Avaya Aura® Core Solution Description

Release 7.1
Issue 1
May 2017

Notice

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

Documentation disclaimer

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

Link disclaimer

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

Warranty

Avaya provides a limited warranty on Avaya hardware and software. Refer to your sales agreement to establish the terms of the limited warranty. In addition, Avaya’s standard warranty language, as well as information regarding support for this product while under warranty is available to Avaya customers and other parties through the Avaya Support website: https://support.avaya.com/helpcenter/getGenericDetails?detailId=C20091120112456651010 under the link “Warranty & Product Lifecycle” or such successor site as designated by Avaya. Please note that if You acquired the product(s) from an authorized Avaya Channel Partner outside of the United States and Canada, the warranty is provided to You by said Avaya Channel Partner and not by Avaya.

“Hosted Service” means an Avaya hosted service subscription that You acquire from either Avaya or an authorized Avaya Channel Partner (as applicable) and which is described further in Hosted SAS or other service description documentation regarding the applicable hosted service. If You purchase a Hosted Service subscription, the foregoing limited warranty may not apply but You may be entitled to support services in connection with the Hosted Service as described further in your service description documents for the applicable Hosted Service. Contact Avaya or Avaya Channel Partner (as applicable) for more information.

Hosted Service

THE FOLLOWING APPLIES ONLY IF YOU PURCHASE AN AVAYA HOSTED SERVICE SUBSCRIPTION FROM AVAYA OR AN AVAYA CHANNEL PARTNER (AS APPLICABLE), THE TERMS OF USE FOR HOSTED SERVICES ARE AVAILABLE ON THE AVAYA WEBSITE, HTTPS://SUPPORT.AVAYA.COM/LICENSEINFO UNDER THE LINK “Avaya Terms of Use for Hosted Services” OR SUCH SUCCESSOR SITE AS DESIGNATED BY AVAYA, AND ARE APPLICABLE TO ANYONE WHO ACCESSES OR USES THE HOSTED SERVICE. BY ACCESSING OR USING THE HOSTED SERVICE, OR AUTHORIZING OTHERS TO DO SO, YOU, ON BEHALF OF YOURSELF AND THE ENTITY FOR WHOM YOU ARE DOING SO (HEREINAFTER REFERRED TO INTERCHANGEABLY AS “YOU” AND “END USER”), AGREE TO THE TERMS OF USE. IF YOU ARE ACCEPTING THE TERMS OF USE ON BEHALF A COMPANY OR OTHER LEGAL ENTITY, YOU REPRESENT THAT YOU HAVE THE AUTHORITY TO BIND SUCH ENTITY TO THESE TERMS OF USE. IF YOU DO NOT HAVE SUCH AUTHORITY, OR IF YOU DO NOT WISH TO ACCEPT THESE TERMS OF USE, YOU MUST NOT ACCESS OR USE THE HOSTED SERVICE OR AUTHORIZE ANYONE TO ACCESS OR USE THE HOSTED SERVICE.

Licenses

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

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

License types

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

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

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

CPU License (CP). End User may install and use each copy or Instance of the Software on a number of Servers up to the number

indicated in the order provided that the performance capacity of the Server(s) does not exceed the performance capacity specified for the Software. End User may not re-install or operate the Software on Server(s) with a larger performance capacity without Avaya's prior consent and payment of an upgrade fee.

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

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

Heritage Nortel Software

"Heritage Nortel Software" means the software that was acquired by Avaya as part of its purchase of the Nortel Enterprise Solutions Business in December 2009. The Heritage Nortel Software is the software contained within the list of Heritage Nortel Products located at https://support.avaya.com/LicenseInfo under the link "Heritage Nortel Products" or such successor site as designated by Avaya. For Heritage Nortel Software, Avaya grants Customer a license to use Heritage Nortel Software provided hereunder solely to the extent of the authorized activation or authorized usage level, solely for the purpose specified in the Documentation, and solely as embedded in, for execution on, or for communication with Avaya equipment. Charges for Heritage Nortel Software may be based on extent of activation or use authorized as specified in an order or invoice.

Copyright

Except where expressly stated otherwise, no use should be made of materials on this site, the Documentation, Software, Hosted Service, or hardware provided by Avaya. All content on this site, the documentation, Hosted Service, and the product provided by Avaya including the selection, arrangement and design of the content is owned either by Avaya or its licensors and is protected by copyright and other intellectual property laws including the sui generis rights relating to the protection of databases. You may not modify, copy, reproduce, republish, upload, post, transmit or distribute in any way any content, in whole or in part, including any code and software unless expressly authorized by Avaya. Unauthorized reproduction, transmission, dissemination, storage, and or use without the express written consent of Avaya can be a criminal, as well as a civil offense under the applicable law.

Virtualization

The following applies if the product is deployed on a virtual machine. Each product has its own ordering code and license types. Note that each Instance of a product must be separately licensed and ordered. For example, if the end user customer or Avaya Channel Partner would like to install two Instances of the same type of products, then two products of that type must be ordered.

Third Party Components

"Third Party Components" mean certain software programs or portions thereof included in the Software or Hosted Service may contain software (including open source software) distributed under third party agreements ("Third Party Components"), which contain terms regarding the rights to use certain portions of the Software ("Third Party Terms"). As required, information regarding distributed Linux OS source code (for those products that have distributed Linux OS source code) and identifying the copyright holders of the Third Party Components and the Third Party Terms that apply is available in the products, Documentation or on Avaya's website at: https://support.avaya.com/Copyright or such successor site as designated by Avaya. The open source software license terms provided as Third Party Terms are consistent with the license rights granted in these Software License Terms, and may contain additional rights benefiting You, such as modification and distribution of the open source software. The Third Party Terms shall take precedence over these Software License Terms, solely with respect to the applicable Third Party Components to the extent that these Software License Terms impose greater restrictions on You than the applicable Third Party Terms.

The following applies only if the H.264 (AVC) codec is distributed with the product. THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO (i) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (ii) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE HTTP://WWW.MPEGLA.COM.

Service Provider

THE FOLLOWING APPLIES TO AVAYA CHANNEL PARTNER'S HOSTING OF AVAYA PRODUCTS OR SERVICES. THE PRODUCT OR HOSTED SERVICE MAY USE THIRD PARTY COMPONENTS SUBJECT TO THIRD PARTY TERMS AND REQUIRE A SERVICE PROVIDER TO BE INDEPENDENTLY LICENSED DIRECTLY FROM THE THIRD PARTY SUPPLIER. AN AVAYA CHANNEL PARTNER'S HOSTING OF AVAYA PRODUCTS MUST BE AUTHORIZED IN WRITING BY AVAYA AND IF THOSE HOSTED PRODUCTS USE OR EMBED CERTAIN THIRD PARTY SOFTWARE, INCLUDING BUT NOT LIMITED TO MICROSOFT SOFTWARE OR CODECS, THE AVAYA CHANNEL PARTNER IS REQUIRED TO INDEPENDENTLY OBTAIN ANY APPLICABLE LICENSE AGREEMENTS, AT THE AVAYA CHANNEL PARTNER'S EXPENSE, DIRECTLY FROM THE APPLICABLE THIRD PARTY SUPPLIER.

WITH RESPECT TO CODECS, IF THE AVAYA CHANNEL PARTNER IS HOSTING ANY PRODUCTS THAT USE OR EMBED THE G.729 CODEC, H.264 CODEC, OR H.265 CODEC, THE AVAYA CHANNEL PARTNER ACKNOWLEDGES AND AGREES THE AVAYA CHANNEL PARTNER IS RESPONSIBLE FOR ANY AND ALL RELATED FEES AND/OR ROYALTIES. THE G.729 CODEC IS LICENSED BY SIPRO LAB TELECOM INC. SEE WWW.SIPRO.COM/CONTACT.HTML. THE H.264 (AVC) CODEC IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO: (I) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (II) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION FOR H.264 (AVC) AND H.265 (HEVC) CODECS MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE HTTP://WWW.MPEGLA.COM.

Compliance with Laws

You acknowledge and agree that it is Your responsibility for complying with any applicable laws and regulations, including, but not limited to laws and regulations related to call recording, data privacy, intellectual property, trade secret, fraud, and music performance rights, in the country or territory where the Avaya product is used.

Preventing Toll Fraud

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

Avaya Toll Fraud intervention

If You suspect that You are being victimized by Toll Fraud and You need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1-800-643-2353 for the United States and Canada. For additional support telephone numbers, see

the Avaya Support website: https://support.avaya.com or such successor site as designated by Avaya.

Security Vulnerabilities

Information about Avaya's security support policies can be found in the Security Policies and Support section of https://support.avaya.com/security.

Suspected Avaya product security vulnerabilities are handled per the Avaya Product Security Support Flow (https://support.avaya.com/css/P8/documents/100161515).

Downloading Documentation

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

Contact Avaya Support

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

Trademarks

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

Avaya is a registered trademark of Avaya Inc.

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

Contents

Chapter 1: Introduction

Purpose

This document describes Avaya Aura® core solution from a holistic perspective focusing on the strategic, enterprise and functional views of the architecture. This document also includes a high-level description of each verified reference configuration for the solution.

This document is intended for people who want to understand how the solution and related verified reference configurations meet customer requirements.

Product compatibility

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

Chapter 2: Solution overview

Avaya Aura® overview

Avaya Aura® is a flagship communications solution that uses an IP and SIP-based architecture to unify media, modes, networks, devices, applications, and real-time, actionable presence across a common infrastructure. This architecture provides on-demand access to advanced collaboration services and applications that improve employee efficiency. Avaya Aura® is available under Core or Power Suite Licenses. Each suite provides customized set of capabilities designed to meet the needs of different kinds of users. Customers might mix Core and Power licenses on a single system based on their needs.

The following are some of the capabilities that Avaya Aura® solution provides:

- Support for up to 28 instances of Session Manager and 250,000 users and 350,000 devices
- Support for up to 18,000 H.323 endpoints on a single Communication Manager server and 350,000 SIP endpoints in an enterprise
- Converged voice and video call admission control
- SIP features, including E911, which reports the desk location of the caller
- Avaya Communication Server 1000 SIP networking and feature transparency
- Session Manager SIP routing adaptations
- A central management application, System Manager, for all Avaya Aura® applications and Avaya Communication Server 1000, with single authentication
- Support for Avaya common servers, S8300E server, and customer-provided servers

Topology

The following graphic depicts the Avaya Aura® architecture and various components of Avaya Aura®.

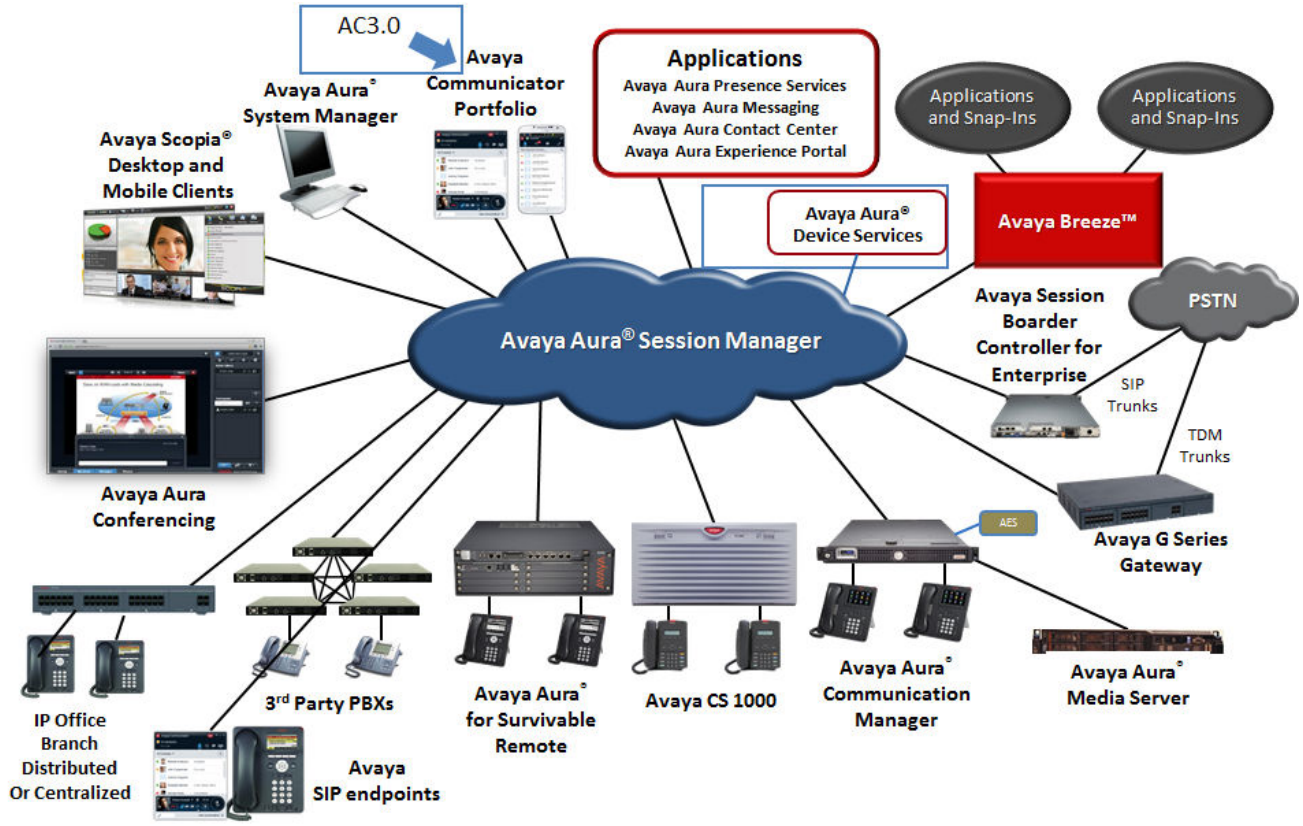


Figure 1: Avaya Aura® Architecture

A standard Avaya Aura® architecture consists the following core components: System Manager, Session Manager, Communication Manager, Application Enablement Services, and Presence Services.

Session Manager provides core SIP routing and integration services that provides communication between SIP-enabled entities, for example, PBXs, SIP proxies, gateways, adjuncts, trunks, and applications across the enterprise. Session Manager uses centralized, policy-based routing to provide integration services. Session Manager sends and receives SIP notifications and SIP Publish messages to and from various endpoints and Presence Services. Configuration of Session Manager is performed from System Manager.

Endpoints registered to Session Manager use Communication Manager Evolution Server for feature support. Endpoints that use H.323 protocol register to Communication Manager over IP. Digital and analog endpoints are directly connected to their respective digital and analog media modules on a Branch Gateway, for example, G450.

Application Enablement Services is a software platform that leverages the capabilities of Avaya Aura® Communication Manager to corporate applications.

By using Application Enablement Services, the Application Enablement Services Collector component within Presence Services allows Presence Services to report telephony presence from Communication Manager endpoints. The Application Enablement Services collector collects Presence from H323, DCP, analog, and SIP telephones administered as OPTIM extensions.

Presence Services collects, aggregates, and publishes presence information from and to multiple sources and clients.

System Manager provides a common console to manage the Avaya Aura® applications. System Manager also helps in bulk import and export of users, including user profiles and global settings such as public contacts lists, shared addresses, and presence access control lists.

