when referring to Avaya SBCE devices, the terms Primary and Secondary are used interchangeably with the terms Active and Stand-by, respectively.

Important:

If Release Notes shipped with your equipment chassis has different information, then follow the Release Notes.

The requirements described in this document are intended for system administrators, network managers, or other qualified network equipment technicians and maintenance personnel. A working knowledge of general communications equipment protocols and network security requirements is necessary. Installation, maintenance, and removal of the Avaya SBCE 1U equipment chassis must be done only by qualified service personnel. For information about security guidelines, see *Avaya SBCE Security Configuration and Best Practices Guide*.

For information about the Avaya port matrix, see *Avaya Port Matrix: ASBCE 7.1*.

Important:

The Avaya SBCE 1U equipment chassis does not contain user-serviceable subsystems or components. Opening the chassis voids the product warranty.

Hardware safety

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual could result in personal injury, network outage, or damage to the equipment.

The following safety precautions listed below represent warnings of certain dangers of which Avaya is aware. As the user of the product, you must follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

Ground the equipment

To minimize shock hazard, the equipment chassis and enclosure must be properly grounded. If the equipment is supplied with a three-conductor AC power cable, the power cable must be plugged into an approved three-contact electrical outlet. The grounding wire must be reliably connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable must meet International Electrotechnical Commission (IEC) safety standards and local electrical regulatory codes.

Do not operate in an explosive atmosphere

Do not operate the equipment in any explosive atmosphere such as in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment could result in an explosion and cause injury or damage.

Keep away from live circuits inside the equipment

Operations and maintenance personnel are *not* authorized to remove chassis equipment covers. Only Factory Authorized Service Personnel or other qualified service personnel designated by Avaya may remove equipment covers for internal subassembly or component replacement or any internal adjustment. Service personnel must not replace components with power cable connected unless explicitly directed to do so, such as when replacing a disk drive or power supply. Under certain conditions, dangerous voltages might exist even with the power cable removed. To avoid injuries, such personnel must always disconnect power and discharge circuits before touching components.

Observe all cautions and warnings in the manual

Warnings, such as the following example, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all other safety precautions that you deem necessary for the operation of the equipment in your operating environment.

Warning:

To prevent serious injury or death from dangerous voltages, use extreme caution when handling, testing, and performing maintenance on this equipment and its components.

Flammability

All Avaya PCBs (printed circuit boards) are manufactured with a flammability rating of 94V-0 by UL-recognized manufacturers.

EMI caution

Caution:

The Avaya SBCE equipment chassis generates, uses, and can generate electromagnetic interference (EMI).

Lithium battery caution

The Avaya SBCE 1U equipment chassis contains a lithium battery to power the internal clock and calendar circuitry.

Caution:

A danger of an explosion exists if the lithium battery is replaced incorrectly. Currently, only authorized Avaya personnel or their agents may open the equipment chassis to replace the battery.

Equipment inventory

Each Avaya SBCE equipment chassis is packaged with the following items.

Item	Description
Avaya SBCE equipment chassis	• One preconfigured Avaya SBCE equipment chassis • Product Information Guide
Rack installation kit	• Rack Installation Guide • Two slide assemblies for mounting the equipment chassis. • Two stop blocks • Eight 10-32 x 0.5-inch flange-head Phillips screws
Cable binding	• Two Cable Clips • Eight Zip Ties
Cables	• One power cable • One USB-to-Serial converter cable (Portwell only). Driver can be downloaded from PLDS. • DB9 Console cable. The type of cable depends on the server. DB9 cables are provided for Dell and HP servers.
Adaptors	

Table continues…

Item	Description
Thumb drive	One thumb drive The procedure for restoring a system from this drive must be used only when directed to by Avaya support. **Note:** The thumb drive is available only with the Portwell server when sold with IP Office. For all other servers and when the Portwell server is sold without IP Office, the thumb drive is shipped separately if ordered by the customer.

Meeting site requirements

After the customer site survey has been completed and submitted to Avaya, check the physical location where the server will be installed. This location must meet several requirements for a safe and successful installation, which are the responsibility of the customer.

Building and electrical code requirements

Building codes

Three major building codes are:

- Uniform Building Code: Produced by the International Conference of Building Officials (ICBO), 5360 South Workman Mill Road, Whittier, CA 90601 USA.
- BOCA Basic Building Code: Produced by the Building Officials and Code Administrators (BOCA) International, Inc., 4051 West Flossmoor Road, Country Club Hills, IL 60478 USA. www.bocai.org
- Standard Building Code (SBC: Produced by the Southern Building Code Congress International, Inc., 900 Montclair Road, Birmingham, AL 35213 USA. www.sbcci.org

Note:

The customer must ensure that all relevant building codes have been complied with prior to installing this equipment.

Electrical codes

Five authorities on electrical codes are:

- National Electrical Code (NEC) Classification (USA only): A recognized authority on safe electrical wiring. Federal, state, and local governments use NEC standards to establish their own laws, ordinances, and codes on wiring specifications. The NEC classification is published by the National Fire Protection Association (NFPA). The address is NFPA, 1 Batterymarch Park, Quincy, MA 02269 USA. www.nfpa.org
- Underwriters' Laboratory (UL) (USA only): An independent research and testing laboratory. UL evaluates the performance and capability of electrical wiring and equipment to determine

compliance with certain safety standards when properly used. Acceptance is usually indicated by the words “UL Approved” or “UL Listed.” The address is UL, 333 Pfingsten Road, Northbrook, IL 60062-2096 USA. www.ul.com

- National Electrical Manufacturing Association (NEMA) (USA only): An organization of electrical product manufacturers. Members develop consensus standards for cables, wiring, and electrical components. The address is NEMA, 2101 L Street N.W, Washington, D.C. 20037 USA. www.nema.org
- Electronics Industry Association (EIA): A trade association that develops technical standards, disseminates marketing data, and maintains contact with government agencies in matters relating to the electronics industry. The address is EIA, 2001 Eye Street N.W., Washington, D.C. 20006 USA. www.eia.org
- Federal Communications Commission (FCC): A commission that regulates all interstate and foreign electrical communication systems that originate in the United States according to the Communications Act of 1934. The FCC regulates all U.S. telephone and cable systems. The address is FCC, 1919 M Street N.W., Washington, D.C. 20554 USA.

Physical system protection requirements

The server is equipped with air vents on either side of the equipment chassis, and exhaust vents on the back. Be sure to follow these guidelines:

- Do not block these air vents.
- Do not place the server in a location where dirt or dust might clog the air vents or enter the chassis and damage internal components.
- Do not install the device in or near a source of heat, including proximate high-current or high-power consuming equipment such as switch banks. Excessive heat might cause the server to overheat and fail.

Note:

The customer must ensure that environmental hazards do not interfere with the operation of the Avaya SBCE server. These hazards could include excessive heat, excessive humidity, improper ventilation, or electromagnetic interference from proximate equipment.

Rack requirements

Racks must conform to conventional standards:

- In the United States, use EIA Standard RS-310C: Racks, Panels, and Associated Equipment.
- In countries other than the United States, use IEC Standard 297.

In addition, verify that your rack meets the following basic mechanical and space requirements.

Mechanical requirements for the rack

Use distribution racks that meet the following mechanical recommendations:

- An open style, 19-inch (48.26 cm) rack facilitates easy maintenance and to provide proper ventilation.
- The rack must use the universal mounting rail hole pattern that is identified in EIA Standard RS-310C (in countries other than the US, use IEC Standard 297).
- The mounting holes should be flush with the rails to accommodate the chassis.
- The rack must be made of steel or aluminum.
- The rack must be able to easily support an additional load of approximately 50 pounds.

Grounding requirements for the rack

Use a rack grounding kit and a ground conductor that is carried back to earth or to another suitable building ground.

All Extreme Networks switches are designed with mounting brackets that provide solid metal-to-metal connection to the rack. If you do not use equipment racks, you can attach wiring terminals directly to the mounting brackets for appropriate grounding. At a minimum, follow these guidelines:

- Ground equipment racks to the earth.
- CAD weld appropriate wire terminals to building I-beams or earth ground rods.
- Use #4 copper wire.
- Drill and tap wire terminals to equipment racks.
- Position the earth ground as close to the equipment rack as possible to maintain the shortest wiring distance possible.
- Properly test the quality of the earth ground.

