



Wave 7 | December 2012 | eDOC2501B

Polycom® RealPresence® SVC-Based Conferencing Solutions Deployment Guide



Trademark Information

POLYCOM® and the names and marks associated with Polycom's products are trademarks and/or service marks of Polycom, Inc., and are registered and/or common law marks in the United States and various other countries.

All other trademarks are the property of their respective owners.

Patent Information

The accompanying product may be protected by one or more U.S. and foreign patents and/or pending patent applications held by Polycom, Inc.



This software has not achieved UC APL certification.

This document provides the latest information for security-conscious users running Version 8.0 software. The information in this document is not intended to imply that DoD or DISA certifies Polycom RealPresence Collaboration Server systems.

© 2012 Polycom, Inc. All rights reserved.

Polycom, Inc.
6001 America Center Drive
San Jose CA 95002
USA

No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of Polycom, Inc. Under the law, reproducing includes translating into another language or format.

As between the parties, Polycom, Inc., retains title to and ownership of all proprietary rights with respect to the software contained within its products. The software is protected by United States copyright laws and international treaty provision. Therefore, you must treat the software like any other copyrighted material (e.g., a book or sound recording).

Every effort has been made to ensure that the information in this manual is accurate. Polycom, Inc., is not responsible for printing or clerical errors. Information in this document is subject to change without notice.

Table of Contents

Overview	1-1
About the Polycom® RealPresence® SVC-Based Conferencing Solutions	
Deployment Guide	1-1
Scope of This Document	1-1
Intended Audience	1-2
Acronym Definitions	1-2
SVC Conferencing Solution Overview	2-1
SVC Conferencing Overview	2-1
Overview of SVC	2-1
Using the SVC-Based Conferencing Solution	2-2
Using SVC-Enabled Endpoints in a Mixed AVC and SVC Conference	2-4
Video Layouts in the Mixed Conference Mode	2-5
SVC Conferencing System Architecture	3-1
System Architecture for Enterprise Deployment	3-1
User Plane	3-2
Access Plane	3-2
Media Plane	3-3
Call Control Plane	3-3
Management and Provisioning Plane	3-4
Polycom System Environment Components	3-4
RealPresence Access Director	3-4
RealPresence Virtualization Manager (DMA)	3-4
RealPresence Collaboration Server (RMX)	3-5
RealPresence Collaboration Server 800s, Virtual Edition	3-5
RealPresence Resource Manager	3-5
Interoperability	3-6
A Typical SVC-Based Conference Deployment Scenario	3-7
SVC Support for Endpoints	3-8
Deploying the RealPresence Virtualization Manager (DMA) in the Enterprise Environment	3-9
Deploying the RealPresence Resource Manager in the Enterprise Environment	3-9
Supported Features in the RealPresence Collaboration Server	3-10
Configuration	4-1
Configuring the RealPresence Collaboration Server (RMX) for SVC Only Conferences	4-1
Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences	4-8
Configuring a Mixed CP (AVC) and SVC Conference on the RealPresence Collaboration Server 800s	4-16
Using Video Resources for a Mixed AVC and SVC Conference	4-16
Resource Report	4-17
Configuring the RealPresence Virtualization Manager (DMA)	4-18

Making an SVC-Based Conference Call	5-1
Using the Polycom RealPresence Desktop and the Polycom RealPresence Mobile Applications	5-1
Making a Conference Call	5-1
Point-to-Point Calls	5-1
Multipoint Conferences	5-3
Appendix - SVC-Based Conferencing Solution Specifications	A-1
Solution Specifications	A-1
Supported Conferencing Features	A-3
MCU Supported Resolutions	A-4

Overview

About the Polycom® RealPresence® SVC-Based Conferencing Solutions Deployment Guide

This guide describes the Polycom® RealPresence® SVC-based conferencing solution. This guide provides an overview of SVC-based conferences and the steps required to configure and use the SVC conferencing solution to add real-time, on-demand multipoint video SVC conferencing to your environment.

Scope of This Document

This document provides you with the solution overview and how to configure the Polycom components for SVC-based conferencing solution to embed it into your environment.

This chapter, "Overview" includes the description of the following topics:

- "Scope of This Document"
- "Intended Audience"
- "Acronym Definitions"

Chapter 2, "Solution Overview," describes the Polycom SVC conferencing solution and includes the following topics:

- "SVC Conferencing Overview"
- "Using the SVC-Based Conferencing Solution"
- "Using SVC-Enabled Endpoints in a Mixed AVC and SVC Conference"

Chapter 3, "SVC System Architecture," describes the SVC solution system design and the Polycom components that are deployed for SVC-based conferencing. This chapter includes the following topics:

- "System Architecture for Enterprise Deployment"
- "Polycom System Environment Components"
- "A Typical SVC-Based Conference Deployment Scenario"
- "Supported Features in the RealPresence Collaboration Server"

Chapter 4, "Configuration," details the configuration procedures for the Polycom components using the SVC-based conferencing solution. This chapter includes the following topics:

- "Configuring the RealPresence Collaboration Server (RMX) for SVC Only Conferences"
- "Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences"
- "Configuring a Mixed CP (AVC) and SVC Conference on the RealPresence Collaboration Server 800s"
- "Configuring the RealPresence Virtualization Manager (DMA)"

Chapter 5, “Making an SVC-Based Conference Call” discusses the processes and user experience of making an SVC-base conference call. This chapter discusses the following topics:

- “Point-to-Point Calls”
- “Multipoint Conferences”

Appendix A, “Solution Specifications”, lists the specifications that are used in the SVC-based conferencing solution and includes the following topics:

- “Solution Specifications”
- “Supported Conferencing Features”
- “MCU Supported Resolutions”

Intended Audience

This document is intended for use by system architects, system engineers, developers, testers, and others who want to use the Polycom SVC-based conferencing solution to provide best-in-class video conferencing using SVC-enabled endpoints.

Deploying the Polycom RealPresence SVC-based conferencing solution requires:

- Basic understanding of how applications are developed in your environment
- Elementary knowledge of video conferencing and video conferencing administration.
- Functional understanding of both HTTP and XML

Acronym Definitions

The following table lists the acronyms that are used throughout the deployment guide.

Table 1-1 Acronym list

Acronym/Term	Description
<i>API</i>	Application Programming Interface
<i>AVC</i>	Advanced Video Coding
<i>CP</i>	Continuous Presence
<i>DTMF</i>	Dual Tone Multi Frequency
<i>EP</i>	Endpoint
<i>EQ</i>	Entry Queue
<i>FECC</i>	Far-End Camera Control
<i>ISDN</i>	Integrated Services Digital Network
<i>LDAP</i>	Lightweight Directory Access Protocol
<i>MR/VMR</i>	Meeting Room or Virtual Meeting Room
<i>PiP</i>	Picture in Picture layout
<i>PLCM</i>	Polycom

Table 1-1 Acronym list (Continued)

Acronym/Term	Description
<i>PSTN</i>	Public Switched Telephone Network
<i>RPAD</i>	RealPresence Access Director
<i>SAC</i>	Polycom Scalable Audio Coding
<i>SBC</i>	Session Border Controller
<i>SDK</i>	Software Development Kit
<i>SIP</i>	Session Initiation Protocol
<i>SVC</i>	Scalable Video Coding
<i>VoIP</i>	Voice over Internet Protocol
<i>VSW</i>	Video Switching conference

SVC Conferencing Solution Overview

This chapter describes the Polycom RealPresence SVC Conferencing solution, a general description of SVC, and using the SVC conferencing solution.

This chapter includes the following topics:

"SVC Conferencing Overview"

"Using the SVC-Based Conferencing Solution"

SVC Conferencing Overview

This section provides a general description of the SVC protocol and video conferencing using the SVC protocol.

Overview of SVC

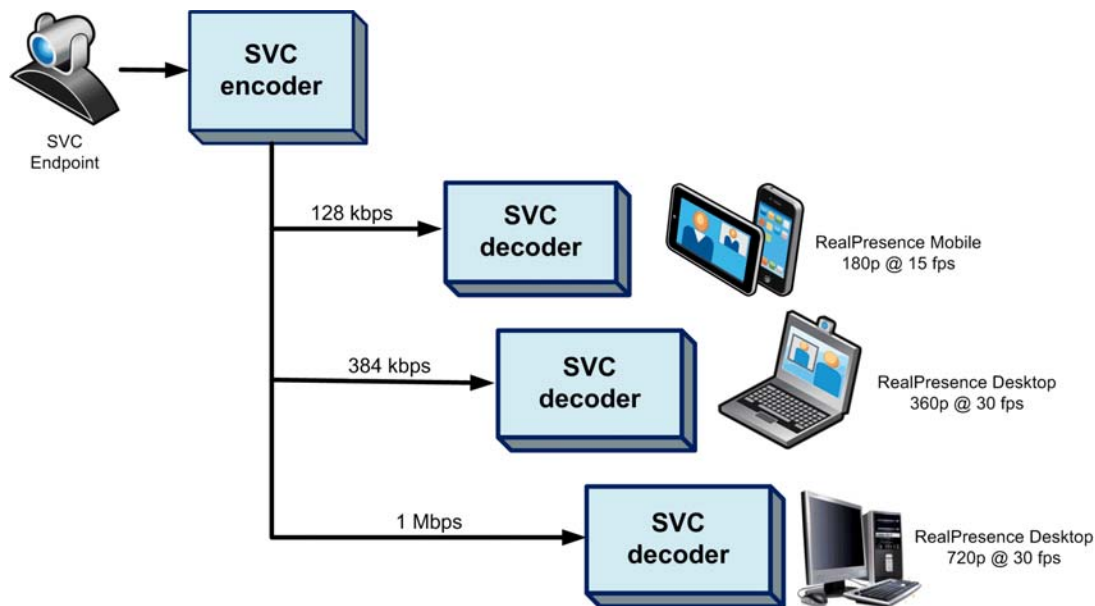
The Scalable Video Coding (SVC), an extension of the H.264/MPEG4-AVC video protocol, is a powerful video compression protocol that enables the standardization of encoding high-quality video streams to provide scalable adaptation to various application requirements such as display and processing capabilities of video devices, and varying transmission conditions.

SVC provides network-friendly scalability at a bit-stream level with a moderate increase in decoder complexity relative to the single layer H.264/AVC protocol.

SVC enables high flexibility for implementation and optimization in various application scenarios. It provides a wide-range of display and processing capabilities of target devices and varying transmission conditions for video conferencing to serve the various needs of users with different displays and CPUs (video conference endpoints, laptops, tablets, and mobile phones) connected through different network links such as LAN and wireless.

In video conferencing, efficient scalable video coding provides certain benefits in the transmission of video streaming. For example, a video conference with heterogeneous clients where multiple bit streams of the same video content differing in picture size, frame rate and bit rate should be provided simultaneously. An SVC solution could make use of simulcasting, in which multiple SVC streams are made available to the different clients, allowing each client to select the picture size, frame rate, and bit rate that best suits its needs. This provides a scalable bit stream set from which representations with lower resolution or quality can be obtained. A video client with restricted resources such as display resolution, processing power, or battery power, needs to decode the lowest available bit stream.

The following diagram illustrates an example of the various devices and bandwidths that can be used in an SVC-based video conferencing environment:



Using the SVC-Based Conferencing Solution

The Polycom RealPresence SVC-Based Conferencing Solution is a powerful and innovative video conferencing mode that, in some cases, provides high-quality video streaming between endpoints with lower resolutions, frame rates, and line rates. SVC conferences also provide higher video capacity, better error resiliency and lower latency.

