Avaya Aura® Communication Manager Overview and Specification

Release 7.0.1
03-604233
Issue 2
May 2016

© 2016, Avaya, Inc.
All Rights Reserved.

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 type(s)

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 and Avaya Aura® are registered trademarks 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 7
Purpose 7
Document changes since last issue 7
Warranty 7
Chapter 2: Communication Manager overview 8
New in this release 9
Multi-country tone support through Avaya Aura® Media Server (MS) 9
Increased capacity for TLS user 9
Commercialization of TLS 9
MLPP support for Precedence Calling to SIP endpoints 9
Support for Opus codecs 9
Opus Codec for Inter-Gateway calls 10
Hunt Group Busy Position Button 10
Streaming Music On Hold from an external source 10
Enhanced interaction between Coverage Answer Group and Call Pickup Group 10
Avaya Aura® Virtualized Appliance overview 11
Avaya Aura® Virtualized offers 11
Avaya Virtualized Appliance overview 11
Appliance Virtualization Platform overview 12
Avaya Aura® Virtualized Environment overview 13
Avaya Pod Fx for Enterprise Communications 13
Avaya Aura® virtualized software 14
Solution Deployment Manager 15
Solution Deployment Manager overview 15
Capability comparison between System Manager Solution Deployment Manager and the Solution Deployment Manager client 17
Solution Deployment Manager client 17
Solution Deployment Manager 19
Chapter 3: Interoperability 22
Product compatibility 22
Communication Manager OVA and server compatibility 22
Operating system compatibility 23
Supported endpoints 23
Chapter 4: Licensing requirements 25
Virtual appliance licensing on VMware 25
Centralized Licensing 26
Chapter 5: Performance specification 27
Capacity and scalability specification 27
Traffic specification 27

Survivability specification 28
Dial plan specification 28
Call Admission Control specification 29
Chapter 6: Security specification 30
Communication Manager security, privacy, and safety 30
Supported encryption algorithm 31
Key exchange details 31
Port utilization 32
Chapter 7: Virtualization specification 33
Chapter 8: Resources 34
Documentation 34
Finding documents on the Avaya Support website 36
Viewing Avaya Mentor videos 37
Training 37
Support 38
Glossary 39

Chapter 1: Introduction

Purpose

This document describes tested product characteristics and capabilities, including product overview and feature descriptions, interoperability, performance specifications, security, and licensing requirements.

This document is intended for anyone who wants to gain a high-level understanding of the product features, functionality, capacities, and limitations within the context of solutions and verified reference configurations.

Document changes since last issue

The following changes have been made to this document since the last issue:

- Added the “New in this release” section.
- Added support for Dell™ PowerEdge™ R630 and HP ProLiant DL360 G9 common servers.
- Added support for “VMware ESXi 6.0 version”.
- Updated the “Communication Manager OVA and server compatibility” section.

Warranty

Avaya provides a 90-day limited warranty on Communication Manager. To understand the terms of the limited warranty, see the sales agreement or other applicable documentation. In addition, the standard warranty of Avaya and the details regarding support for Communication Manager in the warranty period is available on the Avaya Support website at http://support.avaya.com/ under **Help & Policies** > **Policies & Legal** > **Warranty & Product Lifecycle**. See also **Help & Policies** > **Policies & Legal** > **License Terms**.

Chapter 2: Communication Manager overview

Avaya Aura® Communication Manager is the open, highly-reliable and extensible IP Telephony foundation on which Avaya delivers intelligent communications to large and small enterprises. Communication Manager effectively scales from less than 100 users up to 36,000 users on a single system.

Communication Manager is an important component of the Avaya Aura® architecture, which consolidates several components into a holistic package that enterprises need for Unified Communications. Communication Manager software is part of all the Avaya Aura® editions. This software is available with a single-user licensing fee.

Communication Manager provides centralized call control for a distributed network of gateways and a wide range of analog, digital, and IP-based communication devices. Communication Manager comes with several built-in mobility applications, call center features, advanced conference calling, and E911 capabilities.

With support for SIP, H.323, and other industry-standard communications protocols, Communication Manager provides centralized voice mail and attendant operations to organizations and call centers, across multiple locations.

Communication Manager can be configured as an evolution server or a feature server. Communication Manager configured as an evolution server uses the full-call model to provide Communication Manager features to SIP and non-SIP endpoints. As a feature server, Communication Manager only supports SIP endpoints registered to Avaya Aura® Session Manager. Communication Manager configured as a feature server uses the IP Multimedia Subsystem (IMS) half-call model for full application sequencing.

New in this release

Multi-country tone support through Avaya Aura® Media Server (MS)

Avaya Aura® Media Server (MS), as a VoIP resource can provide tones as per user location. However, if more than one users are involved in a call from different locations, the system uses the Avaya Aura® MS native location that is configured on the SIP signaling group page.

Increased capacity for TLS user

Communication Manager Release 7.0.1 supports 18000 H.323 users when TLS mode is enabled.

Note:

TLS session should be configured to operate in TTS-TLS mode. This is accomplished by going to the **IP Network Region** form and going to the **H.323 Profile** and entering the value of **H323TLS**.

Commercialization of TLS

With Communication Manager Release 7.0.1, you can use TLS with or without enabling the FIPS mode.

MLPP support for Precedence Calling to SIP endpoints

With Communication Manager Release 7.0.1, the MLPP feature now includes dialing precedence calls to 17 SIP endpoints. However SIP endpoints cannot initiate Priority or above precedence calls. SIP endpoints can initiate Routine level calls though.

