AVAYA

Avaya Aura® Contact Center and Avaya Communication Server 1000 Solution Description

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Chapter 1: Introduction

Purpose

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

Intended audience

This document is intended for 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.

Related resources

Avaya Aura® Contact Center Documentation

The following table lists the documents related to Avaya Aura® Contact Center. Download the documents from the Avaya Support website at https://support.avaya.com.

Title	Use this document to:	Audience
Overview		
Avaya Aura® Contact Center Overview and Specification	This document contains technical details you need to set up your Contact Center suite. The document contains the background information you need to plan and engineer your system (server preparation information, routing options, licensing configurations, and hardware configuration). The document also	Customers and sales, services, and support personnel

Title	Use this document to:	Audience
	contains background information you require to install all software components that are part of and work with Contact Center. General information about considerations for upgrading your existing suite of Contact Center is also included. This document contains strategies and requirements to plan your network configuration and prepare your servers for Contact Center software installations.	
Avaya Aura® Contact Center and Avaya Aura® Unified Communications Solution Description	This document describes the solution architecture, suggested topologies, and capacities for the Avaya Aura® Unified Communications platform. This document also describes the features and functional limitations of certain configurations.	Customers and sales, services, and support personnel
Avaya Aura® Contact Center and Avaya Communication Server 1000 Solution Description	This document describes the solution architecture, suggested topologies, and capacities for the Avaya Communication Server 1000 platform. This document also describes the features and functional limitations of certain configurations.	Customers and sales, services, and support personnel
Avaya Aura® Contact Center Documentation Catalog	This document describes available Avaya Aura® Contact Center documentation resources and indicates the type of information in each document.	Customers and sales, services, and support personnel
Avaya Aura® Contact Center Terminology	This document contains definitions for the technical terms specific to Contact Center.	Customers and sales, services, and support personnel
Contact Center Performance Management Data Dictionary	This document contains reference tables that describe the statistics and data in the historical and real-time reports generated in Contact Center.	System administrators and contact center supervisors
Implementing		
Avaya Aura® Contact Center and Avaya Aura® Unified Communications Integration	This document contains information and procedures to integrate the Avaya Aura® Unified Communications platform with Contact Center.	Implementation personnel
Avaya Aura® Contact Center and Avaya Communication Server 1000 Integration	This document contains information and procedures to integrate the Avaya Communication Server 1000 platform with Contact Center.	Implementation personnel

Title	Use this document to:	Audience
Deploying Avaya Aura® Contact Center DVD for Avaya Aura® Unified Communications	This document contains information about Contact Center DVD installation, initial configuration, and verification for the Avaya Aura® Unified Communications platform.	Implementation personnel
Deploying Avaya Aura® Contact Center DVD for Avaya Communication Server 1000	This document contains information about Contact Center DVD installation, initial configuration, and verification for the Avaya Communication Server 1000 platform.	Implementation personnel
Deploying Avaya Aura® Contact Center Software Appliance for Avaya Aura® Unified Communications	This document describes how to deploy the Avaya Aura® Contact Center Software Appliance for the Avaya Aura® Unified Communications platform.	Implementation personnel
Avaya Aura® Contact Center Commissioning for Avaya Aura® Unified Communications	This document contains information for Contact Center preparation, process, initial configuration, and verification of the installation on the Avaya Aura® Unified Communications platform.	Implementation personnel
Avaya Aura® Contact Center Commissioning for Avaya Communication Server 1000	This document contains information for Contact Center preparation, process, initial configuration, and verification of the installation on the Avaya Communication Server 1000 platform.	Implementation personnel
Avaya Aura® Contact Center and Proactive Outreach Manager Integration	This document provides conceptual and procedural information on the integration between Avaya Aura® Contact Center (AACC) and Avaya Proactive Outreach Manager (POM); it describes the tasks required for AACC and POM integration.	Implementation personnel
Upgrading and patching Avaya Aura® Contact Center	This document contains information and procedures to upgrade from previous releases to Contact Center, migrating the databases, and information and procedures to download and install service packs.	Implementation personnel and system administrators
Administering		
Avaya Aura® Contact Center Server Administration	This document contains information and procedures for day-today maintenance of all servers in the Contact Center suite, including server maintenance tasks, administrative tasks, managing data, configuring data routing, performing archives, and backing up data. It also describes the	System administrators

Title	Use this document to:	Audience
	optional configuration procedures for server configuration.	
Avaya Aura® Contact Center Client Administration	This document contains information and procedures to configure the users and user access, skillsets, server management, and configuration data in the Contact Center database.	System administrators and contact center supervisors
Using Contact Center Orchestration Designer	This document contains information and procedures to configure script and flow applications in Contact Center Orchestration Designer.	System administrators
Maintaining		
Maintaining Avaya Aura® Contact Center	This document contains routine maintenance procedures such as installing service packs, and maintaining the databases for the Contact Center system.	System administrators and support personnel
Troubleshooting Avaya Aura® Contact Center	This document contains system-wide troubleshooting information and procedures for Contact Center hardware, software, and network.	System administrators and support personnel
Contact Center Event Codes	This document contains a list of errors in the Contact Center suite and recommendations to resolve them. This document is a Microsoft Excel spreadsheet.	System administrators and support personnel
Using		
Using Avaya Aura® Contact Center Reports and Displays	This document contains procedures to generate performance reports, and to monitor and analyze performance data and performance measurements.	System administrators and contact center supervisors
Using Agent Desktop for Avaya Aura® Contact Center	This document provides information and procedures for agents who use the Agent Desktop application to accept, manage, and close contacts of all media types in Contact Center.	Contact center agents and supervisors
Using the Contact Center Agent Browser application	This document provides information and procedures for agents who use the Agent Browser application to log on to Contact Center and perform basic tasks.	Contact center agents

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**.

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.

Chapter 2: Changes in this release

The following sections describe the new features and changes in Avaya Aura® Contact Center Release 7.0.

Feature changes

New features in the Release 7.0 base build

See the following sections for information about new features in the Release 7.0 base build:

- Contact Center Manager Administration support for Caché database on page 13

New features in Release 7.0 Feature Pack 1

See the following sections for information about new features added by Feature Pack 1:

- Instant Messaging feature supports Microsoft Skype for Business 2015 on page 14

Contact Center Manager Administration support for Caché database

In Contact Center Release 7.0, Contact Center Manager Administration (CCMA) stores information in a Caché database. Contact Center Release 7.0 stores agent, user, statistical, scheduling, and reporting information in Caché databases. This simplifies Contact Center data management, migration, and maintenance. This also simplifies the resiliency configuration processes.

In Contact Center Release 7.0, Contact Center Manager Administration (CCMA) does not store information using Active Directory Lightweight Directory Services (AD-LDS) or Microsoft Access databases.

Instant Messaging feature supports Microsoft Skype for Business 2015

From Release 7.0 Feature Pack 1, the Contact Center Instant Messaging feature integrates with Microsoft Skype for Business 2015. Integration and operation is identical with releases of Microsoft Lync already supported in the Contact Center 7.0 base release.

Other changes

Changes in the Release 7.0 base build

See the following sections for information about other changes in the Release 7.0 base build:

Knowledge Worker server type no longer supported

Avaya Aura® Contact Center Release 7.0 does not support the Knowledge Worker server type. Customers with an existing Knowledge Worker solution can migrate to an Avaya Aura® Contact Center Release 7.0 Voice and Multimedia Contact Server or a Voice Contact Server.

Microsoft Windows Server 2008 is no longer supported

Avaya Aura® Contact Center Release 7.0 is supported only on Microsoft Windows Server 2012 R2. Avaya Aura® Contact Center Release 7.0 is not supported on Microsoft Windows Server 2008 R2. Customers upgrading to Avaya Aura® Contact Center Release 7.0 must migrate to a new Microsoft Windows Server 2012 R2 server.