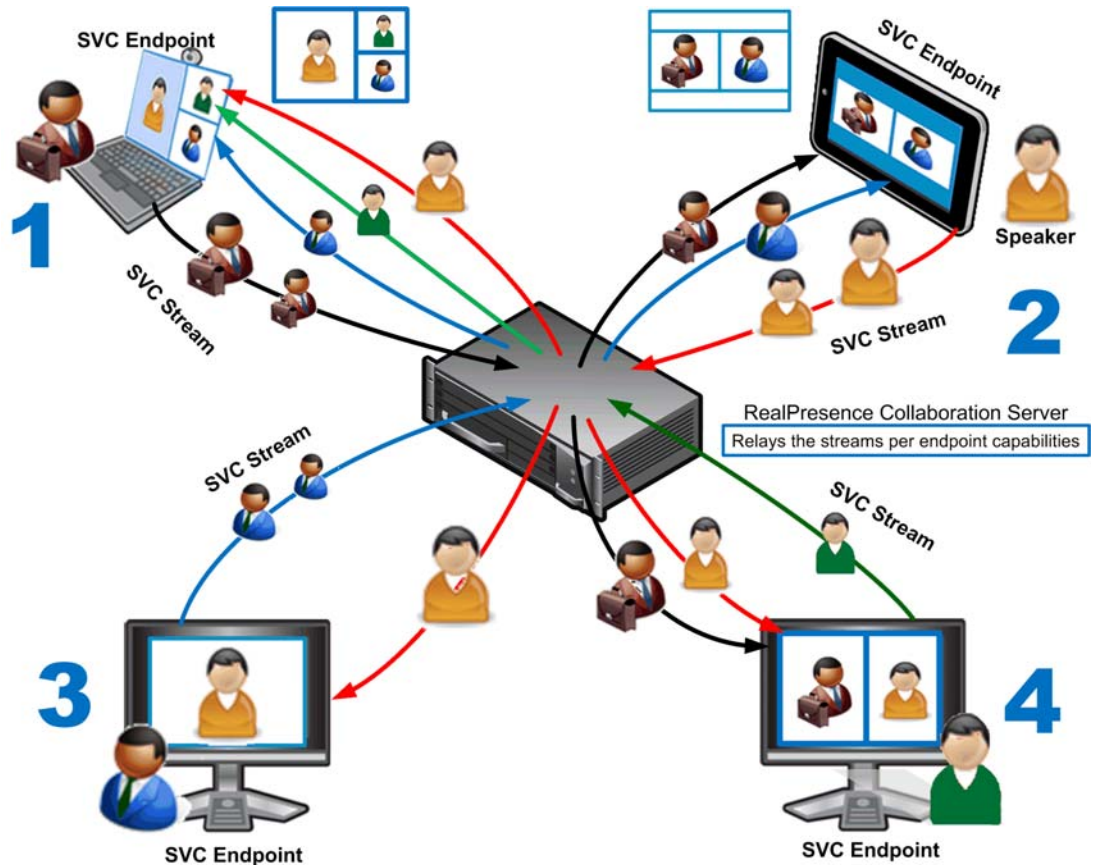
Using the SVC video protocol, SVC conferences provide video bit streams at different resolutions, frame rates and line rates to SVC-enabled endpoints with various display capabilities and layout configurations.

In the SVC-based conference, each SVC-enabled endpoint transmits multiple resolution and temporal layers, to the Polycom® RealPresence® Collaboration Server (RMX) or the Polycom® RealPresence® Collaboration Server 800s, enabling each endpoint to transmit at different resolutions and frame rates such as 720p at 30fps, 15fps, and 7.5fps, 360p at 15fps and 7.5fps, and 180p at 7.5fps.

Polycom SVC-enabled endpoints (Polycom® RealPresence® Desktop and Polycom® RealPresence® Mobile) enable video conference layouts to be automatically assembled by the endpoint giving more flexibility to the endpoint. This enables the RealPresence Collaboration Server to send or relay the selected video streams to the endpoints without sending the entire video layout to the endpoints.

The video streams displayed in the conference layout on each endpoint is obtained from the different streams received from each of the endpoints displayed in the layout. Depending on the size of the video cell in the configured layout, the endpoint requests the video stream in the required resolution from the RealPresence Collaboration Server. The higher the display quality and size, the higher the requested resolution will be sent to the endpoint. The endpoint creates the displayed layout from the different video streams it receives.

The following diagram illustrates an SVC-based conference:



For instance, an SVC endpoint might want to receive three video streams at different frame rates and resolutions, and create a conference layout with the received video streams. Each SVC-enabled endpoint sends and receives encoded SVC bit streams to and from the RealPresence Collaboration Server.

For example, the SVC stream sent from a RealPresence Desktop client (1) will transmit bit streams suited for both a RealPresence Mobile client (2) and a RealPresence Desktop client (4). The transmitted bit streams might contain a compressed video with a lower bit rate to support the capability of the receiving client.

The RealPresence Collaboration Server determines which of the incoming bit streams to send to each endpoint. It does not perform any encoding and decoding, or any transcoding of the video streams. The RealPresence Collaboration Server functions as the multipoint media relay to the endpoints. For voice activated selection of the video streams, the RealPresence Collaboration Server determines which of the incoming bit streams to send to each endpoint.

SVC video conferences provides a robust bandwidth-efficient technology that delivers a consistently high-quality user experience across networks with varying degrees of quality of service. SVC increases the scalability of video networks and enables mass desktop video deployments while reducing total networking equipment cost.

SVC video conferences provides a robust bandwidth-efficient technology that delivers a consistently high-quality user experience across networks with varying degrees of quality of service. SVC increases the scalability of video networks and enables mass desktop video deployments while reducing total networking equipment cost.

Some of the advantages of SVC conferencing are:

- Offers high-resolution video conferencing with low end-to-end latency, improved error resiliency and higher system capacities.
- Allows the SVC-enabled video endpoints to manage display layouts, support multiple resolutions and data rates. SVC provides simulcasting at different resolutions with more layout building options on the endpoint. Flexible in-stream selection to accommodate various endpoint capabilities such as bandwidth, CPU, screen resolution, and so forth.
- The RealPresence Collaboration Server functions as a media relay server providing low cost production benefits. The RealPresence Collaboration Server reduces bandwidth usage by only selecting the necessary video stream to be sent to the endpoints.

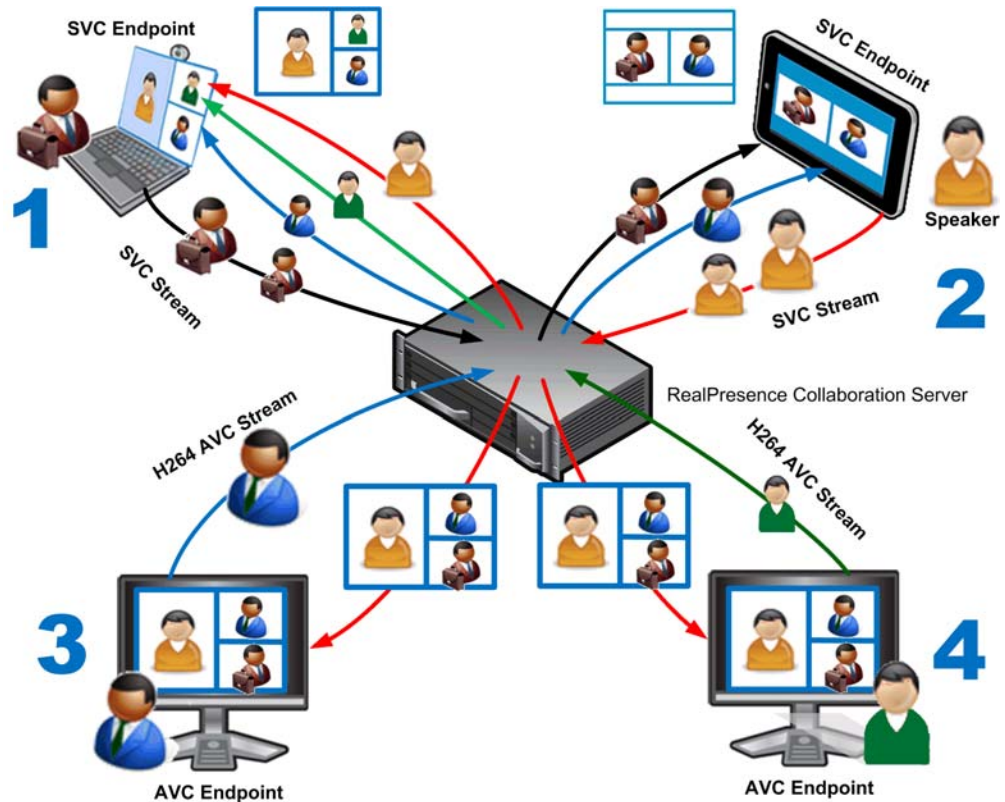
Using SVC-Enabled Endpoints in a Mixed AVC and SVC Conference

A transcoded CP (Continuous Presence) conference is also described as an AVC (Advanced Video Coding) conference. All endpoints that do not support the H.264 SVC protocol such as H.263, H.264, or RTV, are considered AVC endpoints.

The RealPresence Collaboration Server 800s - Virtual Edition, the industry's first multi-protocol, integrated software MCU that runs on industry-standard servers, can manage a mixed SVC and AVC-based conference. This type of conference enables participants with SVC-enabled endpoints and AVC endpoints to participate in the same conference.

SVC endpoints transmit multiple resolutions and temporal layers to the Collaboration Server like the SVC-based conferences, while AVC endpoints send only one H.264 AVC video stream to the Collaboration Server. The Collaboration Server relays SVC-decoded video bit streams to the SVC-enabled endpoints in the conference according to their display capabilities. This enables the video conference layouts to be automatically assembled by the endpoint. AVC endpoints connected to the conference send a single H.264 AVC video bit stream to the Collaboration Server, which is then transcoded to SVC video streams. SVC-enabled endpoints receive the AVC converted video bit streams through the Collaboration Server from the AVC endpoints as a single SVC video bit stream. Alternatively, AVC endpoints receive a single video bit stream with the defined video conference layout from the Collaboration Server. In this mixed mode conferencing, all AVC endpoints receive the same CP video layout as an AVC Only conference, but SVC endpoints receive the same video layout configuration as an SVC Only conference.

The following diagram illustrates an example of a mixed AVC/SVC conferencing mode:



In this example, an SVC endpoint (1) receives three video streams at different frame rates and resolutions, and creates the conference layout with the received video streams. The video bit stream that the SVC endpoint receives from the AVC endpoint (3) is transcoded in the Collaboration Server and then encoded into an SVC bit stream in the required resolution.

Alternatively, an AVC endpoint (4) sends a single resolution video stream to the Collaboration Server. The Collaboration Server first converts the SVC bit stream into AVC, then transcodes the video received from the other endpoints to the required resolution. The Collaboration Server composes the video layout for the AVC endpoint and sends a single resolution video stream with the video layout to the participant. In the displayed example, the Collaboration Server creates different video layouts for each AVC endpoint.

Video Layouts in the Mixed Conference Mode

Video layouts used in the mixed AVC and SVC conferencing mode depends on the endpoint of the participant. SVC endpoints display the same video layouts as in an SVC Only conference. AVC endpoints display video layouts as configured by the Collaboration Server.

The participant that is currently speaking is displayed with a colored border (orange or yellow) depending on the type of skin of the conference while the participants that are listening are displayed in the other panes.



AVC endpoints can use the PiP (Picture in Picture) option, which displays the participant's self-view. This can change the video layouts view.

The following table illustrates how participants are displayed in video layouts for both SVC and AVC endpoints:

Table 2-1 Video Layouts for Mixed AVC and SVC Conferences







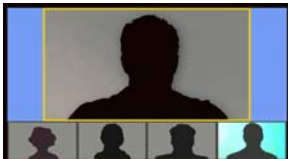

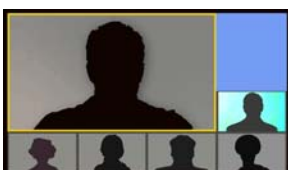

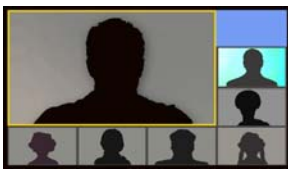









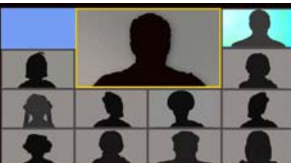

Number of Participants	SVC Endpoints (RPD)	AVC Endpoints (Auto Layout)
2		
3		
4		
5		
6		
7		

Table 2-1 Video Layouts for Mixed AVC and SVC Conferences (Continued)

Number of Participants	SVC Endpoints (RPD)	AVC Endpoints (Auto Layout)
8		
9		
10		
11		
12		

In the AVC endpoints video layout for 10 participants, the current speaker is displayed and the other seven panes are the participants who have previously spoken in the conference. The video layout displays the participants in speaker order - the participant who was the speaker before the other participants displayed in the video layout is not anymore displayed.

In layout 2+8, the two central windows display the last two speakers in the conference: the current speaker and the “previous” speaker. To minimize the changes in the layout, when a new speaker is identified, the “previous” speaker is replaced by the new speaker while the current speaker remains in their window.