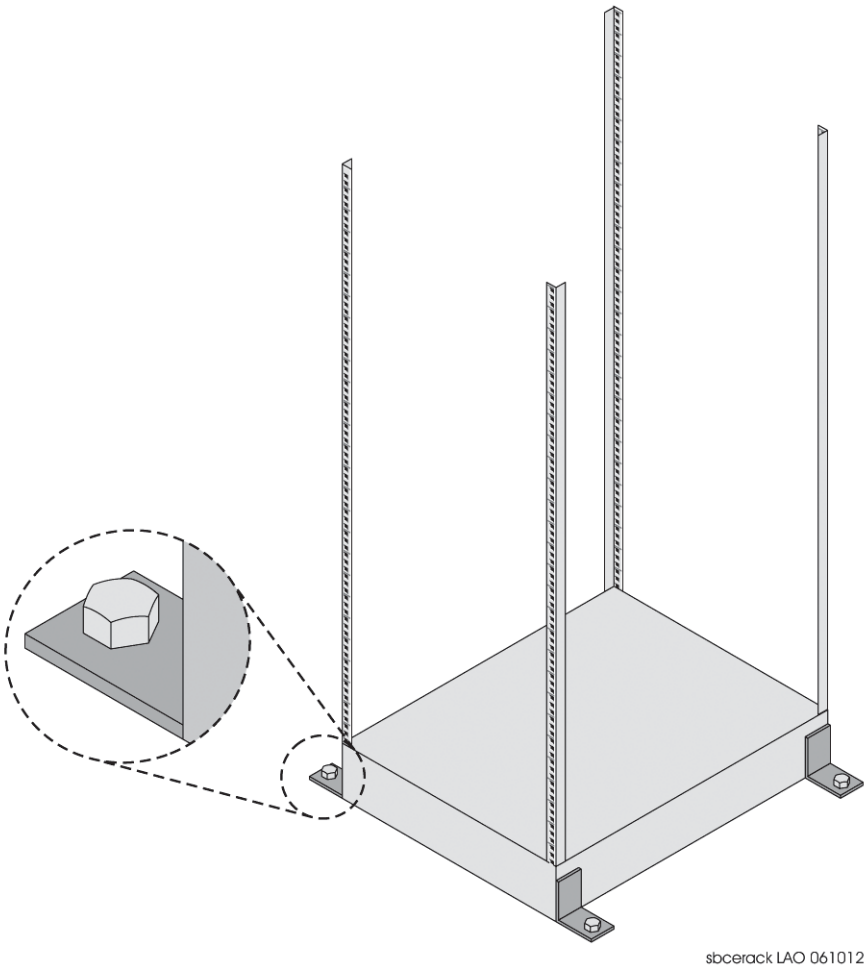
Space requirements for the rack

The following space requirements ensure adequate space to easily service the server:

- Minimum distance of 48 inches in front of the rack.
- Minimum distance of 24 inches behind the rack.
- Space on either side of the equipment rack is not a concern.

Securing the rack

Attach the equipment rack to the equipment room floor with 3/8 inch lag screws or equivalent hardware. The floor under the rack must be level within 3/16 inch. Use a floor-leveling cement compound if necessary or bolt the racks to the floor as shown in the following figure.



Meeting cabling requirements

Once the site survey has been completed and site requirements have been met, evaluate the existing cable plant. You must ensure that proper connections can be accommodated and maintained between the Avaya SBCE server and the VoIP network call servers.

Cabling standards

Applicable cabling standards are promulgated by Building Industry Consulting Service International (BICSI) and must be planned and installed by a Registered Communications Distribution Designer (RCDD).

Cable labeling and record keeping

A reliable cable labeling system is essential when planning and installing communications equipment into a network. Maintaining accurate records is important to:

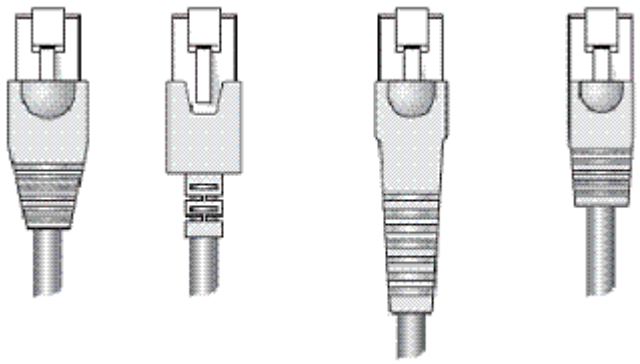
- Isolate faults and facilitate troubleshooting.
- Easily relocate equipment.
- Quickly and accurately make changes.

RJ-45 connector jackets

Use RJ-45 cable with connector jackets that are flush with the connector or that have connectors with a ‘no-snag’ feature. Using cable with jackets that are wider than the connectors can cause:

- Improper alignment of connectors with the port.
- Crowded cable installation, which can cause connectors to pop out of the port.

The following figure shows examples of RJ-45 connector jacket types that are not recommended as well as those that are recommended. The two on the left are not recommended, the one that is second from the right is recommended, and the one on the far right is highly recommended.



Connecting cables to the server

Before you begin

Verify that you identified the correct cable for the port.

About this task

Use only high-quality, shielded RJ-45 terminated cables to connect the server.

Procedure

1. Use an alcohol wipe or other appropriate cleaning agent to clean the cable connectors. Ensure that the connectors are free from all dust, oil, and other contaminants.

2. Press the cable connector into the port mating connector of the server until the cable is securely seated.
3. Repeat Step 1 through Step 3 for each remaining cable.
4. Dress and secure the cable bundle to provide appropriate strain relief and protection against excessive bends and kinks.

Meeting power requirements

About this task

A uninterruptable back-up power supply is strongly recommended.

Caution:

Do not apply power to the server using extension cords or power strips.

Procedure

Ensure unobstructed access exists to an adequate power receptacle that provides AC 110V – 240V.

Preparing a USB device or DVD for installation or upgrade

Preparing a USB device on Windows

Before you begin

Download the `sbce-7.1.0.0-xx10xxxx_<md5sum>.img` file from the PLDS website at https://plds.avaya.com.

About this task

You can use a USB storage device with the minimum capacity of 4 GB for installation or upgrade of Avaya SBCE.

Procedure

1. Download and set up a disk imaging utility like Win32 Disk Imager.
2. Copy the Avaya SBCE 7.1 USB image file on the Windows system.
3. Ensure that the checksum matches the checksum calculated by any checksum utility.
4. Plug in the USB device on the Windows system.

If you get an error indicating that the system is in use, format the USB device before using the Win32 Disk Imager application.

5. In the Win32 Disk Imager application, specify the image name and the correct USB device and click **Write**.

   Warning:

   Do not change the label of the filesystem on the USB drive. The default label is SBC_USB.

6. Wait for the image to be written to the USB device.

Preparing a USB device on Linux

Before you begin

Download the image file from the PLDS website. The image file is named as: `sbce-7.1.0.0-xx-xxxx_<md5sum>.img`.

About this task

A USB storage device with a minimum size of 4 GB can be set up for install or upgrade of Avaya SBCE.

Procedure

1. Copy the Avaya SBCE 7.1 USB image file on the linux system.
2. Go to the location where you copied the image file, and type `md5sum *filename*`, where *filename* is the name of the image file.

   The system displays an alphanumeric hash followed by the image filename.
3. Compare and ensure that the alphanumeric hash matches the checksum value in the file name.
4. Plug in the USB device on the linux server.

   The device can be detected as /dev/sda or /dev/sdb or /dev/sdc. Check with your system administrator if you are not sure.
5. Run the following command: `dd if=/path/of/the/SBCE_USB_image_file of=/dev/sdX bs=16M`

   The command takes up to 10 minutes to complete.

Preparing a DVD

About this task

Use this procedure to prepare a DVD for installing or upgrading Avaya SBCE.

Procedure

1. Download `sbce-7.1.0.0-xx-xxxx.iso` from the plds website at https://plds.avaya.com/.
2. Insert the DVD in a Windows or Linux system.
3. Burn the iso image to the DVD.

Chapter 6: Installation

Read through the information in this chapter thoroughly before attempting to install, provision, or remove the Avaya SBCE server.

About installation

Installation of the Avaya SBCE server comprises the following steps:

1. Mounting the server to an equipment rack or on an electrically grounded table-top.
2. Connecting the server to the existing network.