Microsoft Windows XP and Windows Vista are no longer supported

Avaya Aura® Contact Center and Agent Desktop Release 7.0 do not support Microsoft Windows XP or Microsoft Windows Vista. Avaya Aura® Contact Center and Agent Desktop Release 7.0 support Microsoft Windows 7, 8.1 and 10.

Offsite Agent is no longer supported on the Avaya Communication Server 1000 platform

Avaya Aura® Contact Center Release 7.0 does not support Offsite Agent on the Avaya Communication Server 1000 platform.

SIP-enabled Contact Center supports Offsite Agent, using the Avaya Aura® Unified Communication platform Telecommuter mode feature.

Security Framework server type no longer supported

Avaya Aura® Contact Center Release 7.0 does not support the Security Framework server type. Customers with an existing Security Framework server can change to a single sign-on (SSO) configuration based on an Avaya Aura® System Manager.

SIP-enabled CS1000 integration is no longer supported

Avaya Aura® Contact Center Release 7.0 does not support integration with SIP-enabled Avaya Communication Server 1000 (CS1000).

You can migrate from SIP-enabled Avaya Communication Server 1000 solutions to Avaya Aura® Contact Center Release 7.0 on the Avaya Aura® Unified Communications voice platform.

Chapter 3: Solution overview

This section describes an Avaya Aura® Contact Center (AACC) and Avaya Communication Server 1000 (CS1000) integrated solution.

Avaya Communication Server 1000 AML-based contact center

In AML-based contact centers, Contact Center Manager Server (CCMS) controls Avaya Communication Server 1000 Controlled Directory Numbers (CDNs). The CCMS server communicates with the Avaya Communication Server 1000 Call Server using an Application Module Link (AML) protocol over an Embedded LAN (ELAN). Each CCMS requires a dedicated Avaya Communication Server 1000 Call Server to support contact center voice calls. Using a CCMS to control contact center calls ensures CCMS can support skill-based routing, call treatments, and reporting. In AML-based contact centers, TDM-based phones connect directly to the Call Server.

Application Module Link (AML) is an internal protocol used by Contact Center Manager Server to communicate directly with Avaya Communication Server 1000.

The following diagram shows a typical AML-based contact center.
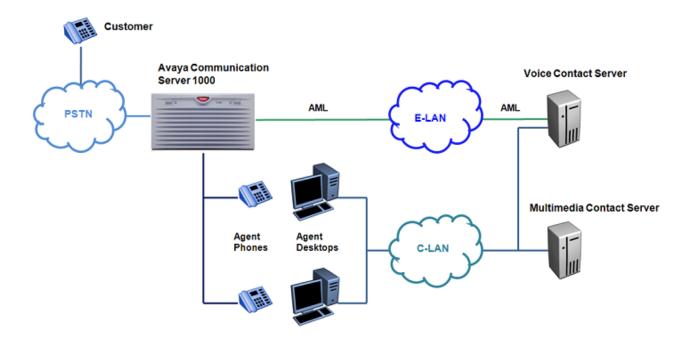
Figure 1: Example of a typical Avaya Communication Server 1000 AML-based contact center

Avaya Communication Server 1000 Switch

The private branch exchange (PBX) or switch provides a speech path for a voice contact between the source (usually a trunk) and the destination (a RAN trunk, voice port, or agent). Two connections to the switch interact with voice-processing systems: voice paths and signaling links.

Avaya Communication Server 1000 supports AML-based contact centers. For more information about Avaya Communication Server 1000, see *Avaya Aura® Contact Center and Avaya Communication Server 1000 Integration*.

🛈 **Important:**

PABX products and other products in your solution follow independent life cycle dates. Depending on their life cycle state, full support might not be available on older versions of these products. In a case where Avaya Aura® Contact Center patches require a dependent patch on the PABX, that patch might not be available on an old switch release that is in End of Manufacture Support life cycle state. Please refer to life cycle bulletins specific to the products and versions in your solution.

You must install the most recent service packs on the switch and make the switch operational. For information about which service pack to install on the switch, see the Avaya website (http://support.avaya.com).

Switch features

The Avaya Communication Server 1000 switch offers the following features:

- Meridian Link Services (MLS)
- Avaya CallPilot®
- Meridian Integrated Recorded Announcement (MIRAN)

Meridian Link Services

Meridian Link Services (MLS) is a process running on Contact Center Manager Server that provides Computer Telephony Integration (CTI) server access to the Meridian Link interface. Through MLS, the server can connect to Meridian Link applications over the Contact Center subnet.

External applications register with MLS to access application layer messages. MLS commands that result in call processing requests are sent over the ELAN subnet to the switch. Examples of external applications that can register with MLS include software that supports Computer Telephony Integration.

Supported switch platforms

Contact Center provides support for the Avaya Communication Server 1000 software releases and switching platforms for AML or standard Contact Center Manager Server.

Avaya CallPilot® communication

Avaya CallPilot® provides Voice/Fax Messaging as well as integrated Unified Messaging capabilities through the users' familiar desktop email environment or Web-based Unified Messaging and personal mailbox management with My Avaya CallPilot®. Avaya CallPilot® is an optional component to use with your Contact Center environment.

The Avaya CallPilot® voice channels connect to the switch by a DS30 cable. On the switch side, you configure this card as an SL1 phone TN (virtual agent).

Contact Center Manager Server also communicates with Avaya CallPilot® to instruct it to play prompts, play broadcast announcements, and collect digits that callers enter.

Communication with the Contact Center

The Contact Center Manager Server communicates with the switch and the voice-processing system.

Configure the speech paths necessary to connect calls to voice ports, agents, or RAN trunks, and to provide tone treatments (such as ringback and busy) to voice contacts. Contact Center Manager Server communicates with the switch over the Embedded Local Area Network (ELAN)

subnet and the contact center subnet using the Application Module Link (AML) protocol. The switch and Contact Center interaction requires the following types of subnets for communication:

- ELAN subnet—An optional dedicated Ethernet TCP/IP LAN that connects the Contact Center Manager Server to the switch.

- Contact center subnet—The LAN to which your corporate services and resources connect. The Contact Center Manager Server and clients connect to the contact center subnet. Third-party applications that interact with the server also connect to this LAN.

Components

Table 1: Avaya Aura® Contact Center for Avaya Communication Server 1000 solution components

Component	Version	Reference Configuration Characteristics
Avaya Aura® Contact Center	7.0	Avaya Aura® Contact Center provides context sensitive and skill-based routing for customer voice and multimedia contacts. Avaya Aura® Contact Center also provides routed contact support for email messages, Web communications, voice mail messages, scanned documents, fax messages, SMS text messages, outbound, and Social Networking.
Avaya Agent Desktop	7.0	Agent Desktop is a single-interface client application that contact center agents use to interact with customers. Agents use Agent Desktop to respond to customers through various media, such as phone, email, Web communication, fax messages, voice mail messages, scanned documents, SMS text messages, and instant messages.
Avaya Communication Server 1000 (CS1000)	7.6	Avaya Communication Server 1000 is an enterprise grade Private Automatic Branch Exchange (PABX).

Table 2: Avaya Aura® Contact Center components

Component	Version	Reference Configuration Characteristics
Contact Center Manager Server (CCMS)	7.0	CCMS is a core Contact Center component that provides the intelligent routing capability for voice and multimedia contacts to the most qualified agent. The most qualified agent is the agent with the appropriate skills and abilities to handle the type of contact. Rules for contact treatment (what happens while the customer waits for a response) and routing (the contact response) can be simple or complex.

