



# Avaya Scopia® Solution Solution Guide



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# Chapter 1: Overview of the Scopia® Solution

Welcome to the Scopia® Solution. This publication has several sections:

- The overview of the Scopia® Solution describes its components, integration with third party deployments, and details what's new in this version of the Scopia® Solution.
- [Selecting Features of your Scopia® Solution](#) on page 51 lists the features of the Scopia® Solution and how they impact on the licenses and other components in your deployment.
- [Considerations for Choosing your Scopia® Solution](#) on page 80 explains the criteria for choosing a deployment.
- [Standalone Scopia® Solution Deployments](#) on page 95 lists the five Scopia® Solutions available, depending on your network topology and other considerations like video and bandwidth capacity.
- [Integrating Scopia® Solution with Avaya Solutions](#) on page 113 helps you choose the right Scopia® Solution for your Avaya deployment.
- The final section refers to the order in which components should be installed and tested for a new or upgraded deployment.

This overview contains the following sections:

## Related links

[The Value of Scopia® Solution Videoconferencing](#) on page 7

[Components of the Scopia® Solution](#) on page 14

[What's New in 8.3 of the Scopia® Solution](#) on page 40

[Integrating with Third Party Products](#) on page 43

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## The Value of Scopia® Solution Videoconferencing

Avaya has built upon product leadership to provide a complete portfolio of video communication solutions for the enterprise market providing cost effective, highly advanced visual communication and collaboration solutions. As high definition (HD) endpoints bring ever-increasing video quality to traditional videoconferencing systems, and unified communications extend video to the desktop and mobile arenas, more and more organizations are turning to Avaya to cost-effectively adopt emerging HD and unified communications technologies.

The Scopia® Solution combines hardware and software to provide the industry's most comprehensive, robust video platform for visual communication solutions that delivers the scalability and seamless device support organizations need to leverage and protect current standards-based conferencing investments. Scopia® Solution products are among the leading visual communication solutions in the industry today by virtue of our technological innovation in several key areas:

- Connectivity

Today's videoconferencing deployments are a mix of heterogeneous devices deployed on different networks. An effective solution allows interconnectivity and interoperability between all devices and networks: circuit switched, packet IP or 3G based. Scopia® Solution enables connectivity between any type of standards-based device, including high-end telepresence systems, high-end room systems, executive desktop systems, desktop video clients, unified communications clients and telephony or mobile devices.

The Scopia® Solution product line also provides unparalleled connectivity both inside and outside the organization's network through firewall traversal solutions.

- Simplicity

Scopia® Solution delivers easy to use videoconferencing systems that connect to any standards-based videoconferencing endpoint, due to its centralized, comprehensive and simple-to-use management system. Its open architecture brings integration to existing enterprise applications and tools, while its dynamic resource management model focuses on usability and simplicity. For example, Scopia® Mobile extends videoconference endpoints to mobile devices, and also offers control and management capabilities through the touch screen interfaces of Apple® iOS or Google® Android® OS devices.

- Distributed architecture

Every component of the Scopia® Solution has been designed for deployment in a distributed IP network. No competing solution can match the capacity of the Scopia® Solution. Components do not need to be centrally located but can be distributed throughout a network. This allows the MCUs of the correct capacity to be deployed strategically throughout the network, where calls can be built dynamically across the distributed MCUs. For more information see [Planning a Centralized or Distributed Topology \(Cascading\) for MCU](#) on page 82 and [Solution 4: Large Distributed Videoconferencing](#) on page 107.

Distributed topologies bring benefits of increased redundancy, network traffic optimization, resource management and high scalability. For example, Scopia® Desktop is designed to support mass deployments in large enterprises.

- Platform for Cloud Services

The Video Platform for Cloud Services enables service providers to enhance their cloud services with a compelling integrated video offering. The video infrastructure is hosted by the service provider, while their customers enjoy full HD video communication with rich data collaboration from any video-enabled device, including personal endpoints, telepresence systems, room systems, PCs or mobile devices.

The Platform for Cloud Services is unique in enabling service providers to share the video resources between different organizations. The platform is highly scalable, growing from a small centralized service or a fully distributed cloud-based offering with dynamic resource

allocation. The platform also offers tools for management, monitoring and quick diagnosis of problems, easing the demands on technicians and administrators. It can even be customized through a comprehensive set of API's. For more information, see [Solution 5: Video Platform for Cloud Services](#) on page 110.

- Extensive protocol support and unified communications integration capabilities

Scopia® Solution supports H.323, SIP, TIP, and ISDN.

The Scopia® Solution is interoperable with nearly any standards-based endpoint on the market today, and delivers videoconferencing capabilities to the majority of leading unified communications solutions: Avaya Unified Communications, Microsoft Lync, IBM Sametime, and ALU OmniTouch My Teamwork. For more information see [Integrating with Third Party Unified Communications Solutions](#) on page 44.

- Scalable Video Coding (SVC) for network resiliency

SVC extends the H.264 codec standard to dramatically increase error resiliency and video quality without the need for higher bandwidth. It is especially effective over networks with high packet loss (like wireless networks) which deliver low quality video. It splits the video stream into layers, comprising a small base layer and then additional layers on top which enhance resolution, frame rate and quality. Each additional layer is only transmitted when bandwidth permits. This allows for a steady video transmission when available bandwidth varies, providing better quality when the bandwidth is high, and adequate quality when available bandwidth is poor.

SVC even allows traditional endpoints without SVC capability to leverage the benefits of SVC, providing full interoperability with existing devices while enjoying the benefits of very high network error resiliency. SVC also improves the quality of connections between cascaded MCUs. For more information, see [Scalable Video Coding Algorithm](#) on page 64.

- Bandwidth management with NetSense

NetSense is a proprietary Scopia® Solution technology which optimizes the video quality according to the available bandwidth to minimize packet loss. For more information on these and other video quality enhancement algorithms, see [Superior Video Quality](#) on page 64.

Bandwidth management enables administrators to monitor and manage the bandwidth used by video communications across the entire network. Avaya Scopia® Management can be configured to generate alerts when bandwidth usage across zones rises above a given threshold, enabling administrators to keep WAN bandwidth costs to a minimum. You can define the system's behavior when the system tries to breach the bandwidth limit. For more information about this functionality and how it can be configured, see *the Administrator Guide for Scopia® Management*.

- Higher video quality at less bandwidth consumption with H.264 High Profile

H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol. H.264 High Profile uses compression algorithms like:

- CABAC compression (Context-Based Adaptive Binary Arithmetic Coding)

- 8x8 transforms which more effectively compress images containing areas of high correlation

These compression algorithms demand higher computation requirements, which are offered with the dedicated hardware available in Scopia® Solution components. Using H.264 High Profile in videoconferencing requires that both the sender and receiver's endpoints support it. This is different from SVC which is an adaptive technology working to improve quality even when only one side supports the standard.

- Desktop software client

Scopia® Desktop Client brings videoconferencing capabilities on Mac and PC platforms, including HD video, SVC, H.239, H.264 High Profile, NetSense, interoperable data collaboration and firewall traversal capabilities. It provides an effective way to extend video communications beyond typical enterprise boundaries to workers at home and on the road. The Scopia® Desktop Client has a very scalable deployment model where it can be installed on a desktop of every member of an organization including external guests, clients, prospects, suppliers and more, extending the effectiveness of your videoconferencing deployment.

- Advanced streaming and recording solution

Streaming and recording involve five areas: capture or ingestion of the content, encoding, management, delivery & distribution, along with display or viewing the content. Avaya has packaged all this functionality into a single-server scalable solution making it really easy to deploy. With the Avaya Scopia® Streaming and Recording server(ASSR), meeting hosts can easily broadcast interactive video meetings to large audiences without a conference administrator or IT resource managing the session. Users can also record meetings in full HD, creating valuable business assets for future reference. Users can easily access content through a universal player coupled with a highly scalable "YouTube" like portal including features such as search, meta data, and most viewed recordings.

The Scopia® Solution includes new streaming and recording features. In addition to recording, archiving and live broadcasting of Scopia conference sessions, the new Avaya Scopia® Streaming and Recording solution adds support for:

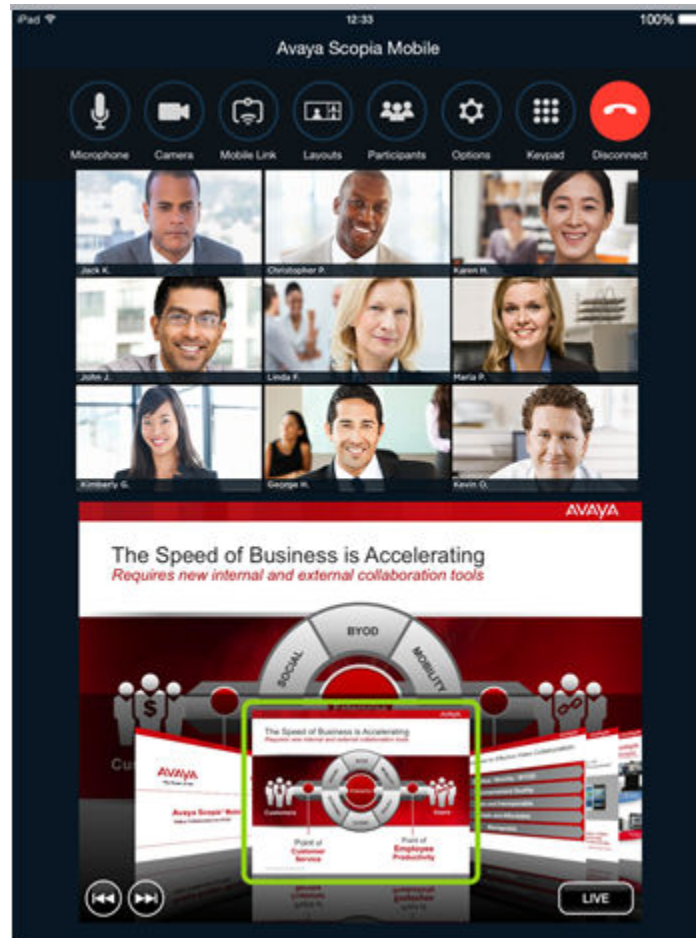
- Standards based HLS streaming
- Mobile devices
- Improved content portal
- Enhanced browsing and searching
- Ability for users to set up live broadcast events on their own without the help of specialized IT staff
- Significantly greater scalability

- Revolutionary Scopia® Content Slider

Advanced data collaboration with Scopia® Content Slider enables sharing material in a videoconference such as presentations, spreadsheets, documents and images, to easily view it on any PC, Mac or mobile device using Apple® iOS or Google® Android® OS.