   Avaya ships the Avaya SBCE servers preinstalled with the software. You must perform steps 3 and 4 only for reinstallations or RMAs.
3. (Optional) For installation by using a DVD, downloading the iso from PLDS. The file format is `sbce-7.1.0.0-xx-xxxx.iso`.

   For installation by using a USB device, download the img file from PLDS.
4. (Optional) Installing the Avaya SBCE software if not preinstalled.

Note:

You can install using a serial connection or a VGA connection. Use the VGA connection to connect a monitor and keyboard to the system. If not, use a serial port.

You cannot use a VGA connection for installing Avaya SBCE on the Portwell CAD-0230 server.

Avaya SBCE supports multiple methods of installation, such as ISO-based DVD/ USB/ NFS/ PXE.

Mounting the server to an equipment rack

The Avaya SBCE server can be installed either in a standard 19” equipment rack or placed free-standing on an equipment tabletop.

Note:

For information about mounting the Avaya SBCE server, see *Rack Installation Guide*.

Connection of the server to the VoIP network

After the Avaya SBCE server has been properly installed, the network cables can be connected. The connection of the Avaya SBCE server to the network is determined by the particular configuration of the enterprise network and the desired location of the server with that topology.

Refer to the following figures for examples of Avaya SBCE servers connected in a single server and a multiple server deployment.

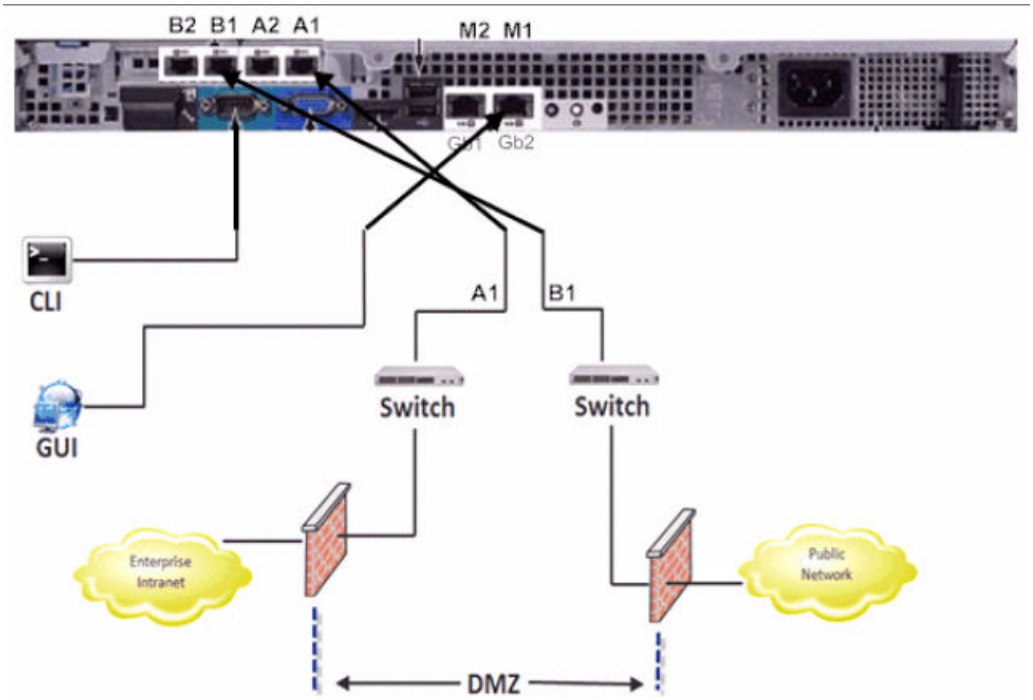


Figure 4: Single server deployment

If there are HA-pair servers being managed by the EMS, the installation script is first run remotely on the EMS server. Then, the system runs the installation script remotely on each of the standalone servers.

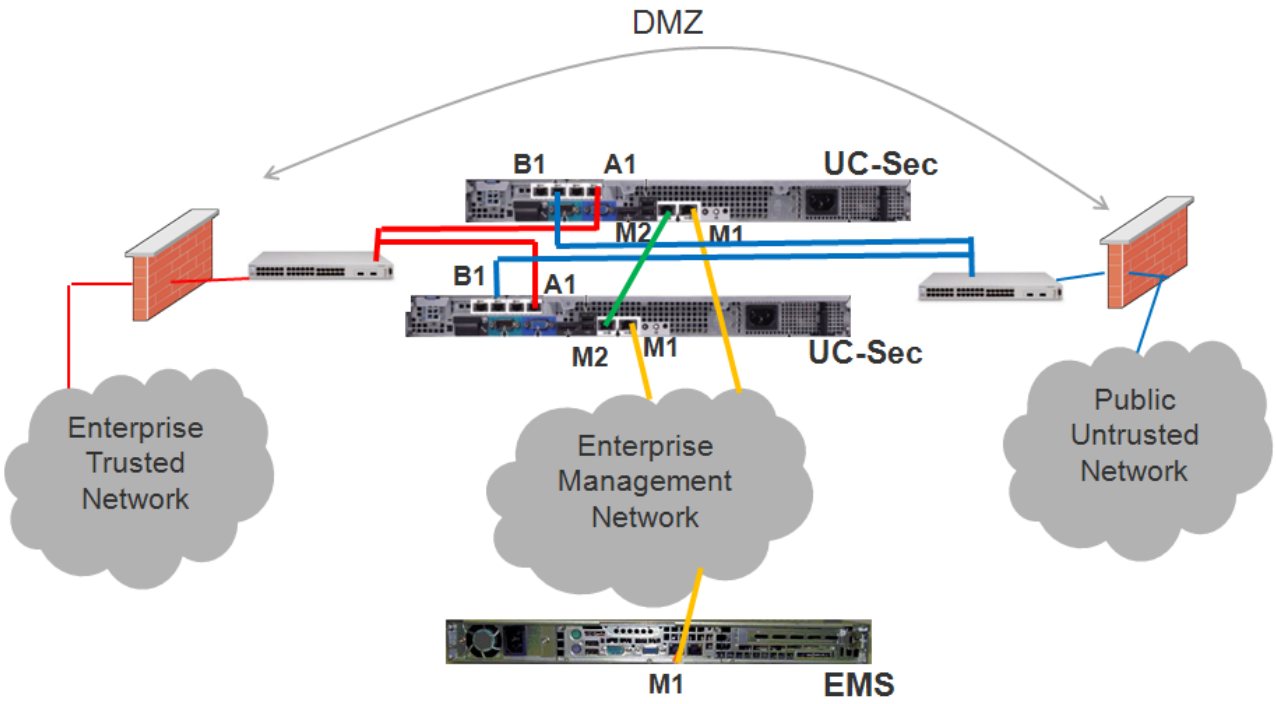


Figure 5: Multiple server deployment

Note:

When Avaya devices are all in the same subnet, you must use a one-wire deployment. For example, using only interface A1 instead of interfaces A1 and B1 (signaling and media interfaces). When Avaya devices are all within the DMZ, the use of internal or external firewalls is optional, depending upon the deployment.

Caution:

Do not interrupt existing network connections without being thoroughly certain of how Avaya SBCE is integrated into existing operations. If you are uncertain how to proceed, call Avaya Customer Service for assistance.

Related links

Configuring Avaya SBCE on page 72

Avaya SBCE installation

Avaya ships the Avaya SBCE servers preinstalled with the software. In this case, performing a fresh install is not required. Perform the steps in the Configuring Avaya SBCE section.

To re-install Avaya SBCE, perform the steps in the Installing Avaya SBCE software from a USB or DVD section.

Warning:

Performing installation will erase all existing data from the server.

Related links

Installing Avaya SBCE software from a USB or DVD on page 62
Configuring Avaya SBCE on page 72

Installing Avaya SBCE software from a USB or DVD

About this task

Use these steps to perform software installation on the system. All existing data on the disk will get overwritten.

This procedure can be performed using either a DVD or a USB storage device. You can use the serial console mode or VGA console mode to perform this task.

You cannot use a VGA connection to install Avaya SBCE on a Portwell CAD-0230 server.