SVC Conferencing System Architecture

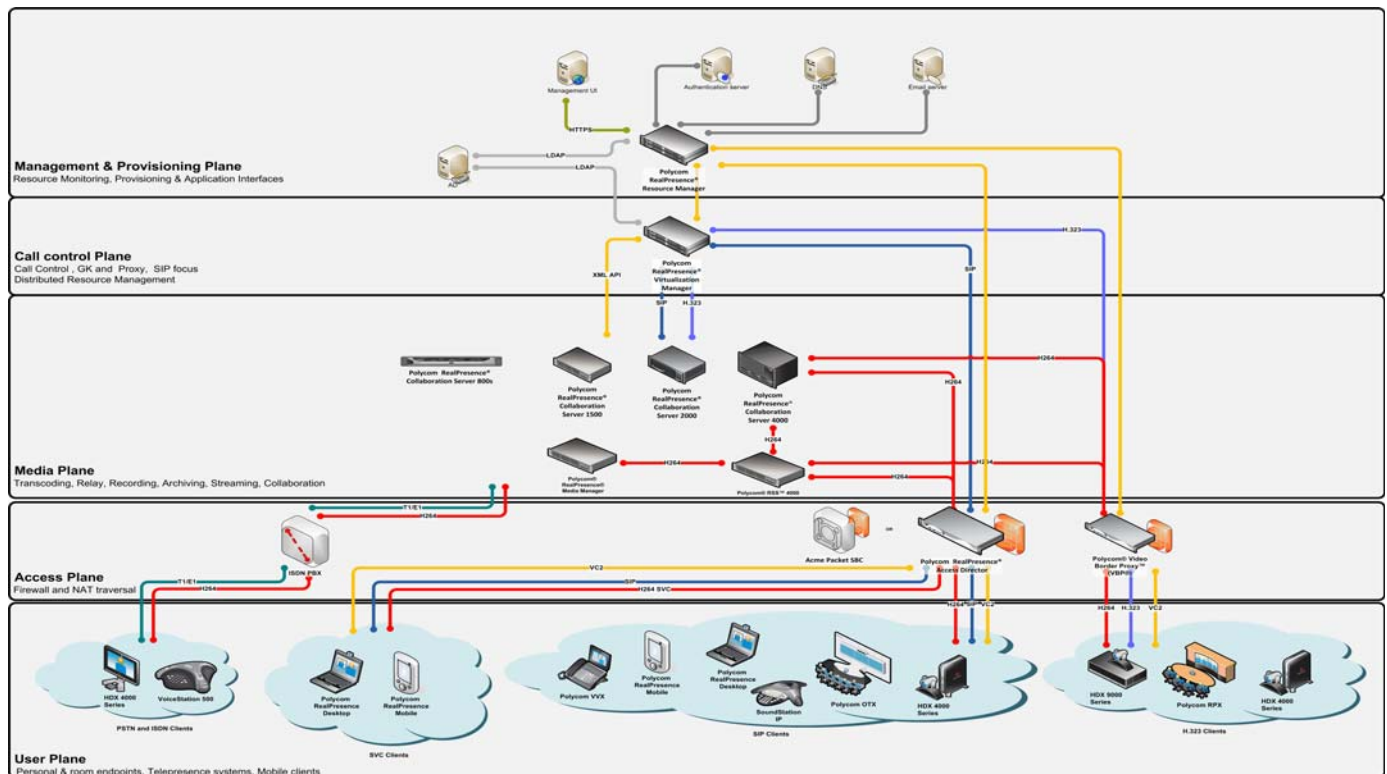
This chapter describes the Polycom RealPresence SVC Conferencing System Architecture, a general description of SVC, and using the SVC conferencing solution.

This chapter includes the following topics:

- "System Architecture for Enterprise Deployment"
- "Polycom System Environment Components"
- "A Typical SVC-Based Conference Deployment Scenario"
- "Supported Features in the RealPresence Collaboration Server"

System Architecture for Enterprise Deployment

The following diagram illustrates the SVC-based conferencing system architecture and each plane is detailed in the sections below the diagram:



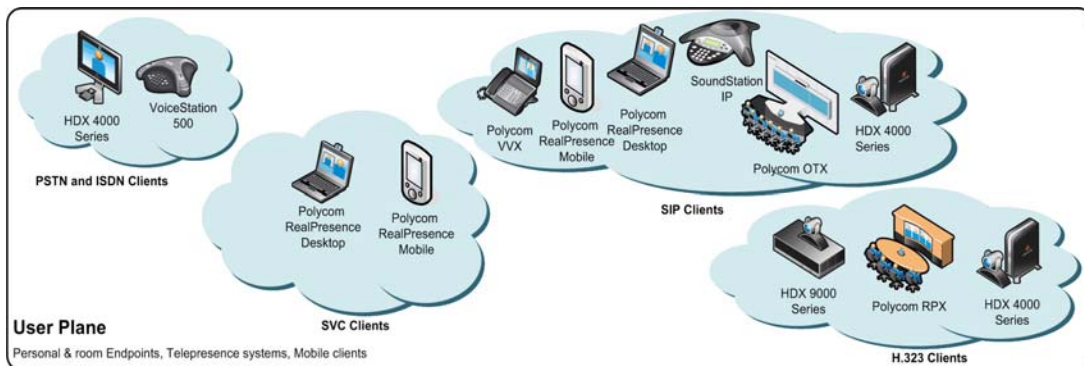
The SVC-based conferencing system architecture diagram is divided into the following sections:

- "User Plane"
- "Access Plane"
- "Media Plane"
- "Call Control Plane"
- "Management and Provisioning Plane"

User Plane

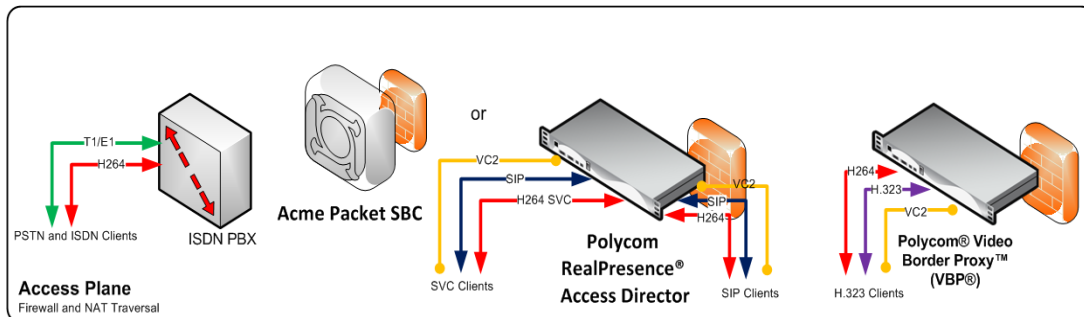
The User plane describes the various endpoints that can be deployed in the RealPresence UC Platform, which can include room and mobile endpoints, Telepresence systems, voice and audio.

In the SVC conferencing solution, only SVC-enabled endpoints such as RealPresence Desktop and RealPresence Mobile can use the SVC encoding and decoding capabilities for compressed video files.



Access Plane

The Access plane controls the flow of data from the endpoints to the media servers. The Access plane can deploy devices such as ISDN PBX, Polycom RealPresence® Access Director™, and so forth. These devices are used to control and manage information security. Firewalls can be deployed for additional security.

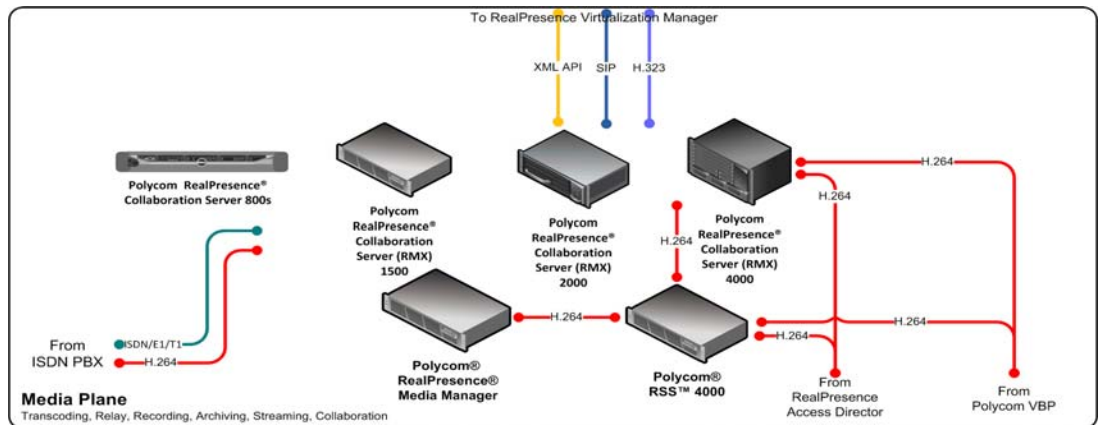


The Polycom® RealPresence® Access Director™ (RPAD) enables expanded firewall traversal options for secured video conferencing connectivity within the enterprise environment or with conference participants outside the enterprise firewall.

Alternatively, the Acme Packet SBC (Session Border Controller) can be deployed in the enterprise environment to provide secured communications across IP network borders.

Media Plane

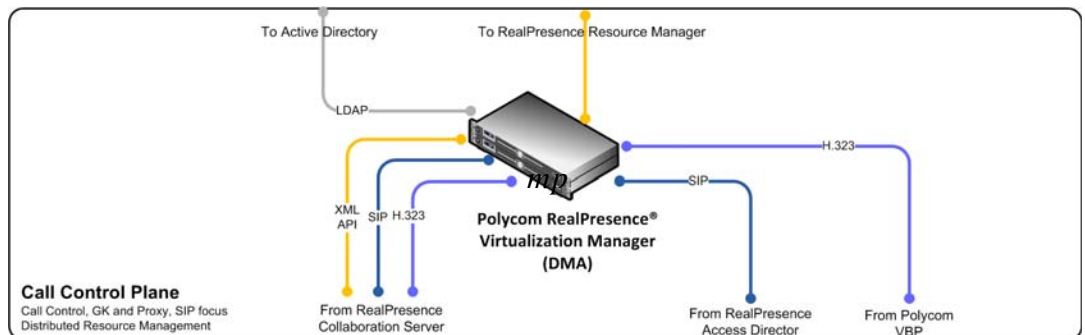
The Media Plane contains the Polycom components such as the Polycom RealPresence Collaboration Server 1500/2000/4000 (RMX) or the RealPresence Collaboration Server 800s, Virtual Edition as the MCU (Multipoint Control Unit) that enables the transcoding, relay, and collaboration of the media for SVC-based conferencing. Some components such as the Polycom RSS 4000, which is used for video recording, archiving, and streaming, are optional for this level.



In this SVC conferencing solution, the RealPresence Collaboration Server communicates with the Polycom® RealPresence® Virtualization Manager (DMA) as the SIP Server. Additionally, the RealPresence Virtualization Manager (DMA) is used to manage conferences, call control, and signaling. For more information about the RealPresence Virtualization Manager (DMA) in the SVC-based conferencing solution, see the "RealPresence Virtualization Manager (DMA)" section.

Call Control Plane

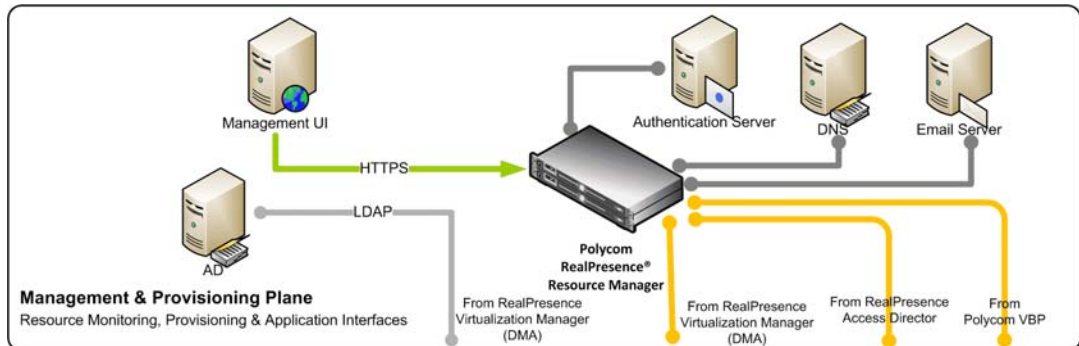
The Call Control Plane contains the RealPresence Virtualization Manager (DMA) that is responsible for call control, signaling, and acts as the conference focus. Additionally, the RealPresence Virtualization Manager (DMA) is used as the SIP Server for the SVC conferencing solution.



Management and Provisioning Plane

This level contains the Polycom® RealPresence® Resource Manager component. The RealPresence Resource Manager controls and manages all enterprise management applications and servers such as Authentication, DNS, Email, in addition to client provisioning through the enterprise Management User Interface (UI).

Additionally, this level contains the enterprise Active Directory (AD), which communicates with the RealPresence Resource Manager as well as the RealPresence Virtualization Manager (DMA).



Polycom System Environment Components

This section describes the Polycom RealPresence components that are used in the SVC conferencing solution. Additionally, it describes the component and endpoint interoperability.

RealPresence Access Director

The RealPresence Access Director (RPAD) is an expanded firewall traversal solution that makes it easier for conference participants, inside or outside the firewall, to video conference safely with anyone in the organization, whether they are in a secure environment at the office or an unsecure environment at home or away.

For more information on using the RealPresence Access Director, see the *Polycom® RealPresence® Access Director™ System Administrator's Guide*.

RealPresence Virtualization Manager (DMA)

The RealPresence Virtualization Manager (DMA), is the primary server communicating between the endpoints and the RealPresence Collaboration Server (RMX). The RealPresence Virtualization Manager (DMA) is responsible for managing conferences, call control, and signaling and acting as the conference focus. It communicates with the RealPresence Collaboration Server using the SIP protocol. Additionally, the RealPresence Virtualization Manager (DMA) provides a Northbound REST API for creating virtual meeting rooms (VMR). Enabling SVC-based conferences on VMRs can be done by configuring the

Conference Template in the RealPresence Virtualization Manager (DMA). For details on configuring the RealPresence Virtualization Manager (DMA) for SVC-based conferences, see "*Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences*" on page 4-8.

For more information on using the RealPresence Virtualization Manager (DMA), see the *Polycom® DMA 7000™ System Operations Guide*.

