

Avaya Aura[®] Conferencing Overview and Specification

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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.

Intended audience

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

Revision history

Issue	Date	Summary of changes
1.0	07/2012	This is a new document for Avaya Aura® Conferencing 7.0.
2.0	12/2012	This issue contains updates to support the following new features of Avaya Aura [®] Conferencing Release 7.0 SP2:
		Collaboration Agent Permanent Association
		Microsoft Lync
		 Avaya Flare[®] Experience for Windowsand Avaya Flare[®] Experience for iPad Devices
		Collaboration Agent for Android-based phones
		Regional cascading
3.0	03/2013	This issue contains updates to the performance specifications.

Related resources

Documentation

The following documents are available for Avaya Aura® Conferencing:

- Avaya Aura® Conferencing 7.0 Overview and Specification
- Planning and Design for Avaya Aura® Conferencing 7.0
- Deploying Avaya Aura[®] Conferencing 7.0
- Avaya Aura[®] Conferencing 7.0 Security
- Administering Avaya Aura® Conferencing 7.0
- Maintaining and Troubleshooting Avaya Aura® Conferencing 7.0
- Accounting Records for Avaya Aura® Conferencing 7.0
- Avaya Aura[®] Conferencing 7.0 Alarms and Logs
- Operational Measurements for Avaya Aura[®] Conferencing 7.0
- Using Avaya Aura® Conferencing Collaboration Agent
- Avaya Aura[®] Conferencing Collaboration Agent Quick Reference

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Course code	Course title
5U00120V	Avaya Aura® Conferencing 7.0 Implementation, Maintenance, and Troubleshooting
3202	Avaya Aura® Conferencing Release 7.x Implementation and Maintenance
2U00032O	Selling Avaya Aura® Conferencing 7 - Level 1
2U00033O	Selling Avaya Aura® Conferencing 7 - Level 2

Course code Course title			
2U00325O	Avaya Aura [®] Conferencing 7 L1 Customer Scenario		
3U00025O	Designing Avaya Aura® Conferencing 7.0 - Tech Sales L1		

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Introduction

Chapter 2: Avaya Aura® Conferencing overview

Feature overview

Avaya Aura® Conferencing is an Enterprise conferencing and collaboration product providing planned and on-demand integrated Audio, Web, and Video conferencing and control from a single point for a seamless Unified Communication experience. Avaya Aura® Conferencing provides reliable call preservation and redundancy as well as outstanding bandwidth management and utilization with distributed architecture and dynamic adaptation through media cascading. A lower total cost of ownership is driven by a unified infrastructure. simplifying management and lower acquisition, upgrade, and bandwidth costs.

The distributed architecture allows cascading Media Servers to be positioned to optimize WAN bandwidth and provide high availability redundancy. Avaya Aura® Conferencing supports ondemand conferencing through MeetMe and Event, and Adhoc conferences with advanced conference controls.

The Avaya Aura® Conferencing solution has strong integration with the Avaya Aura® core and includes broad support for Avaya endpoints. Avaya Aura® Conferencing video conferencing supports high definition resolutions up to 720p through a software video routing technology based on the H.264 SVC standard.

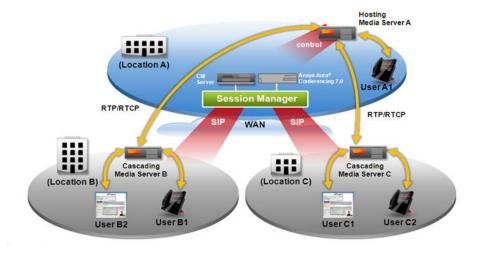


Figure 1: Avaya Aura® Conferencing network architecture

Avaya Aura® solution

Avaya Aura® comprises a number of key components that work together to provide a powerful Unified Communications solution. These components provide integrated management of the overall solution. The components include the following:

- Avaya Aura[®] Session Manager
- Avaya Aura[®] Conferencing
- · Feature servers and access elements
- System Manager

This section describes the roles of these components in providing Avaya Aura® Conferencing features and services.

Session Manager

Session Manager plays a critical role in Avaya Aura[®]. Session Manager determines the routing between components, manages the SIP registration of users, manages the bandwidth of the network, and performs a number of other key functions. Avaya Aura® Conferencing is dependent on the various roles of Session Manager, including:

- SIP routing of sessions between Avaya Aura® Conferencing and other components in the network. Avaya Aura® Conferencing is defined in Session Manager as an application that can originate and terminate SIP sessions.
- Bandwidth management of the network. Session Manager provides a shared bandwidth management interface so that Avaya Aura® Conferencing can request bandwidth for sessions terminating in Avaya Aura® Conferencing.

Avaya Aura® Conferencing components

Various Avaya Aura[®] Conferencing components are deployed in the network of an enterprise. These components provide conferencing and collaboration capabilities to users and tools to manage the resources used in the Avaya Aura® Conferencing application server.

Feature servers and Avaya Aura® access elements

Avaya Aura® supports various feature servers and access elements that provide features for a variety of devices and gateways. Avaya Aura® Communication Manager Releases 5.2.1,

6.0.1, and 6.2 or Avaya Communication Server 1000 Release 7.6 provide features in a network that is equipped with one or multiple instances of the Avaya Aura® access elements.



Only Communication Manager Release 6.2 supports video conferencing.

In addition to client features, Communication Manager or CS 1000 support bandwidth management for resources that the Avaya Aura® access elements control. You can also manage bandwidth usage of the audio and the video media streams in the network through Session Manager. Using a shared bandwidth management interface, Conferencing performs network bandwidth management through Session Manager.

System Manager integrated management

System Manager provides integrated management for all the components in an enterprise network, including a common view of the network elements and navigation to the various components in the solution.

User Communication Profiles

Use Avava Aura® System Manager to assign communication profiles to users. With communication profiles, you can provision attributes that determine the operation of the features and the applications required by users. Some of the attributes, such as user names, address handles, and credentials, are common to a number of applications, while other attributes are specific to certain applications.

In a Conferencing deployment, you can configure common attributes so that users can access Collaboration Agent or Flare Experience using Avaya Aura® user names and credentials. These attributes are replicated from System Manager to Conferencing Application Server. You can assign user conferencing profiles to users in System Manager to provision attributes that are specific to Conferencing.

Conferencing management tools navigation

Through System Manager, system administrators can use the single sign-on credentials to navigate to the management components provided by Conferencing. By selecting the Conferencing element on System Manager home page, you can gain access to a collection of tools to manage the Conferencing components on the network.

Key product features

Avaya Aura[®] Conferencing comprises the following key features:

- Audio and video conferencing
- Web conferencing
- Web collaboration

Audio and video conferencing

Both MeetMe and Adhoc conferences support audio, video, and Web collaboration. Avaya Aura® Conferencing supports different classes of service so the highest quality of audio and video is chosen based on the available bandwidth. The class of service is configured from the administrative provisioning interface. Avaya Aura® Conferencing works in tandem with the Avaya Media Server. Conferencing resources such as Media Server location clustering, bandwidth management, and media cascading are controlled from the same interfaces as audio.

Avaya Aura[®] Conferencing supports single stream and continuous presence video conferences. In continuous presence conferences, the user can receive up to four video streams of the recent active speakers on the conference. The codecs H.264 advanced video codec (AVC) and H.264 scalable video codec (SVC) are supported. Avaya Aura® Conferencing video conferencing supports features and events such as audio mute, video mute, mute all, and lecture mode.

For a list of the supported clients, see Supported clients on page 45.

MeetMe conferencing

MeetMe conferencing is used for preplanned meetings where you distribute the conference number and participant access code in advance. With MeetMe conferencing, you can host a conference call using preconfigured conference access codes. Your system administrator provisions one or more MeetMe telephone numbers. Conference participants can join the conference by dialing the MeetMe telephone number. Each conference participant then dials an access code that is unique to the conference and they are admitted into the conference. The conference moderator has a unique access code for the preconfigured MeetMe conference that is separate from the participants and identifies them as the host of the conference.

🔀 Note:

To join a conference with both audio and video enabled, all policies and bandwidth limits must be satisfied. Otherwise, only audio is available.

Adhoc conferencing

With Adhoc conferencing, you can host a conference or be connected to a conference by the moderator at any time. Similar to MeetMe, the system administrator provisions one or more Adhoc conferencing telephone numbers. This telephone number is referred to as a conference factory.

There are two types of Adhoc conferences:

- · dial out: The conference moderator dials the Adhoc conferencing number and then uses dial-out to contact participants or uses transfer-in to add participants from another call.
- merge: The conference moderator merges two point-to-point calls to create an Adhoc.

The conference participant can choose to join or decline the Adhoc conference. Participants (excluding the moderator) never manually dial into the Adhoc bridge.

Event conferencing

Enterprises need to conduct large conferences that involve a large number of participants. Avaya Aura® Conferencing supports these large conferences through the Event type of conferencing. Event conferences have the following unique characteristics:

- Conferences are always in the lecture mode and cannot be changed from the lecture mode. The moderator unmutes participants with raised hands, which allows these participants to converse with the presenter.
- Presenters join the conference with a separate access code that excludes them from lecture mode.
- Continuation is enabled to ensure that the conference stays active until the last presenter disconnects.
- Participants see a limited roster list containing speakers and the participants that have speaking privileges. The moderator views the entire roster list. Presenters can view raised hand requests.
- Entry and exit tones are disabled.