Procedure

1. Perform one of the following actions:
   - To use a USB device for installation, insert the USB device in the USB port.
   - To use a DVD for installation, connect the external DVD device to the USB port.
2. Reboot the server, and ensure that the boot device is DVD or USB. For information about booting servers, see *Booting servers with a USB flash device*.
3. On the Welcome to Avaya SBC for Enterprise 7.1! screen, select one of the following options:
   - Select **Install or Migrate SBC system (VGA)** for VGA connection, and then press **Enter**.
   - Select **Install or Migrate SBC system (Serial)** for serial connection, and then press **Enter**.
4. Wait until the system displays the installation or upgrade warning screen.
   - If the system has Avaya SBCE software installed on it, the system displays the Upgrade screen. In **"Proceed with Upgrade?"** prompt, type **no** to be presented with the Installation screen.
   - If the system does not have Avaya SBCE installed on it, the system displays the Installation screen. In the **"Proceed with Installation?"** prompt, type **yes** to start the installation.

     Warning:

     If you proceed with the installation, any data residing on the system is lost.

5. When the system displays the **Please select default console type (vga or serial)?** field, type one of the following values.
   - If you use the serial connection mode, type `serial` and press `Enter`.
   - If you use the VGA mode, type `vga` and press `Enter`.
6. If the system displays the Error processing drive screen, select **Re-initialize all**.
7. Wait until the system creates partitions and installs packages.

   This process might take up to 30 minutes.
8. When the system displays `Press ENTER to reboot`, press `Enter`.

   Important:

   If you used a USB storage device for installation, unplug the drive before you press `Enter` to reboot the system.

   The system is now ready to be configured. For a multi-server deployment, repeat the task for other servers.

Related links

Booting servers with a USB flash device on page 63

Booting servers with a USB flash device

This section covers the procedures to boot each server type from a USB flash device.

Dell R210 and Dell 210XL

About this task

To ensure that the server boots using the USB flash device, select the correct boot device.

Procedure

1. Insert the USB flash device in the USB port.
2. Reboot the server.
3. Wait for the option `F11 = Boot Manager` to appear on the top-right of the VGA or serial console.
4. Press F11 to start Boot Manager.
5. Select **Boot Settings** and press `Enter`.
6. Select **Set Legacy HardDisk Drive Order** and press `Enter`.
7. Select **HardDisk Drive #00** and press `Enter`.

   The system displays a list of disk devices.
8. From the list, select the USB flash device and press `Enter`.
9. Press `Esc` to exit the hard disk drive order.

10. Press `Y` to save the changes and exit.
11. Press `Esc` to exit boot settings.
12. Ensure that the USB flash device is listed as the primary hard disk.
13. Select the USB flash device option.
14. Press `Enter`.

Dell R320 and Dell R330

Procedure

1. Insert the USB flash device in the USB port.
2. Reboot the server.
3. Press **F11** to start BIOS Boot Menu.

   The system displays the BIOS Boot Menu.
4. Use arrow keys to navigate to the **Select Hard drive C:** option.

   The system displays a list of devices.
5. Select the USB flash device and press `Enter`.

Dell R620

Procedure

1. Insert the USB flash device in the USB port.
2. Reboot the server.

   The system display the **F11 = Boot Manager** on the top-right corner of the VGA or serial console.
3. Press F11 to start BIOS Boot Manager.

   The system displays the BIOS Boot Manager menu.
4. Use arrow keys to navigate to the **Select Hard drive C:** option.

   The system displays a list of devices.
5. Select the USB flash device and press `Enter`.

Dell R630

Procedure

1. Insert the USB flash device in the USB port.
2. Reboot the server.
3. Press F11 to start Boot Manager.
4. Select **One-Shot BIOS Boot Menu**.
5. Select your USB drive to boot the server from USB.

HP DL 360 G8 connected to a VGA console

Procedure

1. Insert the USB flash device in the USB port.
2. Reboot the server.

   The server takes a few minutes before showing any messages on the VGA console. The system displays the F11 Boot Menu option at the bottom of the screen.
3. Press F11 to launch the Boot menu.
4. From the menu, select **One Time Boot to USB DriveKey** by entering the corresponding option number.

HP DL 360 G8 connected to a serial console

Procedure

1. Insert a USB flash drive in the USB port.
2. Reboot the server.

   The system displays the message `Press F9 key for ROM-Based Setup Utility` at the top of the console.
3. Immediately press `Esc+!`.
4. From the menu, select **One Time Boot to USB DriveKey** by entering the corresponding option number.

HP DL360 G9

Procedure

1. Insert a USB flash drive in the USB port.
2. Reboot the server.
3. Press `F11`.
4. Select **Legacy BIOS One-Time Boot Menu**, and press `Enter`.
5. From the menu, select **One Time Boot to USB DriveKey** by entering the corresponding option number.

Portwell CAD 0208 and 0230 (Micro SBC)

Procedure

1. Insert USB flash drive in the USB port.
2. Reboot the server.
3. If the server is connected to the VGA console, press `Delete`. If the server is connected to the serial console, press `Tab`.

   Do not use VGA port for installing Avaya SBCE on a Portwell CAD 0230 server.

   The BIOS SETUP UTILITY is started.

4. Select the Boot menu option using arrow keys.
5. Select **Boot Device Priority** and press `Enter`.
6. Select the first boot device and press `Enter`.
7. Select the correct USB device from the list and press `Enter`.
8. Press `ESC` to go to the Boot menu.
9. Select the Exit menu option using arrow keys.
10. Select **Save Changes and Exit** and press `Enter`.
11. Click **OK** and press `Enter`.

Chapter 7: Avaya SBCE configuration

Depending on the deployment option, perform the appropriate configuration procedure:

- Single server:
  - Configuring EMS and SBC on a single server on page 67
- Multiple server:
  - Configuring EMS on page 70
  - Configuring Avaya SBCE on page 72

For multiple server configuration, configure servers in the following sequence:

1. Primary EMS
2. Secondary EMS
3. Avaya SBCE servers in any order

Configuring an EMS plus Avaya SBCE deployment

About this task

After installation, the EMS plus SBCE deployment cannot use EMS for other SBCE devices in the network.

Procedure

1. Connect to the system using the same mode that was used for software installation. For preinstalled servers, use the serial mode.
2. Turn on the system.
3. Wait for the configuration menu to appear.

   The options are:

   - 1-configure: Command line mode
   - 2-configure: Text mode
   - 3-Reboot SBCE
   - 4-Shutdown SBCE

4. Select option 1 for CLI mode or 2 for text mode.

   The fields for configuration through CLI mode and text mode are identical. However, in CLI mode, you must type relevant information for each prompt manually.

5. Press `Enter`.

   The Device Type screen displays two options: **SBCE** and **EMS+SBCE**.

   Note:

   For Portwell 0208, the system displays only one option: EMS+SBCE.

6. Select **EMS+SBCE** and press `Enter`.

   The system displays the message, `Please Choose Yes to proceed or No to Exit`.

7. Select **Yes** and press `Enter`.

   The system displays the message, `Installing as a EMS+SBCE device`.

8. Press `Enter`.

   The system displays the Top Level configuration screen, containing two options: **Configuration** and **Operation**.

9. Use the arrow keys to select **Configurations** and press `Enter`.

   The system displays the Device configuration screen.

10. Select the **Tilera Equipped Status** option, and press `Enter`.

    The system displays the Tilera Equipped Status screen.

11. Perform one of the following actions:

    - If the server is Tilera equipped, select **Yes** and click `OK`.
    - If the server does not have a Tilera adapter, select **No**, and press `OK`.

      If you do not specify a value for the **Tilera Equipped Status**, the system uses the default value **No**.

      For a Tilera-equipped server, if you miss setting the **Tilera Equipped Status** to **Yes**, change the status after deployment by using the **`SBCConfigurator.py`** command.

12. Use the arrow keys to select the **Appliance Configuration** option, and press `Enter`.

    The system displays the Configure Appliance screen.

13. Enter the required information in the fields.

    See the Appliance Configuration screen field descriptions table.

14. Press `Enter`.

    The system displays the Device Configuration screen.

15. Use the arrow keys to select the **Management Interface Setup** option, and press `Enter`.

The system displays the Management IP Configuration screen.

16. Depending on the IP addresses used in your network, do one of the following:
    - If you use only IPv4 addresses, select **IPv4** and click **Select**.
    - If you use both IPv4 and IPv6 addresses, select **Dual Stack** and click **Select**.
17. On the Management Interface Setup page, type appropriate values for IP addresses.
18. Click **OK** to continue.
19. Use the arrow keys to select the **Time Zone** option.

    The system displays the Configure Time Zone screen.
20. Select the appropriate time zone and click **Select**.

    The system displays the Device Configuration screen.
21. Use the tab keys to select **Back**.