RealPresence Collaboration Server (RMX)

In the SVC conferencing environment, the Polycom RealPresence Collaboration Server (RMX) functions as a media relay server. The RealPresence Collaboration Server (RMX) does not perform encoding and decoding or any transcoding between the endpoints as it would normally do in an AVC conferencing environment. The RealPresence Collaboration Server (RMX) determines in real-time which of the incoming video streams to send to each endpoint.

In addition, the RealPresence Collaboration Server (RMX) controls and manages non-SVC multipoint video and audio conferences at the same time.



The RealPresence Collaboration Server (RMX) does not run mixed AVC and SVC conferences.

For more information on the RealPresence Collaboration Server (RMX), see the *Polycom® RealPresence® Collaboration Server 1500/2000/4000 Administrator's Guide*.

RealPresence Collaboration Server 800s, Virtual Edition

The Polycom® RealPresence® Collaboration Server 800s, Virtual Edition, is the industry's first multi-protocol, integrated software MCU that runs on industry-standard servers. The Collaboration Server 800s, Virtual Edition delivers open standards-based SVC that results in 3X HD multipoint video capacity for greater scalability. For SVC-based conferencing, the RealPresence Collaboration Server 800s performs similar functions as the RealPresence Collaboration Server (RMX). In addition, the Collaboration Server 800s controls and manages mixed AVC/SVC video conferences as well as non-SVC multipoint video and audio conferences at the same time.

The RealPresence Collaboration Server 800s system is installed on the Dell® PowerEdge™ R620 E5-2690 Rack Server.

For more information on the RealPresence Collaboration Server 800s, see the *Polycom® RealPresence® Collaboration Server 800s, Virtual Edition Administrator's Guide*.

Licensing for SVC-Based Conferencing

Before using SVC-based conferencing on the RealPresence Collaboration Server 800s, it is necessary to register the product and the various software licences and obtain an *Activation* key. Specifically, you are required to register the Collaboration Server with an SVC license to run SVC-based conferences.

For more information on registering the RealPresence Collaboration Server 800s, see the *Polycom® RealPresence® Collaboration Server 800s - Virtual Edition Getting Started Guide*.

RealPresence Resource Manager

The RealPresence Resource Manager system is an integrated scheduling and device management platform for video conferencing that can include these features:

- Endpoint management, including provisioning, updating, monitoring, and troubleshooting.
- Conference scheduling and monitoring on both RealPresence Resource Manager system resources and the RealPresence Virtualization Manager (DMA) system (when integrated with the RealPresence Resource Manager system).
- Conference, network device, and system monitoring and management including network typology by geography and visual alarm reporting.
- Directory and user management including address books and presence.
- The Polycom RealPresence Desktop client for Windows operating systems – an easy-to-use video and audio conferencing application that lets your users see and hear the people they call on their desktop system.
- Automatic provisioning for dynamically-managed endpoint systems and scheduled provisioning for standardly-managed and legacy endpoints.
- Automatic software updates for dynamically-managed endpoint systems and scheduled software updates for standardly-managed and legacy endpoints.
- Firewall management capabilities which enable video conferencing across firewalls.
- Access to user and room directories for on-demand and scheduled calls.

Directory services include:

- Presence and contact list functionality for dynamically-managed endpoints (except for RealPresence Mobile clients).
- Global Address Book for a single directory structure or Multiple Address Books for multiple managed directories.
- H.350 and LDAP directory functionality. H.350 defines a directory services architecture for multimedia conferencing for H.323, H.320, SIP and generic protocols.
- Device monitoring and management, including bridges and access controllers such as firewalls and SBCs.
- An optional high-availability, redundant management server configuration.

The RealPresence Resource Manager system supports up to 10,000 managed devices. It integrates with the RealPresence Virtualization Manager (DMA) system for call control via H.323 gatekeeper and SIP proxy functions.

For more information about the Polycom RealPresence Resource Manager, see the *Polycom® RealPresence® Resource Manager™ System Operations Guide*.

Interoperability

The following table describes the Polycom components and endpoints supported in the SVC solution:

Table 3-1 Polycom Components Supported in the SVC Solution

Component	Product Version	Description
<i>RealPresence Access Director</i>	2.0	The RealPresence Access Director is a firewall traversal solution for secured video conferencing.
<i>RealPresence Virtualization Manager (DMA)</i>	5.2	The RealPresence Virtualization Manager (DMA) is the primary server communicating between the endpoints and the RealPresence Collaboration Server.
<i>RealPresence Collaboration Server 1500/2000/4000 (RMX)</i>	7.8	The RealPresence Collaboration Server functions as a media relay server for SVC Only conferences.
<i>RealPresence Collaboration Server 800s, Virtual Edition</i>	8.0	The Polycom® RealPresence® Collaboration Server 800s, Virtual Edition, is a multi-protocol, integrated software MCU that runs on industry-standard servers. It is used as a media relay server for SVC-based conferences and for SVC endpoints in a mixed AVC and SVC conference..
<i>RealPresence Resource Manager</i>	7.1	The RealPresence Resource Manager is an integrated scheduling, provisioning, and device management platform for video conferencing.
Endpoints		
<i>RealPresence Desktop</i>	2.0	The RealPresence Desktop application enables SVC conferences on PC desktop and laptop endpoint devices.
<i>RealPresence Mobile</i>	2.0	The RealPresence Mobile application enables SVC conferences on iPad tablets and iPhone devices.

A Typical SVC-Based Conference Deployment Scenario

Polycom's migration path for SVC-based conferencing enables a smooth and incremental transition for enterprises that have existing Polycom UC infrastructure such as the RealPresence Collaboration Server (RMX) or the RealPresence Collaboration Server 800s - Virtual Edition, RealPresence Virtualization Manager (DMA), and the RealPresence Resource Manager. Software upgrades to the various Polycom components are performed to provide deployment of SVC-based conferencing, enabling the enterprise to keep their initial investments and upgrading costs to a minimum. Additionally, POCN, Cisco TIP, ISDN, PSTN, and H323 are supported in the RealPresence Collaboration Server for AVC-based conferences.

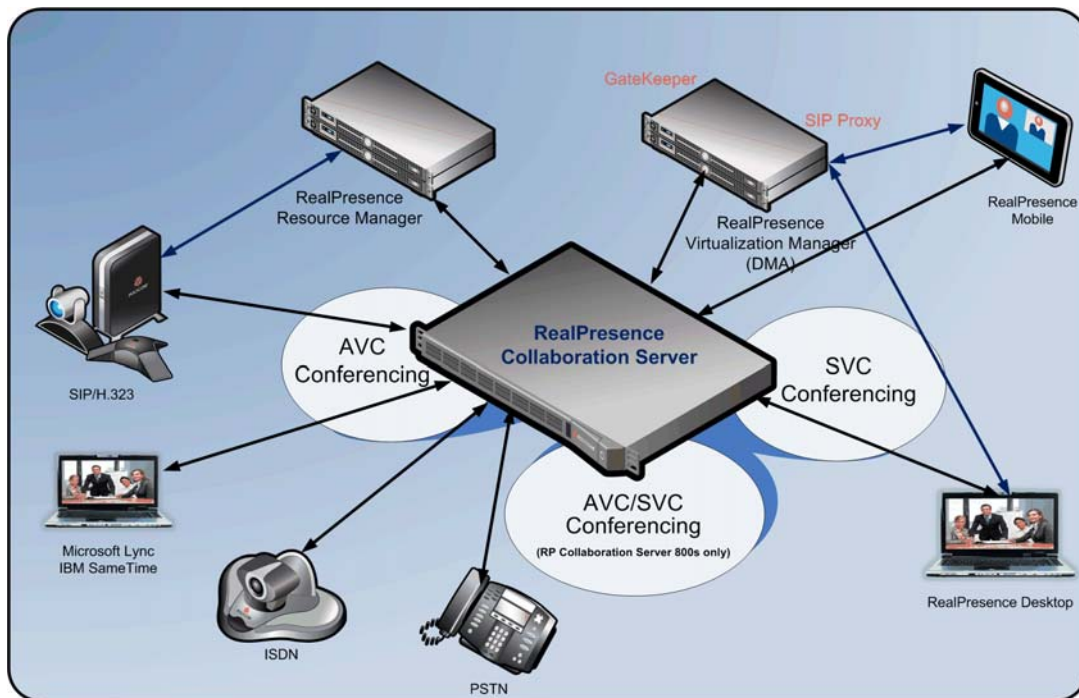
The RealPresence Collaboration Server automatically assigns AVC and SVC resources and can be expanded as needed. Upgrading the RealPresence Collaboration Server software enables managing and operating SVC-based conferences in addition to AVC-based conferences.



SVC-based conferencing requires that the RealPresence Virtualization Manager (DMA) component be installed as a SIP Proxy server.

Polycom’s SVC-based conferencing solution does not require any special training and does not require changing existing dial plans. SVC-based conferencing possess exceptional audio quality – Scalable Audio Coding (SAC) is supported.

The following diagram illustrates Polycom’s migration to the SVC-based conferencing solution:



SVC Support for Endpoints

Supported endpoints for SVC-based conferencing are Polycom’s RealPresence Desktop for PCs and Laptops, and RealPresence Mobile for iPad and iPhone.

The following table describes the SVC support for each type of endpoint:

Table 3-2 SVC Support for Endpoints

Endpoint	SVC Support
<i>RealPresence Desktop</i>	<ul style="list-style-type: none"> Sends and receives up to 720p30 Layout up to 1+10 Content is added to the layout (double-click to view full screen)

Table 3-2 SVC Support for Endpoints

Endpoint	SVC Support
<i>RealPresence Mobile</i>	<ul style="list-style-type: none"> • Receives up to 360p30 (for iPad2 and iPad3) • Sends up to 270p at 15fps • Layout up to 1+5 on iPad and up to 2x2 on iPhone • Content is added to the layout on iPad (double-click to view full screen)

Deploying the RealPresence Virtualization Manager (DMA) in the Enterprise Environment

The RealPresence Virtualization Manager (DMA) is used as the primary video conferencing call controller. It provides conference management, call control, port signaling and functions as the conference focus. Additionally, the RealPresence Virtualization Manager (DMA) communicates with the provisioning server to configure conferences, create virtual meeting rooms (VMR), and connects participants to conferences.

The RealPresence Virtualization Manager (DMA) is used as the SIP Proxy server when making SVC-based calls.

Upgrading the RealPresence Virtualization Manager (DMA) software to version 5.2 enables the enterprise deployment to keep the existing Polycom DMA component and use the RealPresence Virtualization Manager (DMA) for SVC-based conferencing.

For more information on the RealPresence Virtualization Manager (DMA), see the *Polycom® DMA™ 7000 System Operations Guide*.

Deploying the RealPresence Resource Manager in the Enterprise Environment

The RealPresence Resource Manager is an integrated scheduling and device management platform for video conferencing. The RealPresence Resource Manager handles the provisioning of the conference participant endpoints and the scheduling of video conferencing. Additionally, it communicates with the enterprise's management applications and servers such as user authentication, DNS, and Email servers.

The RealPresence Resource Manager replaces the CMA 4000/5000 in the SVC-based conferencing architecture. An existing CMA server may be used in an enterprise deployment but with limited SVC-based conferencing support - the scheduling of SVC-based conferences are not supported.

Supported Features in the RealPresence Collaboration Server

This section describes the features supported or not supported in the varying RealPresence Collaboration Server components, between the RealPresence Collaboration Server 1500/2000/4000 (RMX) and the RealPresence Collaboration Server 800s, Virtual Edition.

The following table describes the features for SVC Only conferences, AVC Only conferences, and mixed AVC and SVC conferences for each Collaboration Server component:

Table 3-3 Supported Features Per Collaboration Server Component

Feature	RealPresence Collaboration Server (RMX) 1500/2000/4000		RealPresence Collaboration Server 800s, Virtual Edition		
	AVC	SVC	AVC/CP	SVC	Mixed CP & SVC
<i>Operator Conferences</i>	✓	✗	✓	✗	✗
<i>Entry Queues</i>	✓	✗	✓	✓ ¹	✓ ¹
<i>Reservations</i>	✓	✗	✓	✓	✓
<i>Dial Out</i>	✓	✗	✓	✗	✓ ²
<i>Gateway Profiles</i>	✓	✗	✗	✗	✗
<i>Cascading</i>	✓	✗	✓	✗	✓ ³
<i>IVR</i>	✓	✗	✓	✓ ⁴	✓
<i>FECC</i>	✓	✗	✓	✓	✓
<i>Encryption</i>	✓	✗	✓	✓	✓
<i>LPR⁵</i>	✓	✗	✓	✗	✓
<i>SVC Error Resiliency</i>	✗	✓	✗	✓	✓ ⁶
<i>Auto Redial</i>	✓	✗	✓	✗	✗
<i>Cisco TIP</i>	✓	✗	✗	✗	✗
<i>Force Layout</i>	✓	✗	✓	✗	✗
<i>Media Recording</i>	✓	✗	✓	✗	✓ ⁷
<i>Message Overlay</i>	✓	✗	✗	✗	✗
<i>Site Names</i>	✓	✓ ⁸	✓	✓ ⁷	✓ ⁷

Table 3-3 Supported Features Per Collaboration Server Component (Continued)

Feature	RealPresence Collaboration Server (RMX) 1500/2000/4000		RealPresence Collaboration Server 800s, Virtual Edition		
	AVC	SVC	AVC/CP	SVC	Mixed CP & SVC
<i>Presentation Mode</i>	✓	✗	✓	✗	✗
<i>Content</i>	✓	Graphics only, H.264 Cascade & SVC Optimized	✓	Graphics only, H.264 Cascade & SVC Optimized	Graphics only, H.264 Cascade & SVC Optimized
<i>Lecture Mode</i>	✓	✗	✓	✗	✗
<i>Skins</i>	✓	✗	✓	✗	✓ ⁹

1. Entry Queue and destination conference must have the same Profile (that is, SVC Only to SVC Only and CP and SVC to CP and SVC)
2. AVC Only participants
3. Only Basic Cascading is available
4. Reduced IVR set for SVC endpoints (also for Mixed CP-SVC)
5. For AVC endpoints, LPR is used. However, for SVC endpoints, new SVC error resiliency methods are used.
6. SVC endpoints only
7. AVC recording only
8. For SVC endpoints, Site Names are managed by the endpoint, not by the MCU.
9. AVC Only participants

Configuration

This chapter describes how to configure the Polycom components for SVC-based conferencing.