Web conferencing

Web conferencing provides tools to manage and participate in conferences through Collaboration Agent. Web conferencing has the following characteristics:

- Users join a Web conferencing from an enterprise location or from a remote location by clicking the Collaboration Agent URL and entering the authentication credentials.
- Users choose to join only the audio conference of a Web conference through a telephone by dialing the assigned conference number.
- Users view a roster list, which identifies the users participating in the conference, in Collaboration Agent.
- Users use conference controls such as raising a hand to converse with the presenter and muting the speaker of the users.

Web conferencing supports Meetme and Adhoc conferences.

For more information about Web conferencing, see *Using Avaya Aura® Conferencing Collaboration Agent* at the Avaya Support website: http://support.avaya.com.

Web collaboration

Using the Collaboration Agent application, Web collaboration provides the ability to share applications, documents, virtual whiteboards, or your entire desktop during a conference. Collaboration Agent runs on any device that supports a Web browser and Adobe Flash.

Collaboration Agent provides the following features:

- a roster to display the list of participants and any information about the participants such as active speaker and mute status
- a library to store presentation material for fast and easy retrieval during a conference
- the ability to share a document, desktop, or an application
- · whiteboard tools to annotate a document for all to see
- send messages during a conference
- record and edit meeting minutes
- create and distribute meeting reports based on meeting minutes

Collaboration Agent Permanent Association

Collaboration Agent displays two entries in the roster for users logging in through Collaboration Agent and a PSTN phone. With the Collaboration Agent Permanent Association feature, users

associate Collaboration Agent and the number of the PSTN phone to appear as a single entry.

This association also applies to actions such as muting. The muting feature in Collaboration Agent does not mute the audio of the PSTN phone.

Key components

Conferencing consists of the following key components:

- Application Server
- Avaya Media Server
- Web Server
- Document Conversion Server

Depending on your deployment layout configuration, some or all of the components in the preceding list can be co-resident or standalone. For more information, see deployment on page 51.

Application Server

The Application Server is a SIP collaboration server that is functionally rich providing a high scalability and high availability audio, video, and Web collaboration session control software engine. The Application Server hosts the MeetMe, Event, and Adhoc conference applications, and handles the SIP signaling from clients. The Application Server supports advanced client integration for Session Initiation Protocol (SIP) events RFC 4579, RFC 4575, Centralized Conferencing Manipulation Protocol (CCMP), and SIP that supports Voice, Video, Web Conferencing, and multiparty Instant Messaging (IM).

In addition to conference control, the roles of the Application Server include management and optimization of bandwidth, and selection of the Media Server for cascading.

Media Server

Avaya Media Server processes the audio and the video media streams of a conference, including voice mixing. Media Server can be distributed across different enterprise locations to provide bandwidth optimization that is aligned with the enterprise network topology. Application Server controls Media Server. Conferencing uses dedicated Media Server clusters to host Event conferences.

Media Server supports the following codecs:

Audio	Video
G.711, including the μ-law and the A-law algorithms	H.264, including AVC and SVC
G.722	_
G.729	_

Web Server

The Web Server is a solution component that allows content sharing through the Collaboration Agent Web application or from supported clients such as Flare Experience.

Subcomponents of the Web Server are the Web Conferencing Server (WCS), the Web Conferencing Management Server (WCMS), and the Collaboration Agent network elements.

- Web Conferencing Server: The Web Conferencing Server is a network element that hosts Web conferencing sessions for the Web conferencing client or other clients. This is a required node for the Web conference solution. This node hosts REST APIs that clients can integrate with to be part of the conference. Dedicated Web Conferencing Servers are required for event conferences.
- Web Conferencing Management Server: The Web Conferencing Management Server is a required network element node. It is a database interface to the Web Conferencing Server and acts as the document repository.

Document Conversion Server

The Document Conversion Server (DCS) is a Windows server that converts Microsoft Word and PowerPoint, PDF, and other document types into a format for content sharing using Web conferencing. The DCS is configured as a separate node and not a network element. This node is required for the Web conferencing solution to support a document repository library.

The DCS requires additional components for converting documents and Web applications for your Web conferencing sessions:

- Microsoft Windows server 2008 R2 Operating system
- Microsoft Office 2010 or later
- · Java 1.6 or later

Conference features

This section contains the conferencing features such as a description of the user roles, conference controls, and lecture mode.

User roles

The following is a list of the user roles for Avaya Aura® Conferencing:

- Moderator
- Presenter
- Participant
- Guest
- Operator

Moderator

A moderator is a provisioned user and has full control of the conference by using one of the supported clients.

For a list of the moderator controls using a supported client such as Collaboration Agent, see <u>Table 1: Conference controls for a supported client</u> on page 21.

For a description of commands using a dialpad on your audio or video endpoint, see <u>Table 2</u>: Conference controls using the dialpad of an audio or video endpoint on page 24.



If a moderator has not joined the conference or one has not identified, then the first user to dial into the conference with the moderator code or the first user to assume moderator command becomes the moderator. If you have already joined the conference as a participant, you must disconnect and rejoin as moderator or enter *51. After the moderator has been established for a particular conference then all subsequent users dialing in with the moderator code are added as participants.

Presenter

A presenter is a provisioned user. The presenter has the same privileges as a participant but has been promoted to presenter to allow presentation of content using Web collaboration.

For Event conferences, the presenter enters a special access code or the moderator can promote participants to presenter status.

Participant

Participant is a provisioned user attending a conference call. A user can participate in a conference using an Avaya Aura® Conferencing user account. Moderator can promote the role of the user to Presenter or Moderator. However, the user cannot change the state of the conference.

For a description of the participant controls using a supported client such as Collaboration Agent, see Table 1: Conference controls for a supported client on page 21.

For a description of commands using the dial pad of your audio or video endpoint, see Table 2: Conference controls using the dialpad of an audio or video endpoint on page 24.



If Moderator has not joined a conference call or Moderator is not defined, a user can assume the Moderator role by joining the conference through the Moderator code.

Guest

A guest is an unprovisioned user. The guest has the same privileges as a participant but cannot be promoted to moderator. Guests can be mobile users, users dialing in from a conference room telephone or from outside an Enterprise location, or anyone who does not have an Avaya Aura® Conferencing user account. Users can log on as guest or participant for Web conferencing.

Operator

An operator (if provisioned by the administrator) controls every aspect of a conference in the same manner as the moderator. However, an operator does not attend the conference but can be called upon by pressing the Information (i) button and dialing the code *0 from your telephone dialpad, if assistance is required. An operator has search host code capabilities and can search by username or security code. If an operator enters a conference with the host code, the operator gains control of the conference. A note appears in the top bar of Collaboration Agent indicating that the operator has control. The operator appears in the roster with an operator icon.

The operator has the same roles as a moderator with the following exceptions for all MeetMe, Adhoc, or Event conference types:

- An operator cannot start or end a Web collaboration session
- An operator does not have presenter capability unless promoted by moderator

- An operator is not muted with conference mute
- · An operator can enable and disable conference continuation after the moderator leaves the conference
- An operator can search a conference by username or security code

Conference controls

Conference users can use a supported audio or video client endpoint to control call functions and characteristics.

The following are the two ways to access a conference:

- dialpad on your audio or video endpoint
- a supported client such as the Collaboration Agent and advanced clients such as Avaya Flare® Experience for Windows and Avaya Flare® Experience for iPad Devices. For a complete list of supported clients, see Supported clients on page 45.

Using Collaboration Agent allows for advanced conference control operations for scheduled conferences such as MeetMe and Event conferences.

The following two tables provide a description of the advanced and integrated conference control features available to the moderator, participant, and guest user using a supported client user interface and conference controls that can be used from the dialpad of your audio or video endpoint.

Table 1: Conference controls for a supported client

Feature	Description	Moderator	Participant	Guest
Continuation	Toggle on or off. Enabled by default. If enabled, the conference continues even after the moderator leaves the conference. If disabled and the moderator leaves the conference, participants are notified of the number of minutes remaining until the conference ends. The conference returns to a normal conference state if the moderator rejoins the conference or one of the participants assumes moderator control.		no	no

Feature	Description	Moderator	Participant	Guest
	For more information about continuation, see Continuation on page 29.			
Lock and unlock conference	The moderator can lock the conference to block new participants from joining. The moderator can dial out to add new participants at any time or unlock the conference. For more information about lock and unlock, see Lock and unlock on page 28.	yes	no	no
Lecture mode	The moderator becomes a lecturer and is the only one who can speak or be seen in video on the conference. All other participants are considered passive participants and in a mute for audio and paused for video state. For more information about lecture mode, see Lecture mode on page 28.	yes	no	no
Fast start	Toggle on or off. If enabled, conference participants are joined to the conference immediately. The moderator does not need to join first. If disabled, conference participants are in a wait state until the moderator joins. For more information about fast start, see Fast start on page 29.	yes	no	no
Display dropped participants	Displays participants who have left the conference.	yes	yes	yes
Sort participants by roles	Displays participants by role (moderator, participant, guest, and presenter).	yes	yes	yes
Dial out	The moderator can invite a new participant to the conference.	yes	no	no