You can also review previously shared data, to review information and catch up if you arrived late to the meeting or want to spend additional time on critical points in material presented. You can browse snapshots of previously presented material to provide a quick way to jump back to

content shared earlier. This review capability is available in both Scopia® Desktop and Scopia® Mobile product lines.



**Figure 1: Advanced Data Collaboration in Scopia® Mobile**

- Affordable solution for small and medium businesses

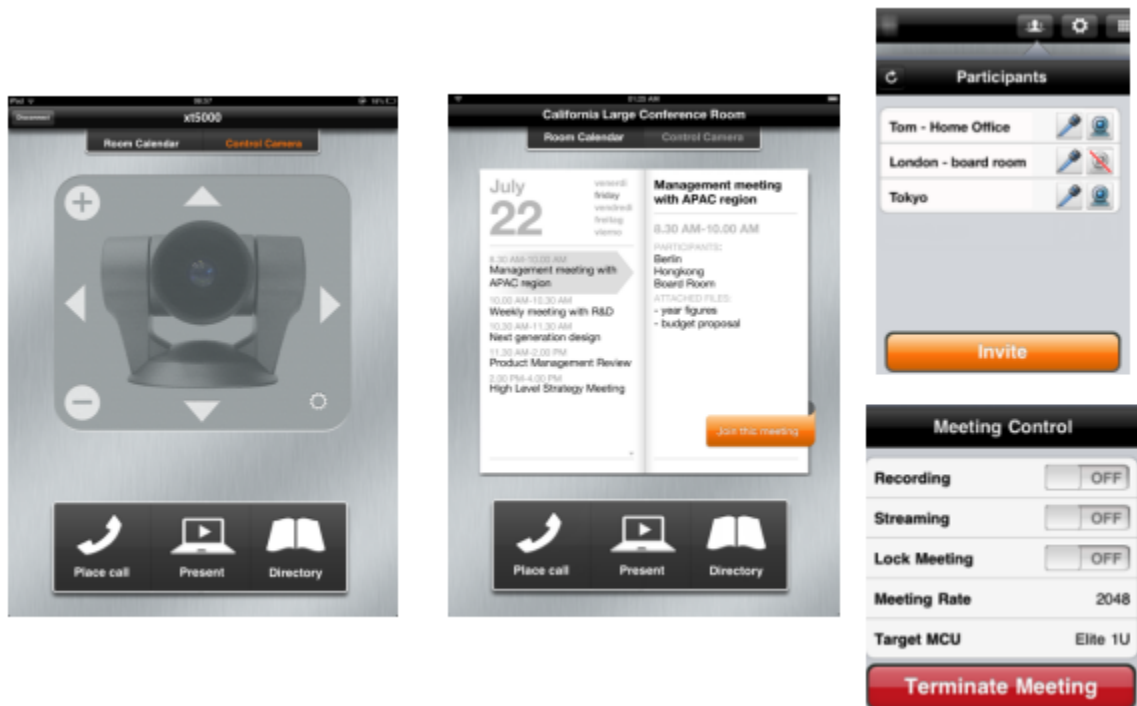
The SMB Solution (see [Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95) integrates Scopia® XT Desktop with the Scopia® XT1200 or Avaya Scopia® XT Series room systems to deliver a unique videoconferencing solution especially suited to the requirements of small and medium businesses, providing an all-inclusive HD videoconferencing solution, that includes integrated multi-party and desktop videoconferencing.

This solution combines the capabilities of the Avaya Scopia® XT Series HD videoconferencing room system with the award winning Scopia® Desktop software to fully extend the Avaya Scopia® XT Series room system experience to users with personal computers or mobile devices at home and on the road, or to partners and even to their customers.

The SMB Solution does not require detailed technical skills to install or manage, making it ideal for those organizations with limited IT departments. The desktop conferencing capability can be easily added to existing Avaya Scopia® XT Series systems or purchased as a total solution.

- Remote control for Avaya Scopia® XT Series room systems

Scopia® Control adds touch screen control to the Avaya Scopia® XT Series HD room system running on an Apple iPad device. This is the first Apple iPad application for control of videoconferencing room systems. Scopia® Control's highly intuitive user interface virtually eliminates the learning curve for using a videoconferencing system. First time users can initiate calls, control their Avaya Scopia® XT Series videoconferencing systems and moderate meetings without any training or introduction. Users can easily join meetings from the integrated conference room calendar, place calls and access a corporate directory in addition to inviting other participants.



**Figure 2: Scopia® Control interface for controlling Avaya Scopia® XT Series**

- Mobile device support

Scopia® Mobile solution extends videoconferencing and control to mobile devices by providing a free application for Apple® iOS or Google® Android® OS. Scopia® Mobile is a natural extension to the Scopia® Solution. Using the device's front camera, users can fully participate in a videoconference ([Figure 3: Videoconferencing with Scopia® Mobile on iPhone or iPad](#) on page 13), and control the video layout if needed.



Figure 3: Videoconferencing with Scopia® Mobile on iPhone or iPad

Scopia® Mobile participants and administrators can also directly control and manage videoconferences through the touch screen of these highly popular mobile devices.

- Strong media security

The Scopia® Solution enhances media communication security using these protocols:

- The encrypted Transport Layer Security (TLS) protocol for SIP-based networks. For more information see [Authentication and Encryption](#) on page 52.
- The Secure Real Time protocol (SRTP) for SIP-based networks.
- The H.235 encryption annex standard for H.323-based networks. For more information see [About Media Security](#) on page 53.

**! Important:**

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

- Powerful interoperability with third party devices

The Scopia® Solution interoperates seamlessly with third party video network devices, including endpoints from Sony, Tandberg, Polycom and LifeSize.

In addition, the telepresence interoperability for the Scopia® Solution enables the Scopia® Elite MCU to establish connections with telepresence systems from Cisco, Logitech/LifeSize, Polycom and Tandberg, allowing telepresence users to view all meeting participants in a videoconference using endpoints or telepresence systems from other vendors.

**! Important:**

For complete interoperability with Cisco telepresence systems, you need to deploy Avaya Scopia® TIP Gateway.

## Related links

[Overview of the Scopia® Solution](#) on page 7

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# Components of the Scopia® Solution

Scopia® Solution provides a comprehensive portfolio of powerful visual communications solutions for the enterprise market that allow advanced voice, data and videoconferencing. The Scopia® Solution includes advanced network infrastructure solutions for videoconferencing, network connectivity, firewall traversal, recording and streaming; endpoint solutions for board rooms, conference rooms, desktop and personal videoconferencing and management software for scheduling, device and bandwidth management and directory services.

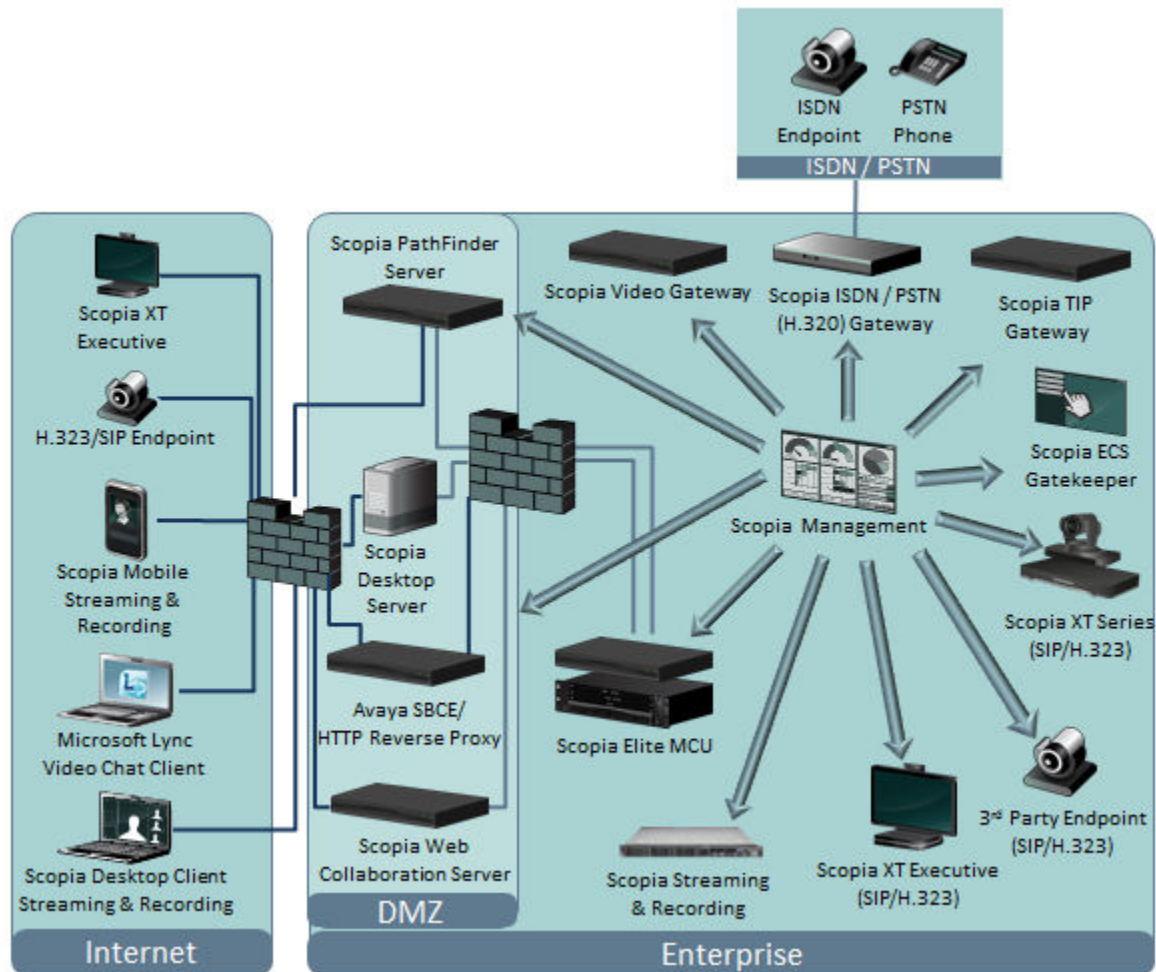
The Scopia® Solution is a powerful combination of hardware and software products that provide the network platform, applications and endpoints to enable advanced videoconferencing and collaboration. Scopia® Solution deployments are fully standards-based and support the highest resolutions available in today's videoconferencing solutions providing interoperability and interconnectivity between any video-enabled device, such as a telepresence system, a meeting

room or a desktop videoconferencing endpoint, with other telephony and videoconferencing systems. Scopia® Solutions are used by institutions, enterprises, and application service providers to create high quality, easy-to-use voice, video, and data communication, collaboration, and entertainment environments, regardless of the communication network - IP, SIP, 3G, H.323, ISDN or next generation networks.

