Avaya Aura® Messaging Single Server Reference Configuration

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Chapter 1: Introduction

Purpose

This document describes network architecture, suggested deployment topologies, system capacities, and product interoperability. This document also describes the functional limitations of certain configurations. With this information, sales design specialists can make decisions about designs that meet the business needs of a customer.

Intended audience

This document is intended for people who determine the best design to meet a customer's business needs.

Document changes since last issue

Issue	Date	Summary of changes
1	January 2017	Added the following: • Topology information of Messaging Single Server on Appliance Virtualization Platform. Updated the following: • Customer requirements • Components

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Chapter 2: Architecture overview

Avaya Aura® Messaging Single Server configuration

Messaging Single Server configuration allows deployment of the Application server, AxC, and Avaya Store all on a single physical server. The Single Server configuration can also integrate with MS Exchange as the store, with any number of application servers supported, from one to the maximum allowed. The Single Server configuration provides the following benefits:

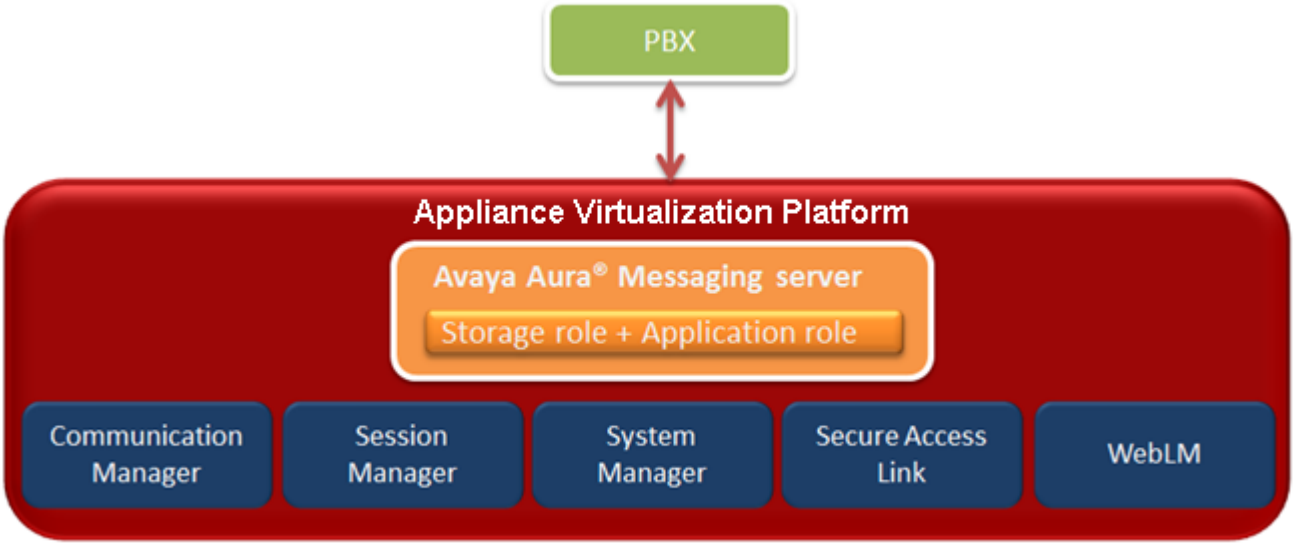
- Simplifies IT management using single server administration and maintenance.
- Requires one server, which reduces the footprint.
- Lowers cooling requirements, which reduces power consumption.
- Enables cost savings on capital equipment.
- Lowers operational expenses.
- Uses standard operating procedures for both Avaya and non-Avaya products.
- Accommodates business scalability and rapid response to changing business needs.
- Makes Avaya Aura® Messaging more competitive.

Topology

This topic provides graphical representations of the Avaya Aura® Messaging Single Server reference configuration architectures.

Messaging Single Server topology on Appliance Virtualization Platform

The following diagram shows the high-level topology for configuring a Messaging Single Server on Appliance Virtualization Platform:

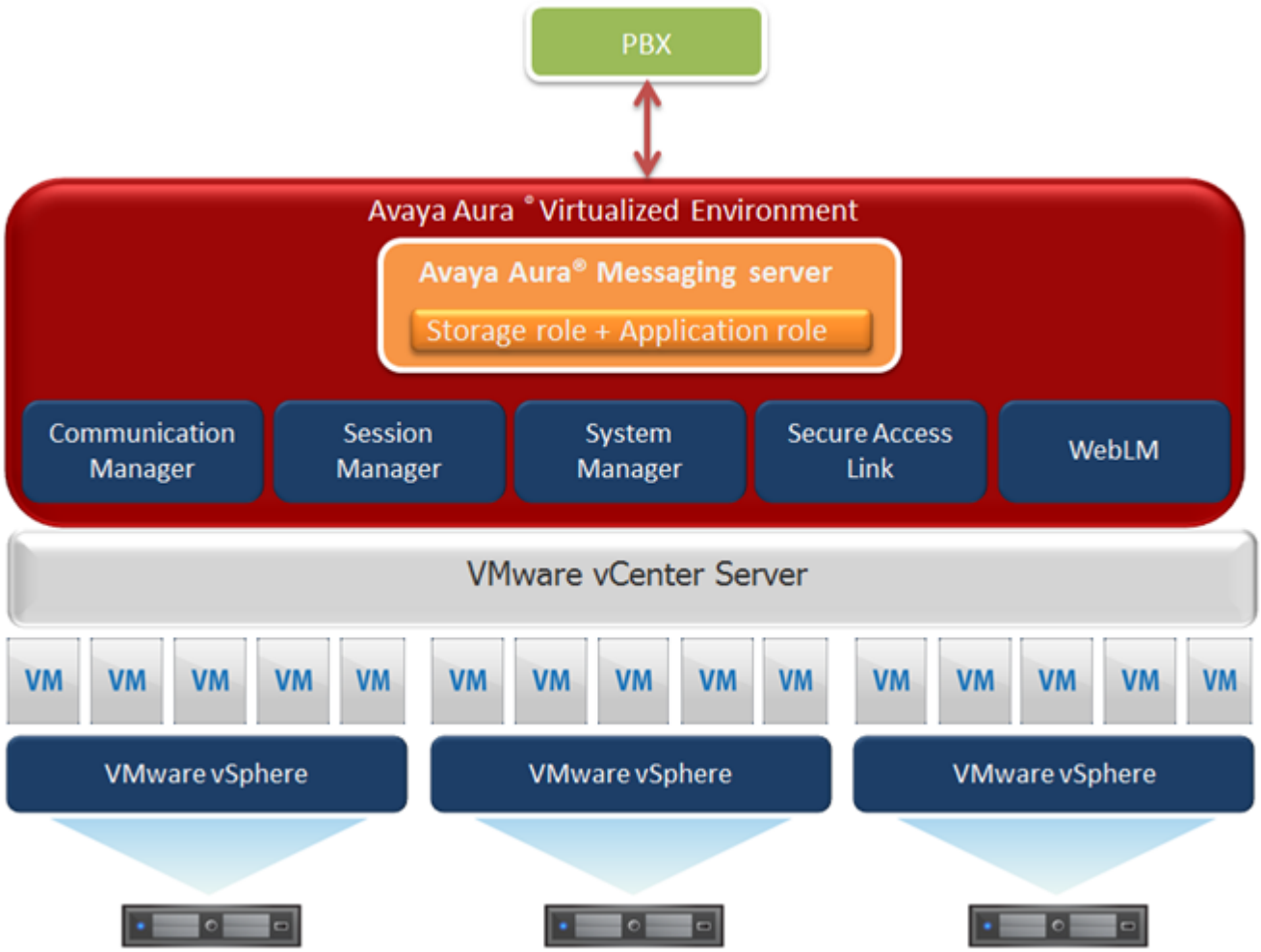


Messaging Single Server on Appliance Virtualization Platform provides a common set of features and services. This set of features and services enables preinstalled and configured virtual applications, called solution templates, to reside on a single physical server.

Appliance Virtualization Platform is the customized OEM version of VMware® ESXi 5.5 and is installed on top of the hardware provided by Avaya to deliver the virtualization technology. With Appliance Virtualization Platform, customers can run any combination of supported applications on servers supplied by Avaya. You can configure and manage Appliance Virtualization Platform by using Solution Deployment Manager that is part of System Manager, or by installing the Solution Deployment Manager client.

Messaging Single Server topology on Virtualized Environment

The following diagram shows the high-level topology for configuring a Messaging Single Server on Virtualized Environment:



Messaging Single Server on the VMware Virtualized Environment platform, VMware vSphere, supports the virtual machines. Each Avaya Aura® application is installed as a separate virtual machine. The VMware vCenter Server management system manages the applications as virtual machines and provides management and implementation features in addition to the standard System Manager features.

Components

The single-server topology of Avaya Aura® Messaging includes the following components:

- Avaya components.
- Server components that provides support and services to the Avaya components.
- Third-party components. For example, Mutare Message Mirror.

For more information about the interoperability between these products, see *Avaya Aura® Messaging Overview and Specification* at the Avaya Support website: http://support.avaya.com.

For the latest and most accurate compatibility information go to https://support.avaya.com/CompatibilityMatrix/Index.aspx

Avaya components

Component	Version	Platform	Description
Avaya Aura® components			
Avaya Aura® Communication Manager	7.0.0 6.3.100	Avaya Virtualization Platform	The IP telephony foundation on which Avaya delivers intelligent communications to large and small enterprises.
Avaya Aura® Messaging	7.0.0	Avaya Virtualization Platform	A part of the Avaya Aura® architecture, but Messaging can also be used in other environments.
Avaya Aura® Session Manager	7.0.0 6.3.9	Avaya Virtualization Platform	A SIP routing and integration tool that integrates SIP entities across the enterprise network. You can view and manage each location, branch, and application in totality, not as separate units within the enterprise.
Avaya Aura® System Manager	7.0.1	Avaya Virtualization Platform	A product that takes a solution-level approach to network administration. System Manager centralizes provisioning, maintenance, and troubleshooting to simplify and reduce management complexity and solution servicing. System Manager provides a common management framework that reduces the complexity of operations for distributed multisite networks with multiple control points inherent in SIP.
Solution Deployment Manager	7.0.0	Avaya Virtualization Platform	A centralized software management solution in System Manager that provides deployments, upgrades, migrations, and updates to Release 7.0.0 Avaya Aura® Messaging.
Avaya Solution Deployment Manager client	7.0.1	Microsoft Windows	A tool that provides the functionality to install the OVAs on an Avaya-provided server or customer-provided Virtualized Environment.
Other Avaya components			

Table continues…

Component	Version	Platform	Description
Avaya Voice Message Form	7.0.0	Microsoft Exchange Server	A component that provides a toolbar for Microsoft Office Outlook and Exchange Server. The tool supports playback of voice messages on your telephone through the computer.
Avaya WebLM	6.3 7.0.0	Avaya Virtualization Platform	A web-based license manager that manages licenses of one or more Avaya software products.
Message Networking	6.3	Avaya server with Linux® Operating System	A component that supports interoperability with legacy voice mail products.
one-X Speech	6.3	Windows Server 2003 for one-X Speech Release 5.2 Windows Server 2012 for one-X Speech Release 6.3	A component that supports speech-based commands and text-to-speech functions for voice mail, email, calendar, and telephony functions.
Avaya service components			
Secure Access Link	2.5	-	A component that remotely manages Messaging and sends alarms to Avaya Services.

For more information about interoperability between these products, see *Avaya Aura® Messaging Overview and Specification* at the Avaya Support website: http://support.avaya.com.

Server components

Supported hardware

Linux®-based servers

Messaging software runs on the following Avaya-provided servers:

- Dell™ PowerEdge™ R610
- Dell™ PowerEdge™ R620
- Dell™ PowerEdge™ R630
- HP ProLiant DL360 G7
- HP ProLiant DL360p G8
- HP ProLiant DL360 G9

If you already have the following servers in your network, you can use them with Messaging. However, you must first get an upgrade kit.