Support for Opus codecs

Communication Manager Release 7.0.1 supports Opus codec for SIP calls. Following Opus-codec sets are supported in the current release:

- OPUS-NB12K
- OPUS-NB16K
- OPUS-WB20K
- OPUS-SWB24K

Opus Codec for Inter-Gateway calls

The calls involving media gateways and media servers now supports Opus codec, an open source audio-codec. This feature is limited to inter-gateway and inter-media server calls where the media resource of each gateway or media-server is used to connect the call between the two gateways or media-servers.

Hunt Group Busy Position Button

The **Hunt Group Busy position (hntpos-bsy)** button facilitates non-ACD hunt group users to voluntarily opt-in or opt-out of hunt group calls. Currently, similar behavior can be achieved by **aux-work** button only on H.323 endpoints. Aux-work works with both ACD and non-ACD hunt. This new button is implemented for 96x1 SIP endpoints.

Streaming Music On Hold from an external source

Communication Manager can be configured to source music from Avaya Aura® Media Server (MS). The Avaya Aura® Media Server (MS) is associated with external or remote servers and hosts media files using the new **Live Streaming Audio** feature. The external source can be an Internet source or a central server the announcement files are stored.

Enhanced interaction between Coverage Answer Group and Call Pickup Group

With Communication Manager Release 7.0.1, a new **Call Pickup for call to Coverage Answer Group** field is introduced. When the default value of this field is set to n and a call rings at a Coverage Answer Group member, Communication Manager does not trigger call pickup alerting if the Coverage Answer Group member is part of a Call Pickup group. This is applicable for the H.323, DCP, Analog, and SIP endpoints.

Avaya Aura® Virtualized Appliance overview

Avaya Aura® Virtualized offers

Starting with Release 7.0, Avaya Aura® 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, provides 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 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.

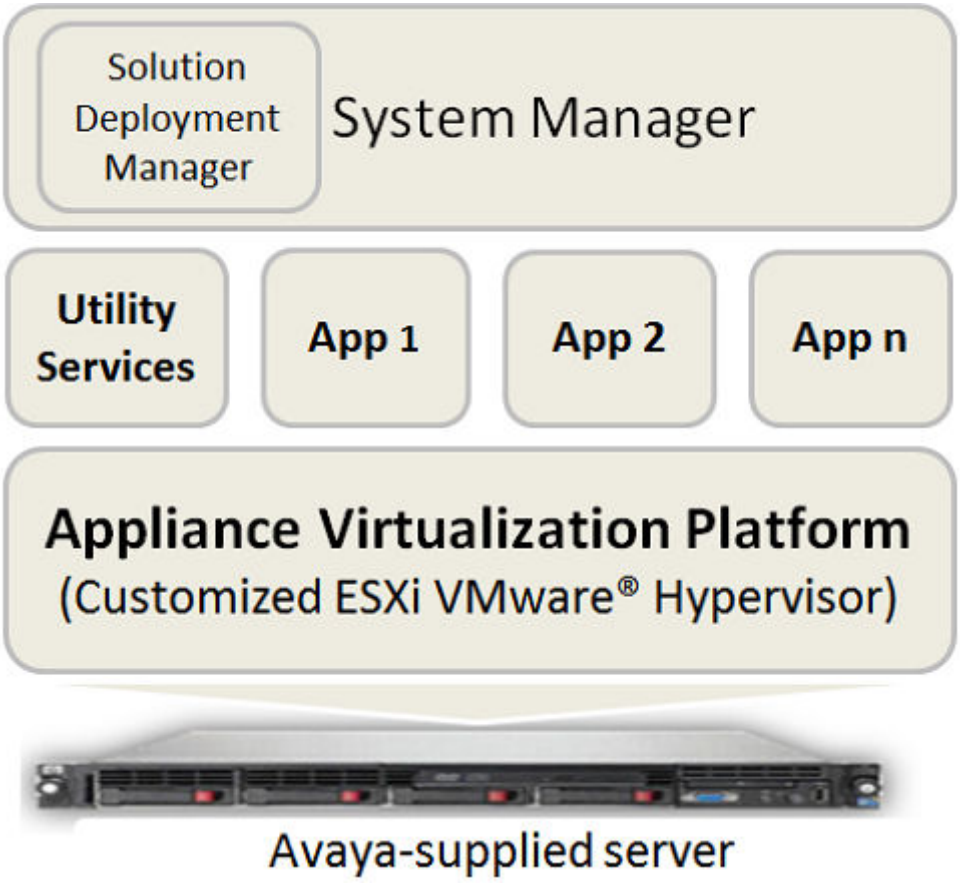
Appliance Virtualization Platform overview

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, HP ProLiant DL360 G7, HP ProLiant DL360p G8, Dell™ PowerEdge™ R630, and HP ProLiant DL360 G9
- S8300D and S8300E

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 Release 7.0, Appliance Virtualization Platform replaces System Platform.

Avaya Aura® Release 7.0.1 supports the following applications on Appliance Virtualization Platform:

- Utility Services 7.0.1
- System Manager 7.0.1
- Session Manager 7.0.1

- Branch Session Manager 7.0.1
- Communication Manager 7.0.1
- Application Enablement Services 7.0.1
- WebLM 7.0.1
- Avaya Breeze™ 3.1.1
- SAL 2.5
- Communication Manager Messaging 7.0
- Avaya Aura® Media Server 7.7.0.292 (SP3)
- Avaya Scopia® 8.3.5
- 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.

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.
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® virtualized software

Software delivery

The software is delivered as one or more pre-packaged Open Virtualization Appliance (OVA) files that are posted on the Avaya Product Licensing and Download System (PLDS) and the Avaya support site. Each OVA contains the following components:

- The application software and operating system.
- Preinstalled VMware tools.
- Preset configuration details for:
  - RAM and CPU reservations and storage requirements
  - Network Interface Card (NIC)

Note:

The customer provides the servers and the VMware® infrastructure, that includes VMware® licenses.