Feature	Description	Moderator	Participant	Guest
Dial out to operator (if provisioned by the administrator)	Contacts the operator.	yes	yes	no
End conference	All participants are released from the conference even if conference continuation is enabled.	yes	no	no
Entry and exit tones	Toggle on or off. Disabled by default. If enabled, an audible entry or exit tone plays when a participant joins or leaves a conference. If disabled, no audible entry or exit tone plays.	yes	no	no
Audio mute or unmute	Individual participants: A moderator can mute or unmute the audio of an individual conference participant. The moderator cannot self mute. A participant can mute audio for self only.	yes	yes-self only	yes-self only
	Audio mute or unmute all participants: If enabled, only the moderator can speak and all other participants have the audio muted.	yes	no	no
Video pause or unpause	Individual participants: A moderator can pause or unpause the video for an individual conference participant. The moderator cannot self pause. A participant can pause video for self only.	yes	yes-self only	yes-self only
	Video pause or unpause all participants: If enabled, only the moderator can send video and all other participants have the video paused.	yes	no	no

Feature	Description	Moderator	Participant	Guest
Move user	Move a participant from one conference to another.	yes	no	no
Drop user	Remove a participant from the conference.	yes	no	no
Promote to moderator	Promote participant to moderator.	yes	no	no
Promote to presenter	Promote participant to presenter.	yes	no	no
Silence or unsilence	Silence or unsilence all participants.	yes	no	no
See the participant count	See the number of participants in the meeting.	yes	yes	yes
Raise and lower hand	To signal to the moderator and others in the conference that you wish to speak.	no	yes	yes
List feature keys	Show a list of the available feature keys.	yes	yes	yes

Note:

The operator has the same privileges as a moderator with some exceptions. For more information about the exceptions, see Operator on page 20.

The presenter has the same privileges as a participant with some differences. For more information, see <u>Presenter</u> on page 19.

Table 2: Conference controls using the dialpad of an audio or video endpoint

Key	Feature	Description	Moderator	Participant	Guest
**	Help	Plays an audio list of the commands available. This is played only to the issuer.	yes	yes	yes
.#	Count participants	Audio indication of the number of active users in a conference. This is played only to the issuer.	yes	yes	yes
##	End conference	Stops the conference even if conference continuation is enabled.	yes	no	no

Key	Feature	Description	Moderator	Participant	Guest
*0	Dial out to operator	The administrator must provision to allow dial out to operator.	yes	yes	no
*1	Dial out	Joins a new participant to the conference.	yes	no	no
*4	Entry or exit tone	Enable or disable the play entry and exit tones to participants. If enabled, tones are played to participants upon entering or exiting a conference.	yes	no	no
*41	Raise hand	Signal to moderator and others in the conference that you wish to speak. Audio only participants receive audio feedback for a raise hand request. The audio feedback is: • your hand is raised • your hand could not be	no	yes	yes
		raised Video endpoint users can see a raised hand icon next to the user in the roster list.			
*42	Lower hand	The moderator can lower the hand of participants. The participant can lower hand for self only. Audio only participants receive audio feedback for a lower hand request. • your hand is lowered • the moderator lowered your hand Video endpoint users can see the hand request has been lowered as the raise hand icon next to the	yes-participants only Note: For event conferences: the moderator must use a user interface such as Collaboration Agent to lower the hand of participants.	yes-self only	yes-self only

Key	Feature	Description	Moderator	Participant	Guest
		user in the roster list is no longer visible.			
*5	Lecture mode	Enable or disable lecture mode for a specific conference. The moderator becomes a lecturer and is the only one who can speak or be seen in video on the conference. All other participants are considered passive participants and are in a mute for audio and paused for video state. For more information about lecture mode, see Lecture mode on page 28	yes	no	no
*51	Set moderator	To set the moderator when none is present. The participant enters the moderator code and then the pound key (#) to become the moderator.	no	yes	yes
*6	Mute or unmute audio and video	Mute or unmute audio and video.	yes-self only	yes-self only	yes-self only
*61	Mute or unmute audio	Mute or unmute audio.	yes-self only	yes-self only	yes-self only
*62	Pause or unpause video	Pause or unpause video.	yes-self only	yes-self only	yes-self only
*7	Lock or unlock conference	The moderator can lock the conference to block new participants from joining. The moderator can dial out to add new participants at any time or unlock the conference. For more information about lock and unlock,	yes	no	no

Key	Feature	Description	Moderator	Participant	Guest
		see <u>Lock and unlock</u> on page 28.			
*71	Disable video	Turns off video for the conference for the duration of the conference. New participants join without video functionality.	yes	no	no
*81	Audio mute all (on or off)	Silences or unsilences all participants in the conference.	yes	no	no
*82	Video mute all (on or off)	Turn video on or off for all participants in the conference.	yes	no	no
*96	Silence all participants	Silences all participants in the conference; however, participants have the ability to unsilience.	yes	no	no
*98	Continuation	Enable or disable. If enabled, conference continues after the moderator leaves the conference. If disabled and the moderator leaves the conference, participants are notified of the number of minutes remaining until the conference ends. The conference returns to a normal conference state if the moderator rejoins the conference or one of the participants assumes moderator control. For more information about continuation, see Continuation on page 29.	yes	no	no

🔀 Note:

The operator has the same privileges as a moderator with some exceptions. For more information about the exceptions, see Operator on page 20.

The presenter has the same privileges as a participant with some differences. For more information, see Presenter on page 19.

Lecture mode

A moderator can start lecture mode. After lecture mode has started, all participants are automatically muted. Event conferences have the characteristics of lecture mode.

The following are some of the characteristics:

- There can be more than one presenter.
- Presenters are not automatically muted.
- Participants who are promoted to presenter are automatically unmuted and have lecture mode capabilities.
- Presenters who are demoted to participant are automatically muted and no longer have lecture mode capabilities.
- Presenters joining an active conference in lecture mode are automatically muted but have the ability to mute or unmute.
- Moderator can mute and unmute participants.
 - If the moderator unmutes a participant, then the participant has left lecture mode and can control their own mute and unmute state.
 - The moderator can return the participant to lecture mode by muting the participant.

Participants in lecture mode or event conferences are automatically muted so the participants use the raise hand feature to signal to the moderator and others in the conference that they wish to speak. Participants in Adhoc or MeetMe conferences are not muted but the raise hand feature can be used to manage speaking order. The moderator can lower hand requests. Participants can use their raise or lower hand request button and can see raised hand requests by other participants.

Lock and unlock

The conference lock feature is used only by the moderator to block new participants from joining the conference. It does not lock bandwidth or other resources when in a locked state. The moderator can use an interface such as Collaboration Agent/Flare client or the telephone dialpad to lock the conference. Conferences are unlocked by default but the moderator can lock or unlock a conference at any time after joining the conference. After the conference is

locked, an audible message is played to notify participants of the change in state. If a participant attempts to join a locked conference, an audible message plays to indicate that the conference is locked.

The moderator can unlock at any time. If the conference is in a locked state, the moderator must dial-out to have new participants join. The moderator can always rejoin the conference if it is in a locked state. Participants can disconnect from the conference at any time regardless of the locked state but cannot rejoin a locked conference. Participants cannot use dial out or join other participants to a conference that is in a locked state. Moderators can promote a user to moderator during a locked conference and the conference remains in a locked state. If the moderator leaves the conference, the conference enters an unlocked state.

A user who is in a conference which is in a locked state can:

- upgrade from audio to audio/video or downgrade from audio/video to audio only
- enter or exit Web collaboration
- silence/pause video

The lock conference feature applies to both MeetMe and Adhoc conferences. Clients that have subscribed to the conference event package recieve an RFC 4575 notification when a conference is locked or unlocked.

Fast start

A fast start conference can be enabled for MeetMe conferences prior to the start of the conference. If the fast start feature is enabled, conference participants can join a conference before the moderator arrives. If Fast Start is disabled, the conference participants are in a wait state until the moderator joins. If the moderator does not join, a conference participant can assume moderator control by entering the moderator access code using an interface such as Collaboration Agent/Flare client or a telephone dialpad (*51). Conference fast start is disabled by default. Fast start is not relevant for Adhoc conferences because the originator of the conference is treated as the moderator.

Continuation

Conference continuation is configured by the moderator to allow the conference to continue after the moderator disconnects. By default, the conference ends after the moderator leaves and the grace period expires. If the moderator rejoins the conference before the grace period expires or another participant assumes control, the conference continues. Otherwise, the conference ends and all sessions are terminated and the audio/video stream is torn down.

To enable continuation after the moderator disconnects, the moderator can use a user interface such as Collaboration Agent or Flare client, or the dialpad on an audio or video endpoint (*98) to toggle continuation. During a conference, the moderator can disable continuation for that specific conference even if the conference continuation setting is enabled in the default

conference settings. The continuation feature applies to both MeetMe and Adhoc conferences.

Key system features

The following section describes the key system features.

Bandwidth management

A key capability in Avaya Aura® Conferencing is to manage bandwidth usage to ensure the best video quality possible within the bandwidth available in the network, while minimizing the cost of network resources. Administrators can define maximum bandwidth limits that can be consumed for audio and video on a location basis and control minimum levels of quality that must be maintained for each user at every site. Avaya Aura® Conferencing adapts to the network conditions by optimizing the quality and bandwidth usage within these limits to maximize the number of audio and video sessions allowed. Management tools monitor bandwidth usage as an aid in planning, deployment, and ongoing support of audio and video conferencing network resources. For more information about the KPI client, see Monitoring and reporting on page 40.