Scopia® Solution is the industry's most comprehensive, robust video platform for visual communication solutions that delivers the scalability and seamless device support organizations need to leverage and protect current standards-based conferencing investments. As high definition (HD) endpoints bring higher and higher video quality to traditional room based videoconferencing systems, and unified communications and collaboration solutions extend video to the desktop and mobile arenas, Scopia® Solution provides organizations the flexibility to cost-effectively adopt emerging HD and unified communications technologies.

The powerful combination of hardware and software supports media processing for advanced room system devices and delivers high scalability and distributed processing for desktops and mobile deployments. Our complete Scopia® Solution includes all the components necessary to provide a total video, voice, and data collaboration solution on a customer's network.

[Figure 4: Components of the Scopia® Solution](#) on page 16 shows the components of the Scopia® Solution, detailing their functional interaction to create a complete end-to-end video communications solution.



**Figure 4: Components of the Scopia® Solution**

Each of the components in this diagram can be categorized into three types:

#### Related links

- [Overview of the Scopia® Solution](#) on page 7
- [Scopia Infrastructure Components](#) on page 16
- [Scopia Endpoint Components](#) on page 30
- [Scopia Management Components](#) on page 35

## Scopia Infrastructure Components

Scopia Infrastructure offers advanced features and technology including support for high definition (HD), Scalable Video Coding (SVC), NetSense and High Profile, support for bridging and interconnecting devices and networks including the latest telepresence systems.

The components of Scopia Infrastructure ([Components of the Scopia® Solution](#) on page 14) are detailed in the following sections:

**Related links**

- [Components of the Scopia® Solution](#) on page 14
- [About Avaya Scopia® Elite MCU](#) on page 17
- [About Scopia® Elite 5000 Series MCU](#) on page 20
- [About Scopia® Desktop server](#) on page 21
- [About Scopia® Video Gateway](#) on page 22
- [About Scopia® Streaming and Recording](#) on page 23
- [About Avaya Scopia® TIP Gateway](#) on page 25
- [About Scopia® PathFinder](#) on page 27
- [About Scopia® Web Collaboration server](#) on page 28

**About Avaya Scopia® Elite MCU**

The Scopia® Elite MCU is Scopia® Solution's flagship platform for high definition multi-party videoconferencing.

An MCU, or Multipoint Control Unit, connects several endpoints to a single videoconference. It manages the audio mixing and creates the video layouts, adjusting the output to suit each endpoint's capabilities.

The MCU harnesses revolutionary processing power for the most demanding videoconferencing applications using the latest DSP technologies. For an uncompromised videoconferencing experience, the MCU supports dual channels of Full HD 1080p at 60 frames per second for video and content, H.264 High Profile for bandwidth efficiency, H.264 Scalable Video Coding (SVC) for high network error resiliency, and full support for many telepresence systems.

With the MCU, each videoconference participant receives a quality experience optimized to their individual capabilities, from wireless mobile devices to HD room systems and immersive telepresence systems. The MCU leads in video interoperability, working with the broadest range of video systems on the market from leading UC clients to mobile devices and telepresence systems.

The MCU also features a patented, distributed architecture approach known as the Virtual MCU or cascaded videoconferences, which brings unparalleled scalability to its superb videoconferencing experience.

The MCU's feature list includes:

- Revolutionary video processing power

The MCU brings unmatched power and capacity in a single unit, enabling dual-channel Full HD 1080p resolution at 60 frames per second for video and content, simultaneous H.264 High Profile and H.264 SVC, and support for multi-stream telepresence.

- Dynamic resource allocation

A meeting can support a mix of SD and HD users, making most efficient use of available resources. Video and audio processing is carried out per user rather than per meeting, with resolutions ranging from CIF to 1080p in the same meeting. Each user connects using unique, optimized audio and video settings to enjoy the best audio and video quality supported by their endpoint and network, without affecting the other participants in a conference.

- Intuitive and easy to use

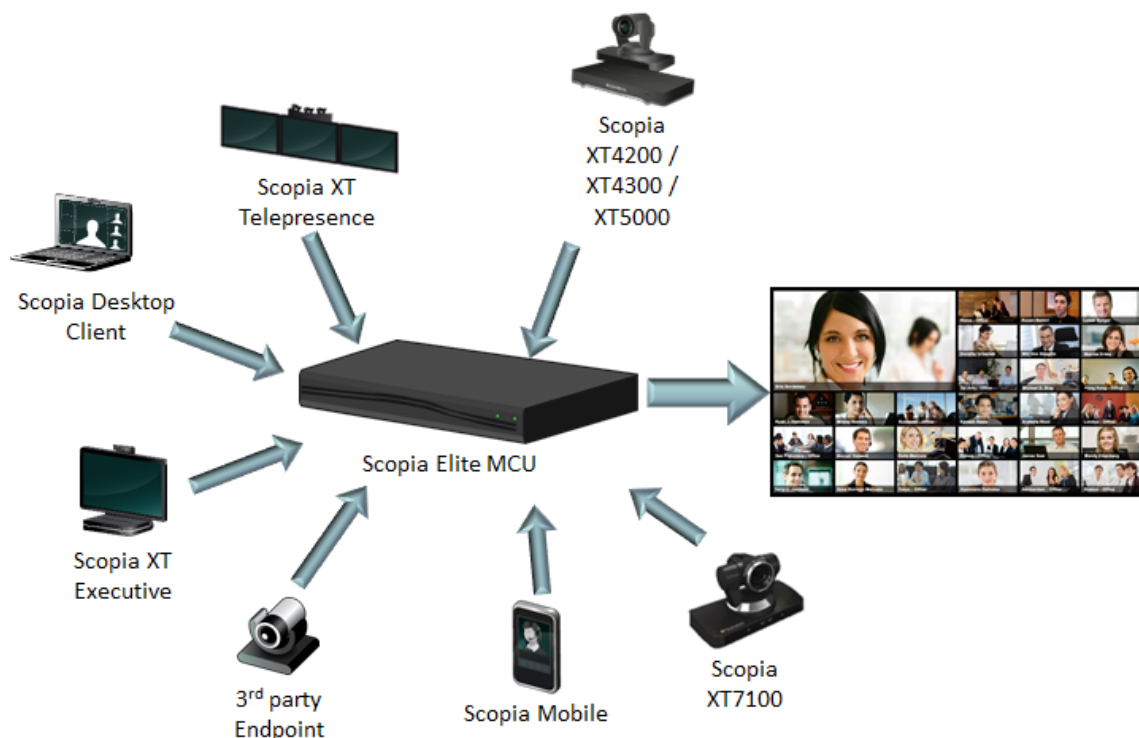
Video menus make it easy to set up or enter a videoconference, and the intuitive web interface makes administration easy.

- Massive scalability

The Virtual MCU enables a unique scalability in both local and distributed architectures to combine the capacity of multiple MCU devices in the same meeting. The number of supported connections depends on your license.

- Seamless interoperability

The MCU is built on the solid foundation of our H.323 and SIP software, ensuring full compliance and broad-ranging interoperability with IP, ISDN, and 3G endpoints. It also enables H.323 and SIP endpoints to collaborate in the same videoconference. See [Figure 5: Endpoints in the same videoconference](#) on page 18.



**Figure 5: Endpoints in the same videoconference**

The MCU also easily integrates telepresence systems with regular videoconferencing systems, even within the same meeting. It is compatible with telepresence systems from Cisco, Tandberg, Polycom, and LifeSize/Logitech.

When used with Scopia® Solution gateways, the deployment can even add ISDN, V.35 and other endpoints to the same meeting.

- Video quality

The MCU delivers enterprise quality video and audio processing, using latest industry standards including state-of-the-art DSP hardware and software. This video quality is supported by:

- SVC error resiliency for unmanaged networks using Temporal Scalability and Forward Error Correction (FEC).

Forward Error Correction (FEC) is a proactive method of sending redundant information in the video stream to preempt quality degradation. SVC extends the H.264 codec standard to dramatically increase error resiliency and video quality without the need for higher bandwidth.

- Frame rates can reach 60 frames per second, ensuring smooth video movement.
- A wide choice of video layouts
- Bitrate (data speed) of up to 12 megabits per second on each stream without affecting capacity. Bitrate is the speed of data flow. Higher video resolutions require higher bitrates to ensure the video is constantly updated, thereby maintaining smooth motion.

- Audio quality

The MCU integrates Voice Activity Detection (VAD) to determine the active speaker and filter out background noise from participants. The MCU also improves audio quality with AGC. Automatic Gain Control (AGC) smooths audio signals through normalization, by lowering sounds which are too strong and strengthening sounds which are too weak.

- Personalized video layouts per meeting or per participant

As an administrator you can choose from 26 video layouts for all participants, or each participant can customize their own view. You can view up to 28 participants on your screen. A video layout is the arrangement of participant images as they appear on the monitor in a videoconference. If the meeting includes a presentation, a layout can also refer to the arrangement of the presentation image together with the meeting participants.

The MCU supports sharing presentations and other content via SIP (using the BFCP standard) and H.323 (using the H.239 standard). A user can connect to a meeting from either type of endpoint to share content such as presentations, spreadsheets, documents, and movies.

The MCU supports an additional set of layouts to optimize screen space during content sharing on single-screen endpoints. With this feature, endpoints with proprietary content sharing protocols such as Avaya Flare Experience or Microsoft Lync can simultaneously display content and participants.

- Security and privacy

The MCU can encrypt communications with endpoints to create secure connections with H.235-based encryption for H.323 endpoints and SRTP and TLS encryption for SIP endpoints.

In addition, the MCU features administrator and operator password protection for accessing the web interface. It also features optional PIN protection for joining a videoconference, and additional PIN protection for moderator control.