Avaya Aura® Suite Licensing V2

Avaya Aura® provides Avaya Aura® Suite Licensing V2 for Unified Communications (UC) applications. This suite provides:

- Simplified Unified Communications licensing for customers and channels.
- New products and capabilities in an easily scalable structure.

Product	Core Suite	Power Suite
Communication Manager, System Manager, Session Manager, Survivability	Y	Y
Application Enablement Services Unified Desktop	Y	Y
Avaya Breeze™	Y Concurrent user Right To Use	Y Concurrent user Right To Use
Avaya Aura® Presence Services (Instant Messaging and Presence)	Y	Y
Avaya Multimedia Messaging	Basic	Enhanced
Voice Messaging (Avaya Aura® Messaging)	Basic VM Avaya Aura® Messaging - Basic license	Enhanced VM Avaya Aura® Messaging - Mainstream license
Avaya Equinox™ - for Windows	Y	Y
Avaya Equinox™ for Skype for business	Y	Y
Avaya Equinox™ - for Android and iOS	Y	Y
Avaya Session Border Controller for Enterprise Remote Worker and SIP Trunking Sessions	One High Availability Remote Worker license and One High Availability SIP Session for every 7 Core Suite licenses	One High Availability Remote Worker license and One High Availability SIP Session for every 7 Power Suite licenses
AvayaLive Video	Right to purchase one Video Meeting Room	Right to purchase one Video Meeting Room

Table continues…

Product	Core Suite	Power Suite
	at a discount for every 25 Core Suite licenses	at a discount for every 25 Power Suite licenses
Avaya Aura® Conferencing (Audio, Video and Web)	Optional	Y
Multidevice Access (MDA) for SIP Devices/users	10	10
Peer to Peer Video	Y	Y
Extension to Cellular (EC500)	Y	Y

Avaya Aura® core components

Avaya Aura® contains the following core components:

- Avaya Aura® Communication Manager
- Avaya Aura® Session Manager
- Avaya Aura® System Manager
- Avaya Aura® Presence Services
- Avaya Aura® Application Enablement Services
- Avaya Breeze™
- G430 Branch Gateway and G450 Branch Gateway
- Avaya Aura® Media Server

Communication Manager overview

Communication Manager is an extensible, scalable, and secure telephony application that connects to private and public telephone networks, Ethernet LANs, and the Internet. Communication Manager organizes and routes voice, data, image, and video transmissions.

Note:

To obtain the security service pack details, go to the Avaya Support website at http://support.avaya.com.

For information about certificates, see *Avaya Aura® Communication Manager Security Design*, 03-601973 and *Administering Avaya Aura® Communication Manager*, 03-300509.

Key features

- Robust call processing capabilities
- Application integration and extensibility
- Advanced workforce productivity and mobility features

- Built-in conferencing and contact center applications
- E911 capabilities
- Centralized voice mail and attendant operations across multiple locations
- Connectivity to a wide range of analog, digital, and IP-based communication devices
- Support for SIP, H.323, and other industry-standard communications protocols over different networks
- More than 700 powerful features
- High availability, reliability, and survivability

For more information about Communication Manager, see *Avaya Aura® Communication Manager Overview and Specification*.

Session Manager overview

Avaya Aura® Session Manager is a SIP routing tool that integrates all SIP devices across the entire enterprise network.

Session Manager simplifies the existing communication infrastructure by combining existing PBXs and other communications systems, regardless of the vendor, into a cohesive, centrally managed, SIP-based communications network.

Specifically, Session Manager provides:

- Integration with third-party equipment and endpoints to normalize disparate networks.
- Centralized routing of calls using an enterprise-wide numbering plan.
- Centralized management through System Manager, including configuration of user profiles and deployment of enterprise-wide centralized applications.
- Interconnection with Communication Manager and Avaya Communication Server 1000 to provide multiple feature support for SIP and non-SIP endpoints.
- Interconnection with IP Office through SIP to provide feature support for SIP endpoints.
- Third-party E911 emergency call service for enterprise users.
- Centralized Presence Services for scale and reduced network complexity with a variety of endpoints and communication servers.
- Support for converged voice and video bandwidth management.
- Application sequencing capability to incrementally deploy applications without needing to upgrade the PBX.
- Geographic redundancy.
- Mobility of SIP telephones and enterprise mobility for SIP users.

Supported servers

Session Manager supports the following servers:

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

Branch Session Manager supports the following servers:

- Dell™ PowerEdge™ R610
- Dell™ PowerEdge™ R620
- Dell™ PowerEdge™ R630
- HP ProLiant DL360 G7
- HP ProLiant DL360p G8
- HP ProLiant DL360 G9
- S8300D
- S8300E

These supported servers are only for Appliance Virtualization Platform configurations.

Avaya no longer supports the S8510 and S8800 servers. Any S8510 or S8800 server can be migrated to a supported server using the server replacement procedure.

Note:

Switching cables within a network is must for a Session Manager instance prior to release 7.0.

Features

Application Sequencing

With Application Sequencing, you can define and manage a set of applications for call sequencing based on the communication profile of the user. Each application in a sequence processes all requests to deny, modify, or forward initial SIP requests. Some examples of sequenced applications are:

- Billing Service
- Voice Monitoring
- Communication Manager Feature Server
- Call Blocker
- Personal assistant

- Meeting Coordinator

Session Manager also supports application sequencing for third-party PBX endpoint. Typical applications include blocking calls based on user preferences, redirecting calls to users in the Avaya Aura® enterprise, and augmenting caller identification information for incoming and outgoing calls. You can enable Application Sequencing without needing to upgrade or modify the code on existing third-party PBX equipment. For more information about Application Sequencing, see *Administering Avaya Aura® Session Manager*.

Call Detail Recording on Session Manager

The Call Detail Recording (CDR) feature records information on calls. When you enable CDR, the CDR records are saved in a special directory on the local hard drive of the server.

The call record contains information regarding:

- The time of the call
- The duration of the call
- The dialed number
- The calling party
- The terminating SIP entity
- The originating SIP entity
- The bandwidth indicator

For each Session Manager, you can administer CDR as either disabled or enabled. CDR records are created if you enable the CDR in at least one of two Session Manager entities.

Note:

Survivable Remote Session Manager (Branch Session Manager) does not support CDR.

CDR records on Session Manager are created on connected calls.

In route-through scenarios, where one Session Manager routes directly to another Session Manager, CDR is generated only on the originating Session Manager if so administered, not on the terminating Session Manager.

For sequenced applications (implicit or administered for a user), only one CDR record is generated for a given call.

If the secondary Session Manager of a user receives a call, the call is routed to the primary Session Manager of the user as per user registration. In that case, the CDR is still generated on the secondary Session Manager and not on the primary Session Manager.

Centralized applications

Session Manager provides connectivity for centralized Avaya applications such as Avaya Aura® Messaging, Avaya Voice Portal, Avaya Aura® Conferencing, and Avaya Meeting Exchange™. Each PBX, gateway, or location connects to the centralized application through Session Manager rather than individually. Session Manager also connects to SIP-enabled adjuncts, making the management and deployment of adjuncts much simpler than methods where each PBX connects to its own adjunct.

Centralized SIP trunking

Centralized SIP trunking routes all network traffic, including branch site traffic, through the enterprise core site. Session Manager provides redundant connections to a SIP service provider using the Gateway or Session Border Controller (SBC).

Customers can use centralized SIP trunking to save on operational costs. However, the setup should have more than one hub-site to avoid the risk of a single point of failure.

SIP Endpoint Concentrator Connection Policy

To inter-operate with virtualized desktop solutions such as a Citrix server hosting 1xC, the Endpoint Concentrator (endpt conc) connection policy provides for up to 1000 connections from a single IP address.

You can assign the Endpoint Concentrator connection policy to a SIP entity link. The Session Manager (ASSET) allows up to 1000 connections on that SIP entity link.

The Endpoint Concentrator policy is an untrusted policy based on the current **Default** (endpoint) policy. The requests arriving over the SIP entity link with the **endpt conc** connection policy are challenged similar to any other endpoint.

When the customer administers a SIP entity as an **Endpoint Concentrator** on the SIP entity page, all subsequently added SIP entity links towards that entity will have the **endpt conc** connection policy by default.

The **endpt conc** policy cannot be used for remote office (REMO) configurations. With a REMO configuration, the Session Border Controller servers use a single connection in the SIP entity link towards Session Manager to multiplex multiple calls. For such configurations, the connection policy must allocate large amounts of memory and buffers for a single connection.

Note:

SIP Link Monitoring is not available for SIP entities of type **Endpoint Concentrator**.

Inter-gateway Alternate Routing for SIP endpoints

Inter-gateway Alternate Routing (IGAR) provides voice connectivity using a public service provider (PSTN) if not enough bandwidth is available on the private network. If the Corporate Data Network cannot handle the call, the bearer connection is routed over the Public Voice Network.

You can use IGAR when calling to or from a SIP endpoint that is registered to a Session Manager server.

The IGAR triggers include:

- The inter-branch bandwidth limit is reached.
- IGAR is always on for branches with low-bandwidth connectivity.

The source and destination of the call must be associated with the same Communication Manager. Video calls are automatically downgraded to audio if IGAR is triggered.

Use cases:

- Case #1: Vijay in Bangalore and Michael in London both have SIP endpoints and are served by Communication Manager. At peak hours, bandwidth between Bangalore and London is insufficient to carry audio calls with proper quality. With IGAR, Communication Manager automatically sends the audio media over the PSTN, ensuring excellent audio for the call.
- Case #2:

  An enterprise has a small branch gateway in Reykjavik with all SIP endpoints registered to an Avaya Aura® data center in Stockholm. The low-cost data connection to Iceland has insufficient bandwidth to carry more than a few audio calls. With IGAR, every call to or from Reykjavik is carried over a low-cost PSTN connection using the “always on” option.

Limit Number of Concurrent Calls for SIP endpoints

The Limit Number of Concurrent Calls (LNCC) feature causes a multi-call appearance endpoint to behave as a single line appearance endpoint. When the LNCC feature is enabled and the user is active/busy on one call appearance, subsequent incoming calls receive a busy signal or follow normal busy treatment such as coverage and are tagged as missed calls.

LNCC works on all H.323 and DCP endpoints and any SIP endpoint that supports call appearances.

A user controls this feature using a feature button or feature access code (FAC). Normal operation allows two incoming calls. The user must enable LNCC to allow only one call.

LNCC allows:

- outgoing calls, incoming priority calls, and emergency callback for SIP stations.
- outgoing calls, incoming priority calls, emergency callback, and crisis alert for H.323 and DCP stations.

LNCC works with the Dual Registration and Multiple Device Access features. The user applies LNCC at the user level, and all devices associated with the user inherit the LNCC feature. For example:

- Most of the time, Steve wants to be active on only one call at a time, so he activates LNCC.
- Andy calls Steve, and they talk for 15 minutes.
- During their conversation, Cindy calls Steve. Because LNCC is active, Cindy’s call goes straight to coverage.
- Cindy does not leave a message, but Steve’s endpoint still records her call as a missed call. Steve calls Cindy after he finishes his conversation with Andy.

The LNCC feature administration field appears on the station screen and is saved as part of the station record by the **`save translations`** command. Subsequent resets restore the LNCC settings to the state when the **`save translations`** was performed. A user activates and deactivates the feature by using the limit-call feature button or by using two Feature Access Codes: **Limit Number of Concurrent Calls Activation/Deactivation**. The limit-call button indicates whether the LNCC feature is active or not.

For more information about LNCC, see *Avaya Aura® Communication Manager Feature Description and Implementation*, 555-245-205.

Normalization of disparate networks

Session Manager normalizes and adapts disparate SIP protocols to meet the strict SIP standards of the network. With normalization of disparate networks, third-party PBXs work with each other and with Avaya equipment enabling customers to realize true vendor interoperability.

For example, Cisco and other PBXs can connect with Session Manager and operate with each other and with Avaya equipment. Session Manager converts the headers in SIP messages that display calling and called-party information in the format required by each switch in a call.

Online/Offline Call Journal (Call History)

The call log of a device includes incoming calls when the device is not logged in. In addition, if a call cannot be delivered to an endpoint due to the Limit the Number of Concurrent Calls (LNCC) feature, the calls is also logged.

- For H.323 endpoints, Communication Manager stores logged out missed calls and downloads the Call History logs when the endpoint logs in. The maximum number of H.323 Call History logs is 10.
- For SIP endpoints, the primary Session Manager stores all call logs and downloads the logs to the endpoint during login. The endpoint maintains the logs locally while logged in.

Call logs are only stored on the primary Session Manager of the user. There is no redundancy for storing call logs. The primary Session Manager stores the call logs in the User Data Storage database.

You enable Call History logging on the Session Manager Communication Profile for the user by enabling **Enable Centralized Call History**. The default is **off**. The maximum number of call logs per Communication Profile is 100.

SIP phones:

- Download call logs during login only.
- Maintain call logs locally while logged in.

Personal Profile Manager

The Personal Profile Manager (PPM) maintains and manages the personal information of the end user in the system. SIP endpoints communicate with PPM to:

- retrieve configuration information such as dial plans, buttons, and contact lists.
- add or update contacts.
- save device-specific data.

The PPM provides an interface for endpoints to attach to the network to download profile data and store data back in the network for easy access across multiple user devices.

Policy-based routing

Customers can use Session Manager to define the routing policy. The routing policy controls when calls are made, how the call load is balanced, and how calls are routed during network failures.

- **Least-cost routing**, also called time-of-day routing, uses the lowest cost route from a list of service providers on a time-of-day or time-of-week basis.

- **Alternate routing** routes calls around network failures on a global basis and uses global PSTN fallback when the internal network is unavailable.
- **Load balancing** distributes calls. For a given SIP entity, you can administer Session Manager to select a host from multiple IP addresses based on administered priorities and weights.
- **Call admission control** reroutes calls when the bandwidth allocation for WAN link is exceeded.

System Manager Web Services

The System Manager Web Services interface for routing and dial plan management provides remote programmatic access for querying, creating, and deleting all Session Manager routing domain data. The routing data that the service accesses and modifies is the same routing data supported by the routing bulk import and administration GUI. The primary routing domain data types are:

- Domains
- Locations
- Adaptations
- SIP Entities
- Entity Links
- Time Ranges
- Routing Policies
- Dial Patterns
- Regular Expression data

The System Manager Web Services API enforces the same level of data integrity as the GUI and import interfaces. The API components enforce the same validation logic the GUI and Import interfaces use.

Use the System Manager Web Services interface for provisioning only. Do not use the Web Service API for real-time application access or SIP application integration. The System Manager Web Service API is appropriate for automating normal administrative tasks and has the same administration data propagation delay to Session Managers as the Routing GUI and bulk import interfaces.

The System Manager Web Services API uses RESTful current best practices. The service provides for XML payloads by default but can optionally support JSON payloads.

Users can select any desired REST client implementation technology. Users must have Web Service development level skills for REST client development.

The System Manager Web Services interface documentation includes a programmers guide, detailed schema definition, and examples and samples.

System Manager overview

Avaya Aura® System Manager is a central management system that provides a set of shared management services and a common console. All shared and element specific management for Avaya Aura® applications that System Manager supports is done from the common console. System Manager provides the following key capabilities:

- Centralized software management solution to support deployments, migrations, upgrades, and updates to the suite of Avaya Aura® applications
- Avoid duplicate data entry through shared management services
- Centralized access to all Avaya Aura® applications through a browser-based Avaya management console with single sign on
- Optimize IT skill sets with consistency of management functions across Avaya solutions
- Integration with enterprise IT infrastructure, such as identity management, authentication, authorization, security, and enterprise directory

You can download System Manager from the Avaya Support website at http://support.avaya.com or order the System Manager software DVD.