Component	Version	Reference Configuration Characteristics
Contact Center Manager Administration (CCMA)	7.0	CCMA is a browser-based tool for contact center administrators and supervisors to manipulate the data and reporting for the CCMS database. You can use CCMA to configure contact center resources, contact flows, components, and activities. You can also use CCMA to define access levels to data and provide dynamic reporting to fit your enterprise business needs.
Communication Control Toolkit (CCT)	7.0	CCT is a client/server application that helps you implement Computer Telephony Integration for installed and browser-based client integrations. In SIP-enabled contact centers, CCT integrates the Contact Center users within the SIP environment to offer features that enrich the customer experience.
Contact Center Multimedia (CCMM)	7.0	CCMM provides support for inbound multimedia contacts. All multimedia contact types are subject to Contact Center routing and prioritization. Administrators can create specific treatments through applications developed in Orchestration Designer. Administrators and supervisors can review a full range of historical reports and real-time displays to track volume and completion statistics.
Orchestration Designer (OD)	7.0	OD is a graphical workflow application that you can use to program Avaya Aura® Contact Center applications. OD provides a graphical editor to create Contact Center Task Flow Executor (TFE) flows.
Contact Center License Manager (LM)	7.0	LM provides centralized licensing and control of all Contact Center suite components and features across the Contact Center suite.
Contact Center Manager Server Utility (SU)	7.0	SU monitors and maintains Contact Center Manager Server activity.

Chapter 4: Solution specification

This section specifies the overall maximum capacities for an Avaya Aura® Contact Center and Avaya Communication Server 1000 solution.

Maximum agent capacity and call rate values

The following table specifies the maximum capacity values supported by Contact Center.

The following conditions apply to the table:

- The capacities supported on a server are limited by the server platform. Use the server guidelines to determine the capacity of your server hardware.
- These values are supported by Contact Center. Capacity values are also limited by telephone switch capacity. To find the limits for your telephone switch, check your telephone switch documentation.

Table 3: Contact Center capacity figures in detail

Parameter	AML maximum
Number of logged-on agents: Configurations with greater than 1500 agents require special consideration for contact center subnet bandwidth and disk requirements.	5,000 The maximum of 5000 logged on agents is only applicable for the Avaya Communication Server 1000 Release 7.6.
Number of logged-on multimedia agents. (No voice agents on Contact Center in this configuration)	3,000
Number of agents defined in the system	10,000
Number of phones:	10,000
Number of supervisors logged on	600
Number of supervisors defined in the system The number of configured supervisors defined in the system is not limited, but Avaya tests only up to 600 configured supervisors.	600
Number of scripts The number of scripts defined in the system is not limited, but Avaya tests only up to 1500 scripts.	1,500
Number of active scripts The product contains three predefined scripts. Therefore, you can create 997 scripts.	1,000 (997)
Maximum script size—Master_Script (characters)	100,000
Maximum script size—other scripts (characters)	50,000
Number of applications (that is, exit points from the Master_Script) The product contains six predefined applications. You can create 1000 applications for the current release.	1,005 (1,000)
Number of user defined call variables	500
Maximum number of supported SIP Contact Intrinsics per contact	N/A

Parameter	AML maximum
Number of skillsets The maximum includes both local skillsets and network skillsets.	3,000
Number of skillset priority levels	48
Number of skillsets for each call	20
Number of activity codes The product contains five predefined activity codes. Therefore, you can create 4995 activity codes.	5,000 (4,995)
Inbound voice calls per hour The number of inbound calls per hour assumes a hold time of three minutes. For shorter call durations, higher call rates can be supported.	100,000
Stand-alone Multimedia server Inbound Multimedia contacts per hour (for stand-alone server)	12,000
Co-resident Multimedia server Inbound Multimedia contacts per hour	2,400
Stand-alone Multimedia server new contacts backlog	100,000 The Extended Email Capacity backlog is 100 000 contacts.
Co-resident Multimedia server new contacts backlog	4,000
Number of waiting contacts	3,000
Call resources parameters	
Number of IVR queues (Communication Server 1000)	150
Number of IVR ports	1,000
Number of ACCESS ports (Communication Server 1000)	191
Number of routes	513
Number of CDNs	2,000
Number of RAN and music routes	512
Number of DNISs	10,000
Web Communications	
Number of concurrent Web Communication sessions. Contact Center supports up to 500 concurrent Web Communication (Web chat) sessions between agents and customers with an average chat duration of 5 minutes. This can be configured as 500 individual agents each handling a single Web chat contact, or 100 agents handling five concurrent web chat sessions, or any multiplicity configuration not exceeding 500 concurrent chat sessions.	500

Parameter	AML maximum
For capacity requirements beyond 500 sessions, use Enterprise Web Chat (EWC).	
Number of assigned active agents per supervisor for observe and barge-in.	25
Number of Instant Messages (IMs) per hour	N/A
Number of presence changes per hour	N/A
Assignment parameters	
Number of agents in an agent-to-supervisor assignment (No CCT)	1,000
Number of agents in an agent-to-supervisor assignment (CCT enabled)	100
Matrix size for agent-to-skillset assignments This parameter is the supported matrix size for displaying agent-to-skillset assignments. An agent-to-skillset assignment contains a matrix with a row for each agent in the assignment, and a column for each skillset to which the agents belong. The matrix size is the number of agents multiplied by the number of skillsets. This parameter works in conjunction with the Number of agent-to-skillset reassignments in an agent-to-skillset assignment parameter. Even though this window allows a 5000 element matrix to be displayed, non-blank elements in the matrix must not exceed the parameter. Number of agent-to-skillset reassignments in an agent-to-skillset assignment (that is, the maximum number of agent-to-skillset reassignments in a single agent-to-skillset assignment is 1500).	5,000
Number of agent-skillset reassignments in an agent-to-skillset assignment In an agent-to-skillset assignment, you can change an agent's status for multiple skillsets. For example, you can put the agent James Jones on Standby for the skillset Bookings, and give him priority 1 for the skillset European Vacations. Thus, you have two reassignments for the agent James Jones in the agent-to-skillset assignment.	1,500
Networking parameters	
Number of call processing nodes in the network (including local node) The number of configured nodes is 30; however, only 20 nodes can be configured in the routing table.	30
Number of network skillsets	1,500

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Parameter	AML maximum
The maximum includes the predefined skillsets, local skillsets, and network skillsets.	
Number of skillsets per agent	150
Number of sites in the routing table for a network skillset	20
Number of network skillsets to which a call is queued	10
Number of agent reservation requests per call	30
Number of remote applications (applications accessible over the network)	6,000
Network calls per hour for which CBC data is collected	10,000
Number of target nodes	20
Database parameters	
Number of client PCs and RTI applications connected to the database	100
Number of other applications connected to the database	100
Number of Fault Management messages in database	7,500
Maximum number of report clauses The database server supports a maximum of 255 clauses on a single SQL statement.	255
Maximum number of contacts in the active Multimedia database (includes all contact types) You must purge the active Multimedia database regularly to archive closed contacts to the Multimedia Offline database. For more information about the Multimedia Archive Utility, see *Maintaining Avaya Aura® Contact Center*.	1,000,000
Maximum number of contacts in the Multimedia Offline database	The Multimedia Offline database does not have a maximum limit for the number of Multimedia contacts. The maximum size depends on the available disk space, contact attachment sizes, and attachment ratio. For more information about disk storage requirements, see Contact Center Multimedia disk storage requirements on page 29.
Maximum number of multimedia contacts per customer	1,000
Third-party interface parameters	
Number of MLS applications	16
Number of MLS DN registrations across all MLS applications	11,000
Number of MLS calls per hour	58,000