- Dual NIC: IP separation or network redundancy

You can use the two network ports of the MCU in one of the following ways:

- Network redundancy cuts downtime and provides a cost-effective, uninterrupted service. If the first NIC fails during a videoconference, network traffic is automatically routed to the second NIC without affecting current calls on the MCU.
- IP separation enhances security within the enterprise by routing media and management traffic to two different subnets.
- Intuitive web-based management

You can configure the MCU through an intuitive web interface offering easy, high-level administrative flexibility for an enhanced user experience.
- In-meeting indicators

A range of messages and icons are displayed on the endpoint during meetings as events occur. For example, participants are notified when someone joins or leaves the meeting.
- Easy creation of logs for Customer Support

You can easily create a file containing logs and settings which you can send to Customer Support for troubleshooting.
- Interactive Voice Response (IVR) messages

The MCU includes pre-recorded greetings to participants and announcements as each new participant joins a meeting. You can record messages to provide custom greetings and announcements, but typically Avaya Scopia® Management supplies these messages across all MCUs in the organization.
- SIP Firewall traversal compatibilities

The MCU is fully interoperable with third-party Session Border Controllers (SBC), which increases compatibility and dexterity with SIP endpoints that join remotely.

#### Related links

[Scopia Infrastructure Components](#) on page 16

## About Scopia® Elite 5000 Series MCU

The Scopia® Elite 5000 Series MCU is the previous generation of the Scopia® Elite MCU product line. It has similar features to the newer Scopia® Elite 6000 Series MCU, with a number of key differences:

- The Scopia® Elite 5000 Series MCU is based on an older hardware platform, while the Scopia® Elite 6000 Series MCU has an entirely new hardware platform, offering higher capacities and more powerful processing for each hardware device.
- The Scopia® Elite 5000 Series MCU delivers a frame rate of up to 60 frames per second for 720p resolution or 30 fps for other resolutions, while the Scopia® Elite 6000 Series MCU is optimized around significantly higher video quality, with a maximum of 1080p at 60fps.
- The Scopia® Elite 5000 Series MCU does not support H.264 High Profile. H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high

definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol.

- The Scopia® Elite 5000 Series MCU is certified by the Joint Interoperability Test Command (JITC).

### Related links

[Scopia Infrastructure Components](#) on page 16

## About Scopia® Desktop server

Scopia® Desktop is a desktop videoconferencing system turning Windows PCs, Apple Macintosh computers and mobile devices into videoconferencing endpoints. It includes the latest in video technology including support for HD video, NetSense for video quality optimization, Scalable Video Coding (SVC) for unsurpassed error resiliency and H.264 when viewing both meeting participants and data collaboration. Its audio system provides echo cancellation, background noise suppression, and is highly resilient to network errors common on the Internet.

Scopia® Desktop server is the component which manages the Scopia® Desktop Clients and Scopia® Mobile endpoints participating in a videoconference. It includes firewall traversal features to ensure call connectivity and quality videoconferencing. Additionally, Scopia® Desktop server supports advanced videoconferencing features such as H.239 data collaboration, PIN protected meetings, conference moderation, SIP point-to-point communication between Scopia® Desktop Clients, and full authentication and authorization.

The Scopia® Desktop server requires Scopia® Elite MCU as part of its deployment.

Scopia® Desktop offers the following additional features:

- Integration with Microsoft Outlook

Users can send invitations to videoconferences directly from Microsoft Outlook using the Scopia® Add-in for Microsoft Outlook. The 32 bit version works directly with the Scopia® Desktop server, while the 64 bit version works directly with Scopia® Management. For more information, see *User Guide for Scopia® Add-in for Microsoft Outlook*.

- Chat messages to meeting participants

Users can send public or private chat messages to meeting participants, including those connecting via dedicated endpoints or room systems.

- High quality video and audio even with limited bandwidth or poor network conditions, by using H.264 High Profile for compression.

H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol.

- Service provider (multi-tenant) support

Scopia® Desktop works alongside Avaya Scopia® Management to support service provider deployments which cater for multiple organizations (tenants). In a multi-tenant deployment,

each Scopia® Desktop meeting is associated with only one tenant. Multi-tenant features include:

- All Scopia® Desktop Clients only see contacts (users or endpoints) belonging to their own organization.
- When browsing or searching a recording, Scopia® Desktop Clients only see recordings belonging to their own organization.
- Scopia® Desktop server has extensive support for security, both standard encryption with certificates and a proprietary secure protocol between the client and server. For more information, see *Installation Guide for Scopia® Desktop*.
- Scalability with an external load balancer

Scopia® Desktop works with load balancers like F5 BIG-IP Load Traffic Manager and Radware's AppDirector, providing unlimited scalability, high availability and redundancy for large deployments.

- Microsoft Lync support

With Scopia® Video Gateway in your deployment, Scopia® Desktop Clients can invite Microsoft Lync users to a meeting.

- Streaming and recording

Streaming and recording with the Scopia® Desktop server is available up to Version 8.3.1 of the Scopia® Solution. From Version 8.3.2 Avaya has packaged the streaming and recording functionality into the Avaya Scopia® Streaming and Recording server.

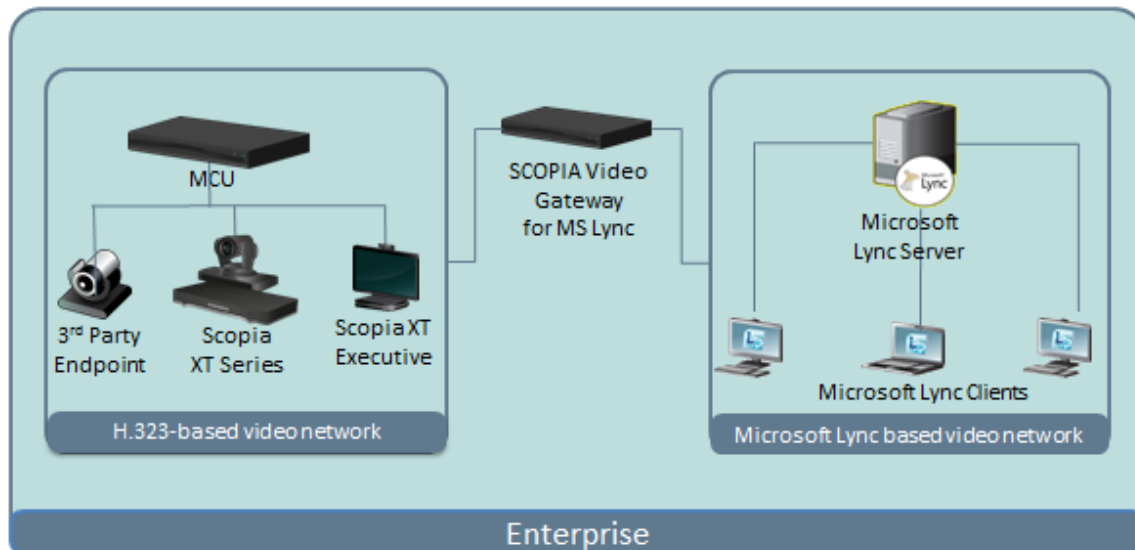
#### Related links

[Scopia Infrastructure Components](#) on page 16

## About Scopia® Video Gateway

Scopia® Video Gateway serves as a bridge between a video network based on endpoints and room systems using H.323 protocol and a video network based on Microsoft Lync platform. With a Scopia® Video Gateway deployed into your existing solution, you can use these two separate video networks as one, making video calls from H.323 endpoints to Lync clients and vice versa.

This bridge functionality characterizes the Scopia® Video Gateway . [Figure 6: Scopia® Video Gateway functionality](#) on page 23 depicts the Scopia® Video Gateway functionality.



**Figure 6: Scopia® Video Gateway functionality**

You can use the Scopia® Video Gateway both in Scopia® Solution deployments and in third party video deployments.

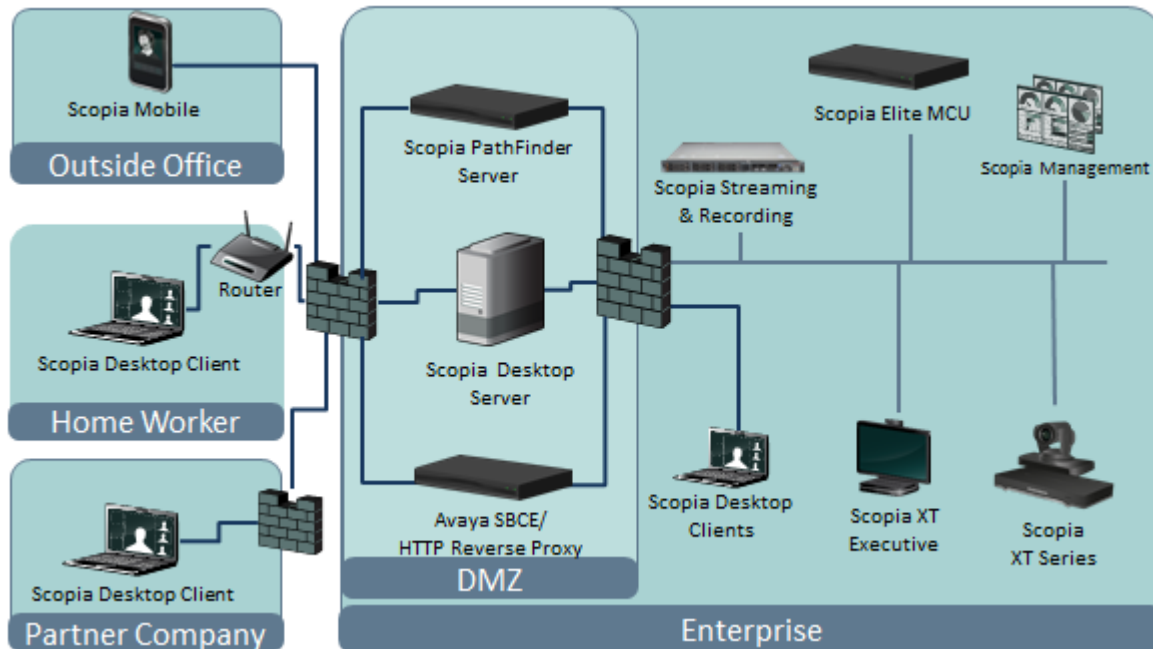
The Scopia® Video Gateway was the first gateway officially certified for Microsoft OCS-R2 and Lync video deployments. The certification process required rigorous and extensive testing to ensure the highest quality and compatibility. It is also fully interoperable with Lync 2013.

#### Related links

[Scopia Infrastructure Components](#) on page 16

### About Scopia® Streaming and Recording

Scopia® Streaming and Recording is an end-to-end video distribution and communication solution that allows your organization to capture video from H.323 and SIP endpoints, and then centrally manage and deliver the content. The Scopia® Streaming and Recording server packages all these capabilities, making it easy to deploy.