Media cascading

Media cascading reduces the number of media streams travelling across the WAN by consolidating these streams based by location. This technique is applied to both audio and video streams. Media cascading provides bandwidth optimization with no significant reductions in the quality of audio or video. Conferences are scalable with proper configuration and management which is fully transparent to end users.

Multimedia sessions without media cascading

The following figure shows an example of three locations that use a single centralized Avaya Media Server without the benefits of media cascading. In this scenario, every client receives an independent stream of audio and video from the hosting Media Server A. Without media cascading, the identical media stream is delivered to all clients. Therefore, as the number of participants in the conference increases, the valuable WAN resources at the non-hosting location are consumed.

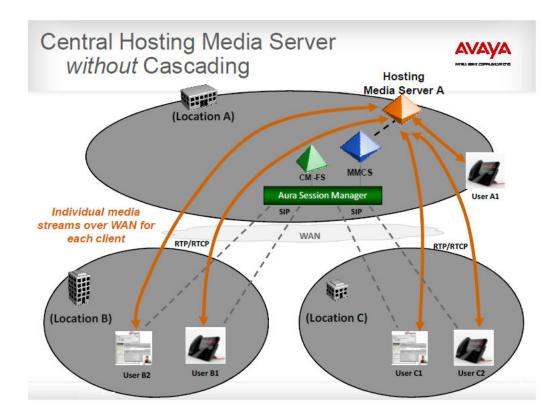


Figure 2: Central hosting Media Server without media cascading

Multimedia session with media cascading

To optimize the bandwidth usage using media cascading, Avaya Aura[®] Conferencing continues to use a centralized Avaya Media Server to provide a single point to accurately determine the Active Speaker from all of the media streams but allows additional Media Servers in different locations in the network so media streams can be distributed to (or from) multiple clients at the location or aggregated locally before routing to the central server (depending upon the session scenario).

In the following figure, you can optimize WAN bandwidth usage by using media cascading. For example, by distributing Media Servers at locations B and C, you can consolidate your media streams at those locations. In this simplified example, only the current active speaker is shown in video to demonstrate that media can be limited to a single video stream from each location (the active speaker) and a single audio stream (mixed stream of all local audio streams).

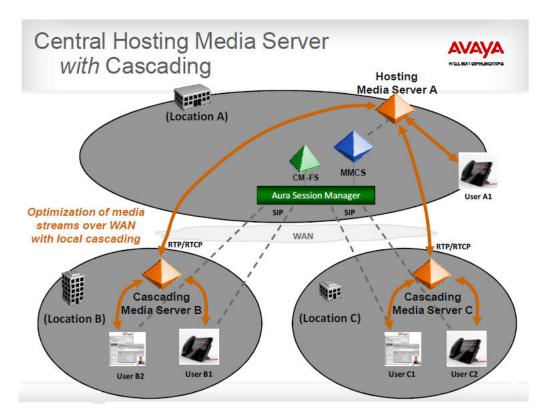


Figure 3: Central hosting Media Server with media cascading



- A single media stream of audio and video from the central Application Server is sent from the hosting Media Server to the local Media Server involved in the cascading scenario. This media stream is cascaded by the cascading Media Server to all clients locally. This eliminates the WAN bandwidth usage of additional streams sent to clients after the first when compared to a scenario without media cascading.
- Audio and video is sent from the cascading Media Server to the hosting Media Server based upon monitoring of the speech activity from local clients.
- A single bidirectional audio stream is sent between the local cascading Media Server and the hosting Media Server. These streams are mixed together and sent in a single stream, reducing WAN bandwidth usage.

The previous figure is just one example of many possible topologies. The following factors must be considered for bandwidth savings and when setting the video display policies:

- the location of the Media Servers in the network, with respect to the multimedia clients and endpoints
- layout of video: number of participants shown and whether it is common to all clients
- active speaker algorithm: the number of recent active speakers to display

Multimedia sessions with regional cascading

With regional cascading, you can assign a media cascading location that is geographically close to a remote location that is not equipped with a media server.

Remote locations that are not equipped with media servers also must be able to take advantage of the media cascading feature of Avaya Aura® Conferencing to optimize the WAN bandwidth usage.

With regional cascading, you can assign regional cascading locations for media cascading to remote locations. These remote locations receive the cascaded media from the assigned regional cascading locations that are equipped with a media server.

You can only assign regional cascading locations to remote locations that are connected with a good quality network link and can manage additional data packet delay because of media cascading. Do not assign regional cascading locations to remote locations that are not equipped with a good quality network link and cannot manage additional data packet delay because of media cascading. These remote locations without remote cascading locations receive the multimedia stream directly from the media servers at the hosting locations.

Event conferences and Meetme conferences support regional cascading.

In <u>Multimedia sessions with regional cascading</u> on page 33, Location C, Location D, and Location E are not equipped with media servers. Location C and Location D are equipped with a good quality network link and can manage additional data packet delay because of media cascading. Configure Location B as the regional cascading location for Location C and Location D. Users located at Location C and Location D connect to the cascaded conference at Location B. A media cascading trunk is set up between the regional cascading Location B and the hosting Location A.

Location E is not equipped with a good quality network link and cannot manage additional data packet delay because of media cascading. Do not configure a regional cascading location for this location. Users at Location E connect to the conference at the hosting Location A.

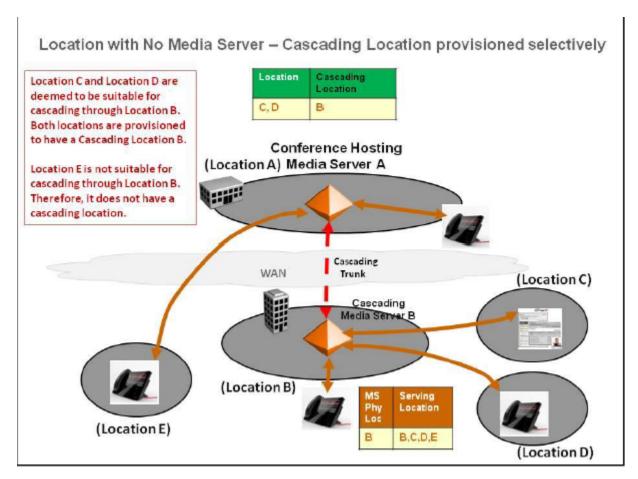


Figure 4: Multimedia sessions with regional cascading

Avaya Media Server selection

Avaya Media Servers are deployed in Media Server clusters that are associated with physical locations. All Avaya Media Servers within a cluster have identical capabilities. These capabilities include IVR and hosting and cascading functions that Avaya Aura® Conferencing controls through MSML and SIP signaling.

Session Manager and Avaya Aura® Conferencing must be provisioned with all the locations in a network. All conference sessions must be associated with a location in the network either through network address mapping or by provisioning the SIP Entity Location field in Session Manager.

🐯 Note:

Avaya Aura® Conferencing cannot manage the sessions that are not associated with a location. If bandwidth management is enabled, Avaya Aura® Conferencingblocks these sessions.

Avaya Media Server algorithms

Use Avaya Media Server selection algorithms to select Media Servers for the various roles in a conference. A Media Server can have different roles for various conferences at any time. For example, an Avaya Media Server can act as an IVR Media Server for one conference, a Hosting Media Server for another conference, and also a Cascading Media Server for another. You create Media Server clusters from the Avaya Aura® Conferencing Element Manager Server and assign a physical location, one or more serving locations and hosting locations in the Avaya Aura® Conferencing Provisioning Client. During conference creation, the user location and Avaya Media Server configuration and state are examined to determine the appropriate Media Server cluster for Avaya Aura® Conferencing to use. Server selection can be one of the following:

- · Media Server selection by location
- IVR Media Server selection
- Hosting and cascading Media Server selection

Avaya Media Server selection by location

There can be numerous scenarios that require consideration for optimal selection of a Media Server for a given location while allowing the pooling of server resources between locations.

For example, it is preferable from a bandwidth utilization perspective for a new participant to use the Media Server that is physically located at the same location. However, if local resources are not available, a Media Server with the lowest load factor that is servicing the location of the participant is selected. This is a common selection algorithm for finding the optimal Media Server for a specified location.

The following flowchart shows the logic used to select the optimal Media Server for a specified location during IVR and hosting Media Server selection.

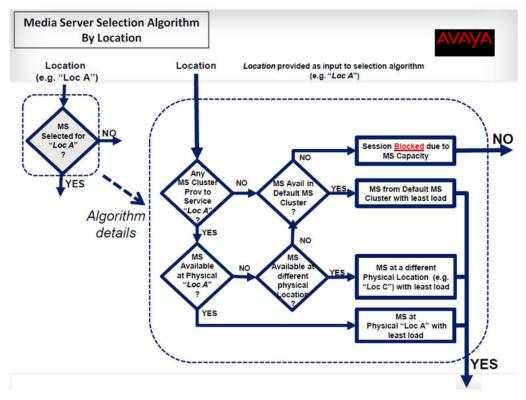


Figure 5: Media Server selection by location

IVR Media Server selection

The IVR Media Server is selected from the current location of the caller which is extracted from the initial INVITE message.



If the initial INVITE from a participant already has the conference access code embedded, the IVR Media Server is not required and the participant is redirected to a Hosting Media Server or Cascading Media Server.

The following figure shows the algorithm used to select the IVR Media Server upon arrival of a new client or participant.