Parameter	AML maximum
The number of MLS calls per hour at 58,000 and 68,000 assumes a hold time of three minutes. For shorter call durations, higher call rates can be supported.	
Number of HDX connections When configured, Database Integration Wizard (DIW) uses a single HDX connection.	10
Number of RTI client systems/applications	100
Other parameters	
Number of scripts activated under load Script activation supports activation cascading, where the activation of a parent script forces activation of all lower level scripts. Do not use this feature on a system under load. Under load, activate scripts from the lowest level up, with the Master script activated last.	1
Steady state CPU	70%
Number of CCMS servers per Avaya Communication Server 1000	3
Number of AML-based application servers per Avaya Communication Server 1000	16
Number of Avaya Aura® Contact Center (AACC) instances per Avaya Aura® Unified Communications (UC) platform. **Note:** The overall capacity of the combined AACC servers connected to a single UC platform must not exceed the maximum specified capacity of a single AACC instance connected to that UC platform. Where multiple AACC servers share a UC platform, AACC High Availability and or UC High Availability are not supported.	0
Number of Phonebook entries on Avaya Agent Desktop	10,000

Orchestration Designer application Variables and Intrinsics

Avaya Aura® Contact Center Orchestration Designer (OD) applications support the following variables and intrinsics for voice contacts.

Type	Description	AML	Access	Maximum
Global variable	Global variables are constants that you can use in all OD applications. For example, the global variable holidays_gv stores information about the dates when your contact center is closed. You can use the OD Application Variables manager to add an extra date to the holidays_gv global variable. This extra date is then automatically used by all OD applications using that global variable. Some examples of default global variables: holidays_gv, business_hours_gv, primary_Skillset_gv.	Yes	OD applications have read-only access to global variables.	N/A
User defined call variable	Call variables have a value that can change for each contact. These variables follow the contact through the system and pass from one OD application to another with the contact. Call variables have values defined on a call-by-call basis. An example of a call variable is a customer account number collected through a voice processing session, as this changes for each caller referenced by the OD application.	Yes	OD applications have read and write access to call variables.	500
System intrinsic	System intrinsics contain system-wide information about skillsets, time, traffic, and voice contacts. Avaya Aura® Contact Center (AACC) automatically creates and maintains system intrinsic. Intrinsics are available only to query data about the system within OD applications, not to modify data. Some examples of system intrinsics: Call intrinsic – CDN, Skillset intrinsic - POSITION IN QUEUE, Traffic intrinsic - TOTAL ACTIVE CALLS.	Yes	OD applications have read-only access to System intrinsics.	N/A — Existing defined intrinsics
SIP contact intrinsic	In a SIP-enabled Avaya Aura® Contact Center, Contact Intrinsic data makes it easy to develop screen pops, reducing the time, effort and cost required to launch new capabilities. In a SIP-enabled contact center solution, each contact has associated SIP Contact Intrinsic data. This Contact Intrinsic data might contain data relevant to that call, the calling customer, and other information retrieved by self-service or third party applications.	No	OD applications have read and write access to SIP Contact Intrinsics.	32

Email limits and capacity values

The following table specifies the maximum email and mailbox capacity values supported by Contact Center.

Table 4: Contact Center email and mailbox capacity figures

Parameter	Maximum
Email servers	
POP3 or IMAP servers	5
SMTP servers	5
Mailboxes	
Maximum number of Mailboxes which can be configured	3000
Maximum number of fax mailboxes which can be configured	50
Maximum number of voice mail mailboxes which can be configured	50
Maximum number of SMS mailboxes which can be configured	50
Maximum number of Scanned Document mailboxes which can be configured	50
Email field limits	
Maximum length of **To:** field	4096 CCMM supports a maximum of 4096 characters in the To: address field. If an email exceeds this limit, CCMM does not process the email and does not create a contact.
Rule Groups	
Maximum number of Rule Groups	3000
Maximum number of Rules in a Rule Group	50
Rules	
Maximum number of Rules	10 000
Maximum number of Auto-Suggests assigned	5
Maximum number of Search Criteria	5
Prepared Responses	
Maximum number of Prepared Responses	5000
Maximum number of Response Categories	50
Maximum number of Prepared Responses Assigned to a Rule	5
Sender Groups	
Maximum number of Sender Groups	100

Parameter	Maximum
Email servers	
Maximum number of addresses per Sender Group	50
Keyword Groups	
Maximum number of Keyword Groups	3000
Maximum number of Keywords per Keyword Group	50
Barred Outgoing Addresses	50

Contact Center Multimedia disk storage requirements

This section describes the database files used by Contact Center Multimedia and provides database capacity calculations for a stand-alone Contact Center Multimedia server.

> 🛈 **Important:**
>
> The total disk space usage on the Contact Center Multimedia database volume must not exceed 90% of the volume space. If this happens, expand the disk space on the server and extend the Multimedia database volume.

Required database files

When you install the Contact Center Multimedia server component, you install the following files required to operate the database:

- CACHE.DAT in the `Avaya\Contact Center\Databases\CCMM\MULTIMEDIA\DATA` folder. This stores the active Multimedia data.

- CACHE.DAT in the `Avaya\Contact Center\Databases\CCMM\MULTIMEDIA\OFFLINE` folder. This stores the offline Multimedia data.

- Cache Journal in the `Avaya\Contact Center\Databases\Journal` folder.

- `Avaya\Contact Center\Journal` folder is created during installation. This folder contains the Database Journal Files, which are used for High Availability.

During the installation you can select the drive letter that these folders or files are created on. The folder information is fixed.

The CACHE.DAT files grow dynamically as the volume of data in the databases grows. Initially they are just under 45 MB. One million contacts takes approximately 20 GB of space. The OFFLINE database must not exceed 70% of the total disk space on the Multimedia database volume: if this happens, expand the disk space on the server and extend the Multimedia database volume.

The Journal files are deleted after seven days. Therefore, the maximum size of this folder is determined by the number of contacts that arrive in a seven-day period. The space taken is in proportion with the one million available contacts in 20 GB space.

Email attachment storage

Attachments for new email contacts are stored in the attachment folder. When the CCMM Offline Synch task runs, it copies each attachment into the OFFLINE database. CCMM stores two copies of each attachment, one on disk and one in the OFFLINE database, until a scheduled cleanup task clears the contact from the MULTIMEDIA database. The maximum additional disk space required to store attachments is calculated as:

Disk space for email attachments in MB

= number of email messages per day

* percent with attachment

* average attachment size in MB

* 2

Example

The following is the additional disk storage calculation for a contact center that receives 9000 email messages every day, where 30 percent of the email messages have an attachment averaging 0.5 MB in size. Contacts stay in the MULTIMEDIA database 10 days before a scheduled cleanup task clears them from the MULTIMEDIA database.

Disk space for email attachments in MB:

= 9 000 * 0.3 * 0.5 * 10 * 2

= 27000 MB

Chapter 5: Licensing

This section describes how to obtain a license for your solution.

How to obtain a license for a nodal AML-based solution

Avaya Aura® Contact Center uses a PLIC license file in an Avaya Communication Server 1000 AML-based contact center.
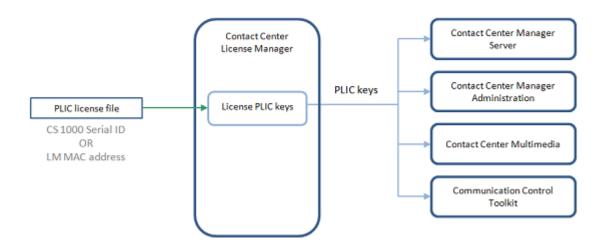
Figure 2: Diagram showing the licensing mechanism options for AML-based Avaya Aura® Contact Center solutions

Depending on the order tool path you used, you have the following options:

1. Obtain the contact center server subnet NIC MAC address (CLAN NIC MAC address) of the Contact Center License Manager server.