The RealPresence Collaboration Server (RMX), the RealPresence Collaboration Server 800s and the RealPresence Virtualization Manager (DMA) are the only Polycom components that require configuration for SVC-based conferences. All other components do not need any special configuration.

This chapter includes the following topics:

- "Configuring the RealPresence Collaboration Server (RMX) for SVC Only Conferences"
- "Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences"
- "Configuring a Mixed CP (AVC) and SVC Conference on the RealPresence Collaboration Server 800s"
- "Configuring the RealPresence Virtualization Manager (DMA)"

Configuring the RealPresence Collaboration Server (RMX) for SVC Only Conferences

This section describes how to configure the RealPresence Collaboration Server for SVC-based conferences.

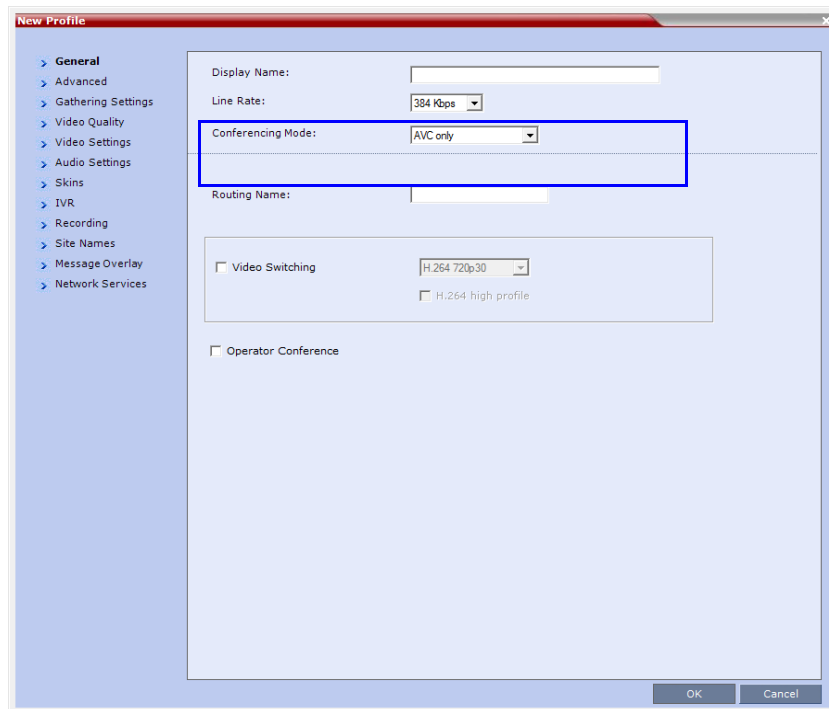


The RealPresence Collaboration Server (RMX) can only run SVC Only and AVC Only Conferences. See "Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences" for configuring mixed AVC/SVC conferences.

To define an SVC Only Profile:

- 1 In the *RMX Management* pane, click **Conference Profiles**.
- 2 In the *Conference Profiles* pane, click the **New Profile** button.

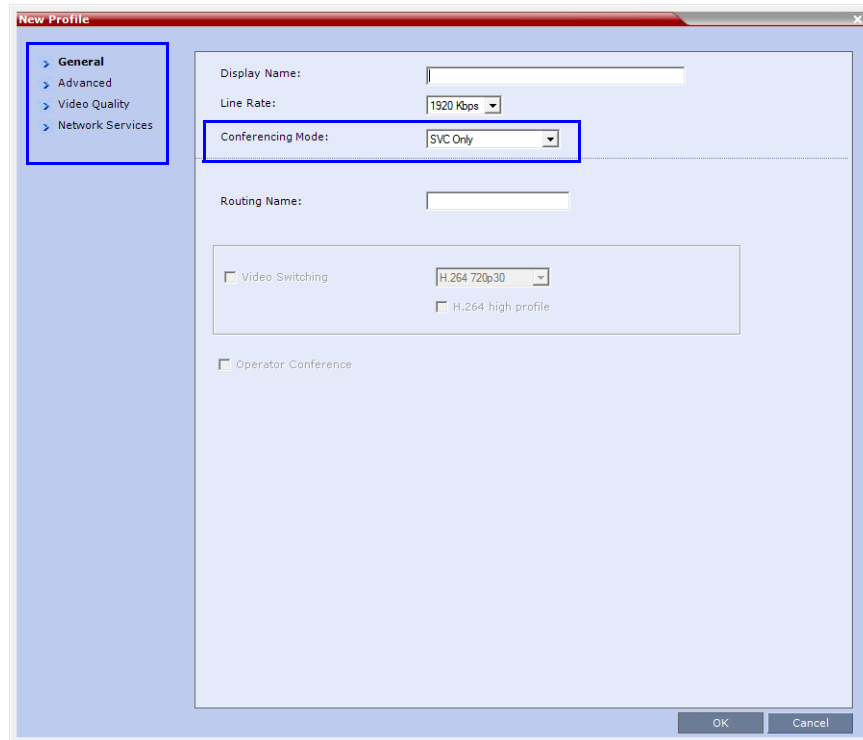
The *New Profile – General* dialog box opens.



By default, the Profile is set to *AVC Only Conferencing Mode*.

- 3 In the *Conferencing Mode* list, select **SVC Only** to define an SVC Profile.

The profile tabs and options change accordingly and only supported options are available for selection. Unsupported options are disabled (grayed out).



- 4 Define the *Profile* name and, if required, the *Profile - General* parameters:

Table 4-1 New SVC Profile - General Parameters

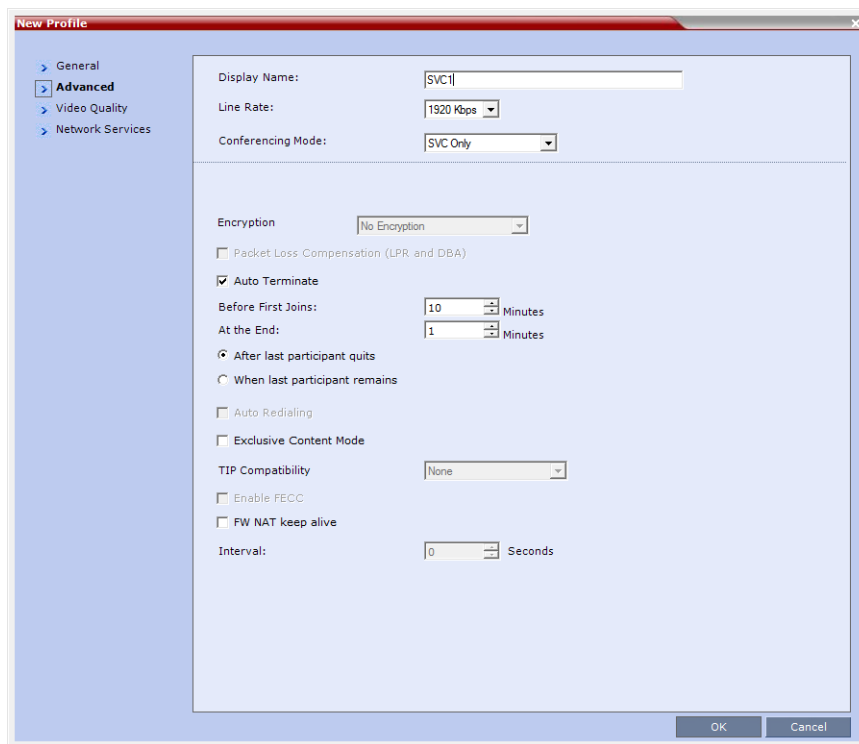
Field/Option	Description
<i>Display Name</i>	<p>Enter a unique Profile name, as follows:</p> <ul style="list-style-type: none"> • English text uses ASCII encoding and can contain the most characters (length varies according to the field). • European and Latin text length is approximately half the length of the maximum. • Asian text length is approximately one third of the length of the maximum. <p>It is recommended to use a name that indicates the Profile type, such as Operator conference or Video Switching conference.</p> <p>Note: This is the only parameter that must be defined when creating a new profile.</p> <p>Note: This field is displayed in all tabs.</p>
<i>Line Rate</i>	<p>Select the conference bit rate. The line rate represents the combined video, audio and Content rate.</p> <p>The default setting for SVC Only conference is 1920kbps.</p> <p>Notes:</p> <ul style="list-style-type: none"> • This field is displayed in all tabs.

Table 4-1 New SVC Profile - General Parameters (Continued)

Field/Option	Description
Routing Name	Enter the <i>Profile</i> name using ASCII characters set. The Routing Name can be defined by the user or automatically generated by the system if no Routing Name is entered as follows: <ul style="list-style-type: none"> • If an all ASCII text is entered in Display Name, it is used also as the Routing Name. • If any combination of Unicode and ASCII text (or full Unicode text) is entered in Display Name, the ID (such as Conference ID) is used as the Routing Name.

5 Click the **Advanced** tab.

The *New Profile - Advanced* dialog box opens.



6 Define the following supported parameters:

Table 4-2 New SVC Profile - Advanced Parameters

Field/Option	Description
<i>Auto Terminate</i>	When selected (default), the conference automatically ends when the termination conditions are met: Before First Joins — No participant has connected to a conference during the <i>n</i> minutes after it started. Default idle time is 10 minutes. At the End - After Last participant Quits — All the participants have disconnected from the conference and the conference is idle (empty) for the predefined time period. Default idle time is 1 minute. At the End - When Last Participant Remains — Only one participant is still connected to the conference for the predefined time period (excluding the recording link which is not considered a participant when this option is selected). It is not recommended to select this option for SVC Conferences. Default idle time is 1 minute.
<i>Exclusive Content Mode</i>	When selected, <i>Content</i> broadcasting is limited to one participant preventing other participants from interrupting the Content broadcasting while it is active. For more details, see
<i>FW NAT Keep Alive</i>	When selected, an <i>FW NAT Keep Alive</i> message is sent at an interval defined in the field below the check box.
<i>Interval</i>	The time in seconds between <i>FW NAT Keep Alive</i> messages.

7 Click the **Video Quality** tab.

The *New Profile - Video Quality* dialog box opens.

The screenshot shows the 'New Profile' dialog box with the 'Video Quality' tab selected. The settings are as follows:

- Display Name: SVC1
- Line Rate: 1920 Kbps
- Conferencing Mode: SVC Only
- People Video Definition:
 - Video Quality: Sharpness
 - Maximum Resolution: Auto
 - Video Clarity
 - Auto Brightness
- Content Video Definition:
 - Content Settings: Graphics
 - Content Protocol: H.264 Cascade and SVC Optimized
 - Cascade Resolution: 720 5fps

Buttons for 'OK' and 'Cancel' are visible at the bottom right.