Server	Supporting documentation
CallPilot 1006r	*CallPilot 1006r Hardware Upgrade Instructions*
HP ProLiant DL360 G7 (when previously used with Modular Messaging)	*Maintaining and Troubleshooting the HP ProLiant DL360 G7 server*

You can download these documents from the Avaya Support website at http://support.avaya.com.

VMware®-based servers

Messaging software runs on ESXi host servers.

Avaya does not provide servers for your VMware environment. But you can get compatibility information for servers from the VMware website at: http://www.vmware.com/. This website also has information about the VMware infrastructure, including I/O, storage/SAN, backups, and interoperability.

Dell R630 server specifications

Base unit	Baseline	Options
R630	1U chassis, dual socket	Listed below
Processor	Intel E5-2620v3, Six Core 2.4 GHz (Haswell) 4 memory channels per CPU with up to 3 DIMMs per channel (most applications use 1 or 2 DIMMs per channel to optimize memory speed)	• Intel E5–2640v3 Eight Core/2.6 GHz (Haswell) • Intel E5–2680v3 Twelve Core/2.5 GHz (Haswell) • Upgradable to dual processors for any of the three processors.
Memory	4 GB DDR4 RDIMMs	Max Capacity for memory (4 GB RDIMM): • 48 GB, 12 x 4 GB (1 proc) • 96 GB, 24 x 4 GB (2 proc)
HW RAID	H730 RAID controller with 1 GB Cache and battery backup. Optioned as RAID 1, 5, or 10	Other RAID configurations available
Hot-Plug disk drive cage	8 Small Form Factor 2.5” hot-plug hard drive bays are available when an optical drive is installed. A typical Avaya configuration has up to four 2.5 inch hot-swappable hard drives.	High density HDD Avaya products will ship with 8 slots.
Disk drive	300 GB SAS 2.5" 10K RPM 6G DP Hard Drive. Two base configurations: • 279 GB total: RAID 1, 2 x 300 GB drives • 558 GB total: RAID 5, 3 x 300 GB drives • 837 GB total: RAID 5, 4 x 300 GB drives • 558 GB total: RAID 10, 4 x 300 GB drives	• Additional 300 GB 10K RPM SAS drive • High performance 300 GB 15K SAS drives • High capacity 600 GB 10K SAS drives • High capacity 1.2 TB 10K SAS drives

Table continues…

Base unit	Baseline	Options
NICs	4 or 6 integrated ENET Gigabit NIC ports with TCP offload engine (included on motherboard)	Broadcom 5720 Dual Port 1 GbE NIC
PCIe slots	2 PCIe risers (left and center)	(Riser 2, Slot 1) One half-height, half-length PCIe slot available in a two CPU system. This slot is not available in a 1 CPU system. (Riser 3, Slot 2) One full-height, half length PCIe slot available for 1 and 2 CPU systems.
Removable media	Slim line SATA DVD-RW optical drive (used in all Avaya configurations)	No additional options supported.
Power supply	495 W or 750 W AC Hot Plug Power Supplies	• DC 1100W • Single and dual power supply configurations
Fans	7 Fan modules	7 Fan modules
Additional items	2 front USB, 2 back USB, and 1 internal USB port Front Video Connector	

Dell™ PowerEdge™ R620 specifications

Component name	Standard server	High capacity server
Chassis	1U	1U
Processor speed	E5-2630 2.3 GHz 6-core	E5-2630 2.3 GHz 6-core
Number of processors	1	1
Ethernet ports	6	4
RAID type	RAID 1	RAID 5
Disk	2 x 300 GB 10K	3 x 300 GB 15K
Standard power supply	1 x 495 W	2 x 495 W

Dell™ PowerEdge™ R610 specifications

Component name	Standard server	High capacity server
Chassis	1U	1U
Processor speed	E5620 2.4 GHz 4-core	E5620 2.4 GHz 4-core
System memory	12 GB	12 GB
Ethernet ports	2	2
RAID type for phase 1 and 2 servers	RAID 5	RAID 5

Table continues…

Component name	Standard server	High capacity server
Disk for phase 1 servers	3 x 146 GB 10K	4 x 146 GB 15K
Disk for phase 2 servers	3 x 146 GB 15K	4 x 146 GB 15K
Standard power supply	1 x 502 W	2 x 502 W

Note:

Phase 1 servers shipped for the first half of the Dell Power Edge R610 general availability life cycle. Phase 2 servers shipped for the second half. The disk configuration for the phases are different.

HP ProLiant DL360 G9 Server specifications

Base unit	Baseline	Options
DL360 G9	1U Chassis, Dual Socket	DL380p G9 2U Chassis, Dual Socket
Processor	Intel E5-2620v3, Six Core 2.3 GHz (Haswell) 4 memory channels per CPU with up to 3 DIMMs per channel (most applications use 1 or 2 DIMMs per channel to optimize memory speed)	• Intel E5–2640v3 Eight Core/2.6 GHz (Haswell) • Intel E5–2680v3 Twelve Core/2.5 GHz (Haswell)
Memory	4 GB DDR4 RDIMMs	Max Capacity for memory (4 GB RDIMM): • 48 GB, 12 x 4 GB (1 proc) • 96 GB, 24 x 4 GB (2 proc)
HW RAID	P440ar RAID controller with 2 GB Cache and battery backup. Optioned as RAID 1, 5, or 10.	Other RAID configurations available
Hot-Plug disk drive cage	8 Small Form Factor 2.5” hot-plug hard drive bays are available when an optical drive is installed.	N/A
Disk drive	300 GB SAS 2.5" 10K RPM 6G DP Hard Drive. Two base configurations: • 279 GiB total: RAID 1, 2 x 300 GB drives • 559 GiB total: RAID 5, 3 x 300 GB drives • 838 GiB total: RAID 5, 4 x 300 GB drives • 559 GiB total: RAID 10, 4 x 300 GB drives **Note:** • 1 GB = 10^9 Bytes • 1 GiB = 2^{30} Bytes	• Additional 300 GB 10K RPM SAS drive • High performance 300 GB 15K SAS drives • High capacity 600 GB 10K SAS drives • High performance 900 GB 10K SAS drives • High capacity 1.2 TB 10K SAS drives **Note:** For each application, the system displays the hard drive capacities that are specified for the application.