Patches and upgrades

A minimum patch level can be required for each supported application. For more information about the application patch requirements, see the compatibility matrix tool at http://support.avaya.com/CompatibilityMatrix/Index.aspx.

Important:

Do not upgrade the VMware tools software that is packaged with each OVA unless Avaya instructs you to upgrade. The supplied version is the supported release and has been thoroughly tested.

Performance and capacities

The OVA template is built with configuration values which optimize performance and follow recommended Best Practices.

Caution:

Modifying configuration values might have a direct impact on the performance, capacity, and stability of the virtual machine. Customer must understand the aforementioned impacts when changing configuration values. Avaya Global Support Services (GSS) might not be able to assist in fully resolving a problem if the virtual hardware or resource allocation has been changed to unsupported values for a virtual application. Avaya GSS could require the customer to reset the values to the optimized values before starting to investigate the issue.

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® 7.0 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.

Note:

In Release 7.0.1, Solution Deployment Manager does not support migration of Virtualized Environment-based 6.x applications to Release 7.0.1 in customer Virtualized Environment. Use vSphere Client to migrate to customer Virtualized Environment.

Release 7.0 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® 7.0 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, 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*.

Capability comparison between System Manager Solution Deployment Manager and the Solution Deployment Manager client

Centralized Solution Deployment Manager	Solution Deployment Manager client
Manage virtual machine lifecycle	Manage virtual machine lifecycle
Deploy Avaya Aura® applications	Deploy Avaya Aura® applications
Deploy hypervisor patches only for Appliance Virtualization Platform	Deploy hypervisor patches only for Appliance Virtualization Platform
Upgrade Avaya Aura® applications Release 7.x supports upgrades from Linux-based or System Platform-based to Virtualized Environment or Appliance Virtualization Platform. Release 7.0.1 does not support Virtualized Environment to Virtualized Environment upgrades.	Upgrade System Platform-based System Manager
Install software patches for Avaya Aura® applications excluding System Manager application	Install System Manager patches
Discover Avaya Aura® applications	Deploy System Manager
Analyze Avaya Aura® applications	-
Create and use the software library	-

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 computer or web browser.

The Solution Deployment Manager client runs on Windows 7.0 and Windows 8, 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.
- Install System Manager software patches, service packs, and feature packs.
- 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.

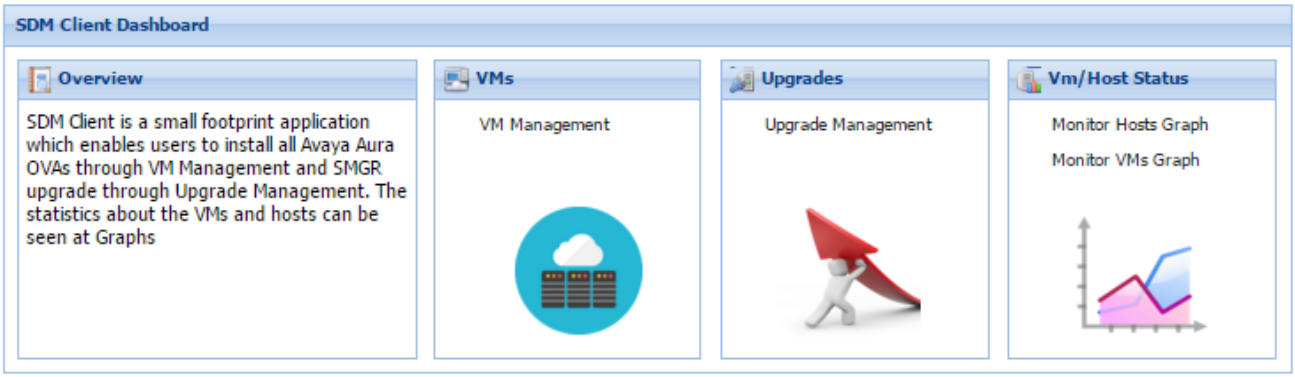


Figure 1: Solution Deployment Manager client dashboard

Solution Deployment Manager client capabilities

The Solution Deployment Manager client provides the following capabilities and functionality:

- Runs on the technician computer on the following operating systems:
  - Windows 7, 64-bit Professional or Enterprise
  - Windows 8.1, 64-bit Professional or Enterprise
- Supports the same web browsers as System Manager Release 7.0.1.
- Provides the user interface with similar look and feel as the central Solution Deployment Manager in System Manager Release 7.0.1.
- Supports deploying the System Manager OVA. The Solution Deployment Manager client is the only option to deploy System Manager.
- Supports Flexible footprint feature. The size of the virtual resources depends on the capacity requirements of the Avaya Aura® applications.
- Defines the physical location, Appliance Virtualization Platform or ESXi host, and discovers virtual machines that are required for application deployments and virtual machine life cycle management.
- Manages lifecycle of the OVA applications that are deployed on the ESXi host. The lifecycle includes start, stop, reset virtual machines, and establishing trust for virtual machines.
- Deploys the Avaya Aura® applications that can be deployed from the central Solution Deployment Manager for Avaya Aura® Virtualized Appliance and customer Virtualized Environment. You can deploy one application at a time.
- Configures application and networking parameters required for application deployments.

- Supports the local computer or an HTTP URL to select the application OVA file for deployment. You do not need access to PLDS.
- Supports changing the hypervisor IP address on Appliance Virtualization Platform.
- Supports installing patches for the hypervisor on Appliance Virtualization Platform.
- Supports installing software patches, service packs, and feature packs only for System Manager.

  Avaya Aura® applications must use centralized Solution Deployment Manager from System Manager to install software patches, service packs, and feature packs.