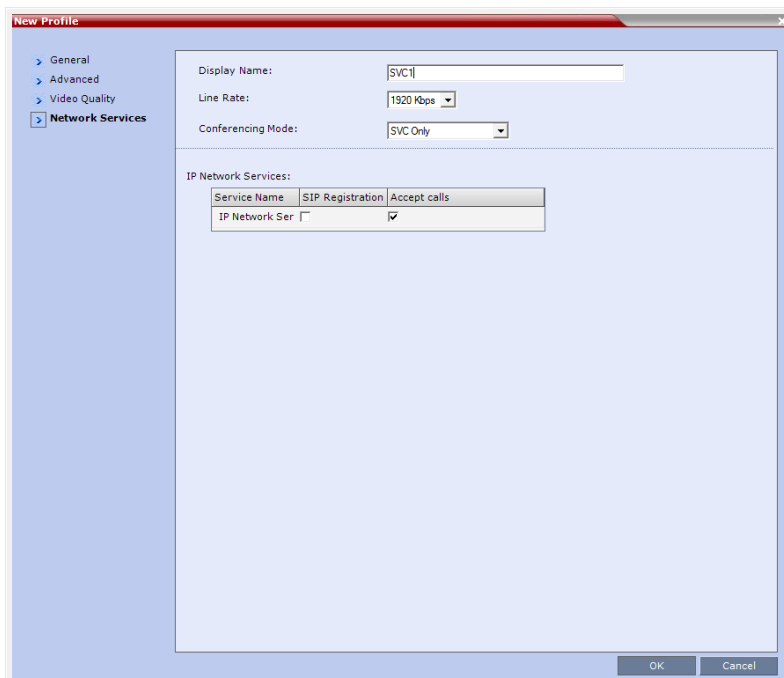
- 8 Define the following parameters:

Table 4-3 New SVC Profile - Video Quality Parameters

Field/Option	Description
Content Video Definition	
<i>Content Settings</i>	Only Graphics is available in SVC Conferencing Mode for transmission of Content. It offers the basic mode, intended for normal graphics For more information, see "H.239" on page 4-2.
<i>Content Protocol</i>	H.264 Cascade and SVC Optimized is the only available Content Protocol for content sharing during SVC-based conferences. In this mode, all <i>Content</i> is shared using the <i>H.264</i> content protocol and all endpoints must use the set video resolution and frame rate (720p 5fps). Endpoints that do not support these settings cannot share content.

- 9 Click the **Network Services** tab.

The *New Profile - Network Services* tab opens.



Registration of conferencing entities such as ongoing conferences, Meeting Rooms, and SIP Factories with SIP servers is done per conferencing entity. This allows better control of the number of entities that register with each SIP server. Selective registration is enabled by assigning a conference Profile in which registration is configured for the required conferencing entities. Assigning a conference Profile in which registration is not configure for conferencing entities will prevent them from registering. By default, Registration is disabled in the Conference Profile, and must be enabled in Profiles assigned to conferencing entities that require registration.

10 Define the following parameters:**Table 4-4** *New SVC Profile - Network Services Parameters*

Parameter	Description
IP Network Services:	
<i>Service Name</i>	This column lists all the defined <i>Network Services</i> , one or several depending on the system configuration.
<i>SIP Registration</i>	To register the conferencing entity to which this profile is assigned with the SIP Server of the selected <i>Network Service</i> , click the check box of that <i>Network Service</i> in this column. When SIP registration is not enabled in the conference profile, the RMX's registering to SIP Servers will each register with an URL derived from its own signaling address. This unique URL replaces the non-unique URL, <i>dummy_tester</i> , used in previous versions.
<i>Accept Calls</i>	To prevent dial in participants from connecting to a conferencing entity when connecting via a <i>Network Service</i> , clear the check box of the <i>Network Service</i> from which calls cannot connect to the conference.

- 11** Click **OK** to complete the *Profile* definition.
A new *Profile* is created and added to the *Conference Profiles* list.

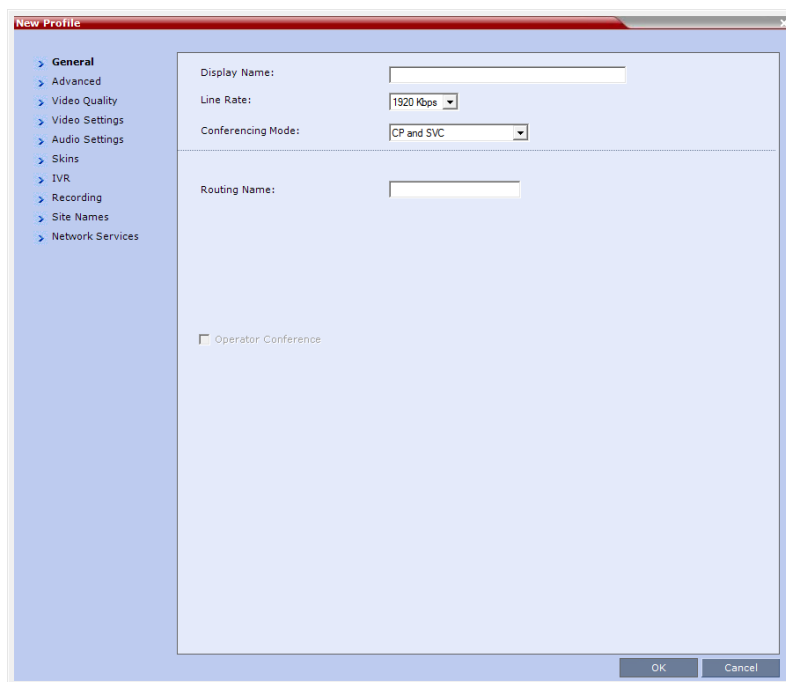
Configuring the RealPresence Collaboration Server 800s for SVC Only Conferences

This section describes how to configure the RealPresence Collaboration Server 800s for SVC-based conferences.

To define an SVC Only Profile:

- 1 In the *RMX Management* pane, click **Conference Profiles**.
- 2 In the *Conference Profiles* pane, click the **New Profile** button.

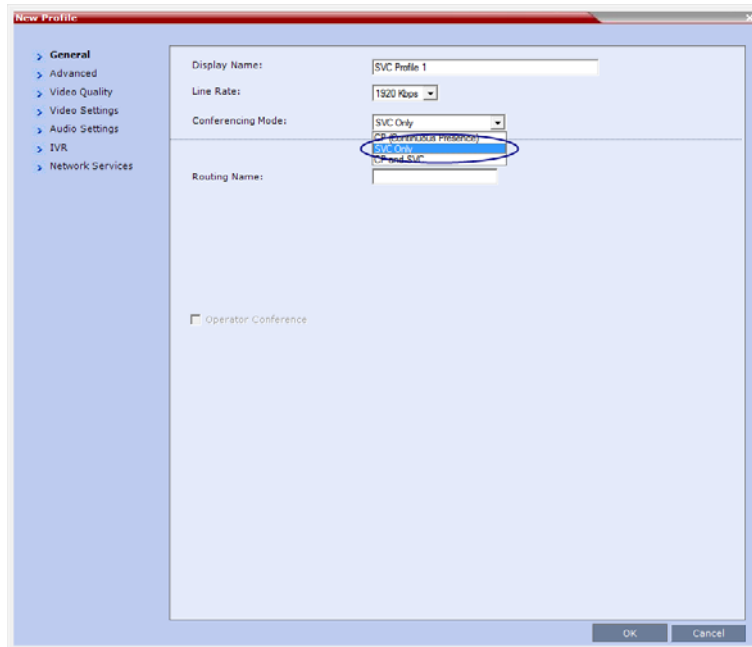
The *New Profile - General* dialog box is displayed.



By default, the Profile is set to the **CP and SVC** conferencing mode.

- 3 In the Conferencing Mode list, select **SVC Only** to define an SVC Profile.

The profile tabs and options change accordingly and only supported options are available for selection. Unsupported options are disabled (grayed out).



- 4 Define the *Profile* name and, if required, the *Profile - General* parameters:

Table 4-5 New SVC Profile - General Parameters

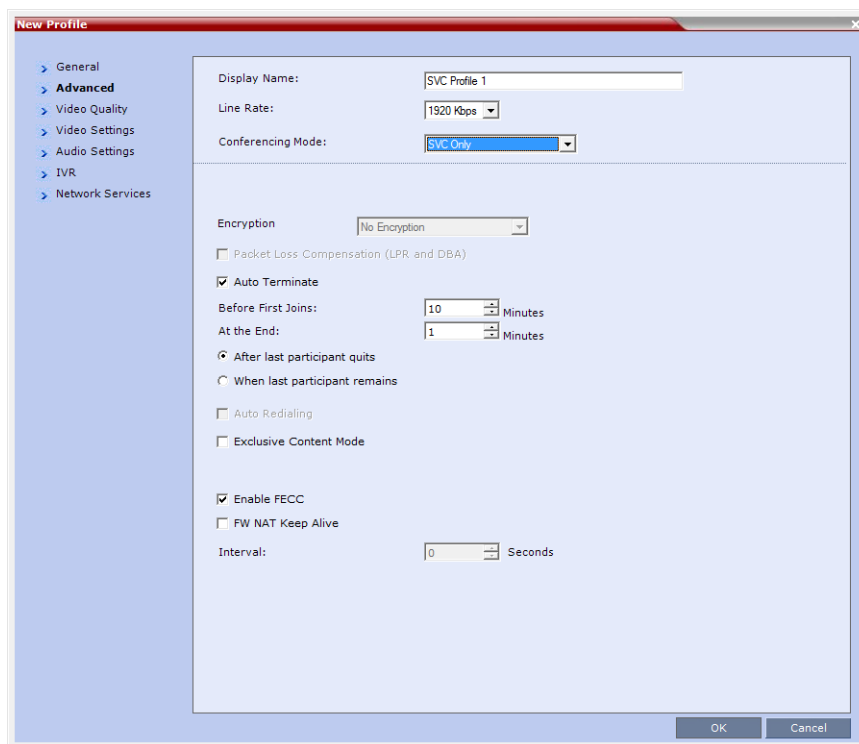
Field/Option	Description
<i>Display Name</i>	<p>Enter a unique Profile name, as follows:</p> <ul style="list-style-type: none"> English text uses ASCII encoding and can contain the most characters (length varies according to the field). European and Latin text length is approximately half the length of the maximum. Asian text length is approximately one third of the length of the maximum. <p>It is recommended to use a name that indicates the Profile type, such as Operator conference or Video Switching conference.</p> <p>Note: This is the only parameter that must be defined when creating a new profile.</p> <p>Note: This field is displayed in all tabs.</p>
<i>Line Rate</i>	<p>Select the conference bit rate. The line rate represents the combined video, audio and Content rate.</p> <p>The default setting for SVC Only conference is 1920kbps.</p> <p>Notes:</p> <p>This field is displayed in all tabs.</p>

Table 4-5 New SVC Profile - General Parameters (Continued)

Field/Option	Description
Routing Name	<p>Enter the <i>Profile</i> name using the ASCII characters set. The Routing Name can be defined by the user or automatically generated by the system if no Routing Name is entered as follows:</p> <ul style="list-style-type: none"> If an all ASCII text is entered in Display Name, it is used also as the Routing Name. <p>If any combination of Unicode and ASCII text (or full Unicode text) is entered in Display Name, the ID (such as Conference ID) is used as the Routing Name.</p>

5 Click the **Advanced** tab.

The *New Profile - Advanced* dialog box is displayed.



6 Define the following supported parameters:

Table 4-6 New SVC Profile - Advanced Parameters

Field/Option	Description
<i>Auto Terminate</i>	When selected (default), the conference automatically ends when the termination conditions are met: Before First Joins — No participant has connected to a conference during the <i>n</i> minutes after it started. Default idle time is 10 minutes. At the End - After Last participant Quits — All the participants have disconnected from the conference and the conference is idle (empty) for the predefined time period. Default idle time is 1 minute. At the End - When Last Participant Remains — Only one participant is still connected to the conference for the predefined time period (excluding the recording link which is not considered a participant when this option is selected). It is not recommended to select this option for SVC Conferences. Default idle time is 1 minute.
<i>Exclusive Content Mode</i>	When selected, <i>Content</i> broadcasting is limited to one participant preventing other participants from interrupting the Content broadcasting while it is active.
<i>FW NAT Keep Alive</i>	When selected, an <i>FW NAT Keep Alive</i> message is sent at an interval defined in the field below the check box.
<i>Interval</i>	The time in seconds between <i>FW NAT Keep Alive</i> messages

7 Click the **Video Quality** tab.

The *New Profile - Video Quality* dialog box is displayed.