2. Use the CLAN NIC MAC address to obtain a nodal PLIC license file from the Avaya Keycode Retrieval System (KRS).

3. Load the PLIC license file into Contact Center License Manager and use it to enable Contact Center licensed features. When Contact Center License Manager loads the license, if the unique number in the license does not match the LM server MAC address, then License Manager shuts down and Avaya Aura® Contact Center cannot process contacts. If the unique number in the license matches the License Manager server MAC

address, then License Manager provides license keys, and Avaya Aura® Contact Center processes customer contacts.

OR

1. Obtain the Avaya Communication Server 1000 serial ID. The Avaya Communication Server 1000 Serial ID is also known as the Site ID.

2. Use the CS 1000 serial ID to obtain a nodal PLIC license file from the Avaya Keycode Retrieval System (KRS).

3. Load the PLIC license file into Contact Center License Manager and use it to enable Contact Center licensed features. When Contact Center License Manager loads the license, if the unique number in the license does not match the CS 1000 serial ID, then License Manager shuts down and Avaya Aura® Contact Center cannot process contacts. If the unique number in the license matches the CS 1000 serial ID, then License Manager provides license keys, and Avaya Aura® Contact Center processes customer contacts.

You can use the License Manager Configuration Utility to check which Avaya Aura® Contact Center features are licensed and how many agent licenses are available.

How to obtain a Corporate license

Avaya Aura® Contact Center solutions that use Corporate licensing must use a PLIC license file. Avaya Aura® Contact Center does not support WebLM for Corporate licensing.

Avaya Aura® Contact Center supports Corporate licensing only for Avaya Communication Server 1000 AML-based contact centers. Corporate licensing does not support SIP-enabled Avaya Aura® Contact Center solutions.
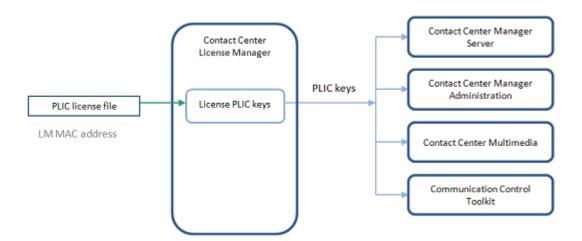
Figure 3: Diagram showing the licensing mechanism used when Avaya Aura® Contact Center uses Corporate licensing

Use the following process to obtain an Avaya Aura® Contact Center Corporate license:

1. Obtain the contact center server subnet NIC MAC address (CLAN NIC MAC address) of the Contact Center License Manager server.

2. Use the CLAN NIC MAC address to obtain a corporate PLIC license file from the Avaya Keycode Retrieval System (KRS).

3. Load the PLIC license file into Contact Center License Manager and use it to enable Contact Center licensed features. When Contact Center License Manager loads the license, if the unique number in the license does not match the LM server MAC address, then License Manager shuts down and Avaya Aura® Contact Center cannot process contacts. If the unique number in the license matches the License Manager server MAC address, then License Manager provides license keys, and Avaya Aura® Contact Center processes customer contacts.

You can use the License Manager Configuration Utility to check which Avaya Aura® Contact Center features are licensed and how many agent licenses are available.

Chapter 6: Avaya Aura® Experience Portal Integration

Avaya Aura® Experience Portal is an open standards-based self-service software platform which offers industry leading reliability and scalability to help reduce costs and simplify operations.

The Avaya Aura® Experience Portal system consists of an Experience Portal Manager (EPM), which controls the Experience Portal system and Media Processing Platform (MPP) servers, which process all calls. The Experience Portal system typically includes an Automatic Speech Recognition (ASR) server, Text-to-Speech (TTS) speech servers, and application servers.

In an Avaya Communication Server 1000 AML-based solution, Avaya Aura® Contact Center supports Landing Pads for integration with Avaya Aura® Experience Portal. Contact Center Web Service Open Interfaces enable self-service systems to transfer a call into Avaya Aura® Contact Center by reserving a Landing Pad. Contact Center Web Service Open Interfaces allow custom data to be passed with the call. To enable Contact Center Landing Pads you must configure Contact Center Web Service Open Interfaces.

AML-based Avaya Aura® Contact Center solutions do not support SIP header Information or Contact Intrinsics as call attached data.

Data transfer methods

The following table shows the maximum amount of data supported by each transfer type:

Transfer method	CS 1000 AML-based Contact Center	Avaya Aura SIP-enabled Contact Center
Landing Pads	Maximum Call Attached Data is 4096 bytes. Maximum 5 ASCII key-value pairs of Contact Intrinsics.	Maximum Call Attached Data is 4096 bytes. Maximum 5 ASCII key-value pairs of Contact Intrinsics.
UUI SIP header using ASAI	N/A	96 bytes maximum.
P-Intrinsics SIP header	N/A	Depends on your solution. [Note 1]

Transfer method	CS 1000 AML-based Contact Center	Avaya Aura SIP-enabled Contact Center
SIP INFO message body using Context Creation	N/A	8K bytes total maximum: • Maximum of 10 ASCII key-value pairs. • And 4729 characters of Call Attached Data (CAD) within the CC application.
Note 1 The following limitations apply to P-Intrinsics SIP header information: • The amount of P-Intrinsics information associated with a call depends on the other SIP headers in the call and on the call flow path. Typically, Contact Center supports up to 10 ASCII key-value pairs of P-Intrinsics. • If your solution has an Avaya Aura® Communication Manager in the incoming call path, the Refer-To header for blind transfers is limited to 1500 bytes overall.		

Contact Center supports ASCII key-value pairs with a key name of up to 25 characters and a value size of up to 80 characters.

Avaya Aura® Experience Portal Orchestration Designer

Avaya Aura® Experience Portal Orchestration Designer is an Eclipse-based application development environment which supports the development of Voice XML and CCXML speech applications. Orchestration Designer generates Avaya Aura® Experience Portal compliant XML-based applications which are deployed on software application servers such as Apache Tomcat Server in a self-service solution.

Voice XML

Voice XML (VXML) is a standard XML format for specifying interactive voice dialogs between a human and a computer. Voice XML is designed for creating audio dialogs that feature synthesized speech, digitized audio, recognition of spoken and DTMF key input, recording of spoken input, telephony, and mixed initiative conversations. A typical Voice XML play and collect application plays voice prompts to customers asking them to enter digits using their phone. The application then collects the customer digits and returns them for processing to the contact center.

Call Control XML

Call Control XML (CCXML) is a standard markup language for controlling how phone calls are placed, answered, transferred, conferenced, and more. CCXML works with Voice XML to provide an XML-based solution for any telephony application. Voice XML and CCXML are two separate languages and are not required in an implementation of either language. For example, CCXML

can be integrated with a more traditional Interactive Voice Response (IVR) system and Voice XML dialog systems can be integrated with other call control systems.

Avaya Aura® Contact Center Web Service Open Interfaces

Avaya Aura® Contact Center provides open standards-based Web services to support maximum interoperability and flexibility.

Web Services Open Interfaces

Avaya Aura® Contact Center Web Service Open Interfaces simplify the integration between the Contact Center and self-service systems allowing enterprises to quickly and easily adapt to changes.

Avaya Aura® Contact Center Web Services are a series of licensed SOAP-based open interfaces available to applications based on Service-Oriented Architecture (SOA).

The Web Service Open Interfaces enable self-service systems and third-party applications to transfer a call into the Contact Center by reserving a Landing Pad on the target Contact Center; it also allows custom data to be passed with the call. When the Landing Pad is reserved, the call must be transferred to Contact Center within 20 seconds. If not, the Landing Pad is unreserved and the call fails, giving a fast busy tone. Avaya recommends that you put the Landing Pad reservation code just before the transfer in the Voice XML application code.