Table continues…

Base unit	Baseline	Options
NICs	4 or 6 integrated ENET Gigabit NIC ports with TCP offload engine (included on motherboard)	Two additional dual NIC slots may be populated for certain applications.
PCIe slots	Three PCI-Express Gen 3 expansion slots: (1) full-height, 3/4-length slot and (1) low-profile slots	Slot 1 is full height / 3/4-length x16 Slot 1 is low profile / half length x8
Removable media	Slim line SATA DVD-RW optical drive (used in all Avaya configurations)	No additional options supported.
Power supply	500 W or 800 W hotplug AC power supply	• 800 W DC power supply • Single and dual power supply configurations
Fans	5 Fan modules in 1 processor model	7 fan modules hot-swappable (fan redundancy standard)
Additional items	2 front USB (1–2.0, 1–3.0), 2 back USB (3.0), 1 internal USB port, and front video connector	

HP ProLiant DL360p G8 specifications

Component name	Standard server	High capacity server
Chassis	1U	1U
Processor speed	E5-2630 2.3 GHz	E5-2630 2.3 GHz
Number of processors	1	1
Ethernet ports	6	4
RAID type	RAID 1	RAID 5
Disk	2 x 300 GB 10K	3 x 300 GB 15K
Standard power supply	1 x 460 W	2 x 460 W

HP ProLiant DL360 G7 specifications

Component name	Standard server	High capacity server
Chassis	1U	1U
Processor speed	E5620 2.4 GHz 4–core	E5620 2.4 GHz 4–core
Number of processors	1	1
System memory	12 GB	12 GB
Ethernet ports	2	2
RAID type for phase 1 servers	RAID 5	RAID 5
Disk for phase 1 servers	3 x 146 GB 10k	4 x 146 GB 15k
RAID type for phase 2 servers	RAID 1	RAID 5

Table continues…

Component name	Standard server	High capacity server
Disk for phase 2 servers	2 x 300 GB 10k	4 x 146 GB 15k
Standard power supply	1 x 460 W	2 x 460 W

Note:

Phase 1 servers shipped for the first half of the HP ProLiant DL360 G7general availability life cycle. Phase 2 servers shipped for the second half. The disk configuration for the phases are different.

1006r specifications

The 1006r server is only available as a standard server. The following table shows the server specifications after you apply the upgrade kit.

Component name	Standard server
Chassis	2U
Processor speed	Dual E5504 2GHZ Quad Core
System memory	16GB DDR3/1066
Number of processors	2
Ethernet ports	Embedded Six 10/100/1000Mbps
RAID type	Integrated SAS Hardware RAID
Disk	2 x 300GB SAS
Standard power supply	AC Dual redundant hot swap 750W

Mutare Message Mirror components

Server hardware specifications

Names of components	Minimum specifications
Processor	2.4 GHz or faster processor; Quad-core preferred
System memory	4 GB RAM minimum (8 GB recommended)
Disk	100 GB hard drive minimum space available
Ethernet connection	100 Mbps NIC for Ethernet connection to TCP/IP LAN

Server software requirements

- Any of the below listed server:
  - Microsoft Windows Server 2003
  - Microsoft Windows Server 2008
  - Microsoft Windows Server 2008 R2

- Microsoft Internet Information Server 6.0 or 7.0.
  - SMTP Virtual Server to send Alarms and Status to System Admin.
  - Web Server for Mailbox Administration and View Status Reports and Errors
- Remote access - VPN Access to network and Remote Desktop to server.

Customer requirements

Customer requirement	Solution
Deploy the Application Server and MSS servers in a single server configuration.	Messaging supports a single-server configuration, which is a nonredundant deployment, for small organizations.
Increase flexibility in numbering plan configurations and allow a single server to support NANP and International numbering schemas simultaneously.	Messaging enables administrators to implement mailbox numbers with varying lengths and to support multiple end user devices with varying extension lengths. Example, 5-digit mailbox number, with 10-digit PSTN number for mobile device, home, and office. Messaging supports mailbox number lengths in range 3 to 50 digits.
Support for all server roles, including Storage Server, Application Server, and Single Server to run on customer-provided VMware environment.	Messaging aligns with the requirements for Virtualization Enablement using VMware.
Configure two single-server systems paired as a survivable solution using Mutare Message Mirror to synchronize the two message stores.	Messaging supports a single-server configuration using Mutare Message Mirror.

Security specification

Before implementing a Messaging system, ensure that the customer security staff reviews and approves the Messaging deployment plan. Customers must engage the expertise of their security staff early in the implementation process. The security staff must decide how to incorporate the Messaging system into the routine maintenance for virus protection, patches, and service packs.

Test strategy summary

The Messaging system verification team performs multiple tests on the Messaging software to verify the performance, reliability, scalability, and the resource use of Messaging. The tests include verification of the updated functions and features, Messaging upgrade paths, and the migration of external databases to Messaging.

Test	Description
New feature test	Functioning of the new features validated and the performance of the features tested.
Regression test	Manual and automated regression tests to verify the performance of the updated functions and features.
Performance test	Performance tested to verify the responsiveness and the stability of Messaging. The tests include verifying the scalability, reliability, and the resource use of Messaging.
Upgrade test	Upgrade paths tested to verify the supported releases to upgrade Messaging. Messaging supports upgrades from Release 6.0.1 and later releases.
Interoperability testing	Compatibility tested with other products to verify how Messaging interoperates with the products. For more information about the supported products, see *Components*.
Bug fix verification	Debugging of Messaging to resolve bugs that originate during the performance testing verified.
Migration testing	Migration of external databases to Messaging tested.
Solution testing	Multiple features of Messaging tested simultaneously to emulate a customer scenario and verify the performance of Messaging.
Launch readiness testing	The final version of the Messaging software tested, which includes regression testing and testing of selected new features.