Solution Deployment Manager

The Solution Deployment Manager capability simplifies and automates the deployment and upgrade process.

With Solution Deployment Manager, you can deploy the following Avaya Aura® applications in Release 7.0.1:

- Utility Services 7.0.1
- System Manager 7.0.1
- Session Manager 7.0.1
- Branch Session Manager 7.0.1
- Communication Manager 7.0.1
- Application Enablement Services 7.0.1
- WebLM 7.0.1
- Avaya Breeze™ 3.1.1
- SAL 2.5
- Communication Manager Messaging 7.0
- Avaya Aura® Media Server 7.7.0.292 (SP3)
- Avaya Scopia® 8.3.5
- 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:

You must deploy the Release 7.0 OVA, and then install the Release 7.0.1 file on the Avaya Aura® Release 7.0 application.

With Solution Deployment Manager, you can migrate, upgrade, and update the following applications:

- Linux-based Communication Manager 5.x and the associated devices, such as Gateways, TN boards, and media modules.

  Note:

  In bare metal Linux-based deployments, the applications are directly installed on the server and not as a virtual machine.

- Linux-based Session Manager 6.x
- System Platform-based Communication Manager
  - Duplex CM Main / Survivable Core with Communication Manager
  - Simplex CM Main / Survivable Core with Communication Manager, Communication Manager Messaging, and Utility Services
  - Simplex Survivable Remote with Communication Manager, Branch Session Manager, and Utility Services
  - Embedded CM Main with Communication Manager, Communication Manager Messaging, and Utility Services
  - Embedded Survivable Remote with Communication Manager, Branch Session Manager, and Utility Services
- System Platform-based Branch Session Manager
  - Simplex Survivable Remote with Communication Manager, Branch Session Manager, and Utility Services
  - Embedded Survivable Remote with Communication Manager, Branch Session Manager, and Utility Services

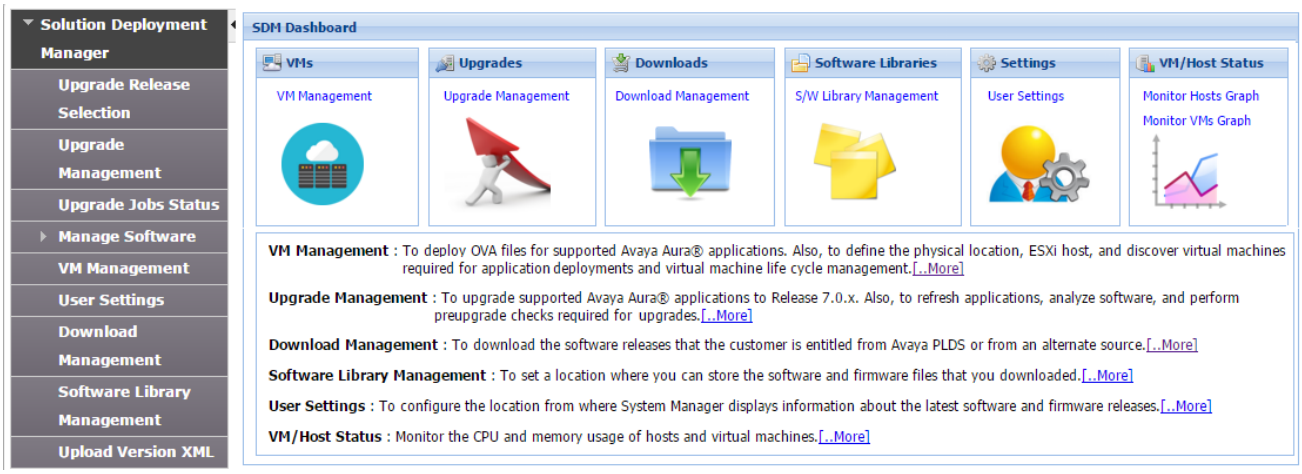
Note:

However, you must manually migrate Services virtual machine that is part of the template.

The centralized deployment and upgrade process provide better support to customers who want to upgrade their systems to Avaya Aura® Release 7.0.1. The process reduces the upgrade time and error rate.

Solution Deployment Manager dashboard

You can gain access to the Solution Deployment Manager dashboard from the System Manager web console or by installing the Solution Deployment Manager client.



Solution Deployment Manager capabilities

With Solution Deployment Manager, you can perform deployment and upgrade-related tasks by using the following links:

- **Upgrade Release Setting**: To select **Release 7.0** or **6.3.8** as the target upgrade. Release 7.0.1 is the default upgrade target.
- **Manage Software**: To upgrade IP Office.
- **VM Management**: To deploy OVA files for the supported Avaya Aura® application.
- **Upgrade Management**: To upgrade Communication Manager that includes TN boards, media gateways and media modules, Session Manager, Communication Manager Messaging, Utility Services, Branch Session Manager to Release 7.0.1.
- **User Settings**: To configure the location from where System Manager displays information about the latest software and firmware releases.
- **Download Management**: To download the OVA files and firmware to which the customer is entitled. The download source can be the Avaya PLDS or an alternate source.
- **Software Library Management**: To configure the local or remote software library for storing the downloaded software and firmware files.
- **Upload Version XML**: To save the `version.xml` file to System Manager. You require the `version.xml` file to perform upgrades.

Chapter 3: Interoperability

Product compatibility

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

Communication Manager OVA and server compatibility

Communication Manager is an OVA that can be deployed on Appliance Virtualization Platform. The Communication Manager OVA has all the features that Communication Manager supports, whether the OVA is on a duplicated server or a branch server.

The following table provides the information about servers compatible with each OVA.