    The system displays the Device Configuration screen.
22. Use the tab keys to select **Done** and press `Enter`.

    A script is automatically activated, configuring Avaya SBCE with the information provided in the previous steps.
23. If you specified an NTP server that cannot be contacted, select one of the following options to proceed:
    - 1-Retry (default)
    - 2-Change NTP servers
    - 3-Manually configure date and time
24. Set the Date manually (if prompted).
25. Set the Time manually (if prompted).
26. At the system prompt, provide the password for root user and then press `Enter`.
27. At the prompt, provide the same password for the ipcs user and press `Enter`.

    Use this password for secure shell (ssh) to gain access to Avaya SBCE.
28. At the prompt, provide the postgres password, and press `Enter`.

    A series of scripts automatically run, which configure Avaya SBCE with the information that you type. As these scripts run, the video display shows a series of outputs reflecting the progress of the configuration. The configuration is successfully complete when the system displays the login prompt.

Related links

Appliance Configuration field descriptions on page 75
Management Interface Setup field descriptions on page 76

Configuring EMS

Before you begin

Ensure that the software installation is complete. For more information, see the Installing Avaya SBCE software from a USB or DVD section.

Procedure

1. Connect to the system using the same mode that was used for software installation.

   For preinstalled servers, use the serial mode.
2. Turn on the system.
3. Wait for the configuration menu to appear.

   The options are:

   - 1-configure: Command line mode
   - 2-configure: Text mode
   - 3-Reboot SBCE
   - 4-Shutdown SBCE
   - 5-SBCE Shell Login
4. Select option 2 for text mode.
5. Press **Enter**.

   The system displays a message that instructs you to select **Yes** to proceed or **No** to exit.
6. Press `Enter` to begin the configuration process.

   The Device Type screen displays three choices: `EMS`, `SBCE` and `EMS+SBCE`.
7. Use the `Tab` key to select `EMS` and press `Enter`.

   The system displays the message `Please Choose Yes to proceed or No to Exit`.
8. Select **Yes** to proceed.

   The system displays a message box that indicates `Installing as a EMS device`.
9. Select **OK**.
10. The system displays the Device Configuration screen with the following options: Configuration and Operations.

    Caution:

    The **Operations** option is used to reset the EMS operating software to the factory default state. This option permanently deletes all system configuration information and

cannot be undone. Do not select this option unless you want to erase all system configuration information.

a. Select **Configuration**.
   - If you use only IPv4 addresses, select **IPv4** and click **Select**.
   - If you use both IPv4 and IPv6 addresses, select **Dual Stack** and click **Select**.

b. Based on the deployment, select an installation type.
   - Select **Primary** or **Secondary** and click **OK**.

   Note:

   This option specifies whether the EMS is primary or secondary.

c. Click **EMS Appliance Configuration**.

   The system displays the Appliance Configuration screen.

d. In the **EMS Host name** field, type a name for the EMS host.

e. In the **List of DNS Servers** field, type the IP address of the DNS server.

f. In the **NTP Server IP Address (ipv4)** field, type the NTP Server IP address.

g. **(Optional)** If you selected the Dual Stack installation mode, in the **NTP Server IP Address (ipv6)** field, type the NTP server Ipv6 IP address.

h. In the **Network Passphrase** field, type the passphrase.

i. In the **Network Passphrase (Again)** field, retype the passphrase.

   You must use the same network passphrase while configuring Avaya SBCE.

j. Select **OK**.

11. Use the `Tab` key to select the **Management Interface Setup** option, and press **Enter**.

    The system displays the Management IP Configuration screen, type appropriate values for Management IP address, Management Network Mask, and Management Gateway IP Address.

12. Select **OK**.

13. Based on the customer location, select the appropriate time zone.

    If required, follow steps 9 to 11 to enter details for a self-signed certificate.

14. **(Optional)** Select **Configure self-signed certificate**.

15. **(Optional)** Type appropriate values in the **First and Last Name**, **Organizational Unit**, **Organization**, **City or Locality**, **State or Province**, and **Country Code** fields.

    Note:

    The country code must be of two characters.

16. **(Optional)** Select **OK**.

17. Use the `Tab` key to select **Back**.
18. Use the `Tab` key to select **Done**.

    A script is automatically activated that configures Avaya EMS with the information provided in the previous steps.

    Note:

    If you have specified an NTP server that cannot be contacted, then system will prompt you to set the date and time manually.
19. At the prompt, type a password for the root user and press **Enter**.
20. At the prompt, type a password for the ipcs user and press **Enter**.

    Use this password for secure shell (ssh) access to EMS.
21. At the prompt, provide the grub password, and press `Enter`.

    A series of scripts automatically run, which configure EMS with the information you provide. As these scripts run, the system displays a series of outputs indicating the progress of the configuration. The configuration is successfully completed when the login prompt is displayed.

    For an active-active EMS, both primary and secondary EMS must have the same grub password.

Related links

Appliance Configuration field descriptions on page 75
Management Interface Setup field descriptions on page 76

Configuring Avaya SBCE

Before you begin

Ensure that EMS is accessible over the network when Avaya SBCE is being configured.

Procedure

1. Connect to the serial console port of the server.
2. Press the **Power On** switch located on the front panel of the equipment chassis.

   The **Power On** indicator LED illuminates and the installation scripts run, providing a series of outputs on the video display.
3. Wait for the configuration menu to appear.

   The options are:

   - 1-configure: Command line mode
   - 2-configure: Text mode

- 3-Reboot SBCE
- 4-Shutdown SBCE

4. Select option 2 for text mode.
5. Press `Enter` to begin the configuration process.

   The Device Type screen displays two choices: `SBCE` and `EMS+SBCE`.
6. Using the arrow keys, select `SBCE` and press `Enter`.

   The system displays the message `Please Choose Yes to proceed or No to Exit`.
7. Select **Yes** and press `Enter`.

   The system displays the message `Installing as a SBCE device`.
8. Press `Enter`.

   The system displays the Device configuration screen, containing two options: Configuration and Operation.
9. Select **Configuration**.

   The system displays the top-level configuration screen.
10. Select the **Tilera Equipped Status** option, and press `Enter`.

    The system displays the Tilera Equipped Status screen.
11. Perform one of the following actions:
    - If the server is Tilera equipped, select **Yes** and click `OK`.
    - If the server does not have a Tilera adapter, select **No**, and press `OK`.

      If you do not specify a value for the **Tilera Equipped Status**, the system uses the default value **No**.

      For a Tilera-equipped server, if you miss setting the **Tilera Equipped Status** to **Yes**, change the status after deployment by using the **`SBCConfigurator.py`** command.
12. Use the arrow keys to select the **Appliance Configuration** option and press `Enter`.

    The system displays the Configure Appliance screen.
13. Enter the required information in the appropriate fields, such as **Network Passphrase** and **Network Passphrase (Again)**.

    This passphrase must match the passphrase used while installing EMS.

    See the EMS Appliance Configuration screen field descriptions table.
14. Press `Enter`.

    The system displays the top-level configuration screen.
15. Use the arrow keys to select the **Management Interface Setup** option, and press `Enter`.

The system displays the Management IP Configuration screen.

16. Depending on the IP addresses used in your network, do one of the following:
    - If you use only IPv4 addresses, select **IPv4** and click **Select**.
    - If you use both IPv4 and IPv6 addresses, select **Dual Stack** and click **Select**.
17. On the Management Interface Setup page, type appropriate values for IP addresses.
18. Click **OK**.

    For information about the acceptable field entries and field description on the Management Interface Setup screen, see the Management Interface Setup screen field descriptions table.
19. Use the arrow keys to select the **Time Zone** option.

    The system displays the Configure Time Zone screen.
20. Select the appropriate time zone and click **OK**.

    The system displays the Device Configuration screen.
21. Type the required information and click **OK**.

    Note:

    The country code must be of two characters.

    The system displays the Device Configuration screen.
22. Use the `Tab` key to select **Back**.

    The system displays the top-level configuration screen.
23. Use the `Tab` key to select **Done** and press `Enter`.

    A script is automatically activated that configures Avaya SBCE with the information provided in the previous steps.
24. If you have specified an NTP server that cannot be contacted, select one of the following options to proceed:
    - 1-Retry (default)
    - 2-Change NTP servers
    - 3-Manually configure date and time

    For an HA pair, both Avaya SBCE instances must configure the EMS IP as the NTP server.
25. Set the date manually (if prompted).
26. Set the time manually (if prompted).
27. Enter the password to be used by the root user and press `Enter`.
28. Enter the same password for the ipcs user and press `Enter`.