Chapter 3: Design considerations

Caveats and limitations

The following limitations apply when you deploy a single-server Messaging configuration:

- You can add application servers to a single-server configuration, but you cannot configure application servers into a cluster with the application role that is on the single server. To expand the single-server system into a system with clustered application servers, you must first administer the application and the storage roles on dedicated servers. Then you can add other application servers as needed.
- If you deploy the standard-capacity server as a single server, the single-server configuration does not support redundancy.
- If you deploy the high-capacity storage server as a single server, you cannot use the additional storage capacity in the single-server topology. The port capacity of the application server, whether you use a standard server or a high-capacity storage server, is the same at 100 ports. Deploying a high-capacity server might be useful if you plan to move to a front-end/back-end configuration in the future.

Capacity and scalability

The single-server topology of Messaging supports a standard server and a high-capacity storage server.

The following table shows the port and the mailbox capacity of the standard server and the high-capacity storage server:

Standard server or high-capacity server	Capacity
Ports	100
Users	6000

Storage space calculation formula

Using the following formula, you can estimate how much space the LAN backup for night requires based on the number of users, their average number of messages and greetings measured in minutes, and the audio encoding format of the system.

Space used each night = `100MB + 0.05MB*(L+R) + (0.1MB*M*L*F)`

Where:

- MB represents a unit of megabytes.
- L is the number of local users existing on the system that night.
- R is the number of remote users existing on the system that night.
- M is the average number of minutes of messages per mailbox.
- F is equal to one if the system uses GSM encoding, and F is equal to five if the system uses G.711 encoding.

Example

A G.711 system with 2,000 local users with 5 minutes of messages/greetings and 50,000 remote users occupies approximately:

= 100MB + 0.05MB*(2000+50000) + (0.1MB*5*2000*5)

= 100 MB + 2600 MB + 5000 MB

= 7.7 GB.

Migration roadmap and limitations

Upgrades

You can upgrade your Messaging system to the release 7.0.0 from the following releases:

- Messaging 6.3.3.x
- Messaging 6.3.2.x
- Messaging 6.2.5

Note:

- Messaging 6.0 and 6.1 customers need to upgrade to the release 6.2.5 or 6.3.2 before upgrading to the release 7.0.0.
- Messaging 6.2 customers who are not yet at Service Pack 5 (6.2.5), need to upgrade to SP5 before upgrading to the release 7.0.0.

Migrations

Messaging supports migrations from the following products:

Product	From: Release	From: Offer and Deployment	To: 7.0 Virtual Appliance [1]	To: 7.0 Virtualized Environment [2]
Intuity Audix, Intuity AudixLX, and Intuity Audix770	4.4, and 5.1	Avaya Professional Services or Business Partner;Avaya ProVision	√	√
Modular Messaging	3.x, 4.x, and 5.x	Avaya Professional Services or Business Partner;Avaya ProVision	√	√
Communication Manager Messaging Federal	4.02	Avaya Professional Services or Business Partner;Avaya ProVision	√	√
Communication Manager Messaging	4.02, 5.2.1, and 6.x	Avaya Professional Services or Business Partner;Avaya ProVision	√	√
CallPilot®	4.0, 5. 0, and 5.1	Avaya Professional Services or Business Partner; CP2AAM utility	√	√

1 Virtual Appliance = Avaya supplied (server + Appliance Virtualization Platform + Applications)

2 Virtualized Environment = Customer Supplied (server + VMware) + Avaya supplied Applications

Security considerations

Avaya is responsible for designing and testing its products for security. The customer is responsible for the appropriate security configurations on their data network. Customers have ultimate control over the configuration and use of the product. They are solely responsible for ensuring the security of their systems is adequate for their intended use.

Customers administer their system configuration and can tailor that system to meet their unique needs, but must also ensure to their own satisfaction that the security configuration is aligned with appropriate risk management best practices. Customers are responsible for keeping themselves informed of the latest information for configuring their systems to prevent unauthorized use.

System managers and administrators are responsible for obtaining and acting on all recommendations, installation instructions, and system administration documents provided with the product. This information can help them understand the features that might introduce risk of toll

fraud and the steps they must take to reduce that risk. Responsibilities owned by system managers include (but are not limited to):

- Integration of Messaging servers into existing TCP/IP network(s) according to the corporate networking policies. In most cases, existing firewalls, and corporate security policies and practices can be implemented or adapted for the Messaging system.
- Careful consideration for the security implications when the client access to the Messaging system are enabled.
- Protection of server against unauthorized use with appropriate administrator and user passwords. Use longer and more random passwords to minimize the possibility of compromise. Ensure that you secure the passwords properly.
- Protection of the surrounding network to minimize the threat of denial of service attacks.
- Review of server logs to detect actual and attempted unauthorized use and to identify its source.

System managers are also responsible for: Physical security, password protection, password control, backups, environmental controls.

Neither Avaya nor its suppliers or business partners can guarantee that any product is immune from risk of unauthorized use of IP or telecommunications services or facilities accessed through or connected to this product. Avaya is not responsible for any damages or charges that result either from unauthorized usage or from incorrect installation of the security patches that are made available periodically. See the End-User License Agreement(s) associated with your Messaging product(s) for additional details.

The customer is responsible for using and configuring the following security features available on Messaging software, on firmware, on the Avaya media gateways, and firmware on IP telephones:

Security policy configuration

Security policy is configured for the following:

- Administrator accounts
- Login account
- Change password
- Server access
- Syslog server
- Authentication file
- Firewall

Role-based user access control

Role based access control (RBAC) allows businesses to assign server, gateway, and application access permissions based on job function or role of a user. Avaya implements RBAC on the Messaging server through the use of profiles for the server webpage.

Authentication and encryption

Avaya uses standard X.509 PKI to manage certificates in the enterprise in which the hierarchy of certificates is always a top-down tree, with a root certificate at the top, representing the central

Certificate Authority (CA) that is integral to the trusted-party scheme and does not need third-party authentication.