OVA type	Server configuration	Supported server
Simplex	• Main • Survivable Core • Survivable Remote	• S8300D • S8300E • Dell™ PowerEdge™ R610 • Dell™ PowerEdge™ R620 • Dell™ PowerEdge™ R630 • HP ProLiant DL360 G7 • HP ProLiant DL360 G9
Duplex	• Main • Survivable Core	• Dell™ PowerEdge™ R610 • Dell™ PowerEdge™ R620 • Dell™ PowerEdge™ R630 • HP ProLiant DL360 G7 • HP ProLiant DL360 G9

For information about capacities, see *Avaya Aura® Communication Manager System Capacities Table*, 03-300511.

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

The S8300E server is based on a 2.0 GHz, dual core Intel Ivy Bridge processor. The S8300E server is supported in the G430 Branch Gateway and G450 Media Gateway. The S8300E server supports Appliance Virtualization Platform and Communication Manager Release 6.3.8 and later. The S8300E server is certified by VMware as VMware Ready.

Operating system compatibility

The following table provides information about the operating system versions compatible with the various releases of Communication Manager.

Communication Manager release	Linux version	Kernel version
7.0	Linux® Operating System 6.5	2.6.32-504.8.1.el6.AV3
6.3	Linux® Operating System 5.8	2.6.18-348.AV04
6.2	Linux® Operating System 5.3	2.6.18-238.AV02 XEN
6.0.1	Linux® Operating System 5.3	2.6.18-128.AV14 XEN
6.0	Linux® Operating System 5.3	2.6.18-128.AV11 XEN
5.2.1	Linux® Operating System 4.0	2.6.18-128.AV07 PAE

Note:

Communication Manager uses a modified version of Linux® Operating System.

Supported endpoints

Avaya Aura® Communication Manager supports the following analog, digital and IP-based communication devices:

- Avaya IP deskphones
- Avaya one-X® IP Telephones
- Avaya 4600-Series IP Telephones
- Avaya digital deskphones and telephones
- Avaya Callmaster telephone
- Avaya DECT Handsets
- Avaya IP wireless telephones
- Avaya Attendant Console
- Avaya analog telephones
- Avaya IP conference phones
- 96x1 H.323 and 96x1 SIP Deskphones

For a complete list of supported devices, see *Avaya Aura® Communication Manager Hardware Description and Reference*, 555-245-207.

Chapter 4: Licensing requirements

To use the Communication Manager software, you require a valid Communication Manager license file. Without a valid license file, Communication Manager enters the License Error mode, with a 30-day grace period. If the grace period expires before a valid license file is installed, Communication Manager enters the License Restricted mode. In this mode, you cannot save any administrative changes to Communication Manager.

Communication Manager Release 6.x and later uses the Avaya PLDS or Product Licensing and Delivery System to manage license entitlements and generate license files. The license file contains information regarding the product, major release, license features, and capacities. Avaya PLDS provides the ability to move licenses between Communication Manager servers if the support offer and the move policy are followed.

Starting from Release 6.2, Communication Manager uses the Service Pack and Dot Release Guardian technology to protect and control the authorized use of service packs and dot releases. Using this technology, Communication Manager inserts the Support End Date (SED) in the license file and compares it with the publication date of the service pack or the dot release, thus, preventing the use of a service pack or a dot release that has a publication date after the SED.

Related links

Virtual appliance licensing on VMware on page 25

Virtual appliance licensing on VMware

Each Communication Manager software that is deployed on the VMware platform uses a single instance of WebLM license server to host the license file. The WebLM instance located within System Manager is the first and the preferred WebLM instance.

In a network of multiple Communication Manager systems, each Communication Manager server or Communication Manager software-duplication pair requires a separate license file. Using the Centralized Licensing feature, install the Communication Manager or Communication Manager software-duplication pair license files on System Manager WebLM. You can also install the Communication Manager license files on the standalone WebLM virtual appliance (per Communication Manager/Communication Manager software-duplication pair).

Related links

Licensing requirements on page 25
Centralized Licensing on page 26

Centralized Licensing

The Centralized Licensing feature is available for most Avaya products. For example, Avaya Aura® Communication Manager. Using the Centralized Licensing feature, you can install up to 600 license files for Communication Manager on a single System Manager WebLM server. After installing a license file for a Communication Manager main server either simplex or duplex pair, you must link the Communication Manager main server to the license file in WebLM.

The Centralized Licensing feature provides the following advantages:

- Eliminates the need to install and configure multiple WebLM servers, one for each Communication Manager main server.
- Eliminates the need to log in to each WebLM server to manage licenses for each Communication Manager main server.
- Reduces the VMware licensing cost for installing and configuring multiple WebLM OVAs on VMware.
- Provides a centralized view of license usage for Communication Manager.

Note:

- The standalone or non-System Manager WebLM server does not support the Centralized Licensing feature.
- The Centralized Licensing feature is optional. Use the Centralized Licensing feature when you have more than one Communication Manager server.

For System Manager and Communication Manager centralized licensing backward compatibility, see http://support.avaya.com/CompatibilityMatrix/Index.aspx.

Related links

Virtual appliance licensing on VMware on page 25

Chapter 5: Performance specification

Capacity and scalability specification

For information about system capacities, see *Avaya Aura® Communication Manager System Capacities Table*, 03-300511.

Traffic specification

In Communication Manager, the processor occupancy or the server occupancy consists of:

- Static occupancy
- Call processing occupancy
- System management occupancy

Due to the fluctuating nature of system management functions, a fixed portion of the total processing capacity is assigned to system management. For all Communication Manager servers, 27% of the total processing capacity of the system is allocated to system management. If the total processor occupancy exceeds approximately 92%, all system management operations are delayed, and subsequent call attempts are rejected.