    Use this password for secure shell (ssh) access to the EMS.

29. At the prompt, provide the postgres password, and press `Enter`.

    Important:

    For an HA pair, both Avaya SBCE instances must have the same postgres password.

    A series of scripts automatically run to configure Avaya SBCE. As these scripts run, the system displays a series of outputs indicating the progress of the configuration. The configuration is successfully completed when the system displays the login prompt.

Related links

[Appliance Configuration field descriptions](#) on page 75
[Management Interface Setup field descriptions](#) on page 76

Field descriptions

Appliance Configuration field descriptions

Name	Description
Appliance Name	A descriptive name assigned to the EMS or Avaya SBCE. **Note:** Ensure that the appliance name is unique.
Domain Suffix (Optional)	The domain within which this server is deployed.
List of DNS Servers	The IP address of each Domain Name Server (DNS). **Note:** The list of DNS server names must be comma-separated, with no spaces. Only two IP addresses are allowed here.
NTP Server IP Address (ipv4)	The IPv4 IP address of the Network Time Protocol (NTP) server. If no NTP is present, configure manually. Only one IP address can be configured. For an HA pair, both Avaya SBCE instances must configure the EMS IP as the NTP server.

Table continues…

Name	Description
NTP Server IP Address (ipv6)	The IPv6 IP address of the Network Time Protocol (NTP) server. If no NTP is present, configure manually. Only one IP address can be configured. This field is available only when you select the **Dual Stack** option for configuration. For an HA pair, both Avaya SBCE instances must configure the EMS IP as the NTP server.
Network Passphrase	A unique password that the EMS server and Avaya SBCE security devices deployed throughout the network will use for authentication. This field is displayed for Avaya SBCE-only installations. **Important:** The same passphrase must be used when configuring each Avaya SBCE and EMS security device. Different passphrases prevent the EMS and Avaya SBCE security devices from communicating with one another.

Management Interface Setup field descriptions

Name	Description
Management IP Address (ipv4)	The IPv4 address of the management network.
Management Network Mask	The network mask of the management network.
Management Gateway IP Address (ipv4)	The IPv4 address of the gateway to the management network.
Management IP Address (ipv6)	The IPv6 address of the management network. The system displays this field only when you select Dual Stack on the Management IP Configuration screen.
Management Network Pfx length	The length of the prefix for the management network IPv6 address. The system displays this field only when you select Dual Stack on the Management IP Configuration screen.

Table continues…

Name	Description
Management Gateway IP Address (ipv6)	The IPv6 address of the gateway to the management network. The system displays this field only when you select Dual Stack on the Management IP Configuration screen.
EMS Server IP Address (ipv4)	The IP address of the EMS server. This field is displayed for Avaya SBCE-only installations.

Important:

When using SSL/VPN as configured on the M1 interface, ensure that the IP address associated with the M1 interface will need *outbound* internet access. The M1 interface requires *outbound* internet access to initiate connectivity with the Avaya VPN Gateway (AVG) server (FQDN: plavg0(x).sal.avaya.com. M1 is the management interface that is the required interface for SSL/VPN.

Note:

For security reasons for Voice Over IP (VoIP) systems, segment the data or data management network from the voice network. For Avaya SBCE deployments, segmentation means configuring the Management Interface (M1) on a separate subnet from the subnet used for the Voice Interfaces (A1, A2, B1, and B2). Avoid placing M1 IP address on a PBX core network. For more information about this recommendation, see

- Avaya: *Security Best Practices Checklist*, in the Network section at https://downloads.avaya.com/css/P8/documents/100070101
- Network Security Agency: *Recommended IP Telephony Architecture*, at http://www.nsa.gov/ia/_files/voip/I332-009R-2006.pdf
- National Institute of Standards and Technology (NIST): *Security Considerations for Voice Over IP Systems* at http://csrc.nist.gov/publications/nistpubs/800-58/SP800-58-final.pdf

Console and SSH passwords complexity

The Console and SSH passwords must fulfill the following norms:

- Contain at least eight characters.
- Contain at least two uppercase characters, not including the first character of the password.
- Contain at least one lowercase character.
- Contain at least one special character.
- Contain at least two digits, not including the last character of the password.

The Console and SSH passwords do not have a limit on the maximum length and are hashed by MD5 hash algorithm.

Note:

Password Authentication Module (PAM) enforces password security, and hashes are stored in: `/etc/shadow`

Grub database password complexity

The Grub database password must meet the following norms:

- Contain at least eight characters.
- Contain uppercase and lowercase characters.
- Contain at least special character except %, $, and $.
- Contain at least two digits.

You can change the Grub database password with the **`SBCEconfigurator.py change-db-password`** command.

Remote access

Secure Access Link

Use Secure Access Link (SAL) for remote access to Avaya SBCE systems in non-IP Office environments. Register Avaya SBCE for remote access with the customer SAL. For information about configuring SAL, see *Implementing Secure Access Link Gateway*.

SSL VPN

When sold with IP Office, use remote access to SSL VPN into IP Office and then use Avaya SBCE. Register and configure Avaya SBCE and IP Office. For more information, see the job aid titled *ASBCE GRT Registration and Remote Connectivity via IP Office SSL/VPN NAPT*, which is available on http://support.avaya.com.

Note:

Configuring SSL VPN in Avaya SBCE is not supported in Release 7.1. However, SSL VPN is supported on single server or standalone systems.

For information about configuring Avaya SBCE, and for remote worker and trunk configuration, see *Administering Avaya Session Border Controller for Enterprise*.

Chapter 8: Verifying EMS operation

You can verify the operational status of the EMS by:

- Attempting to access the EMS server using the web interface.
- Establishing a CLI session via a secure shell session (SSH) and manually checking the status of various internal processes.

If the Avaya SBCE installation fails, you can restore the system data. For more information, see *Troubleshooting and Maintaining Avaya Session Border Controller for Enterprise*.

Logging on to the EMS web interface

Procedure

1. Open a new browser tab or window by using any of the following web browsers:
   - Microsoft Internet Explorer (5) 9.0+
   - Microsoft Edge 13.0+
   - Mozilla Firefox 38+ / 38.0 ESR+
   - Google Chrome 47.0+
   - Apple Safari (4) 7.0+
2. Type the following URL:

   ```
   https://<Avaya EMS IP address>
   ```
3. Press **Enter**.

   The system displays a message indicating that the security certificate is not trusted.
4. Accept the system message and continue to the next screen.

   If the Welcome screen is displayed, the EMS is operating normally and available for use. You can log in to EMS and perform normal administrative and operational tasks. See *Administering Avaya Session Border Controller for Enterprise*.

Logging in to EMS through console

To log in to EMS through a console, you can use a serial connection.

Note:

You can use a VGA connection only if you earlier manually reinstalled the software on the EMS by using a VGA connection.

Logging in to EMS through a serial console

Before you begin

Change the BIOS settings and enable serial redirection.

About this task

Connect the laptop to the serial port on the Avaya SBCE server by using the cable that Avaya provided or a DB9 null modem cable.

Note:

From Avaya SBCE Release 7.0, the default output can be a serial console or VGA depending on the installation.

Procedure

1. Configure the serial connection parameters of the terminal program to the settings in the following table.

Parameter	Value
Baud rate	19200
Parity	None
Data bits	8
Stop bits	1
Connection Setting	Direct to Com1 **Note:** Because the com port number is not fixed, use Device Manager to find out the correct port number.

2. Press **Enter** to establish a serial connection.

   The system displays a prompt asking for the User Name and Password.

3. Provide the required information and press **Enter**.

Logging in to EMS through VGA connection

Before you begin

Connect the monitor to EMS through a VGA cable. Connect a keyboard to EMS.

Procedure

1. Press `Enter` to establish a communications connection.

   The system prompts you to enter the username and password.
2. Enter your username and password, and press `Enter`.

Logging in to Avaya SBCE through SSH connection

Before you begin

Ensure that Avaya SBCE is installed and available on the network.

Procedure

1. Open an SSH client, such as PuTTy.
2. Type the IP address for Avaya SBCE.
3. Specify the port as **222**.
4. Select the connection type as SSH and press `Enter`.
5. Enter the user name and password to log in.

   Note:

   You cannot gain access to shell with user account `ucsec`.