Messaging conforms to the TLS standard to establish a TLS session. Digital certificates authenticate stages of the TLS session establishment to:

- Establish SIP/TLS connections between IP phones and Messaging through the customer installed, trusted third-party certificate.
- Authenticate access to the Messaging web interface.
- Manage SIP/TLS connections
  - Management
  - Signaling

Audit trail logging

Security information is logged in or notified through:

- SNMP trap receiver
- Syslog security log
- Miscellaneous logs that track security-related information

Secure backups

The Messaging server backs up Messaging data over the customer LAN to an external ftp server. The Messaging data can be backed up at the same time as the server data, or independently. In the event of a system failure, the system uses the information stored on the external server to restore the system to an operational state. Messaging supports up to 40,000MB mailboxes. Messaging data backup might easily reach 50 Gigabytes or more. Customers might be unable to support transfers of single files of this size. Hence, in Messaging, the system automatically divides large data backups into 500 MB files before transfer. Each file transfer might complete in about 5 minutes. Consequently, the network must support a minimum average transfer rate of 1.6 MBps.

Remote monitoring and maintenance

Messaging uses Secure Access Link (SAL) gateway to manage alarming and remote access. Secure Access Link (SAL) is an Avaya serviceability solution for support and remote management of a variety of devices and products. SAL provides remote access, alarm reception, and inventory capabilities. SAL uses the existing Internet connectivity of the customer to facilitate remote support from Avaya. All communication is outbound from the customer environment over port 443 using encapsulated Hypertext Transfer Protocol Secure (HTTPS).

For more information about Messaging security features, see *Avaya Aura® Messaging Security Design*.

Additional security information

For security information and documentation about all Avaya products, see the Avaya Security Advisories website at http://support.avaya.com/security. The website includes information about the following topics:

- Avaya Product Security Vulnerability Response Policy
- Avaya Security Vulnerability Classification

- Security advisories for Avaya products
- Software patches for security issues
- Reporting a security vulnerability
- Automatic email notifications of security advisories

For information about Messaging security, see *Avaya Aura® Messaging Security Design*.

For additional information about security practices, see the National Security Agency Security Configuration Guides at http://www.nsa.gov/.

Chapter 4: Configuration details

Customer-provided equipment

The customer must provide the following equipment:

- Standard 19-inch four-post equipment rack that is properly installed and solidly secured. The rack must meet the following standards:
  - American National Standards Institute and Electronic Industries Association standard ANSI/EIA-310–D-92.
  - International Electrotechnical Commission standard IEC 297
  - Deutsche Industrie Norm standard DIN 41494
- Screws that come with the racks for installing the rails
- #2 cross-point (Phillips) screwdriver or 3/8 inch flathead screwdriver
- USB keyboard, USB mouse, and monitor must be available on the site for advanced installation or troubleshooting.
- Power from a nonswitched electrical outlet
- Access to the network

Port utilization

Your IT infrastructure needs to allow network traffic to move freely to and from the Messaging system.

Note:

You must disable multicast while configuring data switch ports.

Messaging in a VMware virtualized environment does not require a dedicated VM ethernet port. See your Services representative for information about how to grant Avaya access to virtual machines for implementation and maintenance support.

For complete port matrix information, see Avaya Aura® Messaging Port Matrix available on the Avaya Support website at http://support.avaya.com.

Traffic specification

Messaging generates two types of network traffic:

- Voice traffic between Messaging and your telephony server
- Data traffic between the Messaging servers

Important:

Do not use multicast or network port mirroring to Messaging servers. These network features can generate unnecessary load and, during periods of high-volume traffic, can disrupt the operation and performance of the Messaging system.

Avaya Aura® Messaging does not support NIC bonding. You must disable NIC bonding.

Variables for calculating bandwidth

- Include both voice and data traffic. The calculations do not include any other activity in your network.
- Use the G.711 coding rate. If you use G.729, your bandwidth requirements are lower.
- Include the maximum traffic load for a server during peak busy hours. The server has 100 active ports that are simultaneously recording or playing voice data.

The topology of a configuration that supports multiple sites influences how data flows over your network. The placement of the following hardware, relative to each other, can affect this traffic load:

- Messaging servers
- Third-party message stores
- Telephony servers, gateways, and endpoints

In a clustered environment, ADCS caching causes less than a 250 milliseconds delay between application servers.

These topology variables are not part of the following bandwidth calculations.

Bandwidth recommendations

- Single-server system = 25 Mbs
- Multiserver system = 25 Mbs for each server

Sample calculation for a multi server system

The number of servers x 25 Mbs = Mbs needed for bandwidth

For example, a fully loaded, 300-port, four-server system requires 100 Mbs: 4 x 25 Mbs = 100 Mbs.

Chapter 5: Related resources

Documentation

You can download the documents you need from the Avaya Support website at http://support.avaya.com. In addition to the documentation listed here, you can download a zip file that is a compilation of the Avaya Aura® Messaging documentation library. You can install this library on a computer or on your corporate network.

The Avaya Support website also includes the latest information about product compatibility, ports, and Avaya Aura® Messaging releases.

Overview

Title	Description	Audience
Avaya Aura® Messaging Overview and Specification	Describes tested product characteristics and capabilities, including feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Sales and deployment engineers, solution architects, and support personnel.
Avaya Aura® Messaging Single Server Reference Configuration	Describes the design, capacities, interoperability, and limitations of single-server configurations.	Sales and deployment engineers, solution architects, and support personnel.
Avaya Aura® Messaging Multiserver Single Location Reference Configuration	Describes the design, capacities, interoperability, and limitations of multi-server single location configurations.	Sales and deployment engineers, solution architects, and support personnel.
Avaya Aura® Messaging Multiserver Dual Location Reference Configuration	Describes the design, capacities, interoperability, and limitations of multi-server dual location configurations.	Sales and deployment engineers, solution architects, and support personnel.
Avaya Aura® Messaging VMware® in the Virtualized Environment Reference Configuration	Describes the design, capacities, interoperability, and limitations of VMware® in the virtualized environment configurations.	Sales and deployment engineers, solution architects, and support personnel.