Avaya recommends that you configure multiple Landing Pads in each Contact Center to ensure proper capacity and scalability.

Front-end Avaya Aura® Experience Portal self-service using Contact Center Web Service Open Interfaces

This section describes a front-end Avaya Aura® Experience Portal self-service integration using Avaya Aura® Contact Center - Web Service Open Interfaces.

A combined Avaya Aura® Experience Portal self-service system and Avaya Aura® Contact Center solution gives your customers exceptional service and improved efficiency. Front-end self-service automation reduces contact center operating costs and improves Customer Satisfaction (CSAT).

Avaya Aura® Experience Portal uses XML voice applications to integrate with Avaya Aura® Contact Center open standard Web services. The Avaya Aura® Contact Center open standard Web services are supported in AML-based and SIP-enabled contact centers.

Avaya Aura® Experience Portal supports any XML speech application that is compliant with Voice XML Version 2.1 or Call Control eXtensible Markup Language (CCXML), regardless of the tool in which the application was created. However, Avaya recommends that you create your speech applications with Orchestration Designer. Avaya Aura® Experience Portal automatically includes all Orchestration Designer applications in the Application Summary report and Application Detail report. If you want these reports to display messages and status information from an application developed in a third-party tool, you must manually log the messages and status information from that application using the Application Logging Web service.

Call flow example using CCMS Web service Open Interfaces

This call flow example shows how the Avaya Aura® Experience Portal system interacts with Avaya Aura® Contact Center Web Service Open Interfaces to handle a typical automated front-end self-service customer transaction.

1. Incoming customer calls are routed to a Media Processing Platform (MPP) server in the Avaya Aura® Experience Portal system.

2. The MPP server checks the Dialed Number Identification Service (DNIS) for the incoming call and uses the configuration information downloaded from the Experience Portal Manager (EPM) server to match the number to a speech application on Avaya Aura® Experience Portal.

3. The Experience Portal Management System starts an Avaya Voice Browser session and passes it the Universal Resource Indicator (URI) specified for the selected speech application.

4. The Avaya Voice Browser contacts the application server and passes it the URI.

5. The application server returns a Voice XML page to the Avaya Voice Browser.

6. Based on instructions on the Voice XML application, the MPP uses prerecorded audio files, Text-to-Speech (TTS), or both to play a prompt to start interaction with the caller.

7. If the customer responds by:

   • Entering Dual-tone multi-frequency (DTMF) digits, the MPP establishes a connection to a TTS server and the ASCII text in the speech application is forwarded for processing. The TTS server renders the text as audio output in the form of synthesized speech which the MPP then plays for the caller.

   • Speaking, the MPP establishes a connection to an Automatic Speech Recognition (ASR) server and sends the caller's recorded voice response to the ASR server for processing. The ASR server then returns the results to the application for further action.

8. The customer chooses to speak to an agent.

9. The Voice XML application connects to the Contact Center Manager Server Open Interface Web services. The Voice XML application requests a Landing Pad number. As part of the Landing Pad number request the Voice XML applications specifies a destination Controlled Directory Number (CDN), transfer type (blind, bridged, or consult transfer), contact ID number, and Contact Intrinsics.

10. Contact Center Manager Server returns the Landing Pad number to the Voice XML application.

11. The Experience Portal Media Processing Platform (MPP) server uses this Landing Pad number to complete the blind transfer of the customer call to the destination CDN.

12. Contact Center Manager Server is now controlling the customer call. Contact Center Manager Server routes the call to an appropriate agent skillset.

13. The call is offered to a Contact Center agent.

14. The Contact Center agent answers the customer call.

15. The XML application terminates the call when it finishes execution or when the caller releases the call.

A combined Avaya Aura® Experience Portal self-service system and Avaya Aura® Contact Center solution gives customers exceptional service and improved efficiency. Front-end self-service automation reduces contact center operating costs and improves Customer Satisfaction (CSAT).

Avaya DevConnect

The Avaya DevConnect Program provides a wide range of developer resources, including access to APIs and SDKs for Avaya products, developer tools, technical support options, and training materials. Registered membership is free to anyone interested in designing Avaya-compatible solutions. Enhanced Membership options offer increased levels of technical support, compliance testing, and co-marketing of innovative solutions compatible with standards-based Avaya solutions.

Avaya Aura® Contact Center supplies generic sample Avaya Aura® Experience Portal applications for demonstration purposes. If you plan to use these sample applications, you must review the sample code and customize it to your solution prior to deploying in production.

For more information, and to download the complete Avaya Aura® Experience Portal and Avaya Aura® Contact Center sample files, see Orchestration Designer Sample Applications on www.avaya.com/devconnect.

Chapter 7: Hot-standby High Availability

Avaya Aura® Contact Center supports hot-standby High Availability (HA) resiliency for Contact Center Manager Server (CCMS), Communication Control Toolkit (CCT), and Contact Center Multimedia (CCMM).

To achieve hot-standby High Availability you must have an AML-based Contact Center with the following:

- Two Voice Contact Servers configured as a High Availability pair and two Multimedia Contact Servers configured as a High Availability pair.

  OR

  Two Voice and Multimedia Contact Servers configured as a High Availability pair.

- Avaya Communication Server 1000 High Availability PABX.
- Redundant Ethernet switches.
- A Windows Active Directory Domain Controller and Domain Name System (DNS).

All of the Contact Center servers must be in the same network subnet IP address range. The Avaya Communication Server 1000 PBX must be in the same campus network location as the Contact Center servers.

All Contact Center servers must be in the same Windows Active Directory domain. All Contact Center servers must be registered with the same Windows Active Directory Domain Controller. All Avaya Agent Desktop clients must be registered in this domain, or in domains with a two-way trust relationship with this Contact Center server domain.

The following diagram shows a typical hot-standby High Availability solution.
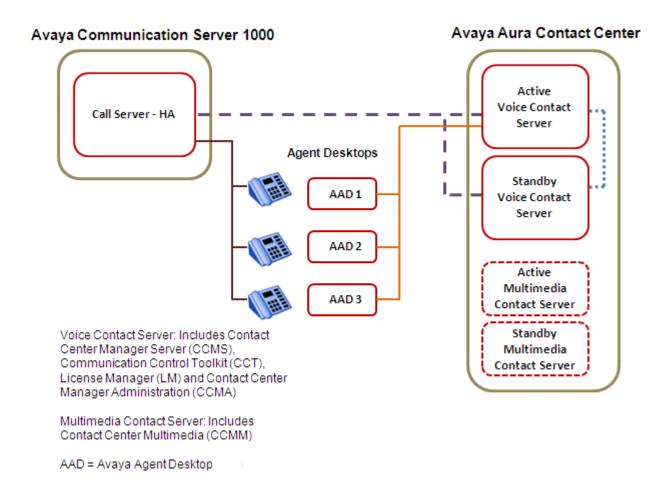
Figure 4: Example of a typical hot-standby High Availability solution

One set of Contact Center applications (a CCMS, a CCT, and an optional CCMM) actively processes scripts and contacts. This set of applications is called the active set. Another set of Contact Center applications in the same Contact Center system, runs in hot-standby mode. This standby set of Contact Center applications monitors and shadows the active applications in the system and does not process calls. If any of the active applications fail, a switchover to the standby server occurs. The standby applications recognize the failure and start processing contacts.

Contact Center Administrators use the active server in daily operation. Configuration changes made to the active system during normal operation automatically replicate to the standby system. Therefore the standby system has the most recent configuration and is ready to take over processing from the active system. Statistical data also automatically replicates to the standby system. Data replicates to the standby system in real-time.