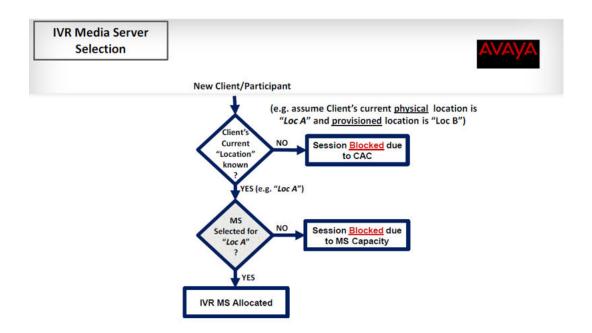


Figure 6: IVR Media Server selection

Hosting and cascading Media Server selection

A hosting Media Server is a logical role for mixing audio, selection of the current Active Speaker and top-level handling of SVC video media streams/layers for the overall conference call.

The target conference is identified after the IVR session. Selection of the hosting Media Server is based on the configuration of the conference moderator. For example:

- The hosting Media Server for an existing conference is found by entering the participant or moderator code and running a search for an existing conference with the participant or moderator code information. If media cascading is disabled for the domain, location, or conference number of the new participant then the new participant is redirected to the existing hosting Media Server.
- The hosting Media Server for a new conference is based on the provisioned location of the conference moderator. This can be different than the moderator's current physical location due to the moderator being at a different physical location than usual or because centralized Media Servers are configured due to site bandwidth limitations.

To select the hosting Media Server, determine the preferred hosting location. This location is then used to select a Media Server using the Media Server selection algorithm.

The following figure shows the algorithm used to select the hosting Media Server upon arrival of a new client or participant.

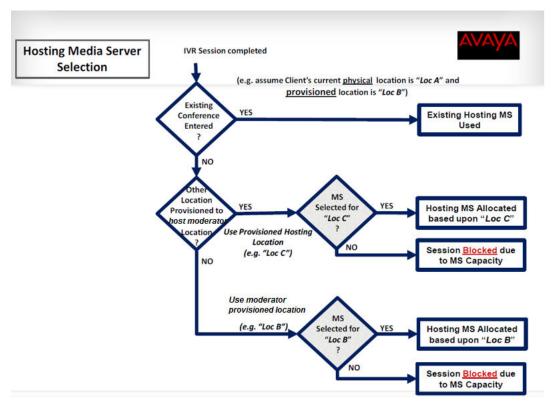


Figure 7: Hosting Media Server selection flow

After the hosting Media Server has been selected, a cascading Media Server can be required.

The following figure shows the algorithm used to select the cascading Media Server upon arrival of a new client or participant to a conference.



The cascading Media Server selected must be at the same physical location as the participant in order to minimize WAN bandwidth. If there is no available local server, cascading cannot occur. The participant is redirected to the hosting Media Server.

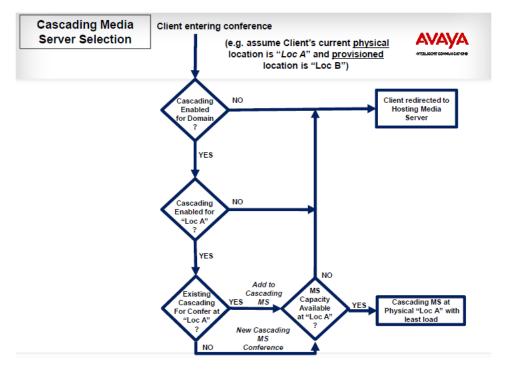


Figure 8: Cascading Media Server selection

Avaya Media Server by load factor

Avaya Aura® Conferencing uses the Avaya Media Server load factor and the number of sessions on the Avaya Media Server to determine the optimal server to host a conference. Any Avaya Media Server that meets the following criteria is a candidate:

- operational
- unlocked
- has a load factor of less than 70
- is available to the cluster at the target location

Avaya Aura[®] Conferencing maintains an ordered list of Avaya Media Servers by issuing an OPTIONS request to the Avaya Media Server every five seconds to request the load factor to keep the order up to date.

Avaya Aura® Conferencing uses the following algorithm to select the Avaya Media Server: For load factors greater than zero, the algorithm is (70 / [load factor] * [number of sessions]) - [number of sessions]. The results are stored against the Avaya Media Server from high to low.



The first Avaya Media Server in this list is the least loaded.

For example, to determine the least loaded Avaya Media Server see the following table.

Table 3: Example calculation to determine load factor

	Avaya Media Server A	Avaya Media Server B				
Sessions:	1000	900				
Load Factor:	35	33				
Calculation:	(70 / [35] * [1000]) - [1000] = [1000]	(70 / [33] * [900]) - [900] = [1009]				
Therefore, Avaya Media Server B is the least loaded						

Monitoring and reporting

Key performance indicator monitoring and reporting client

Administrators of Avaya Aura[®] Conferencing can monitor key performance indicators (KPI) to determine the current or past state of the system and to generate reports. The KPI client is accessed from the Element Manager Console. A network path is required for communication with Element Manager and the Media Server.

With the KPI client, you can view the following:

- View the number of active conferences or sessions from the Application Server dashboard.
- View bandwidth usage at a specific location.
- View the number of licenses in use.
- View system history to troubleshoot problems or plan for system expansion.

For more information about KPI monitoring, see the *Maintaining and Troubleshooting Avaya Aura*[®] *Conferencing* document.

The administrator can use the information from the KPI dashboard to troubleshoot problems or plan for system expansion. Recent data is collected at up to 15-minute intervals. The Data is then flushed and the collection starts again. The update period timer can be configured from 5 seconds through 300 seconds with a default value of 10 seconds. The data collection period is represented on the dashboard chart. The following figure shows the Application Server Dashboard page which includes four charts with information about conferences, sessions, bandwidth, and user based licensing.

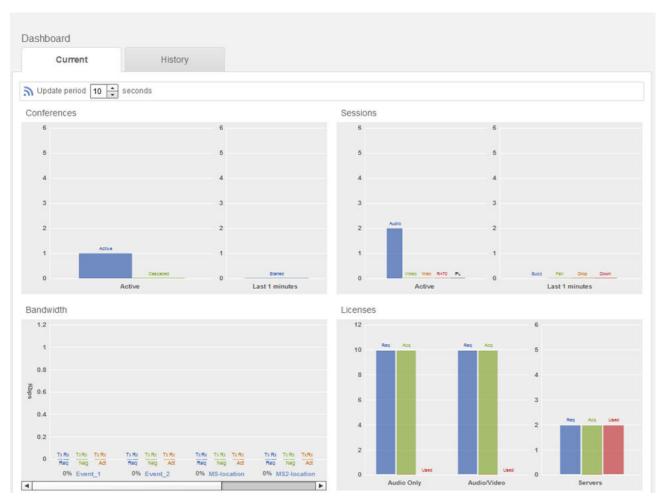


Figure 9: KPI dashboard—Current tab

On the History tab, the Bandwidth chart shows the average transmitted and received values for requested bandwidth, negotiated bandwidth, and actual bandwidth during a specified time period for each location. The Performance chart shows information about the number of conferences and the number of successful, failed, dropped, and downgraded sessions during a specified time period. Session Completion Ratios can be collected for a specific time period such as last hour, last 24 hours, last 7 days, and last 30 days. If there is more than one Application Server instance, select the instance ID for the Application Server from which you want to view data. The following figure shows the Application Server Dashboard page displaying historical information about Bandwidth, Performance, and Session Completion Ratios.

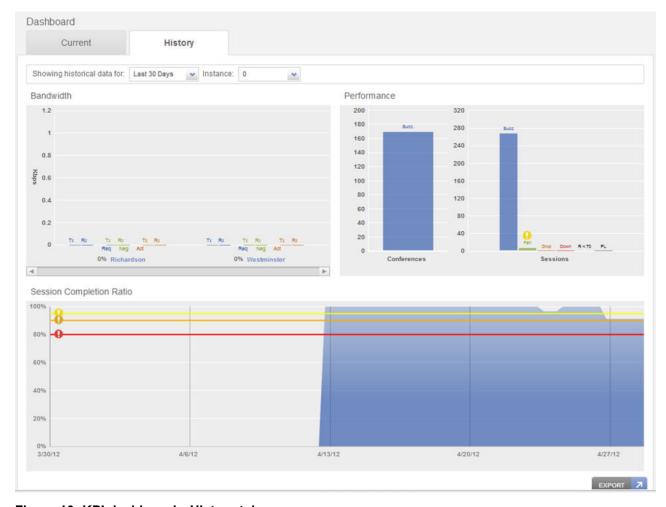


Figure 10: KPI dashboard—History tab

Stateful failover

Configuring stateful failover on your system provides reliability and ensures high availability.

Media Server redundancy

If a Media Server fails, the Application Server routes an incoming session to one of the available Media Servers. During an established session, transparent media failover is not supported. If the session is already established and the Media Server fails, the client must reestablish the session. If the server detects the Media Server failure, an attempt to cleanup the client session is made. The client can also detect a failure and attempt to reestablish the session.

Media Server cluster

A Media Server cluster is a collection of Media Servers. The Media Servers are deployed within clusters with common attributes such as the same physical location, with load sharing redundancy among the servers but no retention of sessions upon failure. All configuration settings are replicated to the Media Servers in the cluster.