Presence Services overview

Avaya Aura® Presence Services provides the presence of a user through the presence states. For example, busy, away, or Do Not Disturb. The presence is an indication of the availability of a user and the readiness to communicate across services, such as telephony, instant messaging (IM), and video.

The presentity is the visibility of a user on a shared communication network. The users who are a part of the presentity group have access to the presence status of another user. A watcher is a user who monitors the presentity of another user. The watcher must subscribe to Presence Services to receive presence updates for a presentity.

Presence Services supports collecting presence information from diverse sources. This information is aggregated for a user and then made available to the presence-aware applications. These applications use Local Presence Service (LPS) to subscribe to Presence Services. When an application subscribes to Presence Services, the application receives presence change notifications that contain the aggregated presence for a user and the communication resources available to the user. Using this information, the application can provide a visual indication about the presence of the user.

Presence Services supports:

- The presence aggregation service that collects the presence information from Avaya and third-party sources and distributes the presence information to the Avaya tools.
- The aggregation of presence information from a variety of Avaya endpoints, including one-X® clients.

- The Extensible Messaging and Presence Protocol (XMPP).

Presence Services is compatible with the client software from Microsoft®, IBM® Domino®, and open source. Presence Services uses the following collectors to enable the users to use the core Presence Services capabilities with other presence sources:

- AES Collector: To collect telephony presence information from nonpresence-capable devices such as H323, DCP, and SIP endpoints administered as OPTIM extensions.
- Exchange Collector: To collect the calendar and out-of-office information from Exchange mailboxes.
- Domino Collector: To collect the calendar and out-of-office information from Domino mailboxes.

Avaya Aura® Application Enablement Services overview

Avaya Aura® Application Enablement Services (AE Services) is a software platform that leverages the capabilities of Avaya Aura® Communication Manager. AE Services provides an enhanced set of Application Programming Interfaces (APIs), protocols, and web services that expose the functionality of Avaya Communication solutions to corporate application developers, third-party independent software vendors, and system integrators.

Note:

AE Services supports existing Communication Manager standalone implementations and Avaya Aura® Session Manager configurations with Communication Manager as an Access Server. AE Services does not support Communication Manager as a Feature Server.

AE Services runs on a Linux server and is tightly integrated with Communication Manager and Avaya Contact Center solutions. AE Services provides an open platform for supporting existing applications and serves as a catalyst for creating the next generation of applications and business solutions.

AE Services offers

AE Services Release 7.1 provides the following product offers.

Avaya Application Enablement Services Software-Only

This offer is available for customers who want to install AE Services on a computer that meets or exceeds the minimum server requirements for AE Services. The High Availability Failover feature is not available with the Software-Only offer.

Avaya Application Enablement Services using VMWare® in the Avaya Aura® Virtualized Environment

The VMWare offer introduced in Release 6.2 deploys the Avaya Aura® Application Enablement Services virtual application in the Avaya Aura® Virtualized Environment. This offer consists of the AE Services template enabled for VMWare. The AE Services template includes the AE Services 7.1 software with the Red Hat Enterprise Linux® Operating System version 7.2 (64 bit), running as a virtual machine on a system running the VMWare ESXi virtualization environment.

Note:

The AE Services 7.1 VMWare offer is supported on VMWare ESXi versions 5.5, 6.0 and 6.5.

AE Services Release 7.1 deployment via System Manager Solution Deployment Manager client on Dell™ PowerEdge™ R610 server with 4 GB or 6 GB RAM is insufficient. Upgrade your system RAM to a minimum of 12 GB before deploying AE Services 7.1.

Avaya Application Enablement Services using the VMWare® based Avaya Virtualization Platform

Avaya uses the VMware®-based Avaya Appliance Virtualization Platform to provide virtualization for Avaya Aura® applications in Avaya Aura® Virtualized Appliance offer.

Avaya Aura® Virtualized Appliance offer includes:

- Common Servers: Dell™ PowerEdge™ R610, Dell™ PowerEdge™ R620, HP ProLiant DL360 G7, HP ProLiant DL360p G8, Dell™ PowerEdge™ R630, and HP ProLiant DL360 G9.
- S8300D and S8300E

Note:

AE Services 7.1 deployment using Avaya Virtualization Platform client on Dell™ PowerEdge™ R610 or HP ProLiant DL360 G7 or G8 server is insufficient. It is recommended that the total memory be increased to a minimum of 12 GB before deploying AE Services 7.1.

Avaya Virtualization Platform is the customized OEM version of VMware® ESXi 5.5. With Avaya Virtualization Platform, customers can run any combination of supported applications on Avaya-supplied servers. Avaya Virtualization Platform provides greater flexibility in scaling customer solutions to individual requirements.

Avaya Breeze™ overview

Avaya Breeze™ provides a virtualized and secure application platform where Workflow developers and Java programmers can develop and dynamically deploy advanced collaboration capabilities that extend the power of Avaya Aura®. Customers, business partners, and Avaya developers can use the platform as the deployment vehicle for their snap-ins.

Avaya Breeze™ acts as the platform for many Avaya products such as the Avaya Oceana™ Solution, Presence Services, Engagement Designer, and Context Store.

Avaya Breeze™ provides the following benefits:

- Customers, partners, and Avaya organizations can rapidly develop snap-ins and applications that are deployed on Avaya Breeze™.
- Developers can focus on building the collaboration snap-ins they need, without the need to develop a robust platform on which snap-ins are deployed and invoked.
- A robust Software Development Kit (SDK) with an easy-to-use API. Developers need not understand the details of call processing to develop new capabilities.
- The ability to perform operations such as:
  - Intercepting calls in to and out of the enterprise.

  - Redirecting calls to an alternate destination.
  - Blocking calls and optionally playing an announcement to the caller.
  - Changing the presented caller ID of the calling or called party.
- The ability to place an outbound call for the purpose of playing announcements and collecting digits.
- The ability to invoke web services for added functionality.
- The ability to expose webpages and web services for invocation by remote browsers and applications.
- A Collaboration Bus that allows snap-ins to leverage each others' capabilities through point-to-point and publish/subscribe messaging patterns.
- A Common Data Manager framework that snap-ins use to access common information stored on System Manager.
- Connector snap-ins that provide access to email and Scopia (conferencing) host applications.

  Multiple SMS snap-ins are available from Snapp Store.
- Zang Call Connector to interact with Zang.
- Zang SMS Connector for Avaya Breeze™ snap-ins to interact with Zang to send and receive messages.
- The ability to add or replace Trust and Identity Certificates for increased security.
- Tools that log and monitor operations and provide troubleshooting support.
- High availability. For more information on high availability, see the *High Availability* section in *Avaya Breeze™ Overview and Specification*.
- Third party ability to create custom Connectors that provide access to their (external) application or service.

Avaya Breeze™ is a powerful snap-in delivery platform that provides Unified Communications and Contact Center customers and partners the ability to quickly deliver capabilities using the skill sets of today's enterprise and cloud application developers.

Branch Gateways

Branch Gateways work with Communication Manager software installed on any of the following servers to help deliver communication services to enterprises:

- S8300D
- S8300E
- Avaya Common Server
- Customer-provided server

Branch Gateways connect telephone exchange and data networking by routing data and VoIP traffic over the WAN. Branch Gateways provide support for IP, digital, and analog devices.

Branch Gateways are controlled by Communication Manager operating either as External Call Controller (ECC) or Internal Call Controller (ICC). In a configuration that includes both ICC and ECC, ICC acts as a survivable remote server (SRS). ICC takes over call control when ECC fails or the WAN link between the main office and the branch office is down.

Branch Gateways also provide the standard local survivability (SLS) when the connection to the primary ECC fails. This feature is available only for IPv4 setups.

G430 Branch Gateway

G430 Branch Gateway can support up to 150 users when deployed as a branch gateway in a medium to large enterprise. The configuration requires Communication Manager to be installed on the S8300D or S8300E server or either of Dell R610, Dell R620, Dell R630, HP ProLiant DL360 G7, or HP DL360 G9.

For more information about G430 Branch Gateway, see *Overview for Avaya G430 Branch Gateway*, 03-603235.

G450 Branch Gateway

G450 Branch Gateway supports up to 450 users in a medium to large enterprise and up to 2400 users when deployed as a campus gateway. Both configurations require Communication Manager to be installed on the S8300D or S8300E server or either of Dell R610, Dell R620, HP ProLiant DL360 G7 or HP DL360 G9 servers.

For more information about G450 Branch Gateway, see *Overview for Avaya G450 Branch Gateway*, 03-602058.

Avaya Media Server overview

Avaya Aura® Media Server (MS), formerly known as Media Application Server (MAS), is a software-based media application platform. Avaya Aura® MS performs all multimedia processing using software rather than using dedicated hardware-based DSP resources. Avaya Aura® MS is designed to run on general purpose operating systems and Commercial Off-The-Shelf (COTS) hardware. Avaya Aura® MS forms the backbone of a flexible communications system for growing companies. Using Avaya Aura® MS, your company can take advantage of the increased functionality of an IP network without replacing the existing infrastructure. Avaya Aura® MS works with media gateways to provide a streamlined voice and data network throughout the enterprise. Avaya Aura® MS and media gateways provide a network built on an industry standard operating system that supports distributed IP networking and centralized call processing. The benefits of Avaya Aura® MS are increased productivity, efficiency, and economic benefits for the enterprise. As Avaya Aura® MS consolidates multiple systems into a single server, you can manage the entire communications infrastructure from one location. Avaya Aura® MS provides scalability, redundancy, and high availability.

Avaya Aura® MS supports SIP TLS, SRTP, VoiceXML 2.1, CCXML 1.0, MRCP, QOS Monitoring, Audio, Video, MLPP, IM, and Webpush features.

Avaya Aura® MS powers diverse applications such as voice messaging, consumer conferencing, self service, contact centers, basic media services, and communication applications.

Avaya Aura® on Amazon Web Services overview

Amazon Web Services (AWS) is a cloud services platform that enables the enterprises to securely run the applications on the virtual cloud. The key components of AWS are Amazon Elastic Compute Cloud (EC2) and Amazon Simple Storage Service (S3).

Supporting the Avaya applications on the AWS Infrastructure as a service (IaaS) platform provides the following benefits:

- Minimizes the capital expenditure (CAPEX) on infrastructure. The customers can move from CAPEX to operational expense (OPEX).
- Reduces the maintenance cost of running the data centers.
- Provides a common platform for deploying the applications.
- Provides a flexible environment to accommodate the changing business requirements of customers.

You can deploy the following Avaya Aura® applications on Amazon Web Services:

- Avaya Aura® System Manager
- Avaya Aura® Session Manager
- Avaya Aura® Communication Manager
- Avaya Aura® Utility Services
- Presence Services using Avaya Breeze™
- Avaya Session Border Controller for Enterprise
- Avaya Aura® Device Services
- Avaya Aura® Application Enablement Services (Software only)
- Avaya Aura® Media Server (Software only)
- Avaya Diagnostic Server (Software only)

The supported Avaya Aura® AWS applications can also be deployed on-premises.

You can connect the following applications to the Avaya Aura® AWS instances from the customer premises:

- Avaya Aura® Conferencing Release 8.0 and later
- Avaya Aura® Messaging Release 6.3 and later
- G430 Branch Gateway, G450 Branch Gateway, and G650 Media Gateway

Topology

The following diagram depicts the architecture of the Avaya applications on the Amazon Web Services platform. This diagram is an example setup of possible configuration offered by Avaya. The setup must follow the AWS deployment guidelines, but does not need to include all the applications.

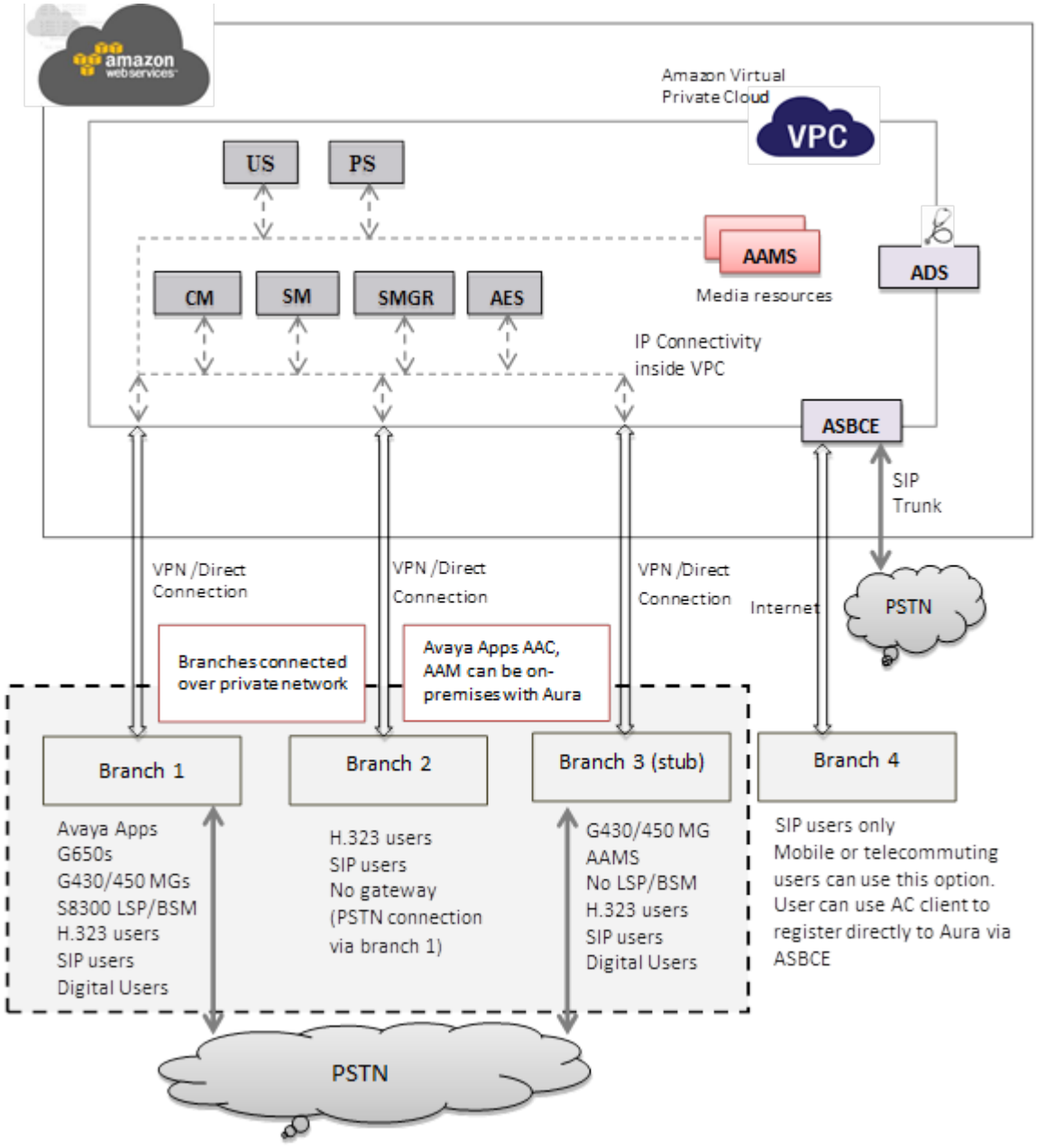


Figure 2: Avaya Aura® applications on Amazon Web Services

Networking considerations for connecting Avaya applications

When you deploy an Avaya application at main location or at a branch location on AWS, ensure that you follow the networking requirements, such as, the WAN network topology, bandwidth and latency of the Avaya applications. You must adhere to the Avaya network recommendations and AWS networking rules.