Hot-standby switchover

In a High Availability campus solution, a hardware, network, or database failure, or a failure of a monitored CCMS or CCT service, can initiate a switchover but only in the following situations:

- Both the active and standby servers are in running state.

- All the critical CCMS and CCT services are monitored and running.

- The active server has Switchover enabled.

- The shadowing latency is less than the latency threshold.

- A database restore is not running on the Standby server.

- The active server database and standby server database are synchronized. The standby server database is shadowing the active server database.

- The standby server can communicate with (ping) the Trusted IP address.

If the Contact Center Administrator uses the Windows Service Control Manager (SCM) to stop a monitored service on an active server, a switchover occurs. If the Contact Center Administrator uses System Control and Monitor Utility (SCMU) to stop a monitored service on an active server, a switchover does not occur.

Contact Center uses the Shadowing Latency threshold to validate how much time the standby server needs to catch up with the active server shadowed database contents. The default value of the Shadowing Latency threshold is 120 seconds. You can review the Shadow Latency information on the Open High Availability utility - System panel. The Shadow Latency must be greater than or equal to zero, but less than the latency threshold. The latency threshold is calculated as 120 seconds plus the Switchover timeout value that is configured on the Server Mode panel of the High Availability utility.

To reinstate High Availability resiliency after a switchover, it is sometimes necessary to restore a database backup onto the new (post-switchover) standby server. The following table shows when a database restore is required to reinstate High Availability resiliency after a switchover:

Cause of switchover	Database restore required
Active server critical service outage	No
Manual switchover	No
Active server ELAN network outage	No
Active server CLAN (contact center subnet) network outage	Yes
Complete network outage	Yes
Active server crash	Yes
Active server reboot	Yes

After a switchover, you can review the System Control panel of the High Availability utility on the (post-switchover) standby server to confirm if a database restore is necessary. In the High Availability utility — System Control panel, in the Information box, look for a notice about restoring the database(s).

Agent experience during a switchover

If any Avaya Aura® Contact Center application or server fails, the hot-standby High Availability solution maintains the logon state of voice Avaya Agent Desktop agents. Calls in progress between a customer and an agent are not affected. The logon state of multimedia-enabled agents is not preserved when a switchover to a standby application occurs. For a CS 1000-based, voice-only Contact Center system with 5000 active agents, it takes approximately 30 seconds for the standby Contact Center Manager Server to begin processing new incoming calls in the script. If your contact center uses Open Queue for multimedia contacts, or CallPilot, the time delay for the standby Contact Center Manager Server to process new incoming calls in the script is a few minutes. During this short period, calls are given default ACD by the CS 1000. No established calls are lost. No calls that are incoming around the time of the failure are lost. No calls that are in treatment at the time of the failure are lost. There is no call loss. The reporting subsystem in Contact Center Manager Server (CCMS) recovers shortly after the script is operational, and the server starts to record events and statistics in the database as normal.

Like Contact Center Manager Server, the Communication Control Toolkit (CCT) server exhibits a zero-touch stateful recovery with hot-standby performance. If a phone call is on-hold and a switchover occurs, the Agent might have to take the call off hold using their phone. If pop-ups are used at the time of a CCT server outage, then the pop-ups resume seamlessly in less than 30 seconds.

In a hot-standby High Availability solution Avaya Agent Desktop clients are registered with the managed IP address of the active CCT server. In multimedia-enabled solutions Agent Desktop clients are registered with the managed IP address of the active Contact Center Multimedia server. During a switchover, multimedia enabled-agents might notice a short delay in receiving new contacts.

> ✳ **Note:**
>
> High Availability does not support Instant Message (IM) contact types. If a switchover occurs, IM contacts are lost.

Administrator experience during a switchover

In a hot-standby High Availability campus solution the Contact Center Administrator launches Contact Center Manager Administration using the managed name of the server.

If an active Contact Center Manager Server, Communication Control Toolkit, or Contact Center Manager Administration application or server fails, the Contact Center Manager Administration client Web browser continues to use the managed name and the Contact Center Administrator continues working by refreshing the Web browser.
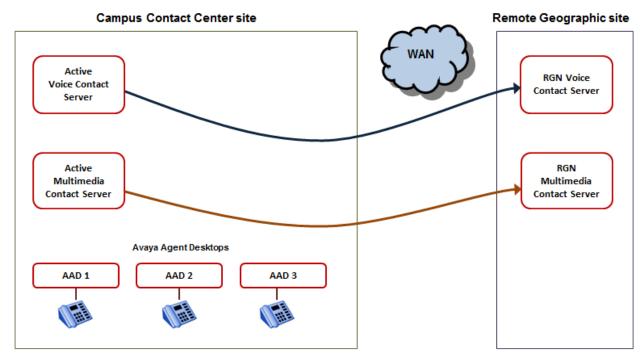
> ✱ **Note:**
>
> At the point where a switchover occurs, the CCMS services stop on the active server. As a result, the historical data being collected on the disk for the 15 minute interval is not saved into the historical statistics tables. It is not possible to recover this data.

Geographic High Availability solution

There are two Geographic High Availability solutions:

- Remote Geographic Node server with no HA at the campus
- Remote Geographic Node server with HA at the campus

The following diagram shows an example of a geographic High Availability solution with no HA at the campus. The RGN Voice Contact server on the remote geographic site shadows the campus Voice Contact Server. The RGN Multimedia Contact Server shadows the campus Multimedia Contact Server.

Voice Contact Server includes Contact Center Manager Server (CCMS), Communication Control Toolkit (CCT), License Manager (LM), and Contact Center Manager Administration (CCMA)
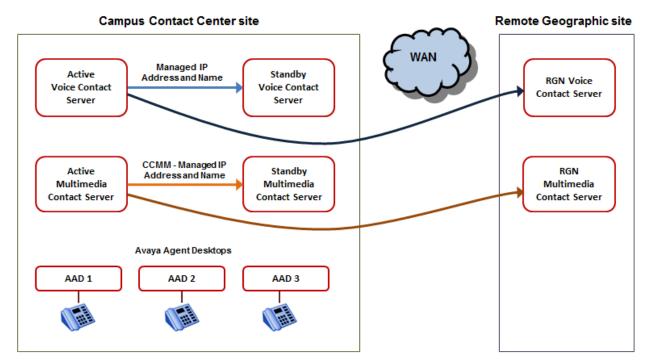
Multimedia Contact Server includes Contact Center Multimedia (CCMM)

AAD   Avaya Agent Desktop

RGN   Remote Geographic Node

Figure 5: Example of a Geographic High Availability solution with no HA at the campus

The following diagram shows an example of a geographic High Availability solution with HA at the campus. The standby Voice Contact Server shadows the active Voice Contact Server. The standby Multimedia Contact Server shadows the active Multimedia Contact Server. The Remote Geographic Node server on the remote geographic site shadows the active Voice Contact Server on the campus site. The Remote Geographic Node Multimedia Contact Server shadows the active Multimedia Contact Server on the campus site.

Figure 6: Example of a Geographic High Availability solution with HA at the campus

The main advantages of Geographic High Availability are:

- Support for database shadowing over the WAN.
- Redundancy in the event of a campus site failure.

Geographic High Availability caters for complete campus site failures, that is, a disaster recovery solution. Remote Geographic Node servers do not automatically take over if the campus system fails. You must start the Remote Geographic Node servers manually.

Avaya Aura® Contact Center supports the following geographic High Availability topologies:

- Avaya Communication Server 1000 AML-based solution, with campus active and standby Contact Center servers, and Contact Center Remote Geographic Node server(s) for data resiliency and disaster recovery.

- Avaya Communication Server 1000 AML-based solution, with a campus active Contact Center server(s), and Contact Center Remote Geographic Node server(s) for data resiliency and disaster recovery.