**Figure 7: Streaming and recording in the Scopia® Solution**

The new platform brings significant enhancements to the Scopia® Solution for recording and streaming including:

- Standards-based HLS streaming
- Mobile support
- Zero download client
- Improved content portal
- Enhanced browsing and searching capabilities
- Significantly greater scalability

Key features of the platform include:

- Usability

Scopia® Streaming and Recording features seamlessly integrate with existing Scopia applications. Users can record conferences to the system's content library for on-demand playback or broadcast in real-time to any viewer's PC, tablet or mobile device. End users easily control start, stop or pause a recording from their Scopia® Desktop Client software or Scopia User Portal. Users may also configure their Scopia® Desktop Client to automatically record their meetings via Scopia® Desktop settings.

Scopia® Management performs all provisioning and administrative functions of the system. The Scopia User Portal allows a user to schedule new meetings. Recording sessions may be initiated ad hoc without the need to schedule system resources in advance. End users can schedule live broadcast events directly via their Scopia User Portal interface. When scheduling a meeting, the Scopia User Portal provides intuitive options to broadcast and/or record the

meeting. Browsing archived recordings or joining live broadcast events is integrated into Scopia® Desktop Client as well.

- High Definition (HD)

The platform supports recording up to 1080p at 30 fps, the full resolution of Scopia® Elite MCUs. In addition, Scopia conferences may be broadcast in real time to end users at full 1080p HD resolution.

- Rich client support

The user can access the web browser to launch streaming and recording from any device (computer, tablet, phone) or operating system (iOS, Android). The universal player supports HTML5 for zero download, as well as Flash, Silverlight, and Windows Media Player. The platform supports transcoding to network appropriate bitrates for highest quality video presentation.

- Flexible deployment

The solution features a compact all-in-one single server deployment option as well as distributed server deployment for large-scale implementations.

- Remote access to recordings and broadcasts

Viewers outside the enterprise network can access recordings and broadcasts using the Avaya Session Border Controller for Enterprise (Avaya SBCE) or an Avaya-authorized reverse proxy.

- Robust content delivery

Build an on-premise/private network of streaming media delivery nodes, or stream live or recorded media to your end users via the Content Delivery Network (CDN) of a service provider. Up to 100 geographically distributed delivery nodes are supported for WAN bandwidth optimization.

- Scalability and multi-tenancy

A distributed implementation with multiple recording media nodes and delivery nodes scales to meet any enterprise's needs. Up to 100 media nodes can support as many as 1,000 concurrent HD (1080p) recording sessions or/and up to 100,000 live streaming viewers.

The solution also supports multi-tenancy, with 400,000 registered users and 2000 tenants.

- Reliability

Both recording media nodes and delivery nodes may operate in clusters. Clustering of media nodes provides system resilience by allowing the system to tolerate any single point of failure.

## Related links

[Scopia Infrastructure Components](#) on page 16

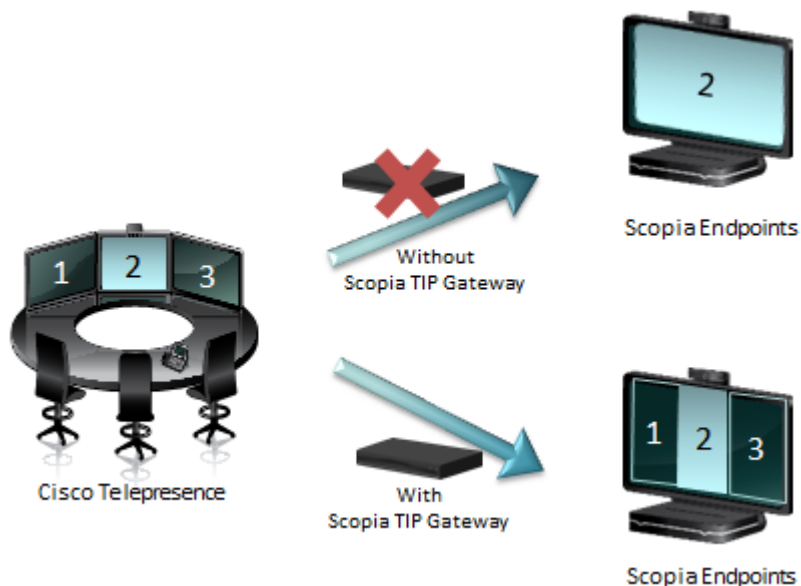
## About Avaya Scopia® TIP Gateway

The Avaya Scopia® TIP Gateway allows organizations to connect Cisco telepresence rooms directly to a Scopia® Elite MCU conference and view all three screens of the Cisco telepresence system.

The TIP Gateway is used for making video calls from the Scopia® Elite MCU to Cisco Telepresence rooms and vice versa. Without the TIP Gateway you see only the active speaker on the endpoint

screen. With the TIP Gateway you see all the participants on the screens, giving the full telepresence experience. With a Avaya Scopia® TIP Gateway deployed into your existing Scopia® Solution, Cisco telepresence rooms become an integral part of your deployment.

[Figure 8: TIP Gateway functionality](#) on page 26 illustrates this functionality, whether the TIP Gateway is located in an enterprise or hosted in a service provider's network.



**Figure 8: TIP Gateway functionality**

The main features of the TIP Gateway include:

- TIP protocol support

Cisco telepresence rooms can connect to a Scopia® Elite MCU conference and enjoy a comprehensive experience including audio, video and content sharing.

Scopia® Elite MCU provides video layouts that were designed specifically for telepresence rooms to maintain the telepresence experience in the best possible way.

- Scheduling

Cisco Telepresence rooms can be included in a scheduled Avaya Scopia® Management meeting like any other endpoint.

- Scalability

The TIP Gateway is designed to grow with deployment requirements from a small workgroup to an entire enterprise. Unlimited scalability is achieved by simply stacking multiple gateways.

For more information on the TIP Gateway, see *Deployment Guide for Avaya Scopia® TIP Gateway*.

#### **Related links**

[Scopia Infrastructure Components](#) on page 16

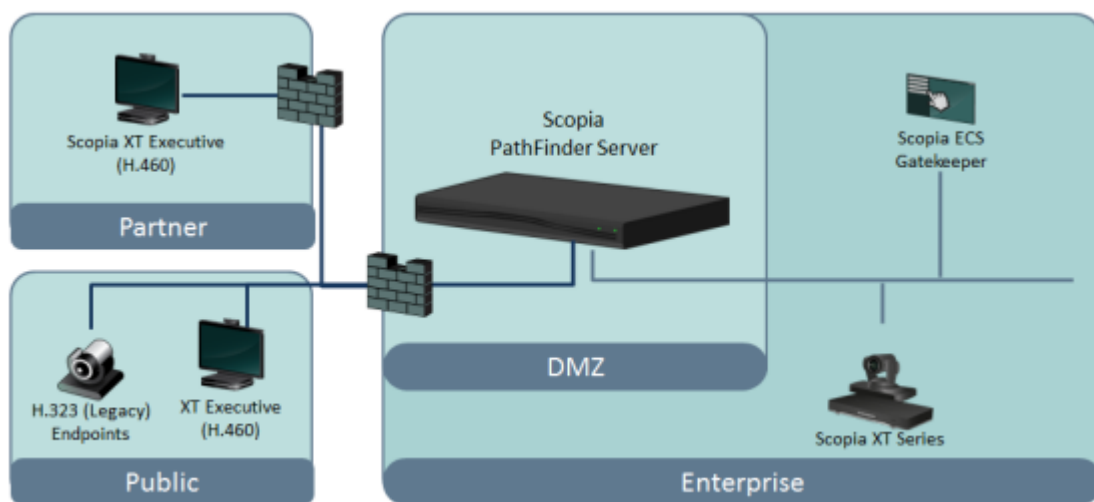
## About Scopia® PathFinder

Avaya Scopia® PathFinder provides a complete firewall and NAT traversal solution for H.323 deployments, enabling secure connectivity between enterprise networks and remote sites.

Avaya Scopia® PathFinder is part of the Scopia® Solution the components of which can be combined to fit the existing network topology and videoconferencing requirements of the organization.

Scopia® PathFinder maintains the security and advantages of firewall and NAT over heterogeneous video networks and allows seamless integration with existing video endpoints and infrastructure components.

[Figure 9: Scopia® PathFinder Functionality](#) on page 27 illustrates the functionality of Scopia® PathFinder.



**Figure 9: Scopia® PathFinder Functionality**

Scopia® PathFinder uses the H.460 protocol. H.460 enhances the standard H.323 protocol to manage firewall/NAT traversal, employing ITU-T standards.

Endpoints which are already H.460 compliant can communicate directly with the PathFinder server, where the endpoint acts as an H.460 client to the PathFinder server which acts as an H.460 server.

The endpoints in a private network can communicate with the endpoints located in the public network via the PathFinder server. Endpoints in the public network can join a conference hosted in the private network via the PathFinder server if there is an open connection through the firewall. The ECS provides standalone address resolution functionality in H.323 networks.

The PathFinder server offers external endpoints a static address when joining conferences hosted in your organization. You can *dial1234@pathfinder.company.com* to access from outside the firewall, or you can dial *1234* directly if you are an H.460 client logged in to the PathFinder server.