AWS has some limitations for establishing public internet VPNs and direct connections into AWS. For more information about Amazon VPC Limits, see the AWS documentation at http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_Appendix_Limits.html.

Important:

Avaya recommends the use of direct connection in combination of a private WAN connection with Service Level Agreement (SLA) measures to ensure that the network quality is appropriate for signaling and voice traffic.

Avaya is not responsible for network connections between AWS and customer premises.

Types of network connection

You can connect applications in a hybrid network on Virtual Private cloud (VPC) in following ways.

Connection type	Resource
VPN Connection	For information about VPN Connections, see http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/vpn-connections.html.
Direct Connection	For information about AWS Direct Connections, see https://aws.amazon.com/directconnect/.

Avaya Aura® deployment options

Avaya Aura® Virtualized Appliance overview

Avaya Aura® Virtualized offers

Avaya Aura® Release 7.0 and later supports the following two Avaya virtualization offers based on VMware:

- Avaya Aura® Virtualized Appliance (VA): Avaya-provided server, Avaya Appliance Virtualization Platform, based on the customized OEM version of VMware® ESXi 5.5.
- Avaya Aura® Virtualized Environment (VE): Customer-provided VMware infrastructure

The virtualization offers provide the following benefits:

- Simplifies IT management using common software administration and maintenance.
- Requires fewer servers and racks which reduces the footprint.

- Lowers power consumption and cooling requirements.
- Enables capital equipment cost savings.
- Lowers operational expenses.
- Uses standard operating procedures for both Avaya and non-Avaya products.
- Deploys Avaya Aura® virtual products in a virtualized environment on Avaya provided servers or customer-specified servers and hardware.
- Business can scale rapidly to accommodate growth and to respond to changing business requirements.

Avaya Aura® Virtualized Appliance overview

Avaya Aura® Virtualized Appliance is a turnkey solution. Avaya provides the hardware, all the software including the VMware hypervisor and might also offer the customer support of the setup. Virtualized Appliance offer is different from Avaya Aura® Virtualized Environment, where Avaya provides the Avaya Aura® application software and the customer provides and supports the VMware hypervisor and the hardware on which the hypervisor runs.

Deployment considerations

- Deployment on the Appliance Virtualization Platform server is performed from the System Manager Solution Deployment Manager or the Solution Deployment Manager standalone Windows client.
- Avaya provides the servers, Appliance Virtualization Platform, which includes the VMware ESXi hypervisor.

Appliance Virtualization Platform overview

From Release 7.0, Avaya uses the VMware®-based Avaya Appliance Virtualization Platform to provide virtualization for Avaya Aura® applications in Avaya Aura® Virtualized Appliance offer.

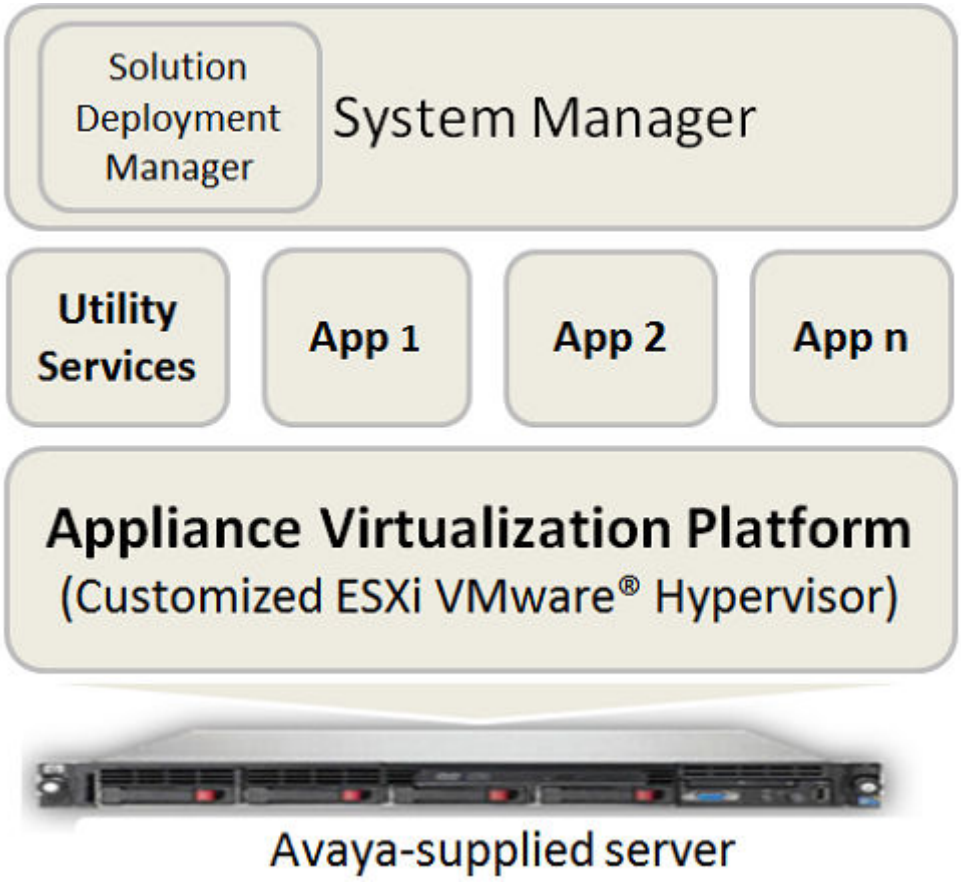
Avaya Aura® Virtualized Appliance offer includes:

- Common Servers: Dell™ PowerEdge™ R610, Dell™ PowerEdge™ R620, Dell™ PowerEdge™ R630, HP ProLiant DL360 G7, HP ProLiant DL360p G8, and HP ProLiant DL360 G9
- S8300D and S8300E

Note:

With WebLM Release 7.x, you cannot deploy WebLM on S8300D Server or S8300E Server running on Appliance Virtualization Platform.

Appliance Virtualization Platform is the customized OEM version of VMware® ESXi 5.5. With Appliance Virtualization Platform, customers can run any combination of supported applications on Avaya-supplied servers. Appliance Virtualization Platform provides greater flexibility in scaling customer solutions to individual requirements.



From Avaya Aura® Release 7.0 and later, Appliance Virtualization Platform replaces System Platform.

You can deploy the following applications on Appliance Virtualization Platform:

- Utility Services 7.1
- System Manager 7.1
- Session Manager 7.1
- Branch Session Manager 7.1
- Communication Manager 7.1
- Application Enablement Services 7.1
- WebLM 7.1
- Avaya Breeze™ 3.3 with Presence Services
- SAL 2.5
- Communication Manager Messaging 7.0
- Avaya Aura® Messaging 7.0
- Avaya Aura® Device Services 7.0.1
- Avaya Aura® Media Server 7.8

- Avaya Equinox 9.1
- Avaya Proactive Contact 5.1.2

  For more information about installing Avaya Proactive Contact and administering Appliance Virtualization Platform with Avaya Proactive Contact, see the Avaya Proactive Contact documentation.

Note:

For deploying Avaya Aura® applications on Appliance Virtualization Platform only use Solution Deployment Manager.

Avaya Aura® Virtualized Environment overview

Avaya Aura® Virtualized Environment integrates real-time Avaya Aura® applications with VMware® virtualized server architecture.

Using Avaya Aura® Virtualized Environment, customers with a VMware IT infrastructure can upgrade to the next release level of collaboration using their own VMware infrastructure. For customers who need to add more capacity or application interfaces, Avaya Aura® applications on VMware offer flexible solutions for expansion. For customers who want to migrate to the latest collaboration solutions, Avaya Aura® Virtualized Environment provides a hardware-efficient simplified solution for upgrading to the latest Avaya Aura® release and adding the latest Avaya Aura® capabilities.

Note:

This document uses the following terms, and at times, uses the terms interchangeably.

- server and host
- reservations and configuration values

Deployment considerations

Avaya Pod Fx for Enterprise Communications

Avaya Pod Fx for Enterprise Communications is an alternative deployment option for Avaya Aura® Virtualized Environment applications.

Avaya Pod Fx is a full-stack turnkey solution that combines storage arrays from EMC, virtualization software from VMware, and networking, management, and real-time applications from Avaya.

Avaya Pod Fx accelerates deployment of Avaya Aura® applications and simplifies IT operations.

Documentation

The following table lists the Avaya Pod Fx for Enterprise Communications documents. These documents are available on the Avaya support website at http://support.avaya.com.

Title	Description
Avaya Pod Fx for Enterprise Communications – Technical Solutions Guide	Provides an overview of the solution, specifications, and components that Avaya Pod Fx for Enterprise Communications integrates.

Table continues…

Avaya Pod Fx for Enterprise Communications – Pod Orchestration Suite User Guide	Provides an overview of the Avaya Pod Orchestration Suite (POS). The POS contains the applications which orchestrate, manage, and monitor the Avaya Pod Fx. This guide explains how to access and use the applications in the POS management suite.
Avaya Pod Fx for Enterprise Communications – Locating the latest product documentation	Identifies the Avaya Pod Fx customer documentation. Also includes the documentation for the Avaya and non-Avaya products that are included in the Avaya Pod Fx solution.
Avaya Pod Fx for Enterprise Communications – Release Notes	Describes fixed and known issues for Avaya Pod Fx. This document does not describe issues associated with each component in the Avaya Pod Fx. For information on the specific components, see the component Release Notes.

Avaya Aura® Solution for Midsize Enterprise

With the introduction of flexible virtualization on Avaya-supplied servers, Avaya does not offer Avaya Aura® Solution for Midsize Enterprise (ME) starting with Avaya Aura® 7.1. However, customers can configure ME-like solutions with any mix of applications on an Avaya common server or through Avaya Aura® Virtualized Environment.

Upgrade path

ME customers, using the existing servers, can upgrade to Release 7.1 and later as a new or upgrade for a ME-type customer.

Upgrade to Avaya Aura® Release 7.1 and later, provides:

- Greater flexibility and scale beyond the boundaries of the earlier ME template. For example, Geographic Redundancy for application such as Communication Manager can scale beyond 2400 users.
- Use of applications that are not on the ME server, such as Application Enablement Services and Session Manager.

Note:

Avaya continues to offer ME as a configured template solution at the Avaya Aura® 6.2.2 level for customers who are still on releases earlier than Release 7.1.

Solution Deployment Manager

Solution Deployment Manager overview

Solution Deployment Manager is a centralized software management solution in System Manager that provides deployments, upgrades, migrations, and updates to Avaya Aura® 7.1 applications. Solution Deployment Manager supports the operations on customer Virtualized Environment and Avaya Aura® Virtualized Appliance model.

Solution Deployment Manager provides the combined capabilities that Software Management, Avaya Virtual Application Manager, and System Platform provided in earlier releases.

In Release 7.1, Solution Deployment Manager supports migration of Virtualized Environment-based 6.x and 7.0 applications to Release 7.1 in customer Virtualized Environment.

Release 7.1 and later supports a standalone version of Solution Deployment Manager, the Solution Deployment Manager client. For more information, see *Using the Solution Deployment Manager client*.

System Manager is the primary management solution for Avaya Aura® 7.1 and later applications.

System Manager with the Solution Deployment Manager runs on:

- Avaya Aura® Virtualized Appliance: Contains a server, Appliance Virtualization Platform, and Avaya Aura® application OVA. Appliance Virtualization Platform includes a VMware ESXi 5.5 hypervisor.

  From Release 7.0 and later, Appliance Virtualization Platform replaces System Platform.
- Customer-provided Virtualized Environment solution: Avaya Aura® applications are deployed on customer-provided, VMware® certified hardware.

With Solution Deployment Manager, you can perform the following operations in Virtualized Environment and Avaya Aura® Virtualized Appliance models:

- Deploy Avaya Aura® applications.
- Upgrade and migrate Avaya Aura® applications.
- Download Avaya Aura® applications.
- Install service packs, feature packs, and software patches for the following Avaya Aura® applications:
  - Communication Manager and associated devices, such as gateways, media modules, and TN boards.
  - Session Manager
  - Branch Session Manager
  - Utility Services
  - Appliance Virtualization Platform, the ESXi host that is running on the Avaya Aura® Virtualized Appliance.

The upgrade process from Solution Deployment Manager involves the following key tasks:

- Discover the Avaya Aura® applications.
- Refresh applications and associated devices, and download the necessary software components.
- Run the preupgrade check to ensure successful upgrade environment.
- Upgrade Avaya Aura® applications.
- Install software patch, service pack, or feature pack on Avaya Aura® applications.

For more information about the setup of the Solution Deployment Manager functionality that is part of System Manager 7.x, see *Avaya Aura® System Manager Solution Deployment Manager Job-Aid*.

Solution Deployment Manager client

For the initial System Manager deployment or when System Manager is inaccessible, you can use the Solution Deployment Manager client. The client can reside on the computer of the technician. The Solution Deployment Manager client provides the functionality to install the OVAs on an Avaya-provided server or customer-provided Virtualized Environment.

A technician can gain access to the user interface of the Solution Deployment Manager client from the web browser.

The Solution Deployment Manager client runs on Windows 7 64-bit, Windows 8 64-bit, and Windows 10 64-bit.

Use the Solution Deployment Manager client to:

- Deploy System Manager and Avaya Aura® applications on Avaya appliances and Virtualized Environment.
- Upgrade System Platform-based System Manager.
- Upgrade Virtualized Environment-based System Manager from Release 7.0.x to Release 7.1.
- Install System Manager software patches, service packs, and feature packs.
- Configure Remote Syslog Profile.
- Create Appliance Virtualization Platform Kickstart file.
- Install Appliance Virtualization Platform patches.
- Restart and shutdown the Appliance Virtualization Platform host.
- Start, stop, and restart a virtual machine.
- Change the footprint of Avaya Aura® applications that support dynamic resizing. For example, Session Manager and Avaya Breeze™.

Note:

You can deploy or upgrade the System Manager virtual machine only by using the Solution Deployment Manager client.