Considerations:

To ensure that the proposed solution design manages the anticipated traffic load, the Avaya Sales Factory team determines the Communication Manager CPU occupancy. Some of the considerations for calculating the traffic usage are:

- Busy Hour Call Completion (BHCC) for inbound calls.
- Call vectoring, especially for announcements that Communication Manager plays for calls in queue.
- The number of simultaneous active SIP trunks. The active SIP trunks that support calls that are in a queue have a greater impact on the Communication Manager CPU occupancy than the number of active SIP trunks that support calls being handled by agents.
- The Communication Manager release, CPU clock speed, and server duplication mode.
- Computer Telephony Integration (CTI) operations, such as monitoring, adjunct routing, and third-party call control.
- Intelligent Customer Routing (ICR) and Best Service Routing (BSR) operations.

For more information about traffic engineering and specifications, see *Avaya Aura® Communication Manager Solution Design Considerations and Guidelines*, 03-603978.

Survivability specification

Communication Manager supports two survivability options: survivable core and survivable remote.

Survivable core server

With survivable core servers, the system continues to operate in the events of network outage. A survivable core server provides survivability support to IP port networks and to Processor Ethernet for registering gateways and IP endpoints. This survivability option is available only for Communication Manager.

Survivable remote server

Survivable remote servers provide enhanced redundancy for branch gateways operating within networks. Survivable remote servers take over segments that loose connection from their primary call server and provide those segments with Communication Manager operation until the outage is resolved. A survivable remote server provides survivability support to IP and SIP telephones and to branch gateways when the connection to the core server fails. This survivability option is available for both, Communication Manager and Session Manager.

For more information about survivability options, see *Avaya Aura® Communication Manager Survivability Options*, 03-603633.

Dial plan specification

The Dial Plan feature supports intra-server dialing for extensions at the main server as well as for extensions at remote locations. To support inter-server dialing, Communication Manager uses the uniform dial plan (UDP) to route a call from the local server. With the Dial Plan feature, you can set extensions of maximum 13 digits. You can further extend the extension length to 18 digits by using uniform dial plans.

To preserve the dial plan for extensions and attendants in a multiple independent node network that is being migrated to a single distributed server, Communication Manager provides the Multi-location Dial Plan feature.

To assign short extensions to different branches and administer the same numbering format across all the branches, you can use the Per-Location Dial Plan feature.

Define the dial plan information for each type of call, including:

- Attendant
- Automatic Alternate Routing (AAR)
- Automatic Route Selection (ARS)
- Dial access codes, including feature access codes (FACs) and trunk access codes (TACs)

- En bloc extensions (enb-ext)
- Extensions
- FACs only
- Prefixed extensions

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

Call Admission Control specification

To protect voice traffic from being negatively affected by other voice traffic and to prevent WAN links from being overloaded, you can set a limit on the bandwidth consumption by using Call Admission Control (CAC) mechanisms. The CAC concept is applicable to voice traffic only, and not data traffic.

In case of data traffic congestion on a particular link in the network, queueing, buffering, or dropping of data packets resolve the congestion. However, for real-time traffic, which is sensitive to both, latency and packet loss, it is better to deny network access under network congestions than to allow data packets to be dropped or delayed. CAC is, therefore, made before a voice call is established. Application of CAC is based on the network resources available to provide suitable QoS for a new call.

The bandwidth limit is applicable to all calls, regardless of the codec of the calls. Therefore, while administering the field for bandwidth consumption limit, ensure that either all calls use the same codec or that you have set a manual limit after considering the highest possible bandwidth consumed by the specified inter-region codec set.

Note:

If SRTP media encryption is used for SIP and H.323 calls, adjust CAC for the additional bandwidth consumption imposed by the authentication process. SRTP authentication adds up to 4 (HMAC32) or 10 (HMAC80) bytes to each packet.

Chapter 6: Security specification

Communication Manager security, privacy, and safety

Communication Manager provides security features for detecting probable breaches, taking measures to protect the system, and tracking and notifying activities. Communication Manager also provides real-time media encryption for environments where enhanced voice privacy over a LAN/WAN is required.

Communication Manager supports:

- Industry Standard STRP for authentication and media encryption
- Real Time Media and Signaling Encryption
- Access Security Gateway
- Malicious Call Tracking
- Toll Fraud protection
- Emergency Calling Services (E911)

The first security layer is the isolation of Communication Manager telephony servers from the rest of the enterprise network to safeguard the servers from viruses, worms, DoS and other attacks. To reduce susceptibility to malicious attacks, Communication Manager uses the minimum number of services and access ports. To secure the voice stream and signaling channels, Communication Manager employs encryption between servers, gateways, and endpoints.

The second security layer incorporates a hardened Linux operating system with inherent security features for Avaya servers with Communication Manager. This operating system provides the functions necessary to protect the core applications from malicious attacks.

Communication Manager and the gateways use encryption as the third layer of Avaya security. This security strategy ensures privacy for the voice stream. Alongside encrypting data, integrated signaling security protects and authenticates messages to all connected gateways and IP telephones, and eliminates tampering with confidential call information.

The Avaya Product Security Support Team (PSST) is responsible for:

- Managing Avaya product vulnerabilities and threats
- Maintaining information posted at http://support.avaya.com/security.
- Performing security testing and auditing of Avaya core products.
- Resolving security-related field problems in support of Avaya Global Services.
- Managing the securityalerts@avaya.com mailbox.

For more information about security design, see *Avaya Aura® Communication Manager Security Design*.

Related links

Supported encryption algorithm on page 31
Key exchange details on page 31

Supported encryption algorithm

The use of AEA and AES is discouraged as these are older Avaya-proprietary-encryption techniques.

Avaya security recommends to use the following types of encryption techniques:

- srtp-aescm128-hmac80
- srtp-aescm128-hmac32
- srtp-aescm256-hmac80
- srtp-aescm256-hmac32
- none (non encrypted call connection).