   User account `ipcs` or user accounts that have shell access can be used for logging in to Avaya SBCE.

Chapter 9: Licensing requirements

Avaya SBCE uses WebLM for licensing requirements. You can install the Avaya SBCE license file on Element Management System (EMS) using the System Management page. Ensure that the license file of the WebLM server displays the product code Session Border Controller E AE. Before you configure the license file, you can view the **License State**, **Grace Period State**, and **Grace Period Expiration Date** fields on the Dashboard page. To install a license file on a newly installed or upgraded EMS, you have a 30-day grace period from the day of installation or upgrade.

The license file contains the following information:

- Product name
- Supported software version
- Expiration date
- Host ID

  The primary host ID of WebLM is used for creating the license file.
- Licensed features
- Licensed capacity

All hardware Avaya SBCE devices can use a local WebLM server for licences. However, for mixed deployment environments with EMS on VMware and Avaya SBCE on hardware, use a WebLM server installed on VMware or System Manager WebLM.

Avaya SBCE license features

To use a feature, you must ensure that the license file that you upload to WebLM has the appropriate licenses for the feature. You cannot configure or use a feature if the correct license for that feature is not present in the license file.

License feature	Description
VALUE_SBCE_STD_SESSION_1	Specifies the number of standard session licenses.
VALUE_SBCE_STD_HA_SESSION_1	Specifies the number of standard service HA session licenses.

Table continues…

License feature	Description
VALUE_SBCE_ADV_SESSION_1	Specifies the number of session licenses for remote worker, media recording, and encryption. **Note:** You must buy and deploy a standard session license with every advanced license feature.
VALUE_SBCE_ADV_HA_SESSION_1	Specifies the number of advanced service HA session licenses.
VALUE_SBCE_VIDEO_CONF_SVC_SESSION_1	Specifies the number of Avaya Scopia® video conferencing session licenses.
VALUE_SBCE_VIDEO_CONF_HA_SVC_SESSION_1	Specifies the number of Avaya Scopia® video conferencing HA session licenses.
VALUE_SBCE_CES_SVC_SESSION_1	Specifies the number of Client Enablement Services session licenses.
VALUE_SBCE_CES_HA_SVC_SESSION_1	Specifies the number of Client Enablement Services HA session licenses.
VALUE_SBCE_TRANS_SESSION_1	Specifies the number of transcoding session licenses.
VALUE_SBCE_TRANS_HA_SESSION_1	Specifies the number of transcoding HA session licenses.
VALUE_SBCE_ELEMENTS_MANAGED_1	Specifies the maximum number of Avaya SBCE elements managed.
VALUE_SBCE_VIRTUALIZATION_1	Specifies that download of VMware OVA files is permitted for Avaya SBCE.
VALUE_SBCE_ENCRYPTION_1	Specifies the Avaya SBCE encryption, and is required for advanced licenses.
FEAT_SBCE_HIGHAVAILABILITY_CONFIG_1	Specifies the configuration of HA for the setup.

License installation

You can install Avaya SBCE license on either of the following servers:

- The WebLM server on System Manager
- The local WebLM server

Installing a license on WebLM server on System Manager

Before you begin

Get the license file from the Avaya Product Licensing and Delivery System (PLDS) website at https://plds.avaya.com/.

About this task

If you experience problems while installing the license file, see the License file installation errors section in *Administering standalone Avaya WebLM*.

Procedure

1. Log in to the System Manager web interface.
2. On the home page, in the **Services** section, click **Licenses**.
3. In the left navigation pane, click **Install license**.
4. Browse to the location where you saved the license file, and select the file to upload.
5. Click **Install**.
6. Verify that the license is installed. If the installation is successful, a new menu item named ASBCE appears in the left navigation pane. Click **ASBCE** to view the licensed features.

Installing a license file on the local WebLM server

Procedure

1. Log in to the WebLM application. If you are logging in for the first time, the default username is **admin** and the default password is **weblmadmin**. The system prompts you to change the default password.
2. In the left navigation pane, click **Install License**.

   The system displays the Install License page.
3. In the **Enter license path** field, select the downloaded license from your computer and click **Install**.

   After the license is successfully installed, the system displays a new menu **ASBCE**.
4. Click **ASBCE** to view the license information.

Configuring WebLM server IP address on EMS

Before you begin

Install the Avaya SBCE license file on System Manager WebLM, local WebLM, or standalone WebLM server. For more information about installing license files, see *Administering Avaya Aura® System Manager*.

Procedure

1. Log on to the EMS web interface with administrator credentials.
2. In the left navigation page, click **System Management**.

3. On the System Management page, click the **Licensing** tab.
4. Perform one of the following tasks:
   - For a System Manager WebLM server or standalone server, in the **WebLM Server URL** field, type the URL of the WebLM server and click **Save**.

     The url format of the System Manager WebLM server is `https://<SMGR_server_IP>:52233/WebLM/LicenseServer` and the standalone WebLM server is `https://<WEBLM_server_IP>:52233/WebLM/LicenseServer`.
   - For a local WebLM server, select the **Use local WebLM server** check box and click **Save**.

   If the WebLM server is not reachable or connection to the WebLM server fails, then run the following command on CLI to obtain license file for EMS:

   ```
   file/usr/local/ipcs/icu/workaround/fixextweblmcert.sh
   ```
5. On the Dashboard screen, check the **License State** field.

   If the configuration is successful, the **License State** field shows `OK`.
6. Click the **Devices** tab.
7. Locate the Avaya SBCE device you configured, and click **Edit**.

   The system displays the Edit Device dialog box.
8. In the **Standard Sessions**, **Advanced Sessions**, and **Scopia Video Sessions** fields, type the number of licensed sessions depending on the license you purchased.
9. Click **Finish**.

Chapter 10: Resources

Documentation

The following table lists the documents related to this product. Download the documents from the Avaya Support website at http://support.avaya.com

Title	Description	Audience
Design		
Avaya Session Border Controller for Enterprise Overview and Specification	High-level functional and technical description of characteristics and capabilities of the Avaya SBCE.	Sales engineers, solution architects, and implementation engineers
Implementation		
Installing Dell R620	Hardware installation and preliminary configuration.	Implementation engineers
Installing the Dell PowerEdge R630 Server	Hardware installation and preliminary configuration.	Implementation engineers
Installing the HP ProLiant DL360 G9 Server	Hardware installation and preliminary configuration.	Implementation engineers
Upgrading Avaya Session Border Controller for Enterprise	Procedures for upgrading to Avaya SBCE 7.1.	Implementation engineers
Deploying Avaya Session Border Controller for Enterprise in Virtualized Environment	Procedure to deploy Avaya SBCE on VMware.	Implementation engineers
Maintenance and Troubleshooting		
Administering Avaya Session Border Controller for Enterprise	Configuration and administration procedures.	Implementation engineers and administrators
Troubleshooting and Maintaining Avaya Session Border Controller for Enterprise	Troubleshooting and maintenance procedures for Avaya SBCE.	Implementation engineers and Sales engineers
Maintaining and Troubleshooting the Dell PowerEdge R630 Server	Troubleshooting and maintenance procedures for the Dell PowerEdge R630 Server.	Implementation engineers and Sales engineers
Maintaining and Troubleshooting the HP ProLiant DL360 G9 Server	Troubleshooting and maintenance procedures for the HP ProLiant DL360 G9 Server.	Implementation engineers and Sales engineers

Related links

Finding documents on the Avaya Support website on page 87

Finding documents on the Avaya Support website

About this task

Use this procedure to find product documentation on the Avaya Support website.

Procedure

1. Use a browser to navigate to the Avaya Support website at http://support.avaya.com/.
2. At the top of the screen, enter your username and password and click **Login**.
3. Put your cursor over **Support by Product**.
4. Click **Documents**.
5. In the **Enter your Product Here** search box, type the product name and then select the product from the drop-down list.
6. If there is more than one release, select the appropriate release number from the **Choose Release** drop-down list.
7. Use the **Content Type** filter on the left to select the type of document you are looking for, or click **Select All** to see a list of all available documents.

   For example, if you are looking for user guides, select **User Guides** in the **Content Type** filter. Only documents in the selected category will appear in the list of documents.
8. Click **Enter**.

Related links

Documentation on page 86

Training

The following courses are available on the Avaya Learning website at www.avaya-learning.com. After logging into the website, enter the course code or the course title in the **Search** field and click **Go** to search for the course.