### Related links

[Scopia Infrastructure Components](#) on page 16

## About Scopia® Web Collaboration server

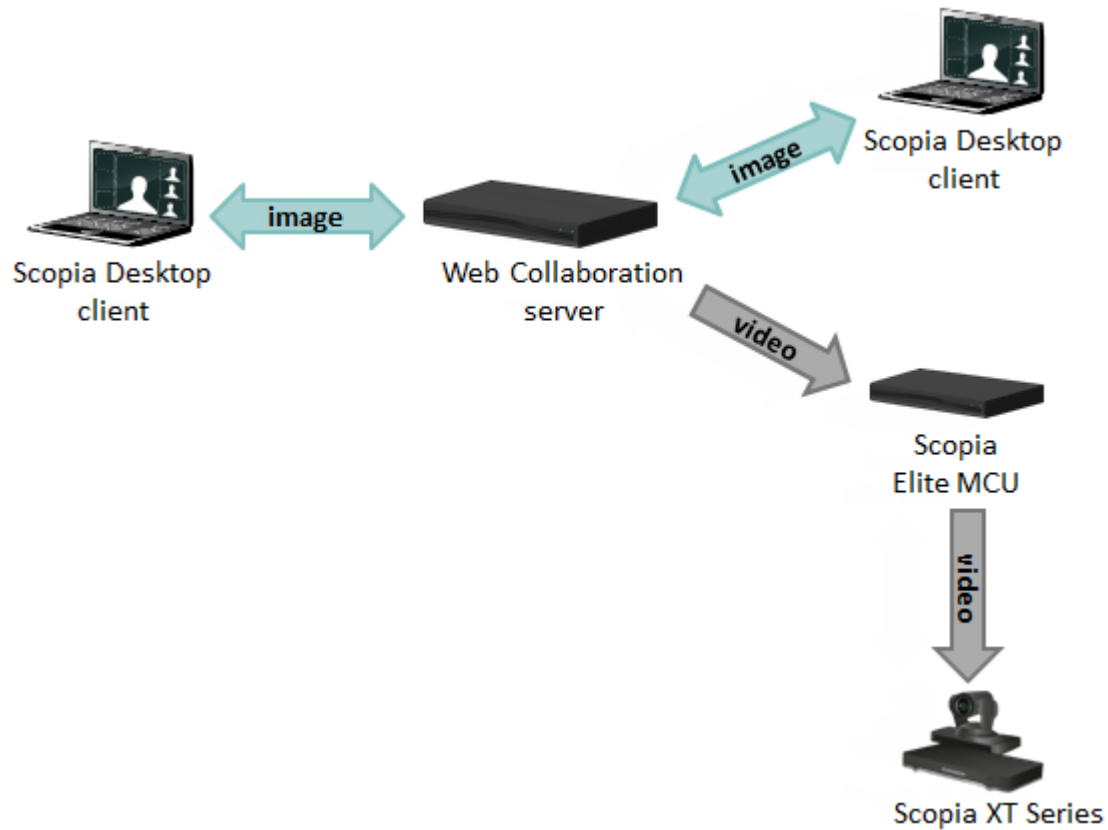
The Scopia® Web Collaboration server is a new video network device that provides the advanced content sharing functionality for your Avaya Scopia® Solution. Before this product was introduced, Avaya Scopia® Solution offered standard content sharing capabilities. Avaya Scopia® Desktop streamed presentations as video, which led to the following restrictions: only one person presenting and annotating at a time while other participants can only passively watch the presentation. When the new Scopia® Web Collaboration server is deployed, the following content sharing features are available:

- The presenter can annotate the shared content.
- All participants can draw and write on the special blank slide (whiteboard), which is not part of the original presentation, to illustrate their point
- All participants can view previously displayed slides using a slider.

This creates a very rich experience, much like when people meet in the same room to share and discuss ideas.

Scopia® Web Collaboration server will be compatible with Avaya Aura® Communicator in the next release, and customers using the Avaya Aura® Communicator client 3.0 will also be able to take part in Scopia® Desktop meetings and enjoy content sharing capabilities.

Scopia® Web Collaboration server transfers presentations between Scopia® Desktop Clients as JPEG images instead of video as with content sharing powered by Scopia® Desktop. As a result, user experience is improved and presentations consume less bandwidth. Participants using videoconferencing endpoints and room systems, like Avaya Scopia® XT Series, can view shared content. To support these users, Scopia® Web Collaboration server sends a presentation as video in the legacy H.239 format via Scopia® Elite MCU. These participants can view the presentation, but cannot annotate it.



**Figure 10: Transferring a presentation as images or video**

Scopia® Web Collaboration server is normally located in the DMZ so that all users, both from inside and outside your network, can access it.

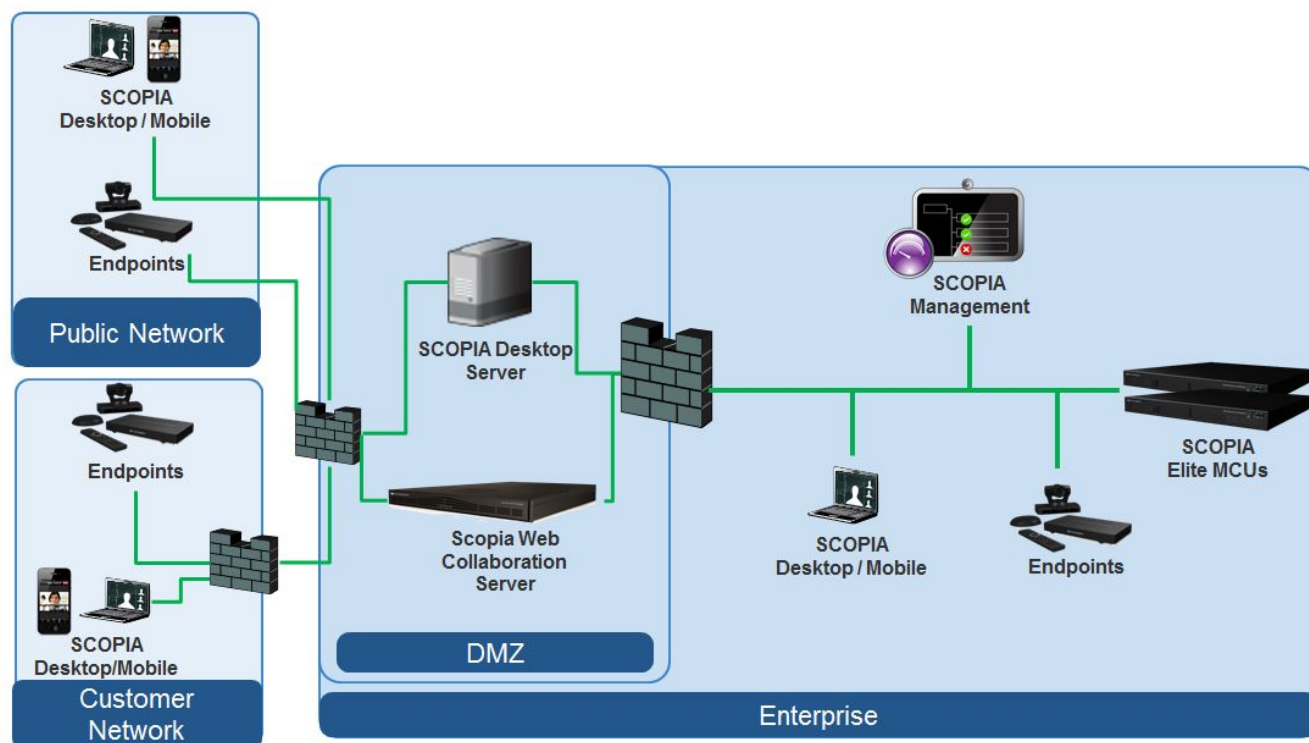


Figure 11: Locating Scopia® Web Collaboration server in your deployment

#### Related links

[Scopia Infrastructure Components](#) on page 16

## Scopia Endpoint Components

Scopia endpoints offer advanced HD videoconferencing for personal and group use at the desktop, on the road, in the conference room or the board room.

Scopia endpoints ([Figure 4: Components of the Scopia® Solution](#) on page 16) include:

- Avaya Scopia® XT Series which includes:
  - Avaya Scopia® XT7000 Series
  - Avaya Scopia® XT5000 Series
  - Avaya Scopia® XT4300
  - Avaya Scopia® XT4000 Series
  - Scopia® XT Executive
  - Scopia® XT1200
  - Scopia® XT Telepresence
  - Scopia® XT Meeting Center Cart

- Scopia® Desktop
- Scopia® Mobile

This section details the key features for each Scopia endpoint component:

### Related links

[Components of the Scopia® Solution](#) on page 14

[About the XT Series](#) on page 31

[About Scopia® Desktop Client](#) on page 33

[About Scopia® Mobile](#) on page 34

## About the XT Series

The Avaya Scopia® XT Series is a set of dedicated videoconferencing endpoints which incorporate state-of-the-art video technology for high definition (HD) conferencing. You can also locally host videoconferences with the built-in MCU on most XT Series models. The XT Series seamlessly works with a wide variety of endpoints, including H.323, SIP, Scopia® Desktop Clients, Scopia® Mobile devices, and ISDN endpoints (via Scopia® 100 Gateway).



Scopia XT7100



Scopia XT5000



Scopia XT Executive



Scopia XT4300



Scopia XT4200



Scopia XT Telepresence

**Figure 12: XT Series products**

This section provides an overview of the general features and capabilities available in the XT Series:

- Excellent video quality, with resolutions of up to 1080p at an unprecedented 60 frames per second (fps), depending on the model.
- Support for dual HD video streams, allowing PC presentations to be shared alongside video from the camera in resolutions of up to 1080p at 60fps, depending on the model.
- Quickly and seamlessly share content on your computer with other endpoints.
- DVD-quality audio with up to 48 kHz sampling rate audio encoding capability, depending on the model. The sampling rate is a measure of the accuracy of the audio when it is digitized. The XT

Series endpoints are shipped with different microphones depending on the model. You can add dedicated Microphone Pods or additional analog microphones if required.

- High quality video and audio even with limited bandwidth or poor network conditions, by using these compression methods (in addition to standard H.263 and H.264):
  - H.264 Scalable Video Coding Technology (SVC) in point-to-point calls. SVC extends the H.264 codec standard to dramatically increase error resiliency and video quality without the need for higher bandwidth.
  - H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol.
  - H.265 supersedes H.264 as a compression standard, allowing high quality calls with even lower bandwidth consumption (XT7000 Series only).
  - NetSense is a proprietary Scopia® Solution technology which optimizes the video quality according to the available bandwidth to minimize packet loss. As the available bandwidth of a connection varies depending on data traffic, NetSense's sophisticated algorithm dynamically scans the video stream, and then reduces or improves the video resolution to maximize quality with the available bandwidth.
- Ability to record videoconferences to a locally connected USB drive or the network (may require license, depending on the model).

You can only record to the network if your Scopia® Solution includes a recording server, the XT Series is managed by Scopia® Management, and the meeting is hosted by an external Scopia® Elite MCU (or an older model).

- For an even better experience, Scopia® Control enables you to remotely control the XT Series features using the intuitive touch interface of an Apple® iPad® (may require license, depending on the model).
- Secure point-to-point video calls and videoconferences, via encrypted connections or using TLS certificates. You can have up to three remote encrypted participants in a videoconference.

**! Important:**

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

The two XT Series products introduced with Version 8.3 Feature Pack 2 are Avaya Scopia® XT7100 and Avaya Scopia® XT4300.

The Avaya Scopia® XT7100 is the new generation Avaya flagship product in the Avaya Scopia® series of room systems. The XT7100 incorporates dual 1080p/60fps live video and content, HD audio, H.265, H.264 High Profile and Scalable Video Coding (SVC), and nine sites multiparty calling. H.265 saves up to 50% bandwidth with respect to H.264 High Profile. Dual HDMI input allows simultaneous connection of two cameras in switching mode for a full coverage of large rooms or auditoriums.

The Avaya Scopia® XT4300 offers outstanding value and cost-effective full HD video collaboration specifically designed for the needs of smaller and mid-sized conference rooms. The XT4300 offers

optional embedded multi-party conferencing with support for up to four participants, also with mixed PC, Mobile, and room system clients.