Administration

Title	Description	Audience
Administering Avaya Aura® Messaging	Explains how to use the System Management Interface (SMI) to configure your system, use reports and diagnostic tools, manage software and users, and perform routine maintenance tasks. The content is available in two formats: HTML and PDF.	Administrators
Job aid for Administering Avaya Aura® Messaging	Includes routine administration tasks. This job aid is a subset of the administration guide.	Administrators
Avaya Aura® Messaging Events, Alarms, and Errors Reference	Describes system alarms, events, and repair procedures.	Administrators and support personnel

Deployment, upgrade, and migration

Title	Description	Audience
Deploying Avaya Aura® Messaging using VMware® in the Virtualized Environment	Describes procedures for deploying the Avaya Aura® Messaging virtual application in the Avaya Aura® Virtualized Environment. The procedures relate to installation, configuration, initial administration, troubleshooting, and basic maintenance of the application.	Deployment engineers, solution architects, and support personnel.
Deploying Avaya Aura® Messaging using Solution Deployment Manager	Describes procedures for deploying the Avaya Aura® Messaging virtual application in the Appliance Virtualization Platform. The procedures relate to installation, configuration, initial administration, troubleshooting, and basic maintenance of the application.	Deployment engineers, solution architects, and support personnel.

Security

Title	Description	Audience
Avaya Aura® Messaging Security Design	Discusses security issues to consider when designing a corporate security strategy. Topics include network security, toll fraud, and recommendations for maintaining a secure system.	Solution architects, deployment engineers, and administrators

User functions

Title	Description	Audience
Using Avaya Aura® Messaging	Explains how to set up and use User Preferences and the Messaging toolbar in your email client. The content is available in two formats: HTML and PDF.	Users
Using Avaya Aura® Messaging Job Aid	Includes the most common user tasks. This job aid is a subset of the user guide.	Users and support personnel
Avaya Aura® Messaging Quick Reference (Aria)	Describes how to use the Aria telephone user interface.	Users
Avaya Aura® Messaging Quick Reference (Audix®)	Describes how to use the Audix® telephone user interface.	Users
Avaya Aura® Messaging Quick Reference (CallPilot®)	Describes how to use the CallPilot telephone user interface.	Users

Hardware

New installations

Title	Description	Audience
Installing the Dell™ PowerEdge™ R610 server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.
Installing the Dell™ PowerEdge™ R620 server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.

Table continues…

Title	Description	Audience
Installing the Dell™ PowerEdge™ R630 Server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.
Installing the HP ProLiant DL360 G7 server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.
Installing the HP ProLiant DL360p G8 server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.
Installing the HP ProLiant DL360 G9 Server	Describes the components, specifications, and configurations for this server.	Deployment engineers and support personnel.

Maintenance

Title	Description	Audience
Maintaining and Troubleshooting the Dell™ PowerEdge™ R610 server	Describes how to add, replace, and repair hardware components for this server. Also provides information about LCD status messages.	Deployment engineers and support personnel.
Maintaining and Troubleshooting the Dell™ PowerEdge™ R620 server	Describes how to add, replace, and repair hardware components for this server.	Deployment engineers and support personnel.
Maintaining and Troubleshooting the Dell™ PowerEdge™ R630 Server	Describes how to add, replace, and repair hardware components for this server.	Deployment engineers and support personnel.
Maintaining and Troubleshooting the HP ProLiant DL360 G7 server	Describes how to add, replace, and repair hardware components for this server.	Deployment engineers and support personnel.
Maintaining and Troubleshooting the HP ProLiant DL360p G8 server	Describes how to add, replace, and repair hardware components for this server.	Deployment engineers and support personnel.
Maintaining and Troubleshooting the HP ProLiant DL360 G9 Server	Describes how to add, replace, and repair hardware components for this server.	Deployment engineers and support personnel.

Training

You can get the following Messaging courses at https://www.avaya-learning.com. Enter the course code in the **Search** field and click **Go** to search for the course.

The course titles might differ from the titles shown.

Course code	Course title
4311W	Selling Unified Communication Messaging — Overview
5U00140V	Avaya Aura® Messaging Implementation, Administration, and Support Virtual Instructor Led
5U00140I	Avaya Aura® Messaging Implementation, Administration, and Support Instructor Led
ATI01674VEN	Avaya Aura® Messaging — Caller Applications

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.

Glossary

Active Directory

The directory service for a Microsoft Windows 2000, Windows 2003 Server, or Windows 2008 Server. The Active Directory stores information about objects on the network and makes this information available for authorized administrators and users. It provides administrators with an intuitive hierarchical view of the network and a single point of administration for all network objects.

AudioCodes Gateway

A gateway that integrates the Messaging system with customer-provided telephony servers.

Bandwidth

A range of frequencies within a band. The maximum rate at which data can be transferred over a communications network.

Caller

Any person who calls into the Messaging system.

Caller Applications

Extensions to the Messaging telephone user interface (TUI) used to customize how Messaging interacts with callers.

Caller Applications Editor

A tool that customizes the Microsoft Management Console (MMC) user interface to permit the creation, editing, and deployment of Caller Applications.

Cluster

A Messaging topology in which up to three application servers are combined to increase the capacity of the Messaging system.

Codec

A device that encodes or decodes a signal.

Communication Manager

A key component of Avaya Aura®. It delivers rich voice and video capabilities and provides a resilient, distributed network for media gateways and analog, digital, and IP-based communication devices. It includes advanced mobility features, built-in conference calling, contact center applications and E911 capabilities.

Configuration

A way in which application servers, storage servers, and AxC/Directory servers are connected to each other considering single server, multi-server, single site, and multiple site needs.

CoS

Class of Service. A category that determines user access to system options and features.

Dial plan

A set of site-specific properties that are stored on the storage server, and are automatically applied to each application server associated with any given site. Dial plans define the storage server and application servers properties to make the Messaging system.

Dial rule

Rules applied to local and remote users to determine how users can respond to messages from callers. Dial-out rules define the dial strings that are sent to the telephony server for making calls.

DTMF

Dual-Tone Multifrequency. A combination of two tones that uniquely identify each button on a telephone keypad.

EAG

Extended Absence Greeting. A user-recorded greeting that Messaging plays when the user is away from the office.

ELA

Enhanced List Application. A feature that associates one mailbox to a list of members. Instead of sending the same message to individual lists members, you can send the message to the list mailbox.

Enterprise List

Message Networking Enterprise Lists are enterprise-wide mailing lists for users that reside on a Message Networking system. Each Enterprise List represents a specific group of potential recipients for enterprise distribution messages.