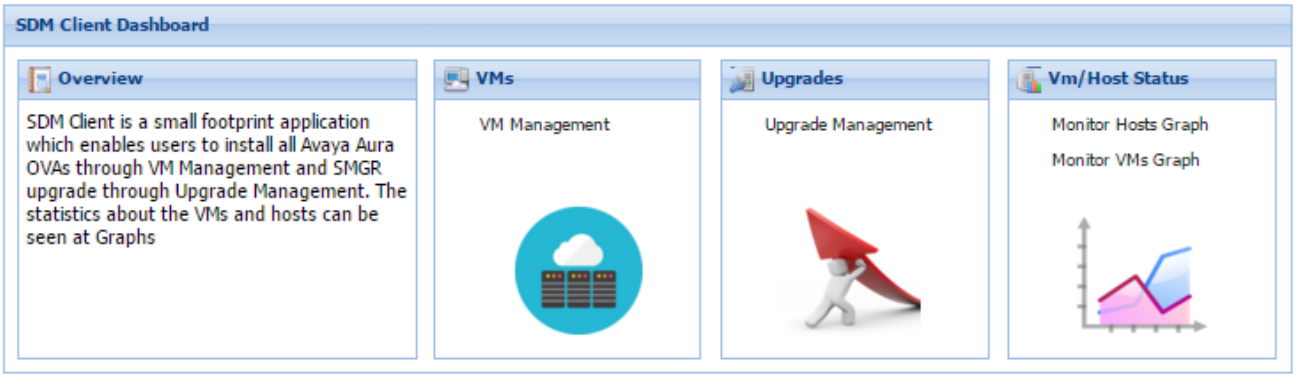


Figure 3: Solution Deployment Manager client dashboard

Benefits of deploying Avaya Aura® Core

Improve business agility

SIP architecture with centralized management and control provides businesses the agility to take advantage of new networking capabilities, deploy new applications, and deliver new levels of customer service.

Reduce costs

Avaya Aura® solution helps in effective handling of traffic and PSTN usage with a single enterprise-wide dial plan and intelligent routing policies. Administrative costs are reduced with simpler management and infrastructure.

Increase productivity

The Avaya Aura® platform enables easy deployment of services to users, independent of location or network connection. Employees can use unified communications tools to work effectively.

Improve customer service

With the Avaya Aura® platform, workers can have improved access to services, information, and expertise.

Centralize user administration

System Manager provides a centralized location for adding users in Communication Manager and Session Manager.

Integrate multi-vendor and business application

Customers can easily integrate the Avaya Aura® solution with the third-party applications.

Improve scalability

The Avaya Aura® platform provides support for up to 35,000 IP endpoints for each Communication Manager instance and support for up to 250,000 endpoints on 28 Session Manager instances.

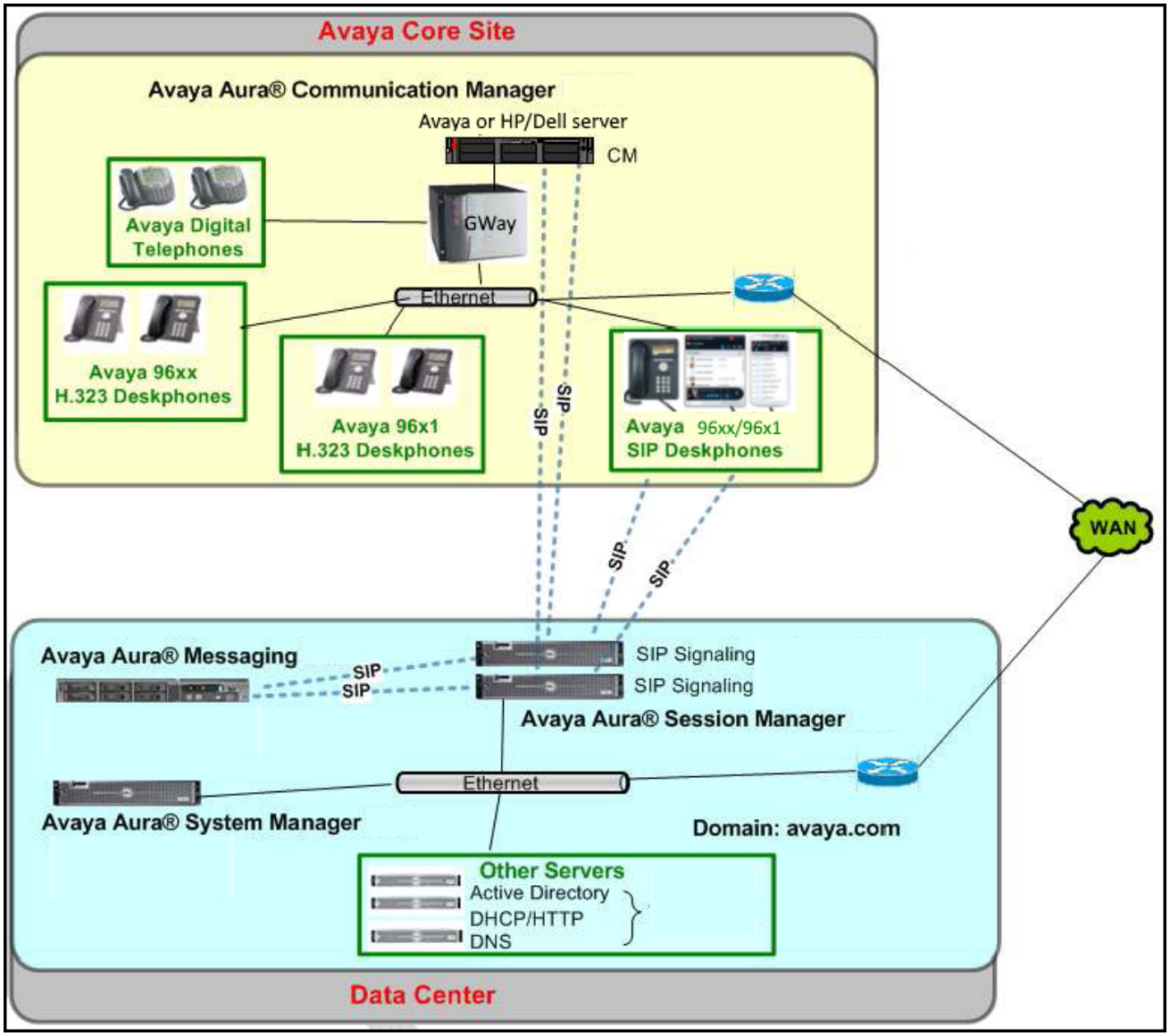
Chapter 3: Solution specification

Reference configurations

This chapter covers sample configurations that can be deployed in customer environment. The sample configurations can be integrated with third-party applications for complete network interconnections.

Messaging

This configuration uses Session Manager, Communication Manager, Avaya Aura® Messaging, and Avaya 9600 Series IP Deskphones and Avaya 9601 Series SIP deskphones. Deskphones have the SIP firmware installed. Two Session Manager instances are deployed, where one Session Manager serves as backup for the other if the network or Session Manager fails.



In this configuration, Avaya 9600 Series IP Deskphones and Avaya 9601 Series SIP deskphones are configured as SIP endpoints. These endpoints register to Session Manager and use Communication Manager for feature support.

Communication Manager Evolution Server also supports Avaya 2420 Digital telephones and Avaya 9600 Series and 9601 Series IP deskphones running H.323 firmware. Communication Manager is connected over SIP trunks to Session Manager servers. Communication Manager uses the SIP Signaling network interface on each Session Manager.

Messaging consists of an Avaya Aura® Messaging Application Server (MAS) and Avaya Message Storage Server (MSS) running on a single Avaya S8300 server. Messaging is also connected over SIP trunks to both Session Manager instances. All users have mailboxes defined on Messaging which they access through a dedicated pilot number.

All intersystem calls are carried over these SIP trunks. Calls between stations are re-directed to Messaging and the calling party can leave a voicemail message for the appropriate subscriber.

The following equipment and software are used for the sample configuration.

Component	Software version
Session Manager on Avaya common server	Release 7.1
System Manager on Avaya common server	Release 7.1
Avaya Aura® Messaging on single Avaya S8300D or S8300E server	Release 6.3.3
96x0 Series IP Deskphone (running SIP firmware)	Release 2.6.11
96x1 Series IP Deskphone (running SIP firmware)	Release 7.0
Digital Telephones (DCP)	N/A
96x0 Series IP Deskphone (H.323)	Release 3.2
96x1 Series IP Deskphone (H.323)	Release 6.6

Conferences

The Avaya Aura® Conferencing for Avaya Aura® solution is a meet me conferencing solution which provides audio, video, and Web conferencing. The Avaya Aura® Conferencing for Avaya Aura® solution provides the ability to deploy Avaya Aura® Conferencing within the Avaya Aura® stack. The Avaya Aura® PBX stack refers to staging and management software such as System Platform and System Manager. With the Avaya Aura® Conferencing for Avaya Aura® solution, a lower total cost of ownership is driven by a unified infrastructure, simplified management and lower acquisition, upgrade, and bandwidth costs. Avaya Aura® comprises a number of key components that work together to provide a powerful unified communications solution. The following components provide integrated management of the solution:

- Avaya Aura® Session Manager
- Avaya Aura® System Manager
- Avaya Aura® Conferencing components
- Feature servers and access elements

Users can connect to the conference using audio and/or video by way of any of the PBX clients, by way of Audio Video in Collaboration Agent embedded in Collaboration Agent, or by way of the Avaya Aura® Conferencing mobile clients. Additionally, users can join Web collaboration using the Collaboration Agent interface and other Unified Communications (UC) clients.

Administrators can manage the Avaya Aura® Conferencing components and users using the Avaya Aura® System Manager, the Element Manager, and Provisioning interfaces. In addition, administrators can bulk provision users by way of Lightweight Directory Access Protocol (LDAP).

Administrators can deploy the Avaya Aura® Conferencing for Avaya Aura® solution on bare metal servers. A bare metal environment refers to the installation of a server directly on to hardware rather than within the host operating system. Alternatively, the Avaya Aura® Conferencing for Avaya Aura® solution supports virtualization through VMWare.

This solution is available for all deployment models and so is suited to small to medium (SMB), medium, and large enterprises.

The sample configuration, documented here, is for a large enterprise.

There are two large configurations for Avaya Aura® Conferencing: A redundant configuration incurs additional costs, which the simplex solution does not incur. Large enterprises require the following to support redundancy:

- Large simplex
- Large with redundancy
- A second server
- An ADC, which provides load-balancing

Additionally, customers have the option of expanding their system to support up to 30,000 users, running 3000 concurrent sessions, by adding additional servers. This expansion can continue up to a maximum of 150,000 users.

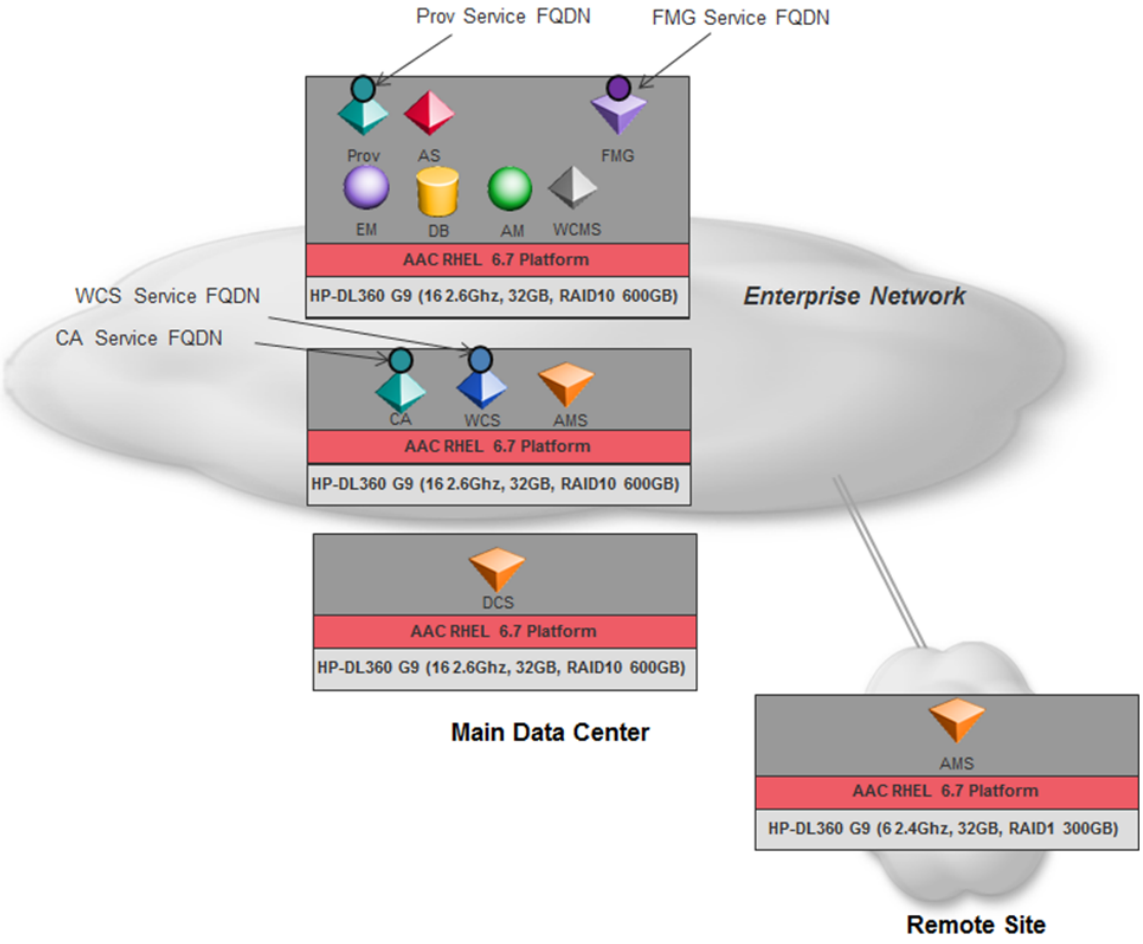


Figure 4: Large Simplex Configuration

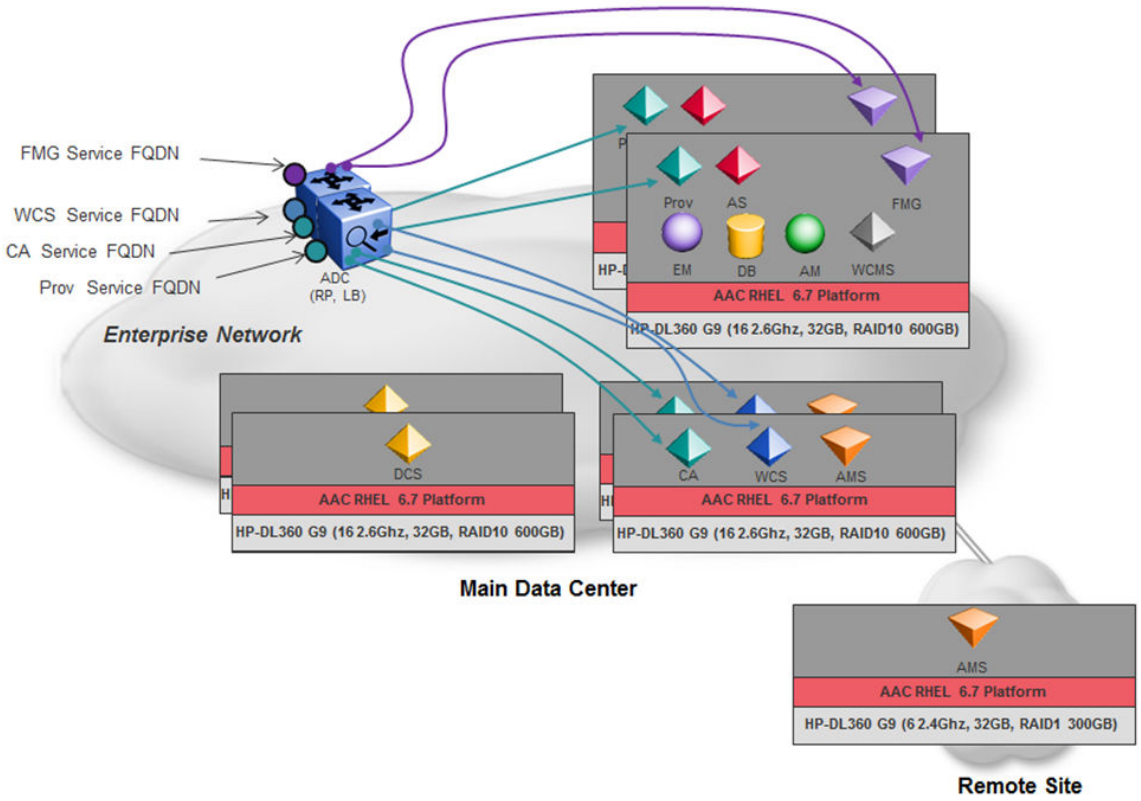


Figure 5: Large Redundant Configuration

Hardware

Avaya recommends the following hardware for an Avaya Aura® Conferencing solution in a large enterprise.