The screenshot shows the 'New Profile' dialog box with the 'Video Quality' tab selected. The settings are as follows:

- Display Name: SVC Profile 1
- Line Rate: 1920 Kbps
- Conferencing Mode: SVC Only
- People Video Definition:
 - Video Quality: Sharpness
 - Maximum Resolution: Auto
- Content Video Definition:
 - Content Settings: Graphics
 - Content Protocol: H.264 Cascade and SVC Optimized
 - Cascade Resolution: 720 fps

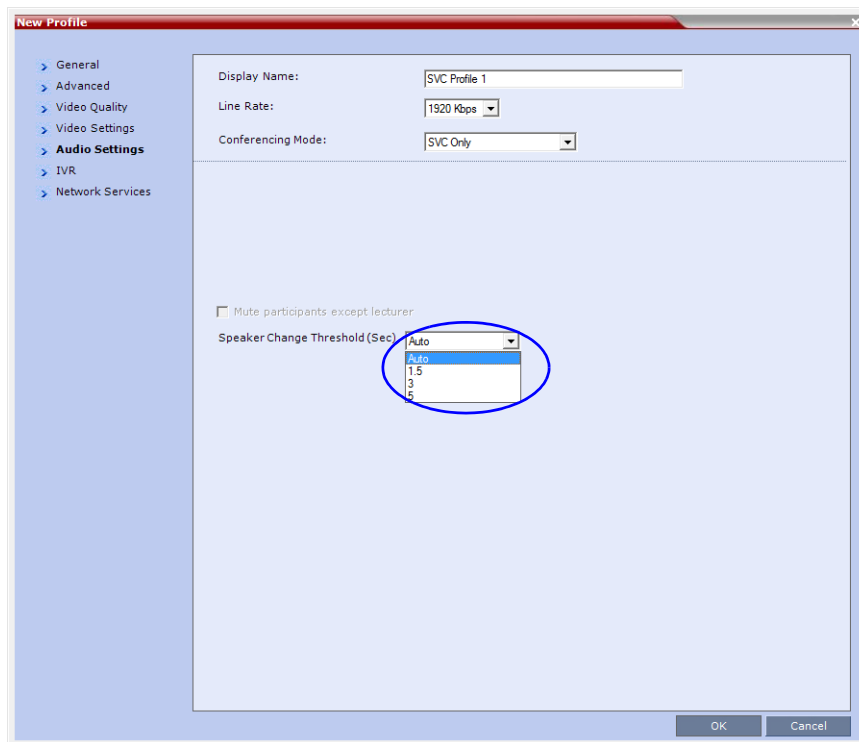
8 Define the following parameters:

Table 4-7 New SVC Profile - Video Quality Parameters

Field/Option	Description
<i>Content Video Definition</i>	
<i>Content Settings</i>	Only Graphics is available in SVC Conferencing Mode for transmission of Content. It offers the basic mode, intended for normal graphics. For more information, see the <i>RealPresence Collaboration Server Administrator's Guide</i> , "H.239".
<i>Content Protocol</i>	H.264 Cascade and SVC Optimized is the only available Content Protocol for content sharing during SVC-based conferences. In this mode, all <i>Content</i> is shared using the <i>H.264</i> content protocol and all endpoints must use the set video resolution and frame rate (720p 5fps). Endpoints that do not support these settings cannot share content.

9 Click the **Audio Settings** tab.

The *New Profile - Audio Settings* dialog box is displayed.



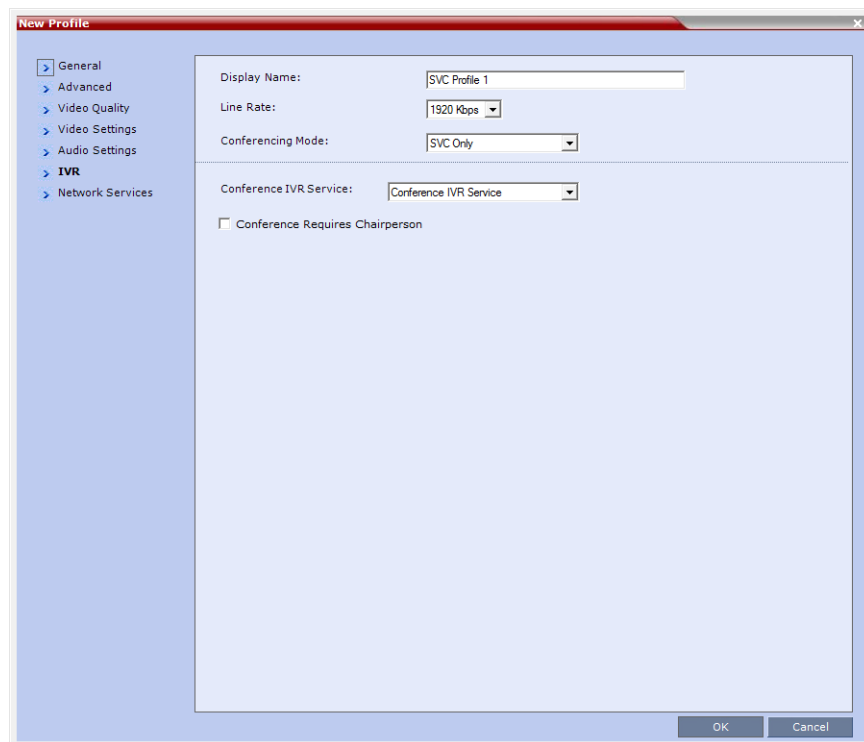
10 Define the following supported parameters:

Table 4-8 New SVC Profile - Audio Settings Parameters

Field/Option	Description
<i>Speaker Change Threshold (Sec)</i>	Select the amount of time a participant must speak continuously before becoming the speaker. The possible values are: <ul style="list-style-type: none"> • Auto (Default, 3 seconds) • 1.5 seconds • 3 seconds • 5 seconds

11 Click the **IVR** tab.

The New Profile - IVR dialog box is displayed.



12 Define the following parameters:

Table 4-9 New SVC Profile - IVR Parameters

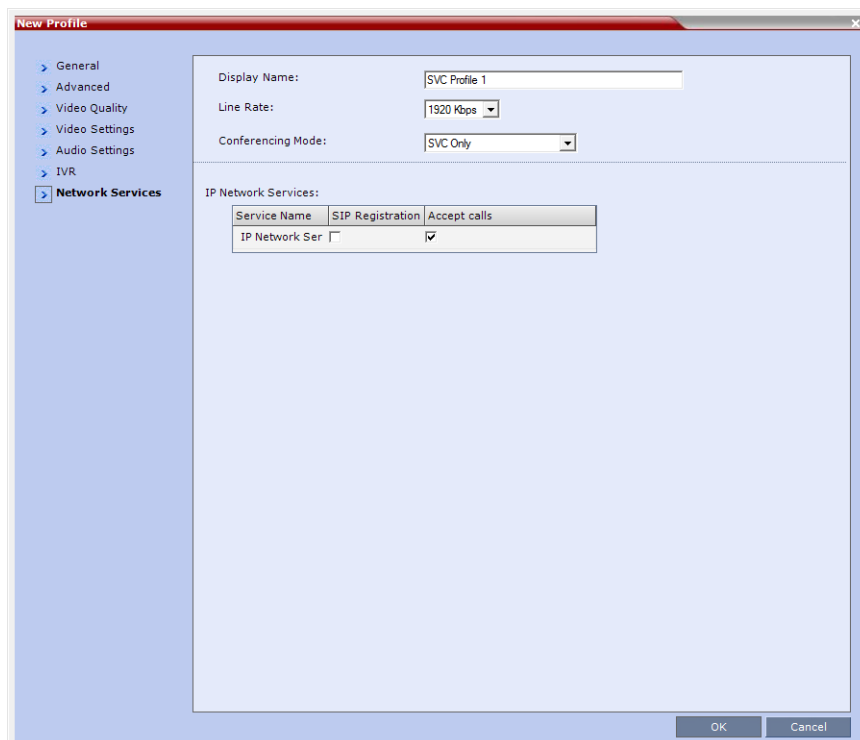
Field/Option	Description
<i>Conference IVR Service</i>	The default <i>Conference IVR Service</i> is selected. You can select another conference IVR Service if required.

Table 4-9 New SVC Profile - IVR Parameters

Field/Option	Description
<i>Conference Requires Chairperson</i>	<p>Select this option to allow the conference to start only when the chairperson connects to the conference and to automatically terminate the conference when the chairperson exits. Participants who connect to the conference before the chairperson are placed on <i>Hold</i> and hear background music (and see the <i>Welcome</i> video slide). Once the conference is activated, the participants are automatically connected to the conference.</p> <p>When the check box is cleared, the conference starts when the first participant connects to it and ends at the predefined time or according to the <i>Auto Terminate</i> rules when enabled.</p> <p>Note: This feature is implemented only if the <i>System Flag</i> TERMINATE_CONF_AFTER_CHAIR_DROPPED is set to YES.</p>

13 Click the **Network Services** tab.

The *New Profile - Network Services* dialog box is displayed.



Registration of conferencing entities such as ongoing conferences, Meeting Rooms, and SIP Factories with SIP servers is done per conferencing entity. This allows better control of the number of entities that register with each SIP server. Selective registration is enabled by assigning a conference profile in which registration is configured for the required conferencing entities. Assigning a conference profile in which registration is not configure for conferencing entities will prevent them from registering. By default, Registration is disabled in the Conference Profile, and must be enabled in the Conference Profiles assigned to conferencing entities that require registration.

14 Define the following parameters:**Table 4-10** New SVC Profile - Network Services Parameters

Field/Option	Description
IP Network Services:	
<i>Service Name</i>	This column lists all the defined <i>Network Services</i> , one or several depending on the system configuration
<i>SIP Registration</i>	To register the conferencing entity to which this profile is assigned with the SIP Server of the selected <i>Network Service</i> , click the check box of that <i>Network Service</i> in this column. When SIP registration is not enabled in the conference profile, the RMX's registering to SIP Servers will each register with an URL derived from its own signaling address. This unique URL replaces the non-unique URL, dummy_tester, used in previous versions.
<i>Accept Calls</i>	To prevent dial in participants from connecting to a conferencing entity when connecting via a <i>Network Service</i> , clear the check box of the <i>Network Service</i> from which calls cannot connect to the conference.

15 Click **OK** to complete the *Conference Profile* definition.

A new *Profile* has been created and added to the *Conference Profiles* list.

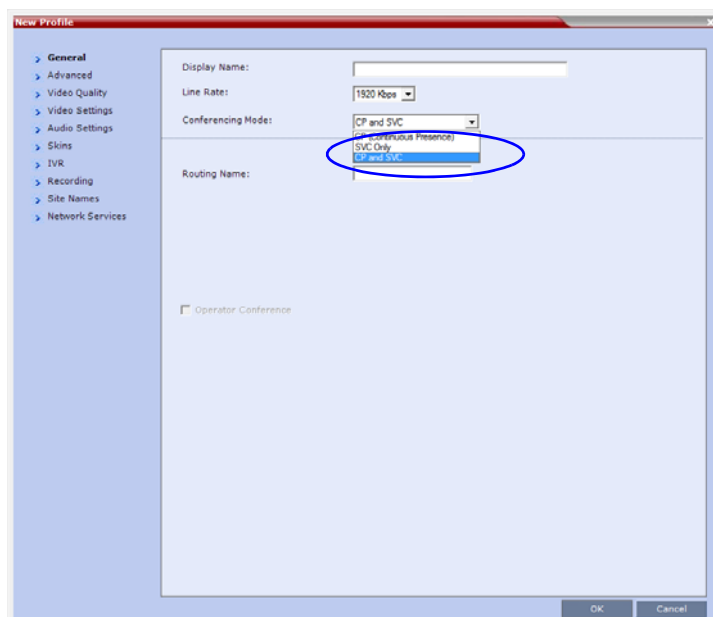
Configuring a Mixed CP (AVC) and SVC Conference on the RealPresence Collaboration Server 800s

The RealPresence Collaboration Server 800s can be configured for a mixed AVC (CP) and SVC conference.

To configure a mixed CP and SVC conference:

- 1 In the *RealPresence Collaboration Server Management* pane, click **Conference Profiles**.
- 2 In the *Conference Profiles* pane, click the **New Profile** button.

The *New Profile - General* dialog box is displayed.



By default, the Profile is set to the **CP and SVC** conferencing mode.

- 3 In the *Confferencing Mode* list, ensure that **CP and SVC** is selected to define a mixed CP and SVC conference.
- 4 Define the rest of the Conference Profile parameters for the mixed CP and SVC conference as detailed in the *Polycom RealPresence Collaboration Server 800s Administrator's Guide*.

Using Video Resources for a Mixed AVC and SVC Conference

In a mixed CP and SVC conference, video resources are used according to the amount of both AVC and SVC participants in the conference. The ratio of resources in a mixed conference is one AVC HD (720p30) video resource to three SVC video resources, meaning for each AVC HD video resource, three SVC video resources can be allocated.

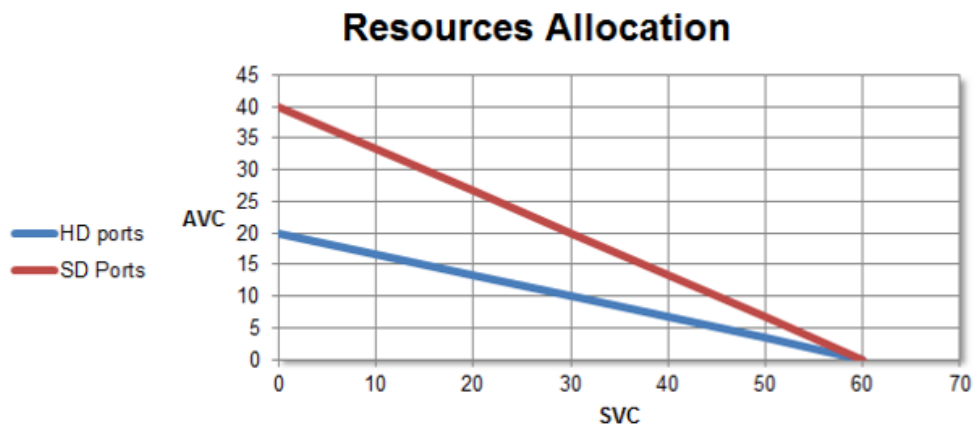
The following table describes the resource capacity allocations for the RealPresence Collaboration Server 800s.