ESXi

A virtualization layer that runs directly on the server hardware. Also known as a *bare-metal hypervisor.* Provides processor, memory, storage, and networking resources on multiple virtual machines.

Find Me

A feature that allows a subscriber to configure a list of telephone numbers where they might be contacted, so that messaging systems can try to connect a caller to a subscriber before asking the caller to leave a message.

G.711

An audio-encoding format with a coding rate of approximately 64 kilobits per second (kbps) or 8 Kilobytes per second (KBps).

GSM 6.10

An audio-encoding format with a coding rate of approximately 13 kilobits per second (kbps) or 1.6 Kilobytes per second (KBps).

Hardware

An Avaya machine or component, including object code in the form of firmware, that is applied to components only in a manufacturing facility or repair depot.

IMAP4

Internet Messaging Access Protocol 4. A method of accessing electronic mail or bulletin board messages that are kept on an email server. Client email applications can use IMAP4 to access remote message stores as if the messages were local.

Info Mailbox

A mailbox that plays greetings and provides information to a caller. A typical informational message includes details about directions, business hours, or weather. Callers cannot leave a message in this mailbox.

LDAP

Lightweight Directory Access Protocol. An Internet Protocol used to retrieve and manage directory information.

Location

Location refers to the physical placement of the server, that is location in building, city, or country. While location refers to the physical destination of the server, site refers to a set of properties that are defined using SMI. See Site on page 41.

Message Mirror

A product of Mutare, Inc. that provides redundancy for the Avaya message store.

MMC

Microsoft Management Console. A presentation service for management applications.

MWI

Message Waiting Indicator. A method of alerting users when messages that meet specified criteria arrive in a mailbox. The indicator is either a lamp on the telephone or an audible tone that you hear when you pick up the receiver.

PDL

Personal Distribution List. A labeled collection of addresses that users create and save for later use. Messages that users address to the list are sent to all the list members. Users can only manage and address messages to those PDLs that they create and own.

Personal greeting

A personalized prompt that greets callers when they are transferred to a user mailbox when the extension is busy or not answered.

Personal Operator

A designated extension or mailbox to which the system can transfer callers for assistance when the original call was not answered. Other terms have been used including “personal assistant”, “covering extension”, “operator”, “zero-out destination”, and so on.

PEL

Privacy Enforcement Level. A systemwide privacy parameter that determines the level of privacy the system enforces. The PEL setting determines which clients or interfaces have access to Messaging mailboxes, and the level of restriction imposed on recipients of private messages.

Pilot number

A single number that presents a call to one of the available ports within a hunt group.

PLDS

Product Licensing and Delivery System. A tool for managing asset entitlements and electronic delivery of software and related licenses. You can perform activities such as license activation and deactivation, license re-host, and software downloads.

Rapid prompts

A shortened variation of the standard set of prompts for the experienced Aria TUI user. Administrator can enable or disable the default option to play rapid prompts from CoS. The optional language pack for rapid prompts is available only in U.S. English.

RBAC

Role-Based Access Control. A tool that defines the administrative roles for your business. You control the administrative privileges on the application and storage servers by assigning a role to a user.

SAL

Secure Access Link. An Avaya serviceability solution for support and remote management of a variety of devices and products. SAL provides remote access and alarm reception capabilities. SAL uses the existing Internet connectivity of a customer to facilitate remote support from Avaya.

SAL Gateway

A customer-installable system that provides remote access, and alarming capabilities for remotely managed devices.

SAN

Storage Area Network. A SAN is a dedicated network that provides access to consolidated data storage. SANs are primarily used to make storage devices, such as disk arrays, accessible to servers so that the devices appear as locally attached devices to the operating system.

Session Manager

A SIP routing and integration tool that is the core component within the Avaya Aura® solution.

Site

A set of properties that administrators define in the System Management Interface. Some of the properties are access number, extension length, mailbox length, language choice, and Auto Attendant features.

SMI

System Management Interface. The single point of access to the Messaging system and the license server. You can open the SMI from any standard web browser from anywhere within the firewall of the organization.

SMTP

Simple Mail Transfer Protocol. A TCP/IP protocol that sends and receives email. Most email systems that send mail over the Internet use SMTP to send messages from one server to another and to send messages from an email client to an email server.

Snapshot

The state of a virtual appliance configuration at a particular point in time. Creating a snapshot can affect service. Some Avaya virtual appliances have limitations and others have specific instructions for creating snapshots.

SNMP

Simple Network Management Protocol. A protocol for managing and monitoring networks.

System Manager

A common management framework for Avaya Aura® that provides centralized management functions for provisioning and administration to reduce management complexity.

T.38 codec

A protocol that describes how to send a fax over a computer data network. T.38 is needed because fax data can not be sent over a computer data network in the same way as voice messages.

Topology

The relationship between the Messaging application servers and the sites that the servers support. You define topology properties on the storage server which then applies the properties to the associated application servers.

TTS

Text-to-Speech. Speech synthesis that converts text into speech. TTS converts message envelope information, text names, and email messages and Messaging plays the converted text over the telephone.

TTY (teletypewriter)

A typewriter-style device for communicating alphanumeric information over telephony networks. Typically used by the hearing impaired and sometimes called a telecommunication device for the deaf (TDD).

udom

User applications domain. A virtual machine that runs with a specific type or mode of High Availability protection, according to Avaya Aura® solution template requirements.

User

A person who has an account on the Messaging system.

VM

Virtual Machine. Replica of a physical server from an operational perspective. A VM is a software implementation of a machine (for example, a computer) that executes programs similar to a physical machine.

vMotion

A VMware feature that migrates a running virtual machine from one physical server to another with minimal downtime or impact to end users. vMotion cannot be used to move virtual machines from one data center to another.

VMware HA

VMware High Availability. A VMware feature for supporting virtual application failover by migrating the application from one ESXi host to another. Since the entire host fails over, several applications or virtual machines can be involved. The failover is a reboot recovery level which can take several minutes.

WebLM

Web-based license manager. A licensing solution that facilitates license management of one or more Avaya software products. WebLM also facilitates easy tracking of licenses. WebLM requires a license file. This file contains information about the products that your organization bought, including the major release, the licensed features, and the licensed capacities of each feature.

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