### Related links

[Scopia Endpoint Components](#) on page 30

## About Scopia® Desktop Client

The Scopia® Desktop Client is a simple web browser plug-in for interactive videoconferencing. With Scopia® Desktop client you can experience high definition videoconferencing, connecting you with other participants who may be using dedicated endpoints, room systems or even telepresence systems, all from your PC or Mac. Scopia® Desktop Client is part of Avaya Scopia® Solution for SMBs (small and medium businesses) which includes Scopia® Desktop and Avaya Scopia® XT Series with its built-in MCU which endpoints and room systems use to connect.

Clients can be centrally managed and deployed without complex licensing fees or installation issues. Users receive a web link in their invitation to join a videoconference, and in moments they are connected and participating. The Scopia® Desktop Client includes the main videoconference client with a built-in chat window and presentation viewing abilities ([Figure 13: The Scopia® Desktop Client user interface](#) on page 33).



**Figure 13: The Scopia® Desktop Client user interface**

Scopia® Desktop Client supports a number of algorithms and standards to make the most efficient use of bandwidth, including:

- H.264 High Profile

H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol.

- NetSense

NetSense is a proprietary Scopia® Solution technology which optimizes the video quality according to the available bandwidth to minimize packet loss.

A Scopia® Add-in for Microsoft Outlook enables easy scheduling of meetings directly from within Microsoft Outlook. You can install the add-in together with Scopia® Desktop Client.

### Related links

[Scopia Endpoint Components](#) on page 30

## About Scopia® Mobile

Scopia® Mobile enables users to easily connect to a videoconference and fully participate in the meeting on iOS devices like the Apple® iPhone®, iPod touch® and iPad®, as well as Android OS based devices. Scopia® Mobile uses the onboard camera and microphone to turn your mobile device into a fully functional videoconferencing endpoint.



**Figure 14: Mobile device as videoconferencing endpoint**

Users can also view presentations, spreadsheets, documents and images shared in a videoconference with Scopia® Solution's complete data collaboration tools, including Scopia® Content Slider to catch up on missed presentation slides.

You can also perform meeting moderation functionality directly from your mobile device using Scopia® Mobile through the touch screen interfaces of these highly popular and inexpensive mobile devices.

**Related links**

[Scopia Endpoint Components](#) on page 30

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## Scopia Management Components

Scopia Management components offer a comprehensive management solution for video communications where enterprises can efficiently manage a diverse, distributed videoconferencing network including endpoints and infrastructure.

Examples of Scopia Management components ([Figure 4: Components of the Scopia® Solution](#) on page 16) include:

- Avaya Scopia® Management (including internal gatekeeper)
- Avaya Scopia® ECS Gatekeeper as a standalone gatekeeper
- Scopia® Control

This section details the key features for each Scopia Management component:

**Related links**

[Components of the Scopia® Solution](#) on page 14

[About Avaya Scopia® Management](#) on page 35

[About Avaya Scopia® ECS Gatekeeper](#) on page 38

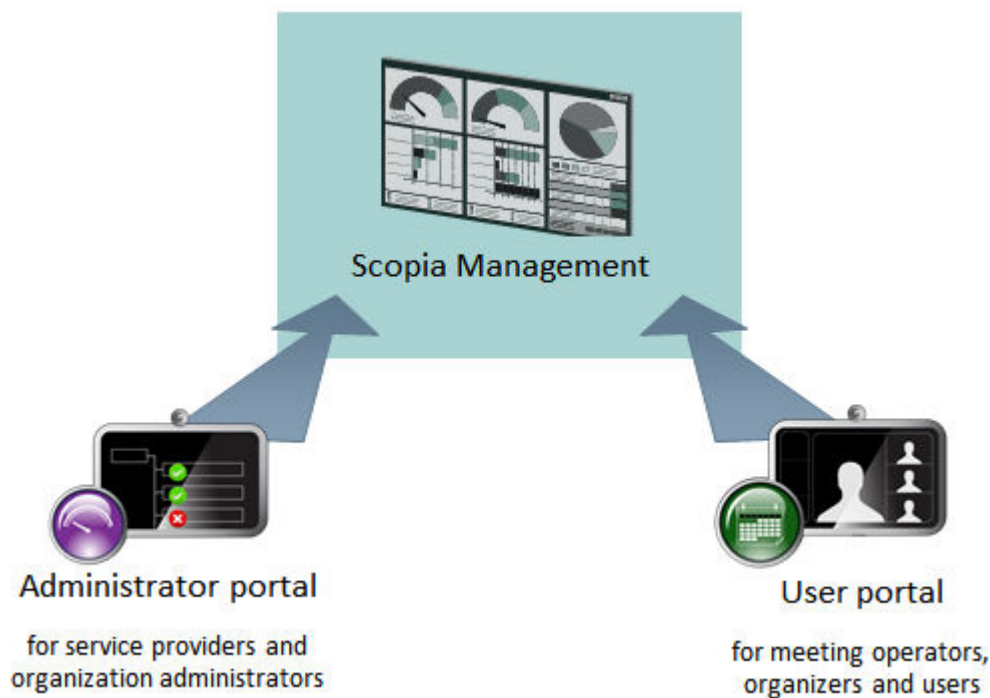
[About Scopia® Control](#) on page 39

## About Avaya Scopia® Management

System administrators use Avaya Scopia® Management to control video network devices, such as gateways, MCUs and endpoints. In addition, users can use Scopia® Management to schedule videoconferences.

You can access Scopia® Management either from the administrator portal or the user portal ([Figure 15: Scopia® Management portals](#) on page 36). Service providers and organization administrators access the administrator portal to perform network-wide management, while customers of service providers access the administrator portal to perform similar tasks that are relevant only for their organization. Meeting operators, organizers, and regular users access the user portal to perform scheduling and management relevant to them.

The system administrator defines different user profiles with varying permissions to determine the management tasks available for a specific user.

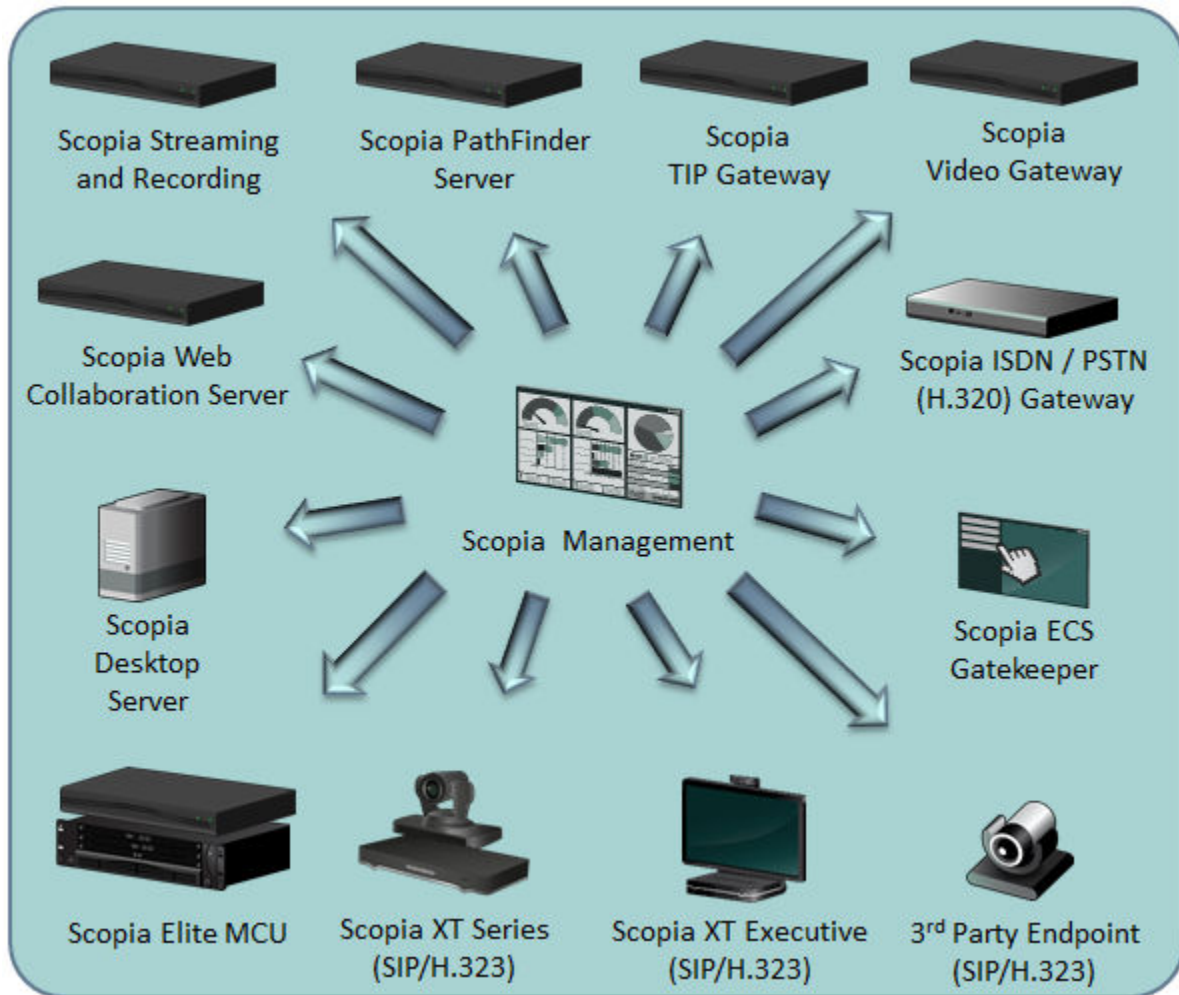


**Figure 15: Scopia® Management portals**

Scopia® Management sits at the core of your Scopia® Solution deployment and offers the following capabilities:

- Video network device management

Remotely configure, upgrade and monitor many of your video network devices via the administrator portal. These devices include Scopia® Elite MCU, Avaya Scopia® Web Collaboration server, Avaya Scopia® Streaming and Recording, Avaya Scopia® ECS Gatekeeper, and many gateways ([Figure 16: Managing all components of the Scopia® Solution](#) on page 37).



**Figure 16: Managing all components of the Scopia® Solution**

- **Endpoint management**

Remotely configure, upgrade and monitor both Scopia® Solution and third-party endpoints via the administrator portal.