Server	Chassis type	CPU	Memory	RAID	NIC	Applications
HP ProLiant DL360 G9	1U	• 2xOCT core • 2.6GHz E5-2640 v3	4x8=32	4x300 (RAID10) (600 MB)	• MB • 6 port	Core Server Avaya Aura® Media Server and Web Conferencing server (WCS) when deployed without recording Hosting Avaya Aura® Media Server when deployed without recording[1] Hosting WCS

Table continues…

[1] If you want to add the recording feature at a later date, you can buy a disk kit to provide recording functionality.

Server	Chassis type	CPU	Memory	RAID	NIC	Applications
						Flash Media Gateway for Audio/Video in Collaboration Agent Large Document Conversion Server (DCS) Collaboration Agent (CA)
HP ProLiant DL360 G9 + Disk Kit	1U	• 2xOCT core • 2.6GHz E5-2640 v3	4x8=32	• 4x300 • RAID 10 • (300 MB); • 4x900 • RAID 10 • (1.8 TB)	• MB • 6 port	Avaya Aura® Media Server and Web Conferencing server (WCS) when deployed with recording Hosting Avaya Aura® Media Server when deployed with recording
HP ProLiant DL360 G9	1U	• 1xHEX core • 2.4GHz E5-2620 v3	4x8=32	2x300 (RAID1) (300 MB)	• MB • 6 port	Cascading server

Software

The Avaya Aura® Conferencing solution for large enterprises is available for deployments that use the Avaya Aura® Private Branch eXchange (PBX). The Avaya Aura® PBX stack includes staging and management software such as System Platform and System Manager.

The Avaya Aura® Conferencing solution for large enterprises is also available for deployments that do not use the Avaya Aura® PBX. Deployments that use an alternative PBX are typically called Turnkey deployments. Once installed, the Avaya Aura® Conferencing software behaves in the same way in Avaya Aura® and Turnkey environments.

For more information on Turnkey deployments, see *Overview and Specification for Turnkey*, which is available from https://support.avaya.com/.

The Avaya Aura® Conferencing solution for large enterprises is suitable for bare metal environments and also for virtual environments. A ‘bare metal’ environment refers to the installation of a server directly on to hardware rather than within the host operating system. A virtual environment refers to the concealment of the physical characteristics of a computing platform. The virtual environment is enabled by way of VMWare.

Survivability

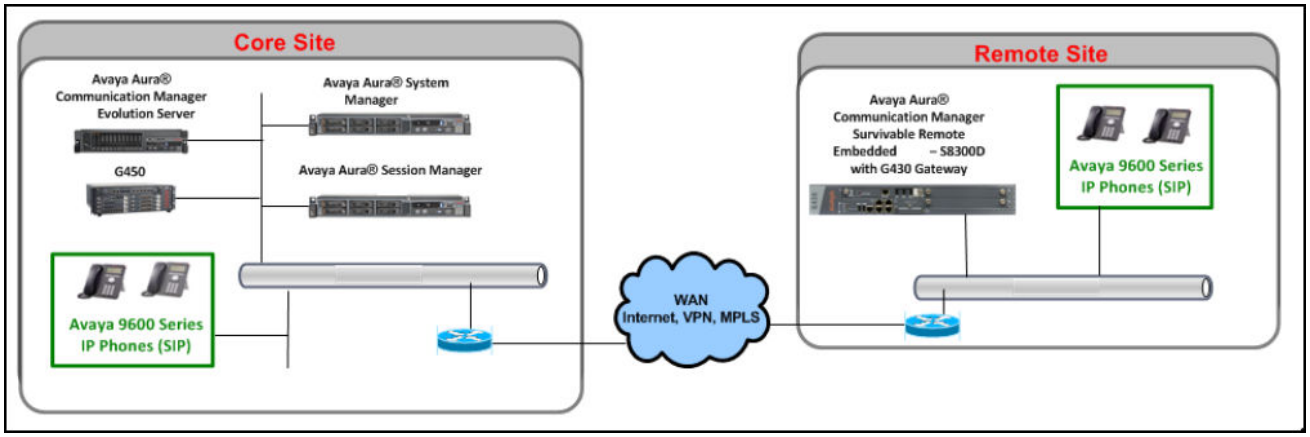


Figure 6: Avaya Aura® with Embedded Survivable Remote

The Embedded Survivable Remote solution supports survivable local call processing and SIP routing for a branch when the connection with the core site fails. Branch Session Manager provides a SIP-enabled branch survivability solution. When the core Session Manager is unreachable, SIP phones receive Communication Manager features from Avaya Aura® that is installed on the Embedded Survivable Remote server. Branch Session Manager provides services to the SIP endpoints when the connection with the core site is fails.

The sample configuration consists of the Embedded Survivable Remote server, Branch Session Manager, and an Avaya Aura® 7.x infrastructure.

The embedded survivable remote template is installed on an Avaya S8300E server with G430 and G450 Branch Gateway.

The site where the embedded survivable remote server is installed includes:

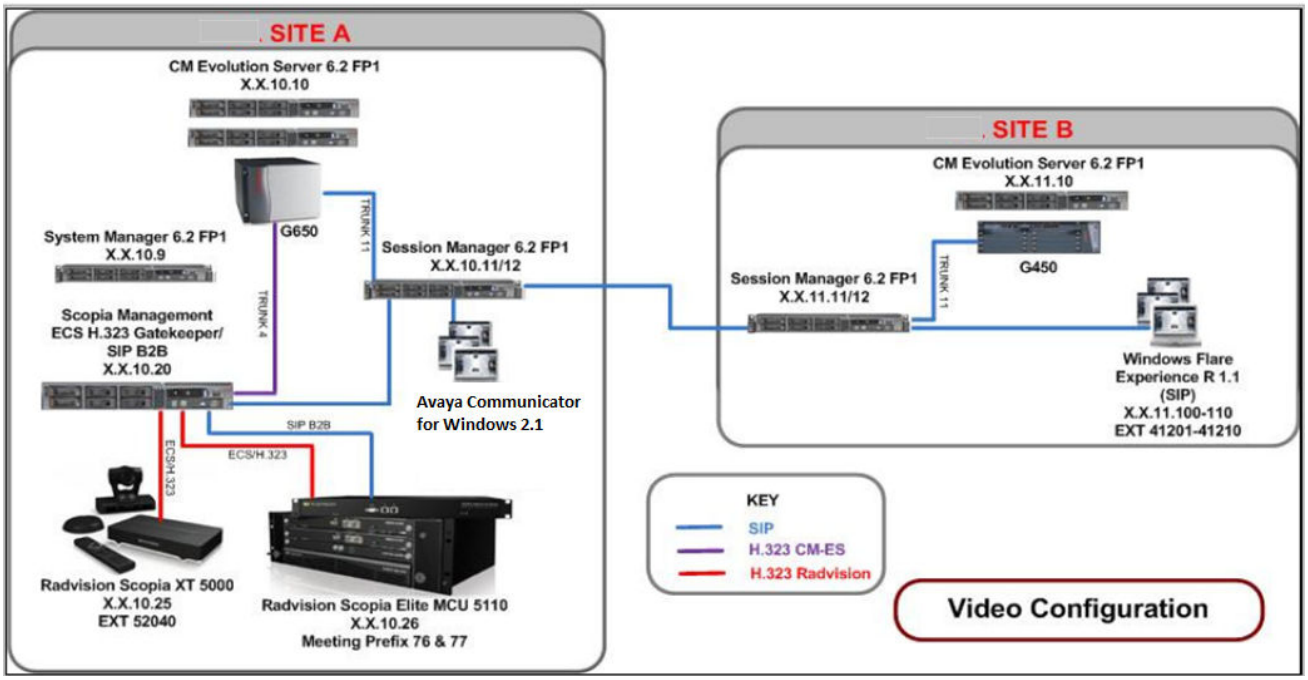
- Session Manager
- Communication Manager
- Utility Services

Component	Software version
• Communication Manager • G450 Branch Gateway	• Communication Manager Release 7.0.1 • G450 Branch Gateway Firmware 37.38.0
• Communication Manager • Survivable Remote embedded with Session Manager • G430 Branch Gateway	• Communication Manager Release 7.0.1 • Branch Session Manager Release 7.0.1 • G430 Branch Gateway Firmware 37.38.0
System Manager on Appliance Virtualization Platform	• System Manager Release 7.0.1 • Appliance Virtualization Platform 7.0.1

Table continues…

Component	Software version
Session Manager	Session Manager Release 7.0.1
Avaya 96x1 Series IP telephone — SIP	Release 7.0.1

Video conferencing



The Avaya Scopia® XT 5000 series endpoint provides the following video-conferencing capabilities:

- HD 1080p video at 60 frames per second (fps)
- HD continuous presence video conferences with in-built MCU

Scopia® Management manages video conferencing, infrastructure, and call control applications such as gatekeepers and SIP agents.

You can deploy Scopia® Management within a distributed environment to provide scalability and redundancy. Scopia® Management includes an internal ECS H.323 gatekeeper that manages multimedia communication networks.

Solution deployment

The sample configuration includes two separate sites, Site A and Site B.

Site A consists of Communication Manager duplex server running as an evolution server. The Communication Manager template is installed on S8300 Server and the platform used is System Platform. The server is configured with G430 Gateway. Site A has System Manager installed on System Platform. The hardware on which System Platform is installed is S8800 Server. A single Session Manager application is installed on S8800 Server.

Scopia® Management is installed on a Microsoft Windows 2008 Enterprise Server R2 operating system as a single server deployment. Scopia® Management server also contains the internal Avaya ECS gatekeeper. Avaya Scopia® XT 5000 endpoint at this location is registered with the Avaya ECS gatekeeper.

Site B consists of a Communication Manager simplex server running as an evolution server and is installed on System Platform. The server is configured with G450 Branch Gateway. Session Manager is installed on S8300 Server. Site A System Manager is used to manage Communication Manager and Session Manager.

Equipment/software	Release/version
Session Manager on Avaya S8300 Server	Release 7.0.1
System Manager on System Platform	Release 7.0.1
Communication Manager Evolution Server on System Platform	Release 7.0.1
Scopia® Management Scopia® ECS	Release 8.3.1 Release 8.3
Avaya Scopia® XT5000 (H.323)	Release 8.3

Avaya Aura® in a virtualized environment

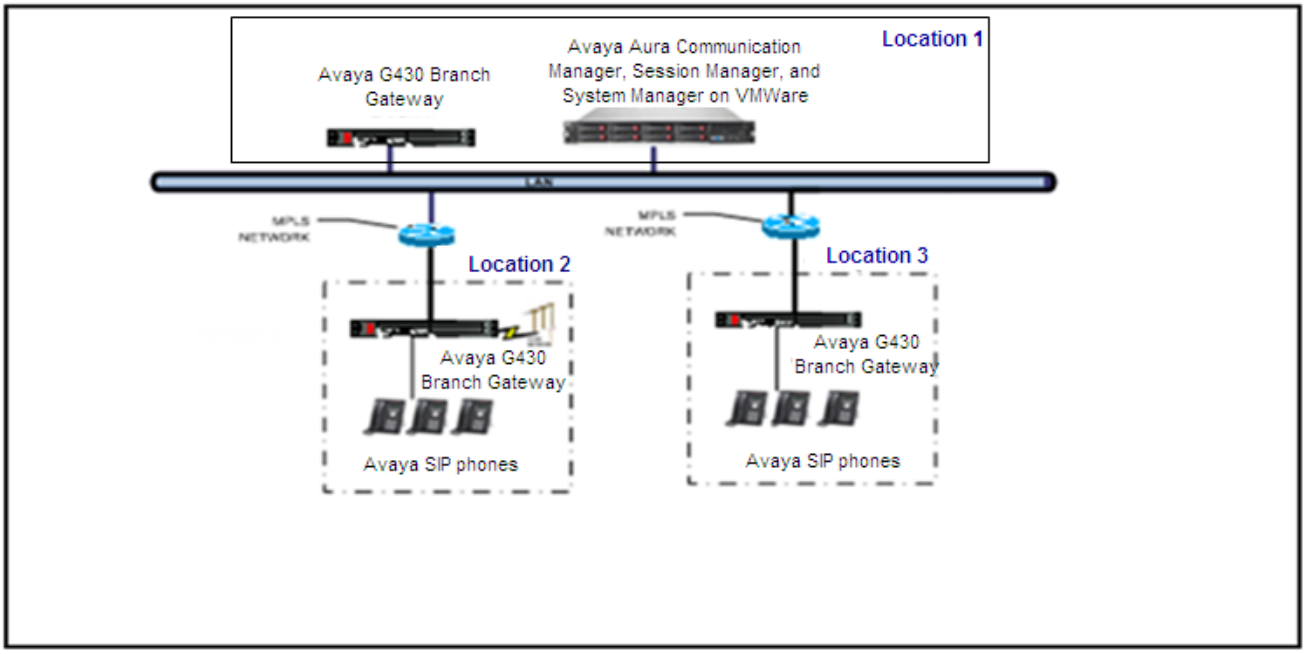


Figure 7: Avaya Aura® on VMware

The Avaya Aura® core setup is in the head office, Location 1. The head office connects to Location 2, a branch office, which is the parts warehouse. Location 2 requires a new setup for 150 users.

Location 2 uses SIP endpoints. The network environment uses POE. The communication system requires a 30–channel ISDN PRI trunk for inbound and outbound calling. The branch office connects over WAN to the head office.

The second branch office, Location 3, requires a setup to support up to 40 users. The branch office uses SIP endpoints and a 30–channel ISDN PRI trunk for inbound and outbound calls. The branch office connects over WAN to the head office.

Proposed solution

Location 1

The Location 1 datacenter consists of Communication Manager, Session Manager, and System Manager. Virtualized Environment is on customer-provided hardware and VMware. The servers are installed on VMware. Location 1 uses one G430 Branch Gateway for media resources. The Location 1 system hosts all the licenses and provides services and control over WAN to Location 2 and Location 3. The Location 1 system has licenses for 190 users, 150 for Location 2 and 40 for Location 3. Number of EC-500 licenses are available as a startup are 20.