Table 4-11 Resource Capacity Allocation

Resource Type	Number of Resources
VoIP Ports	120
CIF Ports	40
SD Ports (4CIF)	40
HD 720p30 Ports	20
VGA RTV Ports	20
SVC Only Ports	60

For example, in a mixed AVC/SVC conference, 10 HD ports and 30 SVC ports can be the maintaining ratio of one HD port to three SVC ports.

The following diagram illustrates the amount of AVC to SVC port resources that are used in a mixed AVC/SVC conference:



Resource Report

When viewing the Collaboration Server resource report, the resource allocations are described in AVC SD/CIF units. A port ratio of 1 AVC HD port will equal 2 AVC SD ports, which equals 3 SVC ports. This signifies that when the Collaboration Server is reporting the available capacity, it will appropriately round up the remaining capacity to the nearest whole value of available ports. For a detailed description of the Collaboration Server resource report, see the *Polycom® RealPresence® Collaboration Server Administrator's Guide*.

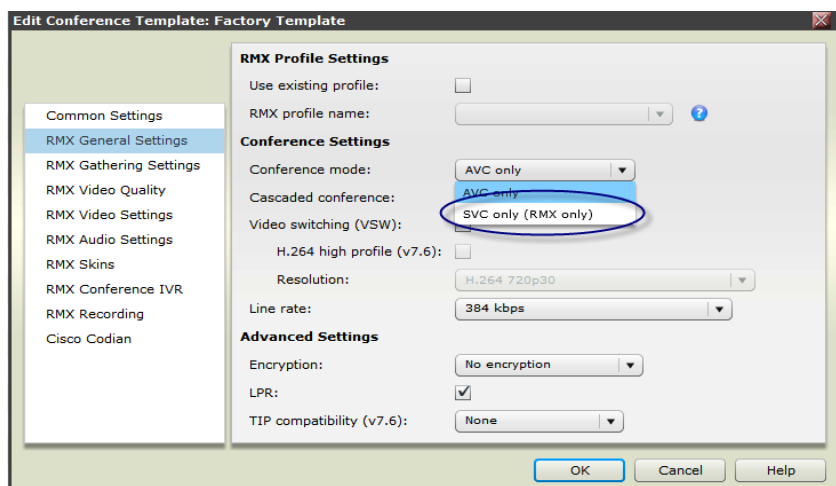
Configuring the RealPresence Virtualization Manager (DMA)



The RealPresence Virtualization Manager (DMA) Version 5.1 only supports SVC Only conferences on the RealPresence Collaboration Server (RMX).

To configure the RealPresence Virtualization Manager (DMA) for SVC-based conferences:

- 1 In the *Edit Conference Template: Factory Template* dialog box, click **RMX General Settings**.



- 2 In the *Conference mode* setting, click the drop-down menu arrow and select **SVC only (RMX only)**.



Selecting this setting disables most of the other template settings such as Encryption, LPR, and TIP compatibility.

- 3 Select any of the other settings that is relevant for the conference.
- 4 Click **OK**.

Making an SVC-Based Conference Call

This chapter describes how to place an SVC-based conference call using the RealPresence SVC-Based Conferencing solution. It describes the conference call from the end-user perspective in addition to describing the SVC-based conference established in the RealPresence Collaboration Server and the RealPresence Virtualization Manager (DMA). Additionally, the chapter describes the various features that can be used in an SVC-based conference.

Using the Polycom RealPresence Desktop and the Polycom RealPresence Mobile Applications

The Polycom RealPresence Desktop application is designed as an enhancement and replacement of the existing Polycom CMA Desktop and m100 applications. However, in this release, the RealPresence Desktop supports the Windows platform only.

The Polycom RealPresence Mobile application provides video conferencing for tablets and smartphones, extending video beyond conference rooms, enabling organizations to deliver video collaboration to more users in more environments. RealPresence Desktop and RealPresence Mobile are fully SVC-enabled applications.

Making a Conference Call

There are several types of conferences:

- "Point-to-Point Calls"
- "Multipoint Conferences"

Point-to-Point Calls

Point-to-point calls enable one participant to call another participant for video conferencing. Using the RealPresence Desktop or RealPresence Mobile, a point-to-point call can be made between two endpoints using the SIP protocol. Point-to-point calls can also be done between standard-based H.323 and SIP clients.

For point-to-point calls using the SIP protocol, an exchange is performed for video capabilities between the participants at the beginning of the call to determine the preferred call characteristics by both sides. When that is determined, point-to-point calls uses the SVC error resiliency capabilities but only one resolution is sent between the endpoints.

Using the RealPresence Desktop or the RealPresence Mobile applications, the participant can initiate a point-to-point call by:

- Selecting a participant from the Contacts list (LDAP access from the provisioning server or a manually entered contact)
- Selecting a participant from the Recent Calls list
- Typing the IP address of the calling participant

When the RealPresence Desktop is provisioned using the RealPresence Resource Manager, the Contacts list is comprised of the LDAP directory and contacts that have been manually added. When selecting a participant from the Contacts list, the call is started when the called participant answers the call.

The RealPresence® Access Director™, the Polycom secure firewall solution, enables high-quality and secure unified communications with remote enterprise users and guest users in the enterprise. In this solution, the RealPresence Access Director system, acting as the Session Border Controller (SBC) for the enterprise IP network, secures the borders to the enterprise IP network, the private VPN, and the Internet. This allows for secure communication between the enterprise environment and enterprise remote users.

The RealPresence Access Director enables external, remote users via designated video endpoints such as smartphones and tablets, to make an LDAP connection to the RealPresence Access Director system which are then proxied to the internal LDAP server.

The RealPresence Virtualization Manager (DMA) establishes point-to-point conferences within the enterprise network and is used as the SIP proxy server between the conference participants.



Point-to-point calls uses the RealPresence Virtualization Manager (DMA) for call control. When the point-to-point video call is sent to an endpoint outside the enterprise firewall, SIP signaling and media are sent through the RealPresence Access Director.

Video Layouts for Point-to-Point Calls

The video layout for point-to-point calls contain both participants in the layout view. The smaller pane displays the local participant (self-view).

The following table illustrates how participants are displayed in the video layout of a point-to-point call:

Table 5-1 Point-to-Point Video Layout

Number of Participants	RealPresence Desktop	RealPresence Mobile
1 - 2		

Multipoint Conferences

For SVC-based conferences, only SVC-enabled endpoints, such as the RealPresence Desktop and RealPresence Mobile applications, can connect to a configured SVC Only conference on the RealPresence Collaboration Server and the RealPresence Virtualization Manager (DMA). Non-SVC endpoints are not able to connect to SVC Only conferences.

SVC-based conferences are established on the RealPresence Virtualization Manager (DMA) through Virtual Meeting Rooms. Participants to SVC-based conferences can dial-in to the Virtual Meeting Room using a SIP URI, SIP IP address, or a Meeting Room number.

Examples of these can be:

- SIP URI – 724999@polycom.com
- SIP IP Address – 1111@123.45.67.89
- Meeting Room – 724999

The RealPresence Collaboration Server 800s currently enables an SVC participant to directly dial-in to a Meeting Room or an ongoing conference or dial-in through an Entry Queue.

VMRs can also be located in the Contacts list when the RealPresence Resource Manager is connected with the enterprise LDAP. The RealPresence Resource Manager controls the provisioning of the enterprise computers.

The RealPresence Virtualization Manager (DMA) is used for call control, SIP proxy, and conference management. The RealPresence Virtualization Manager (DMA) allocates a RealPresence Collaboration Server for sending and receiving video streams to and from the SVC-enabled endpoints. When the RealPresence Collaboration Server is allocated, it detects if all endpoints support SVC capabilities and allows SVC-enabled endpoints to connect. When an endpoint in the conference is not an SVC endpoint, the RealPresence Collaboration Server rejects the call and does not allow it to connect to the conference.

The RealPresence Collaboration Server provides the information on the SVC streams for each endpoint in the conference and negotiates the required video streams to be sent to the endpoints.

Using the RealPresence Desktop or RealPresence Mobile applications, the user is able to dial to VMRs and other participants, view other participants in a continuous presence video layout, control video and audio mute, and share content.

Video Layouts

Depending on the number of participants in the multipoint conferencing, video layouts are automatically configured for displaying on the participant endpoint. The participant that is currently speaking is displayed in the larger video pane and the participants currently listening are displayed in the smaller video panes.

The following video layouts are used in an SVC-based conference using the RealPresence Desktop or RealPresence Mobile clients.

The following table illustrates how participants are displayed in video layouts in an SVC-based conference:

Table 5-2 Video Layouts for Multipoint Conferences







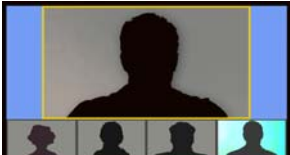

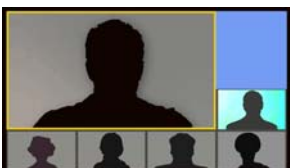
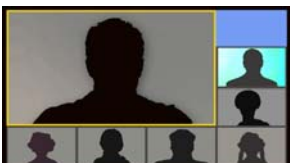
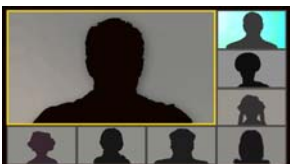



Number of Participants	RealPresence Desktop	RealPresence Mobile
2		
3		
4		
5		
6		
7		
8		

Table 5-2 Video Layouts for Multipoint Conferences (Continued)

Number of Participants	RealPresence Desktop	RealPresence Mobile
9		
10		
11		

Appendix - SVC-Based Conferencing Solution Specifications

Solution Specifications

The following table describes the SVC-based conferencing solution supported capabilities:

Table A-1 Supported Solution Capabilities

Feature	Description
<i>Video Protocol</i>	H.264 SVC, Baseline Profile
<i>Video Resolutions</i>	For details, see: <ul style="list-style-type: none">• "MCU Supported Resolutions" on page A-4
<i>Audio Protocols</i>	The following protocols are supported for SVC conferencing: <ul style="list-style-type: none">• SAC LPR (multipoint only)
<i>Signaling</i>	<ul style="list-style-type: none">• SIP over TCP (Recommended)• SIP over UDP• SIP over UDP/TLS
<i>Media Quality</i>	Low Latency, VID & AUD error resiliency
<i>Additional Video RFC Support</i>	<ul style="list-style-type: none">• PLI (Picture Loss Indication, RFC 4585)• FIR (Full Intra Request, RFC 5104)

Table A-1 Supported Solution Capabilities (Continued)

Feature	Description
<i>Video Layout</i>	<ul style="list-style-type: none">• RealPresence Desktop:<ul style="list-style-type: none">• 1+3• 1+4• 1+7• 1+10• RealPresence Mobile (iPad):<ul style="list-style-type: none">• 1+3• 1+5• RealPresence Mobile (iPhone):<ul style="list-style-type: none">• 1x1• 1x2• 1+2• 2x2 <p>Note: For asymmetric layouts such as 1+3 and 1+4, the first digit denotes the current speaker in the conference. The second digit denotes the number of participants including the local (self view).</p>

Supported Conferencing Features

- Multipoint Video H.264 SVC call between SVC endpoints and a single MCU
- Maximum number of SVC participants in a conference:
 - Up to 90 video participants using the RealPresence Collaboration Server (RMX)
 - Up to 60 video participants using the RealPresence Collaboration Server 800s



When running an SVC-based conference in the RealPresence Collaboration Server (RMX), all SVC participants in the same conference must reside on the same MPMx media card.

- A content session can be started
- Video Resources Capacity:

Table A-2 Video Resources Capacity

Resource Type	RP Collaboration Server (RMX) (per MPMx card)	RP Collaboration Server 800s
HD 720p	30	20
SD	60	40
SVC	90	60

RP Collaboration Server (RMX): 1 CIF port is equivalent to 1 SVC port

RP Collaboration Server 800s: 2 CIF/SD ports is equivalent to 3 SVC ports

- The Polycom RealPresence Virtualization Manager (DMA) provides the following Proxy services via the SIP and Registrar servers to the registered clients:
 - Trunk configuration
 - Feature server insertion (dial plan)
 - SIP outbound tunneling (RFC5626) over TCP and TLS
 - Support of up to 60 registrations per second
 - Support of up to 30 call setups per second
 - Support of up to 15,000 registrations

MCU Supported Resolutions

The MCU automatically selects the resolution and frame rate according to the conference line rate. Table A-3 details the maximum resolution and frame rates supported by the MCU for each conference line rate. The actual video rate, resolution and frame rates displayed on each endpoints is determined by the endpoint's capabilities.:

Table A-3 SVC Conferencing - Maximum Supported Resolutions per Simulcast Stream

Conference Line Rate (kbps)	Profile	Maximum Resolution	Max. Frame Rate (fps)	Audio Rate (kbps)
1472 - 2048	High Profile	720p	30fps	48
1024 - 1472	High Profile	720p	15fps	48
768 - 1024	High Profile	360p	30fps	48
512 - 768	High Profile	360p	15fps	48
256 - 512	Base Profile	180p	30fps	48
192 - 256	Base Profile	180p	15fps	48
128 - 192	Base Profile	180p	7.5fps	48



The maximum conference line rate for the RealPresence Collaboration Server 800s is 1920 kbps.