A Media Server can be used for either hosting or cascading. It does not matter whether the Media Servers are in the same cluster or different clusters.

A serving location is a list of locations that are served by a Media Server cluster. This is a many to many relationship. A cluster can serve many locations. A location can be served by many clusters.

Avaya Aura® Conferencing failover

Avaya Aura® Conferencing supports 1+1 failover of the Avaya Aura® Conferencing Application Server. In this scenario, there are two instances of the Application Server. One server is the Active server and the other server is in a Hot Standby state. The server in Hot Standby has the same data as the Active server instance but is unused until the Active server fails. If a failover occurs during a call, the state of the call is kept alive because the established session is check-pointed. Pending operations such as lock conference, do not always survive the failover.

Database redundancy

Avava Aura[®] Conferencing supports an Active-Active configuration for a redundant database.

Data migration from existing systems

Avaya Aura® Conferencing 7.0 supports migrating your Avaya Aura® Conferencing 6.0 or Meeting Exchange 5.2 data.

Avaya Aura® Conferencing supports the HP ProLiant DL360 G7. However, if you are upgrading from Avava Aura® Conferencing 6.0 or Meeting Exchange 5.2, you can repurpose your Dell™ PowerEdge[™] R610 or IBM S8800 to use Avaya Aura[®] Conferencing 7.0 for co-resident with redundancy or co-resident simplex layout configurations.



A separate WebLM server is required if you want to maintain your current Meeting Exchange or Avava Aura® Conferencing license while adding a new Avava Aura® Conferencing 7.0 license.

For information about how to migrate your data, see *Deploying Avaya Aura® Conferencing*.

Avaya Aura® Conferencing overview

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Chapter 3: Interoperability

Supported Operating Systems

Avaya Aura® Conferencing supports the following Operating System platforms:

- Server Operating System: Red Hat Linux Enterprise Edition 5.4
- Administration Operating System: Microsoft Windows 7 (32-bit and 64-bit)

Interoperability

The following sections describe the Avaya products, third-party products, and product releases that are compatible with Avaya Aura® Conferencing.

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

Related topics:

Supported clients on page 45 Supported Web browsers on page 49

Supported clients

Avaya Aura® Conferencing supports the following clients:

Avaya client	MeetMe	Adhoc	Advanced Conference Controls	Web conferencing
Avaya Flare® Communicator for iPad (1.x)	yes	_	_	_

Avava client	MeetMe	Adhoc	Advanced	Web
Avaya client	INICELIVIE	Autioc	Conference Controls	conferencing
Avaya Flare® Experience for iPad Devices (1.x)	yes	yes	yes	yes
Avaya Flare® Communicator for Windows (1.x)	yes	_	_	no
Avaya Flare® Experience for Windows (1.x)	yes	yes	yes	yes
Collaboration Agent	_	_	_	yes
9600 series IP Deskphones 6.2 for H.323-based calls:	yes	_	_	_
• Avaya one-X® Deskphone H.323 9608				
• Avaya one-X® Deskphone H.323 9611G				
• Avaya one-X® Deskphone H.323 9621G				
• Avaya one-X® Deskphone H.323 9641G				
9600 series IP Deskphones 6.2 for SIP-based calls:	yes	yes	yes	_
Avaya one-X® Deskphone SIP 9608				
Avaya one-X® Deskphone SIP 9611G				
Avaya one-X® Deskphone SIP 9621G				
• Avaya one-X® Deskphone SIP 9641G				

Avaya client	MeetMe	Adhoc	Advanced Conference Controls	Web conferencing
Avaya 1000 series	yes	_	_	_
Avaya one-X® Communicator 6.1 for H.323-based and SIP- based calls	yes	_	_	_
Note:				
Avaya Aura® Conferencing with Communication Manager Release 6.2 and later support Avaya one-X® Communicator for H.323-based and SIP-based audio and video conferencing. Avaya Aura® Conferencing with Communication Manager Releases 5.2.1 and 6.0.1 support Avaya one- X® Communicator for H.323-based and SIP-based audio conferencing.				
Avaya LifeSize 10XX	yes	_	_	_
Android-based devices:	yes	_	yes	yes
Samsung Galaxy Ace GT-S5830				
Motorola Fire XT 530				
Samsung Galaxy S3 19300 with Android OS 4.0 Ice Cream Sandwich				
HTC Desire S S510E with Android OS 2.3 Gingerbread				

Related topics:

Microsoft Lync integration on page 48

Avaya Flare Experience integration on page 48

Collaboration Agent for Android-based phones on page 48

Microsoft Lync integration

Avaya Aura[®] Conferencing supports Microsoft Lync integration for Avaya Aura[®] deployments where Microsoft Lync Server 2010 is deployed. Avaya Aura[®] Conferencing supports the Avaya Aura[®] and Microsoft Lync integration only on the Microsoft Lync 2010 client.

For more information about the Microsoft Lync integration, see *Avaya Microsoft Lync Integration and Microsoft Office Communicator Add-in Fundamentals for Avaya Aura®* at the Avaya Support website: https://support.avaya.com/.

Avaya Flare® Experience integration

With the Avaya Flare® Experience for Windows and Avaya Flare® Experience for iPad Devices integration feature, you can log in to the enterprise server and dial and receive voice calls and video calls from a telephone extension through a computer.

Using the Avaya Flare® Experience client, you can also:

- Send email messages and instant messages.
- Gain access to the call history, the Avaya Aura® contacts, and the Microsoft Outlook contacts.
- Search the enterprise directory for contacts.
- Manage your presence status.

The Avaya Flare[®] Experience client provides enterprise users with access to all the communication tools in a single interface along with automatic integration with Avaya Aura[®] Conferencing.

Collaboration Agent for Android-based phones

With the Collaboration Agent for Android-based phones integration feature, you can start, join, and manage Web collaboration sessions on the Avaya Aura® Conferencing system from your smart phone.

Supported Web browsers

Avaya Aura® Conferencing supports the following browsers for Collaboration Agent users and Avaya Aura® Conferencing administrators:

Browsers	Operating System	Collaboration Agent	Administrators
Microsoft Internet Explorer 7.0 and 8.0	Windows XP Windows 7.0	yes	yes
Microsoft Internet Explorer 9.0	Windows 7.0	yes	yes
Mozilla Firefox version 10 and later	Windows XP Windows 7.0	yes	yes
Google Chrome version 17 and later	Windows XP Windows 7.0 Mac OS 10.7.x— Chrome 17 only	yes	no
Apple Safari 5.x (for Mac) (excluding iPad and iPod)	Mac OS 10.7.x	yes	no

Interoperability

Chapter 4: Reference configurations

Avaya Aura® Conferencing deployment

Avaya Aura[®] Conferencing provides several deployment options to consider when installing your system. The following are the four deployment options:

- co-resident with redundancy
- co-resident simplex
- standalone with redundancy
- standalone simplex

The following section describes the deployment options. For more information about deployment, see Deploying Avaya Aura® Conferencing.

Deployment layouts

Avaya Aura® Conferencing supports the following deployment layouts:

Table 4: Deployment layouts

Deployment layout	Description	Features	Scalable	Enterprise DMZ deployment
Co-resident with redundancy	For small scale deployments where redundancy is required. Avaya Media Server is coresident with the application server.	Avaya Media Server with load sharing Web conferencing management server Active/active redundancy for Web conferencing server with Collaboration Agent Active/standby redundancy with an	Yes, scalable to a standalone deployment	No

Deployment layout	nt Description Features		Scalable	Enterprise DMZ deployment
		additional Application Server		
Co-resident simplex	For small scale deployments where all the Application Server components reside on a single server and redundancy is not required. Avaya Media Server is coresident with Application Server.	Web conferencing server with Collaboration Agent Web conferencing management server	Yes, scalable to a standalone deployment	No
Standalone with redundancy	For medium to large scale deployments. One pair of redundant Application Servers are dedicated for element management, database, application and service, and accounting functions. One server is dedicated to Avaya Media Server components.	 Avaya Media Server with load sharing Web conferencing server with Collaboration Agent Web conferencing management server for Web conferences with more than 1500 participants. Active/active redundancy with Document Conversion Server for Web conferencing server with Collaboration Agent Active/standby redundancy with an additional Application Server 	Yes, scalable with additional servers, if required.	Yes, with additional Web conferencing server components in the enterprise Demilitarized Zone (DMZ) for added functionality. For more information about DMZ, see Enterprise DMZ deployment on page 53.

Deployment layout	Description	Features	Scalable	Enterprise DMZ deployment
Standalone simplex	For medium to large scale deployments where all the Application Server components reside on separate servers to provide higher capacities and where redundancy is not required.	 Avaya Media Server with load sharing Web conferencing server with Collaboration Agent Document Conversion server Web conferencing management server for Web conferences with more than 1500 participants. 	Yes, with additional servers, if required.	Yes, with additional Web conferencing server components in the enterprise DMZ for added functionality. For more information about DMZ, see Enterprise DMZ deployment on page 53.

Enterprise DMZ deployment

For standalone with redundancy and standalone simplex deployment configurations, you can deploy the Web conferencing server within the Enterprise DMZ of your network firewall. This allows you to connect to an Avaya Aura® Conferencing conference as a member or guest from outside the company firewall while still ensuring a strong and secure network defense. The moderator of a conference can also be located outside of the corporate firewall and still have access to most command functions. You also have the benefit of using Avaya Aura® Conferencing for off-site conferences and events.