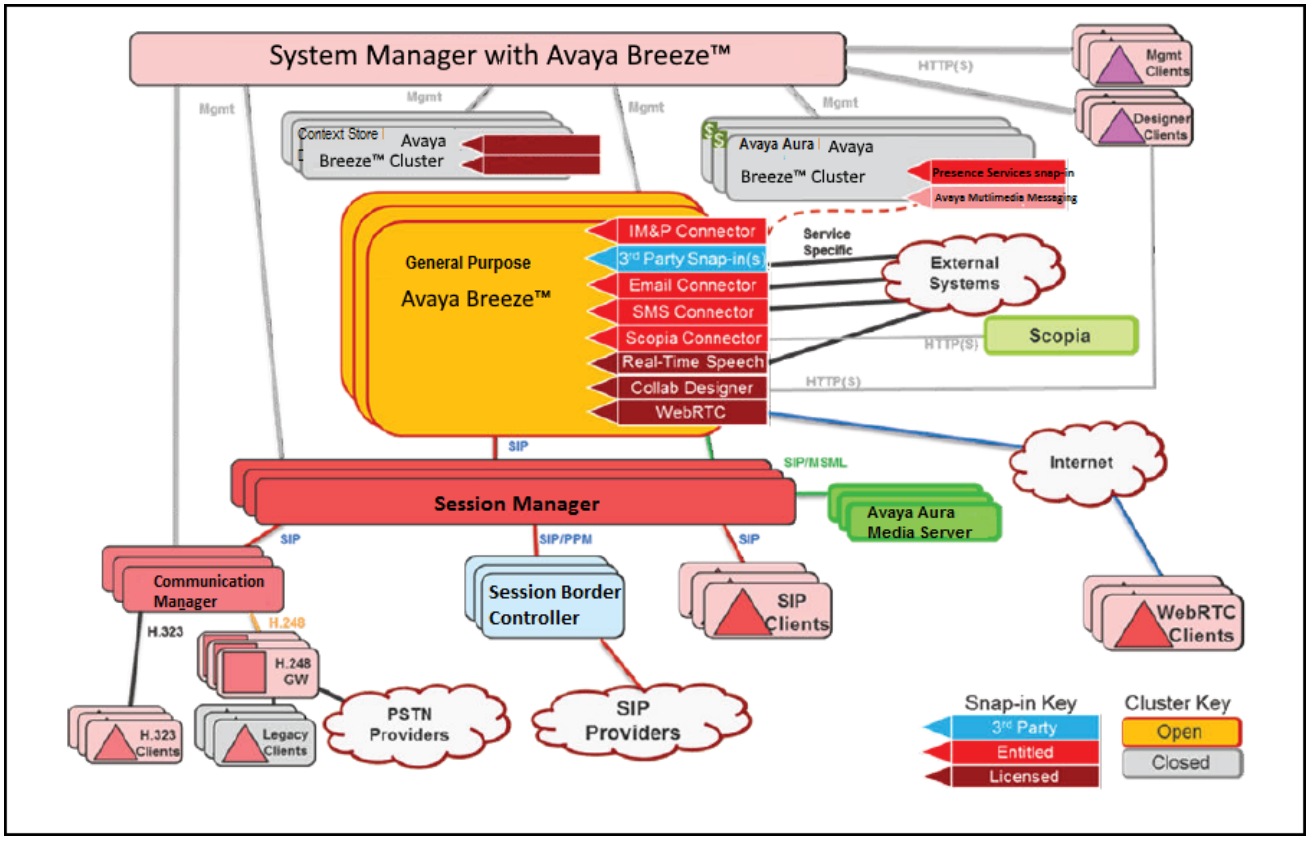
Location 2

Location 2 uses G430 Branch Gateway for media resources. The branch office uses 150 Avaya 9608 IP and SIP telephones and a 30-channel ISDN PRI card for PSTN connectivity. All endpoints work on POE and do not require local power supply. G430 Branch Gateway connects to the head office over WAN. The system uses Branch Session Manager and Survivable Remote in case of a connectivity failure at the head office.

Location 3

Location 3 uses G430 Branch Gateway for media resource and local connectivity. Location 2 uses 40 Avaya 9608 IP and SIP Phones. Location 3 uses a 30-channel PRI card for PSTN connectivity. All endpoints use POE and do not require local power supply. G430 Branch Gateway connects over WAN to Avaya servers in the head office . The setup uses the standard survivability capabilities with limited survivability features.

Avaya Breeze™



Solution overview

The Avaya Breeze™ server runs in the Avaya Aura® environment. Avaya Breeze™ complements and expands the core communication capabilities of Session Manager and Communication Manager. System Manager manages Avaya Breeze™ that interoperates with Communication Manager 7.0.

Traditional H.248 gateways provide access to the PSTN and support for H.323 and legacy endpoints. Connection to SIP service provider trunks is provided through Avaya Session Border Controller for Enterprise to Session Manager.

All incoming and outgoing PSTN calls use Call Intercept services that run on Avaya Breeze™, regardless of the type of endpoint and the type of trunk. For ISDN trunks, Communication Manager routes outbound PSTN calls first to Session Manager and then to the ISDN trunk. Similar configuration is required for incoming calls over an ISDN trunk. Station-to-station calls cannot run Call Intercept services even if the endpoints are SIP endpoints.

Avaya Breeze™ is deployed on one of the following:

- In Avaya appliance offer, on Appliance Virtualization Platform.
- In customer Virtualized Environment, on VMware™

Chapter 4: IP Office branch solution with Avaya Aura®

IP Office Branch Solution

An IP Office enterprise branch deployment can be implemented on an IP Office 9.1 standard mode system. The IP Office system can be installed as an independent, standalone branch, or be connected to the Avaya Aura® network and migrated to a Distributed, Centralized, or Mixed enterprise branch to provide specific features and applications to meet the needs of individual employees in each branch location.

In addition to centralized SIP endpoints, IP Office can concurrently support other IP and TDM endpoints for a community of centralized users and IP Office users in the same branch. Ideal for enterprises requiring applications in customer data centers or in the branch itself, an IP Office branch can effectively deliver a range of communication tools without complex infrastructure and administration.

IP Office branch solution topology

IP Office branch solution can be deployed with Avaya Aura® in distributed, centralized, and mixed enterprise branch configurations.

Distributed branch deployment

In a distributed enterprise branch deployment, all users are IP Office users. The IP Office users obtain telephony services from the local IP Office and not from Avaya Aura®. The IP Office systems can be connected to Session Manager and administrators can obtain centralized management services through System Manager. The enterprise can choose to connect IP Office users in this deployment option to an IP Office voice mail system, such as Embedded Voicemail or VoiceMail Pro, or a centralized voice mail system, Messaging or Modular Messaging. IP Office users can also have access to some centralized Avaya Aura® applications and services.

Centralized branch deployment

Centralized users must be configured on the Session Manager, Communication Manager, and IP Office. A centralized user must be configured on Session Manager and Communication Manager as a SIP user. On IP Office, the centralized user must have either a SIP extension or an analog extension.

Mixed enterprise branch deployment

An enterprise branch with both centralized users and IP Office users. Centralized users obtain their telephony services from Avaya Aura® and the IP Office users obtain their telephony services from the local IP Office, as in the case of the distributed branch deployment.

All users in this deployment option must use a centralized voice mail system: Avaya Aura® Messaging or Avaya Modular Messaging.

IP Office branch solution architecture

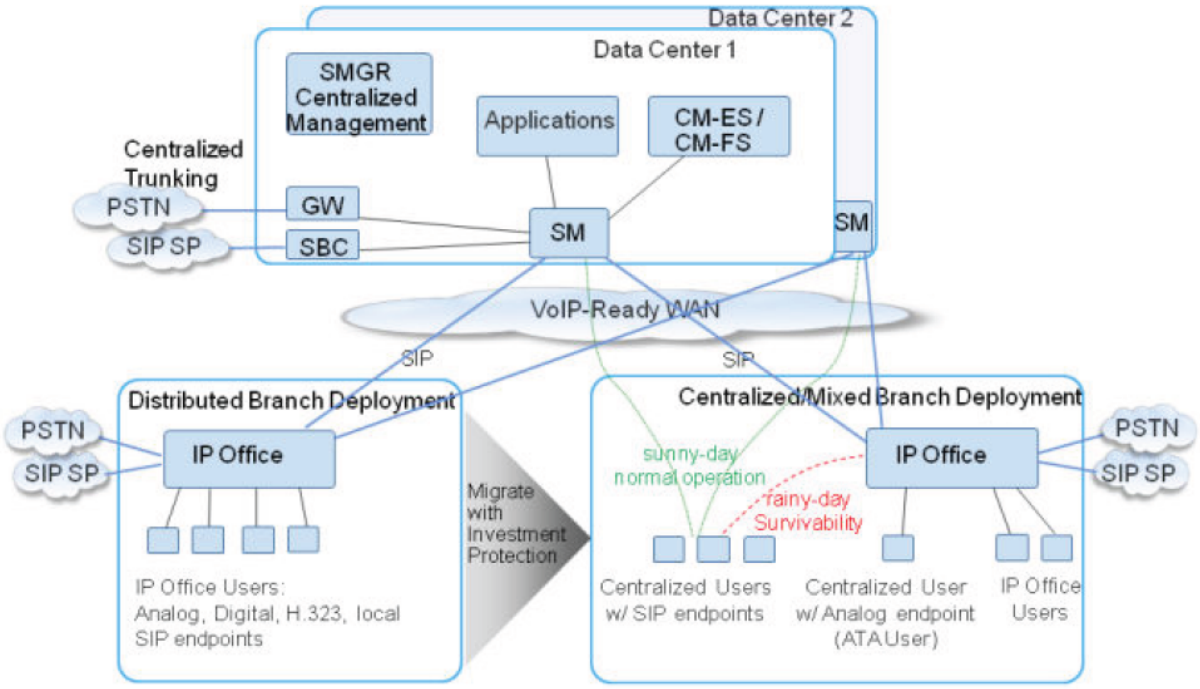


Figure 8: IP Office branch solution architecture

The following table describes how the applications and services in a branch office solution interact with each other.

Component	Description
IP Office branch solution	This solution includes hardware and software components. Each branch consists of an IP Office system.
Main Avaya Aura® network	• System Manager provides administrative functions that administrators can use to easily manage all users and IP Office

Table continues…

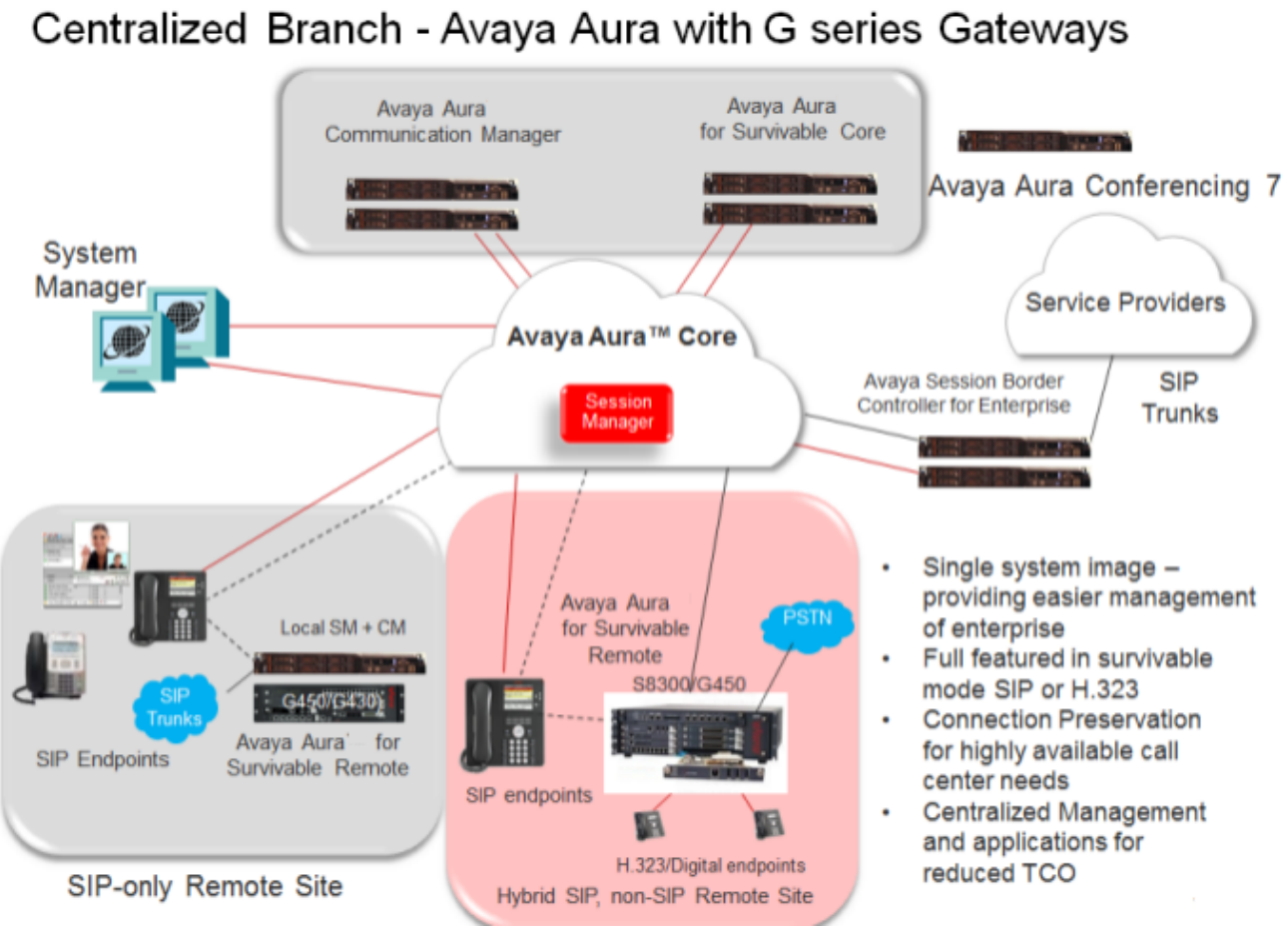
Component	Description
	systems in the enterprise. In a distributed, mixed, or centralized environment, IP Office branches connect to the IP Office server. System Manager does not manage the following applications: Voicemail Pro, CCR, and UCM. • Session Manager connects branches to each other and to other applications and services in the enterprise center. For IP Office users in distributed and mixed deployment environments, Session Manager acts as a SIP proxy to route SIP sessions to and from the SIP connections to IP Office. For centralized users, Session Manager is also the main interface that handles user registration and routing of calls. • Communication Manager provides telephony services to centralized users through Session Manager. • Avaya WebLM is included within System Manager and provides centralized licensing management. • Secure Access Link (SAL) provides remote access and alarm reception capabilities. The SAL Gateway is installed on Linux® Operating System in the customer network and acts as an agent on behalf of several managed elements. All communication uses encapsulated Hypertext Transfer Protocol Secure (HTTPS). • Other centralized services such as conferencing and messaging are available to centralized users. Some of these services are also available to IP Office users in distributed and mixed branch environments.
Supported centralized endpoints	The IP Office branch solution supports the following centralized SIP endpoints: • Avaya 9600 series phones - 9620 SIP 2.6 - 9630 SIP 2.6 - 9640 SIP 2.6 - 9650 SIP 2.6 - 9601 SIP 6.2.2 - 9608 SIP 6.2.2 - 9611G SIP 6.2.2 - 9621G SIP 6.2.2 - 9641G SIP 6.2.2 • Avaya Equinox™ • Avaya Scopia® video endpoints

Avaya Aura® Branch solution with G-series gateways

The Avaya Aura® Branch solution with G-series gateways is ideally suited for enterprises that have invested in a network connecting branches.