In all these encryption algorithms, the system dynamically creates encryption keys for each connection. The system creates the encryption keys within the gatekeeper and transmits the keys to the endpoints and the processing boards over secure links. Additionally, the system produces separate keys for the incoming and outgoing streams of each call. For conference calls, the system assigns a unique pair of keys for encrypting the payload of each endpoint, one for the incoming stream and one for the outgoing stream.

Because all the authentication keys are dynamically created and assigned, the system stores these keys only in RAM. These keys are not accessible by administrators or users. RTP keys are not escrowed.

With Communication Manager Release 7.0, SRTCP provides the security-related feature to RTCP.

Related links

Communication Manager security, privacy, and safety on page 30

Key exchange details

Key negotiations are authenticated with 128-bit Diffie-Hellman and fixed symmetric keys for the following:

- IPSI streams are based on AES-128-Cipher Block Chaining
- H.248 streams are based on AES-128-Output FeedBack

When Communication Manager starts or re-configures a data stream, Communication Manager inserts the encryption keys again to decrypt the data streams. The average cycle length for AES and SRTP with AES-128-CBC is reported to be 2^{127}, which is too long to permit a practical attack.Avaya

uses a block size of 128 bits to maximize the average cycle length of transmission. A cycle of any length is invisible unless the transmitted information is identical.

SRTP inherently provides anti-replay and integrity protection because SRTP accepts a packet only once. In addition, packets contain the session key along with the SSRC or the synchronization source that are different for each packet.

Related links

Communication Manager security, privacy, and safety on page 30

Port utilization

For more information about port utilization, see the Communication Manager port matrix on the Avaya Support website at http://www.avaya.com/support.

Chapter 7: Virtualization specification

Communication Manager Release 6.2 and later is available as an open virtual application (OVA) that can be installed on VMware vSphere Release 5.0, 5.1, 5.5, and 6.0. The Communication Manager VMware virtualization environment is available in a vAppliance package, which is ready for deployment on VMware certified hardware.

Note:

Communication Manager Release 6.2 and later does not support VMware vSphere Release 4.1.

Communication Manager on the VMware platform is deployed either as a simplex or as a duplicated Communication Manager software-duplication pair. The Communication Manager Simplex OVA deployment supports VMware high availability.

The Communication Manager virtual machine requires the following set of resources to be available on the ESXi host before deployment. These resources are specified in the Communication Manager OVA.

VMware component	Description
ESXi host	The physical machine that runs the ESXi Hypervisor software.
ESXi hypervisor	A platform to simultaneously run multiple operating systems on the host computer.
vSphere client	The client application installed on a personal computer or accessible through a web interface. It connects to a vCenter server or directly to an ESXi server where vCenter is not used. Supports installation and management of virtual machines.
vCenter	A software to centrally control and monitor each level of the virtual infrastructure. Provides alarms and monitors performance of ESXi hosts and virtual machines.

For more information about deploying Communication Manager on VMware, see *Deploying Avaya Aura® Communication Manager*.

With Communication Manager Release 7.0 and later, you can deploy the Communication Manager OVA on the Avaya-provided servers using the System Manager Solution Deployment Manager or Solution Deployment Manager client.

For information about deploying Communication Manager OVA using Solution Deployment Manager, see *Deploying Avaya Aura® applications from System Manager*.

Chapter 8: Resources

Documentation

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

Title	Description	Audience
Design		
Avaya Aura® Communication Manager Security Design, 03-601973	Describes security-related issues and security features of Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Solution Design Considerations and Guidelines, 03-603978	Describes the Avaya Aura® solution, IP and SIP telephony product deployment, and network requirements for integrating IP and SIP telephony products with an IP network.	Sales Engineers, Solution Architects
Avaya Aura® Communication Manager System Capacities Table, 03-300511	Describes the system capacities for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects
Maintenance and Troubleshooting		
Avaya Aura® Communication Manager Reports, 555-233-505	Describes the reports for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Maintenance Alarms for Avaya Aura® Communication Manager, Branch Gateways Servers, 03-300430	Provides procedures to monitor, test, and maintain an Avaya server or Media Gateway.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Maintenance Commands for Avaya Aura® Communication Manager, Branch Gateways and Servers, 03-300431	Provides information to monitor, test, and maintain hardware components of an Avaya servers or Gateways.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Avaya Aura® Communication Manager Server Alarms, 03-602798	Provides procedures to monitor, test, and maintain an Avaya servers.	Sales Engineers, Solution Architects, Implementation

Table continues…

Title	Description	Audience
		Engineers, Support Personnel
Avaya Aura® Communication Manager Denial Events, 03-602793	Describes the denial events listed on the Events Report form.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Avaya Aura® Toll Fraud and Security Handbook, 555-025-600	Describes the security risks and measures that can help prevent external telecommunications fraud involving Avaya products.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Administration		
Administering Avaya Aura® Communication Manager, 03-300509	Describes the procedures and screens for administering Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Administering Network Connectivity on Avaya Aura® Communication Manager, 555-233-504	Describes the network connectivity for Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Administering Avaya Aura® System Manager for Release 7.0.1	Describes procedures for managing the features that are part of Solution Deployment Manager for Communication Manager.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Implementation and Upgrading		
Deploying Avaya Aura® Communication Manager	Describes the implementation instructions while deploying Communication Manager on VMware.	Implementation Engineers, Support Personnel, Solution Architects
Deploying Avaya Aura® applications from System Manager	Describes the implementation instructions while deploying and configuring Solution Deployment Manager for Communication Manager.	Implementation Engineers, Support Personnel, Solution Architects
Upgrading and Migrating Avaya Aura® applications to Release 7.0.1 from System Manager	Describes the implementation instructions while deploying and configuring Solution Deployment Manager for Communication Manager.	Implementation Engineers, Support Personnel, Solution Architects
Understanding		
Avaya Aura® Communication Manager Feature Description and Implementation, 555-245-205	Describes the features that you can administer using Communication Manager.	Sales Engineers, Solution Architects, Support Personnel