Example

The following figure shows a basic DMZ configuration for a standalone with redundancy layout.

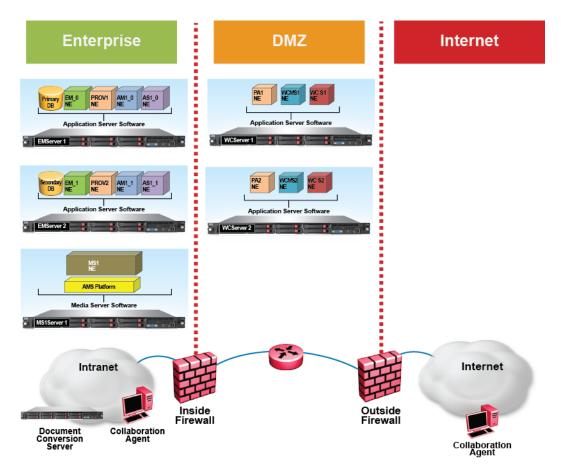


Figure 11: Basic DMZ configuration

In the preceding figure, the components required for interaction on both sides of the corporate firewall (the Personal Agent Manager, Web Conferencing Management Server, and the Web Conferencing Server) are located within the DMZ. These components require a small number of ports opened on the Enterprise and the Internet side, which has minimal firewall impact. With this configuration, conference members can connect to a conference outside of the corporate entity while continuing to maintain firewall integrity. The Document Conversion Server is located within the Enterprise side of the firewall and is fully protected; however, the Web Conferencing Server can still access and disperse the required documents.

Feature interactions

A moderator cannot upload documentation to the Document Conversion Server when outside the corporate firewall.

The following are some possible workarounds:

- the moderator can upload the required documents in advance of the offsite meeting while they are still within the corporate firewall
- the moderator can connect to the VPN outside of the firewall and upload the required documents

For information about the port matrix, see DMZ port matrix.

Chapter 5: Performance specifications

Performance specifications

The following sections provide the performance specifications for Avaya Aura® Conferencing.

Related topics:

Co-resident simplex and a co-resident with redundancy deployment layout on page 55 Standalone simplex and a standalone with redundancy deployment layout on page 58

Co-resident simplex and a co-resident with redundancy deployment layout

The following tables provide the performance specifications for a co-resident simplex and a co-resident with redundancy layout on the following servers:

- HP DL360 G7
- Repurposed Dell PowerEdge R610
- Repurposed IBM S8800

Table 5: Performance specifications of an audio and Web conference

Server	Port type	Į.	User		
		HP DL360 G7 server	Repurpose d Dell PowerEdge R610 server	Repurpose d IBM S8800 server	capacity
Application Server co- resident with Avaya Media Server, Web Conferencing Server, Web Conferencing Management	Audio and Web	1320, including 500 audio, 500 Web and 320 720p SVC video sessions	1320, including 500 audio, 500 Web and 320 720p SVC video sessions	660, including 250 audio, 250 Web and 160 720p SVC video sessions	5000

Server	Port type	A	Active sessions			
		HP DL360 G7 server	Repurpose d Dell PowerEdge R610 server	Repurpose d IBM S8800 server	capacity	
Server, and	G.711	500	500	250	_	
Collaboration Agent	G.722	500	500	250	_	
	G.729	300	300	150	_	
	Maximum sessions for each conference	250	250	100	_	
	Web Conferencing Server	500 ports	500 ports	250 ports	_	
	Collaboration Agent	500	500	250	_	

Table 6: Performance specifications of an audio, Web, and video conference on an HP DL360 G7 or a repurposed Dell PowerEdge R610 server

Server	Codec		Pixels	Bandw	Act	ive sess	ions	
	Audio	Vie	deo	(p) x 30fps	idth usage (kbps)	Audio	Web	Video
Application	G.711	H.264	AVC	720	1314	500	500	400
Server co- resident with				360	495	500	500	500
Media Server,			SVC	720	1613	500	500	320
Web Conferencing				360	595	500	500	500
Server, Web Conferencing	G.722 H	H.264	H.264 AVC	720	1314	500	500	400
Management				360	495	500	500	500
Server, and Collaboration			SVC	720	1613	500	500	320
Agent				360	595	500	500	500
	G.729	H.264	AVC	720	1262	300	300	300
				360	443	300	300	300
			SVC	720	1561	300	300	300
				360	543	300	300	300

Server	Codec		Pixels	Bandw	Active sessions			
	Audio	Vio	deo	(p) x 30fps	idth usage (kbps)	Audio	Web	Video
	Sharing the library	_	_	_	116	_	_	_
	Sharing the desktop	_	_	_	453	_	_	_

Table 7: Performance specifications of an audio, Web, and video conference on a IBM S8800 server

Server	Codec		Pixels			Active sessions		
	Audio	Vio	deo	(p) x 30fps	idth usage (kbps)	Audio	Web	Video
Application	G.711	H.264	AVC	720	1314	250	250	200
Server co- resident with				360	495	250	250	250
Media Server, Web			SVC	720	1613	250	250	160
Conferencing				360	595	250	250	250
Server, Web Conferencing	G.722	H.264	AVC	720	1314	250	250	200
Management				360	495	250	250	250
Server, and Collaboration			SVC	720	1613	250	250	160
Agent				360	595	250	250	250
	G.729 H.26	H.264	AVC	720	1262	150	150	150
				360	443	150	150	150
			SVC	720	1561	150	150	150
				360	543	150	150	150
	Sharing the library	_	_	_	116	_	_	_
	Sharing the desktop	_	_	_	453	_	_	_

Standalone simplex and a standalone with redundancy deployment layout

The following tables list the performance specifications for a standalone simplex and a standalone with redundancy deployment layout.

Table 8: Performance specifications of an audio and Web conference

Server	Port type	Active session	User capacity
Application Server	Audio and Web	10000 audio and video sessions or 7500 audio, video, and Web sessions	150000
Media Server using	G.711	3000	_
TCP	G.722	2500	_
	G.729	2000	_
Media Server using	G.711	3000	_
TLS	G.722	2500	_
	G.729	2000	_
Web Conferencing Server — Web Conferencing Management Server and Collaboration Agent	Web	1500 ports Note: For more than 1500 Web sessions, a dedicated Web Conferencing Management Server is required.	_
	Collaboration Agent	1500	_
Event Conference	G.711	2000	_
Server	G.722	2000	_
	G.729	2000	_

Table 9: Performance specifications of an audio and video conference

Server	Codec			Pixels (p)	Bandwid	Active
	Audio	Video		x 30fps	th usage (kbps)	session
Media Server using	G.711	H.264	AVC	720	1300	600
TCP				360	420	1500
			SVC	720	1600	480
				360	515	1200
Media Server using TLS	G.711	H.264	AVC	720	1300	600
				360	420	1500
			SVC	720	1600	480
				360	515	1200
Event conference server	All codecs	H.264	AVC	720	1200	500
				360	420	1500
			SVC	720	1500	400
				360	515	1200

Performance specifications

Chapter 6: Security

Security specifications

The following are the security specifications for Avaya Aura® Conferencing.

Related topics:

Platform security on page 61

Application security on page 62

Account management on page 62

Audit trails and logs on page 62

Cryptography usage on page 63

Avaya Services Access on page 64

Platform security

Avaya uses the Red Hat Enterprise 5 Linux operating system. All security vulnerability fixes from Red Hat are incorporated into the operating system through the patch process. Avaya has taken numerous steps to minimize vulnerabilities and improve security by modifying or hardening the Linux operating system. The following table describes the platform security features:

Security feature or configuration	Description
RPM Package Management	Unused RPMs removed.
Least Privilege	Root SSH access disabled. The following roles are defined for administrative accounts:
	System Security Administrator (SSA)
	Security Auditor (SA)
	Application Administrator (AA)
	Backup Administrator (BA)
	Database Administrator (DBA)
	Operational Support System Administrator (OSS)

Security feature or configuration	Description
Audit	Provides an audit log to the Security Auditor of system calls to provide a means to analyze relevant events that have occurred on the system.
File system integrity Management	Create baselines of the file system to detect changes to determine what has changed over a given period of time.
Disabled Services	Services that are not required are disabled, for example, telnet, ftp, nfs, netfs and kudzu.
Unix STIG Compliant	Operating System hardening based on the DISA UNIX Security Checklist.

Application security

Avaya Aura® Conferencing uses the Transport Layer Security (TLS) protocol (Version 1.0) to prevent eavesdropping and tampering of communications sent across a network. TLS is used for all SIP signaling traffic as well as all Web based communication. Integration with the System Manager Trust Management (TM) Service allows certificate enrollment for certificates issued by the System Manager to the Avaya Aura® Conferencing components directly from the Element Manager Console.

Account management

User accounts along with password policies are centrally managed on the Avaya Aura® System Manager. Single sign-on is used for administrative user accounts through the Avaya Aura® System Manager.

Audit trails and logs

Avaya Aura® Conferencing sends application log feeds to the System Manager. System security logs are stored at /var/log/secure. The security logs are accessible to only administrators with the System Security Administrator (SSA) role.

Cryptography usage

Certificates support 1024, 2048, and 4096 bit RSA asymmetric keys, SHA-1 with RSA encryption, and SHA-256 with RSA encryption for the Certificate Signature algorithm.