High Availability Utility

Configure hot-standby High Availability resiliency for CCMS, CCT and CCMM using the High Availability Utility in the Database Utilities. The High Availability Utility configures which server is the active and which is the standby server. The HA utility also configures the Managed IP address for the HA pair.

The High Availability Utility on an active server has the following dialogs under the Configuration tab:

- Server Mode

  - Configure the IP address for the active and standby servers

  - Configure the Trusted IP address

  - Configure the IP address for the Remote Geographic Node

  - Identify if the server is active or standby

  - Enable Automatic Switchover

  - Configure the switchover time-out. This is the duration of a network outage that causes an automatic switchover.

- Notifications

  - Configure an email server for email notifications

  - Configure where and how often to send email notifications

  - Configure the email character set

- System

  - Display information on the system status

  - Verify that shadowing is running

The High Availability utility on an active server has the following dialogs under the Tasks tab:

- CC Applications

  - Start or stop the system

  - Enable or disable CC applications

  - Enable or disable switchover on the CC applications

  - Display system information

- CC Configuration

  - Monitor application service status

  - Define which application services are stopped or started

  - Configure how often a service restarts before switching over to the standby server

- System Control

  - Initiate a manual switchover for the Active Server

  - Initiate Standby Server shadowing

Use the hot-standby High Availability Utility to configure High Availability IP addresses and to configure which server is the active server and which is the standby server. From this utility you can start database shadowing and High Availability functionality. The High Availability Utility does not use the System Management and Monitoring Component (SMMC) system tray.

How to reinstate High Availability resiliency after a switchover

In a Hot-standby campus solution, if the active server fails or if a manual switchover is triggered, the standby server starts processing contacts. The initially active server is now stopped, and the High Availability - Enable Switchover option is disabled. The standby server becomes the active server and it continues to process contacts. The High Availability SMTP feature sends an email to the Contact Center Administrator informing them about the switchover. The current active server has no corresponding standby server at this point, and the solution is no longer resilient.

After a switchover, the High Availability Utility displays a message on the System Control panel if a database restore is required to reinstate High Availability resiliency:

- After a manual switchover, a database restore to the new standby server is not required.

- After a switchover caused by a critical service problem, a database restore to the new standby server is not required.

- After a switchover caused by a contact center subnet (CLAN) network outage, the High Availability Utility displays a message to inform the user to restore the active server database to the new standby server.

- After a switchover caused by an ELAN subnet network outage, a database restore to the new standby server is not required.

- After a switchover caused by an active server crash, the High Availability Utility displays a message to inform the user to restore the active server database to the new standby server.

When the root cause of the failure has been addressed the Contact Center Administrator can reinstate High Availability resiliency using the following steps.

1. If the High Availability Utility — System Control panel displays a message stating that a database restore to the new standby server is required, perform these sub steps. Otherwise, skip to step 2.

   a. On the currently active running server (previous standby server), run the Database Maintenance utility and back up all database applications to a network share. You do not need to stop the active server to back up the applications.

   b. On the currently stopped server (previous active server), stop High Availability shadowing.

   c. Use the Database Maintenance utility to restore the Contact Center databases from the network share.

2. In the High Availability configuration utility, configure this stopped server to be the standby High Availability server.

3. Run Server Configuration to update the local server information to identify the real local IP addresses. Ensure that the License Manager IP address and license type are correct.

4. On the active server, start High Availability and enable switchovers.

5. On the standby server, start High Availability, enable switchovers, and start shadowing.

6. If your HA solution supports multimedia contacts, on the primary Contact Center Multimedia server, restart the CCMM Multimedia Contact Manager service.

For more information about these High Availability related procedures, see *Avaya Aura® Contact Center Server Administration*.

How to reinstate High Availability resiliency after a total network outage

During a total network outage, the active and standby servers cannot communicate with each other and/or the Trusted IP address. Because the active server cannot communicate with the Trusted IP address, it stops the Contact Center services. Because the standby server also cannot communicate with the Trusted IP address, it stops the Contact Center services. All Contact Center services on the active and standby servers stop during a total network outage.

When the root cause of the failure is fixed, the Contact Center Administrator can reinstate High Availability resiliency using the following steps.

• Ensure the active and standby servers can communicate with each other and the Trusted IP address.

• Configure the active server to be the High Availability active server.

• Start High Availability on the active server.

- Backup the active server databases and restore them on to the standby server.

- Configure the standby server to be the High Availability standby server.

- On the standby server, use Server Configuration to verify that the standby server details are correct.

- Start High Availability on the standby server.

- Enable switchovers on the active server.

For more information about these High Availability related procedures, see *Avaya Aura® Contact Center Server Administration*.

How to manually switch over to the Remote Geographic Node in an AML CS1000-based solution

If the CS1000 AML-based Hot-standby High Availability campus site fails or is shut down, you can manually commission and start the Remote Geographic Node solution. During normal operation the Remote Geographic Node (RGN) shadows the campus site database. The RGN therefore has the same configuration as the campus site. The RGN has the correct configuration of agent and skillset information, the same as the campus site.

You can manually commission the RGN servers by ensuring the server configuration details point to local telephony and multimedia resources at the RGN location.

In the following example the geographic site has a Remote Geographic Node Voice Contact Server and a Remote Geographic Node Multimedia Contact Server.

Before commissioning the Remote Geographic Node server:

- Completely disable the active and standby servers on the campus site.

- Activate the Avaya Communication Server 1000 (CS1000) Survivable Media Gateway on the geographic site.

Remote Geographic Node CCMS, CCMA, and CCT configuration

Perform the following steps on the Remote Geographic Node (RGN) Voice Contact Server:

- Use the HA utility to verify that shadowing has stopped. Stop shadowing if it has not.

- Use the HA utility to select, while in RGN server mode, the **Temporarily set as non-HA** check box, and click **OK**.

- Use the System Control and Monitor Utility (SCMU) to start all services.

- Log on to the RGN CCMA Web administration, and manually update the CCMS, CCT, and CCMM servers to the RGN server name and IP address.

- Start Agent Desktop.

- If your Contact Center solution uses an external Web Communications server, configure the Web Communications server to update the files with the RGN server name.

• If your Contact Center solution uses Proactive Outreach Manager (POM), configure the POM server to point to the RGN server.

How to revert to the campus site after running the RGN for a few days

If a Hot-standby High Availability campus site fails or is shut down, you can manually commission and start the Remote Geographic Node solution. You can then use the Remote Geographic Node (RGN) servers until the campus site is available again. When the campus servers are available you must shutdown the RGN servers and re-configure High Availability on the campus site. Avaya Aura® Contact Center is out-of-service during this re-configuration period, because the campus HA servers must be rebuilt with consistent data, without any configuration or statistical data updates on the RGN server that might not get restored on the new campus HA server.

In the following example the solution has a HA pair of Voice Contact Servers at the campus, and a Remote Geographic Node Voice Contact Server.

• Stop shadowing, and stop all contact center services on the RGN server.

• On the RGN server, backup all the application databases and the ADMIN database.

• On the RGN server, using the High Availability utility, ensure that shadowing is stopped and clear the **Temporarily set as non-HA** check box. This sets the RGN server back to RGN mode.

• Restore the RGN database backups on the campus active server.

• On the campus active server, using the High Availability utility, under **Tasks** > **CC Applications**, click **Start** to start HA. This starts the AACC services.

• Use the System Control and Monitor Utility (SCMU) to confirm that all services started.

• Log on to CCMA, and manually update the CCMS, CCT, and CCMM server names to the original campus values.

• After the active server is up, take a database backup from the active server, and restore this backup to both the standby server and the RGN server.

• On the standby and RGN servers, using the High Availability utility, start shadowing.

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