Table continues…

Title	Description	Audience
Avaya Aura® Communication Manager Screen Reference, 03-602878	Describes the screens that you can administer using Communication Manager.	Sales Engineers, Solution Architects, Support Personnel
Avaya Aura® Call Center Elite Overview and Specification	Describes tested product characteristics and capabilities, including product overview and feature descriptions, interoperability, performance specifications, security, and licensing requirements.	Sales Engineers, Solution Architects, Support Personnel
What's New in Avaya Aura® Release 7.0.1, 03-601818	Describes the new features for the current release of Avaya Aura®.	Sales Engineers, Solution Architects, Support Personnel
Avaya Aura® Communication Manager Special Application Features	Describes the special features that are requested by specific customers for their specific requirement.	Sales Engineers, Solution Architects, Avaya Business Partners, Support Personnel

Finding documents on the Avaya Support website

About this task

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

Procedure

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

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

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.

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
Understanding	
1A00234E	Avaya Aura® Fundamental Technology
AVA00383WEN	Avaya Aura® Communication Manager Overview
ATI01672VEN, AVA00832WEN, AVA00832VEN	Avaya Aura® Communication Manager Fundamentals
2007V	What is New in Avaya Aura® 7.0
2009V	What is New in Avaya Aura® Communication Manager 7.0

Table continues…

Course code	Course title
2011V	What is New in Avaya Aura® System Manager & Avaya Aura® Session Manager 7.0
2009T	What is New in Avaya Aura® Communication Manager 7.0 Online Test
2013V	Avaya Aura® 7.0 Solution Management
5U00060E	Knowledge Access: ACSS - Avaya Aura® Communication Manager and CM Messaging Embedded Support (6 months)
Implementation and Upgrading	
4U00030E	Avaya Aura® Communication Manager and CM Messaging Implementation
ATC00838VEN	Avaya Media Servers and Implementation Workshop Labs
AVA00838H00	Avaya Media Servers and Media Gateways Implementation Workshop
ATC00838VEN	Avaya Media Servers and Gateways Implementation Workshop Labs
2012V	Migrating and Upgrading to Avaya Aura® 7.0
Administration	
AVA00279WEN	Communication Manager - Configuring Basic Features
AVA00836H00	Communication Manager Basic Administration
AVA00835WEN	Avaya Communication Manager Trunk and Routing Administration
5U0041I	Avaya Aura® Communication Manager Administration
AVA00833WEN	Avaya Communication Manager - Call Permissions
AVA00834WEN	Avaya Communication Manager - System Features and Administration
5U00051E	Knowledge Access: Avaya Aura® Communication Manager Administration

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.

Glossary

Busy Hour Call Completions	A measure of dynamic traffic calls that can be completed in an average busy hour.
Call Admission Control	A method of limiting voice traffic over a particular link in a network.
Codec	A coder and decoder (Codec) is a device that encodes or decodes a signal.
Communication Manager	A key component of Avaya Aura®. It delivers rich voice and video capabilities and provides a resilient, distributed network for media gateways and analog, digital, and IP-based communication devices. It includes advanced mobility features, built-in conference calling, contact center applications and E911 capabilities.
S8300	A Communication Manager server supporting medium-sized customers.
Session Manager	A SIP routing and integration tool 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.

Index

A

Appliance Virtualization Platform 11
Appliance Virtualization Platform overview 12
Avaya Aura application
    deploy 19
    upgrade 19
Avaya Aura Virtualized Appliance offer 12
Avaya Aura Virtualized Software 14
Avaya courses 37
Avaya virtualization platform 12
Avaya Virtualized offers 11
Avaya Virtualized Software 14

C

CAC 29
Call admission control 29
capabilities
    Solution Deployment Manager client 17, 18
Capacity and scalability
    specification 27
client Solution Deployment Manager 15
Collaboration Pod 13
Commercialization of TLS 9
Communication Manager
    overview 8
Communication Manager virtual appliance licensing 25
customer VMware 13

D

dial plan specification 28
document changes 7
document purpose 7

E

encryption algorithm 31
enhanced interaction
    coverage answer group and call pickup group 10

H

Hunt Group Busy Position Button 10

K

Key exchange details 31

L

legal notice .....
licensing requirements 25

O

offer
    Avaya appliance 11
    Virtualized Environment 11
operating system 23
operating system compatibility 23
Opus Codec for Inter-gateway calls 10
overview 13
    Communication Manager 8

P

port utilization 32
Preemption
    SIP 9
Privacy 30
product compatibility 22
purpose of document 7

R

related documentation 34
RTP encryption 31

S

S8300E 22
Safety 30
SDM client 17
SDM client capabilities 18
Security 30
server compatibility 22
Solution Deployment Manager 15, 19
Solution Deployment Manager client 15, 17
Solution Deployment Manager client capabilities 17, 18
Streaming Music On Hold from an external source 10
Suppor for Opus codec 9
support 38
Supported endpoints 23
survivability 28
survivability specifications 28
System Manager Solution Deployment Manager and client capabilities 17

T

TLS user
Increased capacity 9
traffic specifications 27
training 37

U

upgrade Avaya Aura application 19

V

videos 37
virtual appliance licensing 25
virtualization 33
Virtualized Appliance 11
Virtualized Environment 11, 13
VMware 33
VMware licensing 25

W

Warranty 7
WebLM
centralized licensing 26