Table 10: Supported HTTPS Cipher Suites

Cipher name	Enabled by default
SSL_RSA_EXPORT_WITH_DES40_CBC_SHA	no
SSL_RSA_EXPORT_WITH_RC4_40_MD5	no
SSL_RSA_WITH_DES_CBC_SHA	no
SSL_DH_RSA_WITH_3DES_EDE_CBC_SHA	no
SSL_RSA_WITH_3DES_EDE_CBC_SHA	no
SSL_RSA_WITH_RC4_128_MD5	no
SSL_RSA_WITH_RC4_128_SHA	yes
TLS_RSA_WITH_AES_128_CBC_SHA	yes

Table 11: Signaling Cipher Suites

Cipher name	Enabled by default
TLS_RSA_WITH_NULL_SHA	no
TLS_RSA_WITH_AES_128_CBC_SHA	no
TLS_RSA_WITH_AES_256_CBC_SHA	yes

Table 12: SSH Cipher Suites

Cipher name	Enabled by default
aes128-ctr	yes
aes192-ctr	yes
aes256-ctr	yes
arcfour256	yes
arcfour128	yes
aes128-cbc	yes
3des-cbc	yes
blowfish-cbc	yes
cast128-cbc	yes

Cipher name	Enabled by default
aes192-cbc	yes
aes256-cbc	yes
arcfour	yes

Avaya Services Access

With Avaya Aura® Conferencing, the Secure Access Link (SAL) provides remote access to the Avaya Aura® Conferencing servers through SSH, to the Provisioning Manager using HTTPS, and to the Element Manager Graphical User Interface (GUI). SAL can also be configured to receive SNMP alarms from Avaya Aura® Conferencing.

Port utilization

For the complete *Port Matrix: Avaya Aura® Conferencing* document, see http://support.avaya.com. For more information about the DMZ port matrix, see *Deploying Avaya Aura® Conferencing*.

Chapter 7: Licensing requirements

License key requirements

The license key is installed on the WebLM server which is co-resident with System Manager. The license key must be obtained prior to starting the deployment. Allocated licenses are subtracted from the license key capacity on the WebLM server. The license key capacity remains allocated to Avaya Aura® Conferencing as long as the network elements are in service.

For information about installing the Conferencing license key, see *Deploying Avaya Aura®* Conferencing at the Avaya Support website: http://support.avaya.com.

A unique multimedia license is required for each provisioned user in Conferencing. A user uses this license for all conferencing sessions. This unique license gives the user the ability to moderate a conference, use the supported audio codecs, and present in a Web sharing session. Guest users do not require a user license as these users cannot moderate a conference when logged on as Guest.

On the System Manager console, click **Services > Licenses > Conferencing** to view the license capacity and the peak license usage. The following table list the licensing attributes for Conferencing:

Table 13: Licensed features

Feature name	Feature description
VALUE_CONF_MULTIMEDIA_USERS	Maximum number of audio, video, and Web provisioned users.
VALUE_CONF_MEDIA_SERVERS	Maximum number of Media Servers allowed in Conferencing.
VALUE_CONF_WEB_SERVERS	Maximum number of Web conferencing servers allowed in Conferencing.

Licensing requirements

Glossary

Access control list

A set of data that informs the operating system of a computer which permissions, or access rights, that each user or group has to a specific system object, such as a directory or file.

Advanced video codec (AVC)

H.264 AVC supports the video conferencing features and events.

Application Server

This element is responsible for all conference call processing and stores information about conferences. To get current data about sessions and conferences Element Manager sends a request to the network element.

Avaya Media Server

The Avaya Media Server hosts conferences and relays media.

AV MeetMe conference A planned Web conference supporting audio and video.

Bandwidth

Requested bandwidth: This is the bandwidth that is requested at the time of initiating a conference call. This bandwidth request may be negotiated down to a lower bandwidth, or can be thinned by Avaya Aura® Conferencing at some point during the conference.

Negotiated bandwidth: This is a bandwidth that the server allocates to the client and is based on your system configuration and the total available network bandwidth.

Actual bandwidth: This is the bandwidth that is used for a session as determined by the Avaya Media Server.

Centralized Conferencina **Manipulation** Protocol (CCMP)

CCMP is an alternative method of issuing commands during a conference rather than using a telephone dialpad. In this document, CCMP commands are referred to as the user interface of clients such as the Collaboration Agent, Avaya Flare® Experience for Windows, and Avaya Flare[®] Experience for iPad Devices devices.

Collaboration Agent

The Collaboration Agent application provides tools for managing and participating in conferences. Web-based conferencing allows users or guests to join a conference either on site or from a remote location. Users can access Collaboration Agent using a supported Web browser and an audio endpoint.

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.

Database (DB)

The database stores configuration information for all Network Elements, such as long and short names, server IP address, and historical OM data.

DMZ

In computer networks, the demilitarized zone (DMZ) is a physical or logical subnetwork between your Enterprise and the Internet. The DMZ is required to allow conference access from outside your firewall.

Down sessions

Down sessions are the number of sessions where bandwidth is downgraded because of proactive or reactive thinning.

Dropped sessions

Dropped sessions are the number of sessions that dropped by a system due to bandwidth management issues.

Element Manager (EM)

Client receives almost all information from the Element Manager using OMI methods. The client sends an OMI request to Element Manager. Element Manager processes this request and determines what to do with it. To get the data for client Element Manager, a request is sent to the database or to other network elements, such as the Application Server or the Web Conferencing Server.

Gap

The gap is the difference between the negotiated and actual bandwidth. For example: A request for bandwidth is initiated for a video or audio call (requested bandwidth). The Media Server responds with bandwidth and bandwidth is applied (negotiated bandwidth). Bandwidth continually changes during a call due to factors such as codec, packetization, and time. Therefore, a gap between the actual and negotiated bandwidth occurs.

Guest

A guest is an unprovisioned user. The guest has the same privileges as a participant but cannot be promoted to presenter or moderator.

Hosting and hosted location

A hosting location is the location where a conference is hosted. The hosting location is determined by the location provisioned for the user. If there are network limitations, a hosting location can be mapped to another location for hosting conferences. This is then referred to as the hosted location.

Hybrid Conference

A hybrid conference includes Web and Audio sessions.

KPI client

Client receives almost all information from the Element Manager using OMI methods. Usually to get some information client sends an OMI request to Element Manager. Element Manager processes this request

and decides what to do with it. To get the data for client Element Manager sends a request to database or to another network elements, such as the Application Server or the Web Collaboration Server.

IPv4 The fourth revision in the development of IP, and the first version of the

protocol to be widely deployed.

License There are two types of system licenses: Audio and Video. A unique

> license is required for each Avaya Aura® Conferencing provisioned user. The License key is installed on the Web License Manager (WebLM)

server which is co-resident with System Manager.

Load factor An engineering number that is used to gauge CPU utilization of the Avaya

Media Server process on a particular Avaya Media Server.

Moderator A moderator is a provisioned user and has full control of the conference

using either Telephone User Interface (TUI) and User Interface (UI)

commands on one of the supported clients.

SOAP based Web Services provides operations required for Avaya **Open Management** Interface (OMI) call

Aura® Conferencing.

An operator controls every aspect of a conference in the same manner Operator

> as the moderator. An operator does not attend the conference but can be called upon by issuing a Telephony User Interface (TUI) code, if

assistance is required.

Participant Participants are people who attend conference calls. A participant can

> access a conference using an Avaya Aura® Conferencing user account or log in as guest. A participant can be promoted by the moderator to be

a presenter or a moderator but cannot change the state of the

conference.

Physical location A physical location is where the Media Server physically resides. The

> physical location association is configured against a cluster to ensure that all Media Servers in the cluster are at the same location (to support

Media Server failover).

Presenter A presenter is a provisioned user. The presenter has the same privileges

as a participant but has been promoted to presenter to allow presentation

of content using Web collaboration.

Provisioning The Provisioning Manager is a Web-based administrative interface for

configuring system wide conferencing details and templates, and

managing user configuration.

Manager

Repre	esentational
state	transfer
(RES	Γ)

A software architecture style for distributed systems such as the Web.

R-factor

R-factor is a measure of audio quality; the lower the number, the poorer

the audio quality. R-factor uses a scale of 0 to 100.

Scalable video codec (SVC)

Scalable video codec (SVC) is based on the H.264 advanced video codec (AVC) standard and heavily leverages the tools and concepts of the original codec. SVC video technology allows video conferencing devices to send and receive multilayered video streams composed of a small base layer and optional additional layers that enhance resolution,

frame rate, and quality

Serving location

A serving location is a list of locations that are served by a Media Server cluster. This is a many to many relationship. A cluster can serve many locations. A location can be served by many clusters.

Session Completion Ratio The percentage of rejected sessions compared to the total number of sessions. A session can be rejected for different reason, such as, not enough Bandwidth or not enough licenses.

Simple Object Access Protocol (SOAP) Protocol specification for exchanging structured information in the implementation of Web Services in computer networks.

Standalone Web conference

A user starts a standalone Web conference using the Collaboration Agent client before starting an AV MeetMe conference. After an AV MeetMe conference is started, the standalone Web conference is merged with the AV MeetMe conference and is no longer in a standalone state.

System Manager

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

Web Conferencing Server (WCS)

This server handles user actions and media during Web collaboration.

Web Service (WS)

A software system designed to support interoperable machine-tomachine interaction over a network.

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