G430 Branch Gateway and G450 Branch Gateways in S8300D or S8300E servers support up to 1000 SIP or H.323 users.

The following image shows the topology of this solution.



Key differences between IP Office Branch and Avaya Aura® Branch with G-series gateways

There are similarities and differences between the IP Office Branch solution and the Avaya Aura® Branch solution with G-series gateways. The differences are summarized below.

- The IP Office solution offers flexible deployment options, IP Office services, and cost advantages that are not available with the Avaya Aura® Branch solution.
- IP Office is not an H.248 gateway under Communication Manager control. IP Office is a telephony system or a SIP gateway connecting to Session Manager. The IP Office Branch solution is not limited to 250 gateways per Communication Manager. Up to 2000 IP Office branches can connect to Session Manager with a single core CM-ES or CM-FS.
- Centralized users in the IP Office Branch solution cannot access many advanced features available to users in the Avaya Aura® Branch solution with G-series gateways. Differences in the IP Office solution include:
  - IP Office Branch offers basic survivability for centralized users with limited features in rainy-day. With the Avaya Aura® solution, users get consistent features in normal and survivable modes.
  - IP Office does not support IGAR. This is a Communication Manager feature to send media over the PSTN instead of the WAN when the Session Manager Call Admission Control limit is reached.
  - Calling and basic features possible between centralized users and IP Office users in a Mixed branch, but no group features such as bridging or Call Pickup.
  - No synchronization of provisioned or dynamic data between the central Communication Manager and IP Office, except for centralized user basic configuration fields, such as name, extension, and password, in System Manager.
  - Short service disruption of up to 3 minutes for centralized users after failover occurs.

Chapter 5: Hardware and software components

Hardware components

The Avaya Aura® solution includes supported hardware. This hardware includes servers, gateways, desk telephones, and video devices.

Servers

Avaya software applications are installed on the following supported servers:

- Avaya S8300D and S8300E Servers, embedded servers that reside in G430 and G450 Branch Gateways.
- Standalone servers that come in a 1U configuration:
  - HP ProLiant DL360 G7
  - HP ProLiant DL360p G8
  - HP ProLiant DL360 G9
  - Dell™ PowerEdge™ R610
  - Dell™ PowerEdge™ R620
  - Dell™ PowerEdge™ R630

Gateways

The Avaya Aura® solution uses the following supported gateways:

- Avaya G650 Media Gateway, a traditional gateway that houses TN circuit packs and is used in port networks
- Branch gateways
  - Avaya G430 Branch Gateway: a gateway that provides H.248 connectivity and houses media modules.
  - Avaya G450 Branch Gateway: a gateway that provides H.248 connectivity and houses media modules.
- AudioCodes M3000 Gateway, a high-density SIP trunk gateway that provides SIP connectivity to Communication Manager and Session Manager.

Circuit packs and media modules

Communication Manager often uses port networks made up of Avaya G650 Media Gateways that houses TN circuit packs. The following circuit packs support IP connectivity:

- TN2312BP IP Server Interface (IPSI), with Communication Manager on a server provides transport of control (signaling) messages.
- TN799DP Control LAN (C-LAN), provides TCP/IP connectivity over Ethernet or PPP to adjuncts
- TN2302AP IP Media Processor (MedPro), the H.323 audio platform
- TN2501AP voice announcements over LAN (VAL), an integrated announcement circuit pack that uses announcement files in the .wav format
- TN2602AP IP Media Resource 320, provides high-capacity voice over Internet protocol (VoIP) audio access

Communication Manager also uses branch gateways in lieu of or in addition to port networks. The G430 and G450 Branch Gateways house media modules. The following media modules support IP connectivity:

- MM340 E1/T1 data WAN Media Module, provides one WAN access port for the connection of an E1 or T1 data WAN
- MM342 USP data WAN Media Module, provides one USP WAN access port

Note:

Avaya does not sell MM340 and MM342. However, if an existing customer already have the media modules, they can be used in the G430 and G450 Branch Gateways.

For more information on circuit packs and media modules, see *Avaya Aura® Communication Manager Hardware Description and Implementation* (555-245-207).

Telephones, endpoints, and video devices

The Avaya Aura® solution supports the following Avaya and third-party IP (H.323/H.320) and SIP telephones and video devices:

- Avaya IP telephones and devices
  - Avaya IP deskphone series
  - Avaya 1600/9600–series specialty handsets
  - Avaya 4600–series IP telephones
  - Avaya E159 and E169 media stations
  - Avaya IP conference telephones
  - Avaya H100 Video Collaboration device
  - Avaya 2400 and 9400 series DCP devices
  - Avaya 1000–series video devices
  - Avaya Equinox™ for Android, iOS, and Windows
- Third-party telephones and video devices
  - Polycom VSX/HDX endpoints

  - Tandberg MXP endpoint
- Scopia® endpoints
  - Scopia® XT Telepresence
  - Scopia® XT4200, XT5000, and XT7000 Room Systems
  - Scopia® XT Meeting Center Room System
  - Scopia® Control
  - Scopia® XT Executive 240
  - Scopia® Video Gateway for Microsoft Lync

For more information on telephones and video devices, see *Avaya Aura® Communication Manager Hardware Description and Implementation* (555-245-207) and documentation on the individual telephones and video devices.

Software components

The Avaya Aura® solution consists of several Avaya software applications in addition to the core components. The following products are part of the Avaya Aura® solution:

- Avaya Session Border Controller for Enterprise
- Avaya Aura® Conferencing
- Avaya Communication Server 1000
- Avaya Video Conferencing Manager

Avaya Aura® supports several software mobility endpoints including:

- Extension to Cellular (EC500)
- Avaya Equinox™

Avaya Aura® core also supports third-party applications such as:

- Polycom CMA
- Polycom VBP-E
- Polycom HDX 6000, 7000, and 8000 Series Room Telepresence Solutions
- Polycom RMX 1000
- Polycom RMX 1500
- Polycom RMX 2000
- Polycom RMX 4000
- Polycom VVX1500
- Polycom Gatekeepers

For more information, see *Avaya Aura® Communication Manager Hardware Description and Reference*, 555-245-207.

Chapter 6: Avaya Aura® applications upgrades

For information about upgrading Avaya Aura® applications and supported upgrade paths, see *Upgrading and Migrating Avaya Aura® applications from System Manager* and product specific documentation on Avaya Support website.

Chapter 7: Resources

Documentation

Document number	Title	Use this document to:	Audience
Overview			
555-245-207	*Avaya Aura® Communication Manager Hardware Description and Reference*, 555-245-207	Learn about the hardware components that Communication Manager supports.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
03-603978	*Avaya Aura® Solution Design Considerations and Guidelines*	Understand the Avaya Aura® solution, IP and SIP telephony product deployment, and network requirements for integrating IP and SIP telephony products with an IP network.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
03-300468	*Avaya Aura® Communication Manager Overview and Specification*	Understand the characteristics and capabilities of the product, including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.
—	*Avaya Aura® Session Manager Overview and Specification*	Understand the characteristics and capabilities of the product, including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.

Table continues…

Document number	Title	Use this document to:	Audience
—	*Avaya Aura® System Manager Overview and Specification*	Understand the characteristics and capabilities of the product , including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.
—	*Avaya Aura® Presence Services Overview and Specification*	Understand the characteristics and capabilities of the product, including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.
—	*Avaya Aura® Application Enablement Services Overview and Specification*	Understand the characteristics and capabilities of the product, including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.
—	*Avaya Equinox™ Overview and Specification for Android, iOS, Mac, and Windows*	Understand the characteristics and capabilities of the product, including product feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Anyone who wants to gain a high-level understanding of the product feature, functions, capacities, and limitations.
Implementing			
—	Upgrading Avaya Aura® applications to Release 7.0	Describes the procedures and checklists for upgrading Avaya Aura® applications to Release 7.0	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
—	Deploying Avaya Aura® applications	Describes the procedures for installation, configuration, initial administration, and basic maintenance checklist and procedures for deploying Avaya	Solution Architects, Implementation Engineers, Sales Engineers,

Table continues…

Document number	Title	Use this document to:	Audience
		Aura® applications in Virtualized Environment by using Avaya Aura® System Manager Solution Deployment Manager.	Support Personnel
—	*Avaya Aura® Presence Services Snap-in Reference*	Describes the steps to deploy and configure Presence Services Release 7.0.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
	Deploying Avaya Aura® Presence Services	Install, configure, and upgrade Presence Services.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
	Implementing Avaya Aura® Application Enablement Services in a Software-Only Environment	Install, configure, and upgrade Application Enablement Services.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
	Avaya Aura® Virtualized Environment Solution Description	Understand the Avaya Aura® Virtualized Environment solution and its verified configurations.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
Using			
555-233-504	*Administering Network Connectivity on Avaya Aura® Communication Manager*, 555-233-504	Administer the network components of Communication Manager.	Solution Architects, Implementation Engineers, Sales Engineers, Support Personnel
03-300509	*Administering Avaya Aura® Communication Manager*, 03-300509	Administer Communication Manager components, such as trunks, signaling groups, and dial plans. Set up telephony features, such as	Solution Architects, Implementation Engineers, Sales Engineers,

Table continues…

Document number	Title	Use this document to:	Audience
		conferencing, transfer, and messaging.	Support Personnel

Finding documents on the Avaya Support website

Procedure

1. Navigate to http://support.avaya.com/.
2. At the top of the screen, type your username and password and click **Login**.
3. Click **Support by Product** > **Documents**.
4. In **Enter your Product Here**, type the product name and then select the product from the list.
5. In **Choose Release**, select an appropriate release number.
6. In the **Content Type** filter, click a document type, or click **Select All** to see a list of all available documents.

   For example, for user guides, click **User Guides** in the **Content Type** filter. The list displays the documents only from the selected category.
7. Click **Enter**.

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
Avaya Aura® core implementation	
1A00234E	Avaya Aura® Fundamental Technology
4U00040E	Avaya Aura® Session Manager and System Manager Implementation
4U00030E	Avaya Aura® Communication Manager and Communication Manager Messaging Implementation
10U00030E	Avaya Aura® Application Enablement Services Implementation
8U00170E	Avaya Aura® Presence Services Implement and Support
AVA00838H00	Avaya Aura® Media Server and Media Gateways Implementation Workshop

Table continues…

Course code	Course title
ATC00838VEN	Avaya Aura® Media Server and Gateways Implementation Workshop Labs
Avaya Aura® core support	
5U00050E	Session Manager and System Manager Support
5U00060E	ACSS - Avaya Aura® Communication Manager and CM Messaging Support
4U00115I 4U00115V	Avaya Aura® Communication Manager Implementation Upgrade (R5.x to R6.x)
1A00236E	Avaya Aura® Session Manager and System Manager Fundamentals
2008W	What is New in Avaya Aura® Application Enablement Services 7.0
2008T	What is New in Avaya Aura® Application Enablement Services 7.0 Online Test
2009W	What is New in Avaya Aura® Communication Manager 7
2009T	What is New in Avaya Aura® Communication Manager 7.0 Online Test
2010W	What is New in Avaya Aura® Presence Services 7.0
2010T	What is New in Avaya Aura® Presence Services 7.0 Online Test
2011W	What is New in Avaya Aura® Session Manager and Avaya Aura® System Manager 7.0
2011T	What is New in Avaya Aura® Session Manager and Avaya Aura® System Manager 7.0 Online Test
2013V	Avaya Aura® 7 Administration
Avaya Aura® core administration and maintenance	
9U00160E	Avaya Aura® Session Manager for System Administrators
1A00236E	Avaya Aura® Session Manager and Avaya Aura® System Manager Fundamentals
5U00051E	Avaya Aura® Communication Manager Administration
5M00050A	Avaya Aura® Communication Manager Messaging Embedded Administration, Maintenance & Troubleshooting
2012V	Migrating and Upgrading to Avaya Aura® 7.0
2012I	Migrating and Upgrading to Avaya Aura® 7
2017	Avaya Aura® 7 Administration Delta
2017V	Avaya Aura® 7 Administration Delta

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.

Related links

Using the Avaya InSite Knowledge Base on page 60

Using the Avaya InSite Knowledge Base

The Avaya InSite Knowledge Base is a web-based search engine that provides:

- Up-to-date troubleshooting procedures and technical tips
- Information about service packs
- Access to customer and technical documentation
- Information about training and certification programs
- Links to other pertinent information

If you are an authorized Avaya Partner or a current Avaya customer with a support contract, you can access the Knowledge Base without extra cost. You must have a login account and a valid Sold-To number.

Use the Avaya InSite Knowledge Base for any potential solutions to problems.

1. Go to http://www.avaya.com/support.
2. Log on to the Avaya website with a valid Avaya user ID and password.

   The system displays the Avaya Support page.
3. Click **Support by Product** > **Product Specific Support**.
4. In **Enter Product Name**, enter the product, and press `Enter`.
5. Select the product from the list, and select a release.
6. Click the **Technical Solutions** tab to see articles.
7. Select relevant articles.

Related links

Support on page 60

Glossary

Application Enablement Services (AES)	A set of enhanced telephony APIs, protocols, and web services that are available to developers. These capabilities support access to the powerful call processing, media, and administrative features available in Communication Manager.
Call Detail Recording	A feature of some telephone systems that allows the system to collect and record information on outgoing and incoming telephone calls and send this information to a printer or a Call Detail Recording Utility (CDRU).
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.
E1	A European standard for digital transmission service that carries traffic at a rate of 2.048 MBps.
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.
PLDS	PLDS is an online web-based tool for managing license entitlements and electronic delivery of software and related license files.
Presence server	Presence server collects presence information from various sources, such as Application Enablement Services (AES), Microsoft Office™ Communicator Server (OCS), and eXtensible Messaging and Presence Protocol (XMPP) Server for presentities retrieved from User Data Store and distributes the presence of a given class, such as phone and enterprise IM users.
Presence Services	Presence Services is a single point of presence collection. It supports presence information gathering from a diverse range of sources. This information is aggregated on a per user basis, and then made available to presence aware applications.
Session Border Controller	A Session Border Controller (SBC) is a network equipment that controls real-time session traffic between networks. SBCs facilitate the transmission of real-time session traffic outside a NAT device or firewall boundaries.

	SBCs secure voice and video communications, presence information, and instant messaging. SBCs also safeguard SIP signaling elements against threats and data overload.
Session Manager	An enterprise SIP proxy registrar and router that is the core component within the Avaya Aura® solution.
System Manager	A common management framework for Avaya Aura® that provides centralized management functions for provisioning and administration to reduce management complexity. System Manager can also function as a self-signed Root Certificate Authority (CA) or as an intermediate CA. System Manager enables the Simple Certificate Enrollment Protocol (SCEP) application to sign certificates for Avaya deskphones.
vCenter Server	An administrative interface from VMware for the entire virtual infrastructure or data center, including VMs, ESXi hosts, deployment profiles, distributed virtual networking, and hardware monitoring.
virtual appliance	A virtual appliance is a single software application bundled with an operating 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.
vSphere Client	The vSphere Client is a downloadable interface for administering vCenter Server and ESXi.

Index