Course code	Course title
5U00090E	Knowledge Access: Avaya Session Border Controller
5U00160E	Knowledge Collection Access: Avaya Unified Communications Core Support

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

Procedure

- To find videos on the Avaya Support website, go to http://support.avaya.com and perform one of the following actions:
  - In **Search**, type `Avaya Mentor Videos` to see a list of the available videos.
  - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and perform one of the following actions:
  - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
  - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

Note:

Videos are not available for all products.

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.

Appendix A: BIOS recommendations

Changing boot mode for HP DL360 G9

About this task

By default, boot mode is set to UEFI Mode. The boot mode must match the operating system installation. For HP DL360 G9, you must change the boot options to Legacy BIOS mode. If you do not change the boot mode, the server might not boot to the installed operating system.

Procedure

1. From the System Utilities screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Boot Options** > **Boot Mode** and press `Enter`.
2. Select **Legacy BIOS Mode** and press `Enter`.

   This boot mode configures the system to boot to a traditional operating system in Legacy BIOS compatibility mode.
3. Press `F10` to save your selection.
4. Reboot the server for the change to take effect.

Configuring BIOS settings for HP DL360 G9

About this task

In addition to the settings for boot mode, the BIOS settings recommended for HP DL360 G9 are different from the settings for other HP ProLiant servers. For the recommended BIOS settings for other HP ProLiant servers, see the HP ProLiant Servers section.

Procedure

1. Configure the server with RAID 1.

   The HP DL360 G9 is shipped without any RAID configuration.
2. From the System Utilities screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)**.
3. Enable **Intel Hyperthreading Options**.
4. Set the **HP Power Profile** to **Maximum Performance**.

5. Disable **Intel Turbo Boost Technology**.
6. Disable **ACPI Slit Preferences**.
7. Disable **Virtualization Technology**.
8. Disable **Intel VT-d**.

Dell PowerEdge Server

When the Dell server starts, press F2 to display the system setup options.

- Set the Power Management Mode to **Maximum Performance**.
- Set the CPU Power and Performance Management Mode to **Maximum Performance**.
- In Processor Settings, set:
  - **Turbo Mode** to **enable**.
  - **C States** to **disabled**.

HP ProLiant Servers

The following are the recommended BIOS settings for the HP ProLiant servers:

- Set the Power Regulator Mode to **Static High Mode**.
- Disable **Processor C-State Support**.
- Disable **Processor C1E Support**.
- Disable **QPI Power Management**.
- Enable **Intel Turbo Boost**.

Appendix B: Acronyms and abbreviations

This appendix contains an alphabetical list of all the acronyms and abbreviations used in this manual.

Acronym	Definition
BICSI	Building Industry Consulting Service International
BOCA	Building Officials and Code Administrators
CE	Certification mark for the European Community
CLI	Command Line Interface
CM	Call Manager
CS	Call Server
CSA	Certification mark for the Canadian market
DDoS	Distributed Denial-of-Service
DIMM	Dual In-line Memory Module
DoS	Denial-of-Service
EIA	Electronics Industry Association
EMS	Element Management System
FCC	Certification mark of the Federal Communications Commission for the US market
FIPS	Federal Information Processing Standards
GARP	Gratuitous Address Resolution Protocol
GbE	Gigabit Ethernet
GUI	Graphical User Interface
HA	High-Availability
HDD	Hard Disk Drive
HTTP	Hypertext Transfer Protocol
ICBO	International Conference of Building Officials
IM	Instant Messaging
IP	Internet Protocol
IPCS	Internet Protocol Communications Security

Table continues…

Acronym	Definition
LAN	Local Area Network
LED	Light-Emitting Diode
NEC	National Electrical Code
NEMA	National Electrical Manufacturing Association
NFPA	National Fire Protection Association
NOC	Network Operations Center
POP	Point-of-Presence
RCDD	Registered Communications Distribution Designer
SBC	Session Border Controller
SIP	Session Initiation Protocol
UL	Certification mark of Underwriters Laboratories, Inc. for the US market
URL	Uniform Resource Locator
VoIP	Voice-over-Internet Protocol

Index

A

abbreviations
definitions ... 91
about installation ... 59
acronyms
definitions ... 91
Appliance Configuration
field descriptions ... 75
Avaya SBCE configuration ... 72
Avaya SBCE installation ... 61

B

back panel
Dell R630 ... 27
back view
Dell R330 server ... 22
Portwell CAD-0230 ... 17
Back view of Dell R620 ... 24
BIOS for HP servers ... 90
BIOS settings
for Dell servers ... 90
booting
CAD 0208 ... 65
CAD 0230 ... 65
Dell R320 from USB device ... 64
Dell R330 from USB device ... 64
HP DL360 G9 from USB ... 65
booting Dell R620 with a USB flash device ... 64
booting HP DL 360 G7 and G8 with a USB flash device ... 65
booting HP DL 360 G8 with a USB flash device
serial console ... 65
booting R630 from a USB flash drive ... 64
booting servers with a USB flash device ... 63
bootting Del R210I ... 63
building code requirements ... 51

C

cables
connecting to server ... 55
cabling
labeling ... 55
requirements ... 54
RJ-45 connectors ... 55
standards ... 54
CLI
accessing ... 80
CLIPCS
accessing ... 80
configuring
BIOS settings for HP DL360 G9 ... 89
configuring Avaya SBCE
multiple server ... 67
single server ... 67

D

Dell R320
back view ... 19
ethernet port labels ... 35
Dell R330
front view ... 20
port labels ... 36
Dell R330 server
back view ... 22
Dell R620
back view ... 24
front view ... 23
port labels ... 36
Dell R630
back panel ... 27
ethernet port labels ... 37
deployment checklist ... 43
deployment process ... 43
deployment scenarios ... 45, 60
document changes ... 8
document purpose ... 8

E

electrical code requirements ... 51
EMS
configuring ... 70
installing ... 70
Verifying ... 79
EMS,
GUI ... 79
EMS+SBCE
configuring ... 67
installing ... 67
environmental requirements for server ... 52
equipment inventory ... 50

F

front panel ... 30
description ... 12
front panel description
Portwell ... 15
front view ... 18
Dell R330 ... 20
Dell R630 ... 25
Portwell CAD 0230 ... 16

Front view of Dell R620 23
Front view of HP DL360p G8 Server 29

G

grounding
requirements 53
grounding equipment 49
grub database password complexity 78

H

hard drive specifications 34
hardware warranty 8
HP DL360 G9
back panel 31
changing boot mode 89
ethernet port labels 38
HP DL360p G8 Server
front view 29
rear view 29

I

installation 59
installing a license on WebLM on System Manager 83
installing Avaya SBCE 62
installing the license file 84
interface specifications 38
inventory
equipment 50

L

license administration
WebLM support 82
license feature
SBCE 82
logging in
Avaya SBCE 81
logging in to EMS 81
logging in to EMS through console 80

M

Management Interface Setup
field descriptions 76
memory specifications of server 33

N

network
connecting server 60

P

password
console 77
port labels
Dell EMS 35
Dell R330 36
Dell R620 36
HP DL360 G8 37
Portwell CAD 0208 34
Portwell CAD 0230 35
Portwell CAD 0230
front view 16
port labels 35
Portwell CAD-0230
back view 17
power requirements of server 56
preparing a DVD for installation 57
preparing a USB device on Linux 57
preparing USB on Windows 56
processors in server 33

R

rack
requirements 52, 53
securing 53
space requirements 53
rear panel
description 14
rear panel description
Portwell 15
Rear view of HP DL360p G8 Server 29
related documentation 86
remote access 78
remote support 78
RJ-45 connectors 55

S

safety 48
EMI 50
explosive atmosphere 49
flammability 49
grounding equipment 49
lithium battery 50
live circuits 49
safety requirements 52
SAL 78
SBCE
front panel 12, 15
license feature 82
rear panel 14, 15
server
hard drive 34
interfaces 38
power requirements 56

server *(continued)*
processors 33
supported device types 9
system memory 33
server front view 30
server list 9
servers
capacity 10
site requirements 51
building and electrical codes 51
safety 52
software warranty 8
SSH
establishing session 80
support 88
support under warranty 8

T

Telnet
establishing session 80
thermal requirements 52
TILEncore-Gx36 adapter
rear panel 32
training 87

V

VGA connection 81
videos 88
VoIP network
connecting server 45

W

warranty 8
ways to install license 83
WebLM Server
configuration 84