- **Resources and bandwidth management**

Configure your network devices and endpoints for effective bandwidth control. For example, you can determine when meetings are cascaded between multiple MCUs (for more information, see *the Administrator Guide for Scopia® Management*). You can also monitor in real-time from the administrator portal's dashboard, or generate reports to see network statistics for a given time period.

- **User management**

You can manage user access by creating profiles with a set of capabilities. You can also create virtual rooms and assign endpoints. Scopia® Management also integrates with existing directory servers such as Microsoft Active Directory and IBM Lotus Domino for easy user provisioning.

- Meeting management

Schedule, moderate, and reserve resources for your videoconferences via the user portal. Scopia® Management can also work with Microsoft Outlook or IBM Lotus Notes for easy and intuitive calendar application scheduling.

Using one of the Scopia® Management plug-ins for Microsoft Outlook, you can easily schedule meetings with resources directly from Microsoft Outlook (2010 or later) or a calendar application on your mobile device (see [Planning User Access to Videoconferences](#) on page 61).

- Interface to unified communication solutions

Scopia® Management provides the interface to market leading unified communication solutions such as Avaya Aura Collaboration Suite, Microsoft Lync Server, Microsoft Office Communications Server and IBM Lotus Sametime.

- SIP server integration

The smooth integration with third-party SIP servers leverages existing network call control for the videoconferencing system. The SIP server manages the call control and network usage, while Scopia® Solution supplies the videoconferencing capabilities.

- Built-in gatekeeper

Scopia® Management is shipped with a built-in gatekeeper, which is called Avaya Scopia® Gatekeeper. It supplies the correct destination IP and authorizes the appropriate bandwidth for the call. In this way, Scopia® Management can manage endpoint-initiated calls and point-to-point calls.

- Call authorization

Scopia® Management integrates with the gatekeeper to authorize calls based on the settings you define for your network, such as user capabilities and allowed bandwidth.

## Related links

[Scopia Management Components](#) on page 35

## About Avaya Scopia® ECS Gatekeeper

Avaya Scopia® ECS Gatekeeper provides address resolution functionality in H.323 networks.

The ECS is integrated into Scopia® Management and installed on the same server as the recommended deployment. The ECS is offered also as standalone server.

It provides the most intelligent, advanced backbone management system for IP telephony and multimedia communication networks.

It provides gatekeeper functionality and everything required to simply and easily define, control and manage voice, video and data traffic over IP networks, no matter how large or complex.

It ensures the optimal bandwidth utilization to deliver carrier-grade, best-quality call completion and video collaborative communications over any network and any protocol.

## Related links

[Scopia Management Components](#) on page 35

## About Scopia® Control

Scopia® Control is an Apple® iPad™ app which enables you to control a Avaya Scopia® XT Series room system, telepresence system or personal endpoint from the app. Scopia® Control's intuitive user interface makes it easy to start calls, moderate meetings and view presentations, while the integrated calendar and enterprise directory make it easy to join meetings and invite others.

With Scopia® Control you can access the calendar of the physical conference room, view scheduled meetings, and then join directly by tapping its entry. In most XT Series models, you can control your endpoint's camera by simply tapping the screen, or even control a remote camera in the meeting via far end camera control (FECC).



**Figure 17: Intuitive Scopia® Control on Apple iPad**

You can moderate videoconferences whether they are hosted on the endpoint's built-in MCU, or on an external Scopia® Elite MCU when it is part of your deployment. Moderators can manage all the meeting's participants, including hiding their video, muting their audio, and changing the video layouts.

Scopia® Control also enables you to view shared data like presentations or spreadsheets directly within the app on the device. You can review previously shared content without interrupting the presenter using the integrated Scopia® Content Slider functionality.

The Scopia® Control app is available for download free from the App Store, and will connect to any XT Series with the appropriate license installed.

### Related links

[Scopia Management Components](#) on page 35

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## What's New in 8.3 of the Scopia® Solution

The latest innovations for this version include a widespread set of features across the full range of products in the Avaya Scopia® Solution.

- Expanded Room System Portfolio

The new version introduces two endpoints:

- Avaya Scopia® XT7100

This endpoint is the flagship offering in the XT Series of videoconferencing room systems. The XT7100 incorporates H.265 High Efficiency Video Coding (HEVC), the industry's most advanced video compression technology. H.265 HEVC doubles the video compression efficiency of H.264 High Profile, enabling Full HD 1080p at 60 frames per second (fps) with half the bandwidth required, delivering an exceptional experience with a lower total cost of ownership.

- Avaya Scopia® XT4300

The XT4300 offers outstanding value and cost-effective Full HD video collaboration specifically designed for the needs of small and mid-size conference rooms as well as users that do not require all the features offered in Scopia advanced room system solutions. The XT4300 system is incredibly powerful and includes many features often found with costly upgrades in other vendor offerings.

- Elevated Quality

The new version adds Full HD 1080p everywhere:

- Full HD 1080p mobile user support with Scopia® Desktop

Mobile users on their laptops, tablet PCs, and desktops can participate with the Full 1080p HD video quality previously available only on room systems, executive desktops, or hardware-based personal systems.

- Additionally, Avaya's cloud service, AvayaLive™ Video, provides Full HD 1080p support for meeting participants.

- Enhanced Streaming and Recording

The new version phases out the Scopia Content Center streaming and recording solution (used up to version 8.3.1) and offers the following features:

- Streaming and recording delivered as one appliance for installation simplicity
  - Scopia® Desktop and users can initiate recording with one click
  - Notifications to users that the meeting is being recorded, thus complying with legal and privacy requirements
  - Playback of previous recordings
  - Streaming of meetings, townhalls and trainings, without involving specialized IT personnel
  - Excellent scalability with up to 100,000 live viewers

- Enhanced User Experience

The new version introduces the following improvements:

- Wireless presentation support with Scopia video room systems

Avaya Scopia users now have the ability to wirelessly present from their laptop (either PC or Mac) with Avaya ScreenLink.

- Mobile meeting continuity between Scopia® Desktop Client, Scopia® Mobile, and room systems

With Avaya Mobile Link, the user's mobile device automatically pairs and transfers the meeting to the room system, with the added benefit of enjoying the room system's crystal-clear audio, HD camera and large display.

- Network Quality Indicator

The user gets a real-time indication of the quality of the connection, just as on the mobile phone. The call statistics button is still available to open a window with more detailed information about the call.

- Enhanced Gallery Layout

The Gallery Layout (mixed video and presentation) is now available to any XT Series endpoint without the need to register with Scopia® Management.

- Virtual Knock on the Door

With this feature, late arrivers with Scopia® Desktop, Scopia® Mobile, and room systems have to ask for permission to join the meeting and the meeting host (moderator) can let them in.

- Outlook Scheduling Enhancements

The new version phases out Scopia® Desktop add-in in favor of Avaya Scopia® Management plug-in providing:

- Office 64 bit support
- Installation from desktop
- Connection to Avaya Scopia® Desktop server (no need to be on VPN)
- Support of HTTPS redirect
- Two-mode usage: a simplified one like Scopia® Desktop, and an advanced one leveraging Scopia® Management's sophisticated capabilities including the ability to reserve resources such as MCU ports, and automatically invite room system endpoints.
- Scopia® Management awareness of all system meeting.

- Simplified User Licensing

The customer purchases either the Avaya Scopia® Elite MCU software package or the Scopia® Management license and gets unlimited mobile and desktop seats. Everyone is mobile enabled. The limit to the number of concurrent users for Scopia® Desktop and Scopia® Mobile is the number of MCU ports in the deployment.

- Enhanced Scalability

The new version expands scalability in the Scopia® Solution from 3,000 to 5,000 concurrent multi-party calls. With a 10 to 1 ratio of users to concurrent calls, a single deployment supports 50,000 users.

### - Enhanced Scopia® Management

The new version introduces the following improvements:

- Expanded Third Party Room System Management

Scopia® Management has enhanced capabilities to open the door of Cisco and Polycom accounts with expanded management of third party room systems. Scopia can now manage the Cisco C and SX Series Room systems, in addition to Polycom's RealPresence Group Series room systems.

- Endpoint Inventory

Customers easily determine the endpoints that are in their deployment. One click generates a CSV file that can be used in Microsoft Excel and lists all endpoints including models, versions, MAC addresses, and additional details.

- Troubleshooting and Monitoring Enhancements

- Separate troubleshooting log for third party management solutions like HP Operations Manager (OM). With this new capability, the administrator gets all the context instead of single messages to tell what actually happened. For example, connection failures happen in a deployment and the administrator always gets them. But if there is a rate or pattern of them, these issues are visible in a separate troubleshooting log as a group instead of individual error indications one at a time. Administrators can generate problem tickets very quickly with this capability.
- Option to re-invite all offline participants. This capability makes it easy to re-invite participants who did not connect with a single click to the scheduled meeting.
- Enhanced Scopia® Management dashboard, showing information on the number of recorded meetings or web collaboration clients.
- The web-based scheduler of Scopia® Management features new recurring patterns to support scheduling exceptions and the ability (via an advanced command) to modify instances of a recurring meeting.

- Service Provider and Cloud Enhancements

- Super administrators can now reset tenant administrator passwords.
- There is a better handling of expired password notification.
- New settings allow hiding the ability to schedule meetings in non-virtual meeting rooms.

- Cloud-specific enhancements

- The administrator can define favorite values for user profiles created via API.
- Super administrators can now manage organizations.
- Global Cloud Interactive Voice Response (IVR)

- Advanced Web Collaboration Option

The new version adds the following improvements:

- Integrated Avaya Aura Conferencing (AAC) capabilities for more feature-rich, content-sharing capabilities

Version 8.3 incorporates the rich web/data collaboration experience from Avaya's AAC solution within the Scopia® Solution. Features include white boarding, application sharing, selecting the screen to share with multiple monitors – which is becoming more prevalent with users docking their PC tablets and ultrabooks and using both displays. Also, this enables remote desktop control – where a user sharing the desktop can also share keyboard and mouse with one other meeting participant.

- Data collaboration gateway functionality for room system interoperability (H.323 and SIP systems)
- Web collaboration delivered as an appliance for installation simplicity:
  - Web collaboration supported by Scopia® Desktop Clients
  - Using web collaboration to present from Scopia® Desktop Clients requires users to download the new web collaboration plug-in from the Scopia® Desktop portal
  - Scopia® Mobile experience as today
  - Avaya Scopia® Web Collaboration server transcodes web collaboration presentation to/from H.239/BFCP with XT Series room systems and third party endpoints
  - Per service configuration. Standard presentation (H.239) is used in case web collaboration is disabled for the service.
- Unified Avaya User Interface Client Style

Scopia® Desktop and Scopia® Mobiledisplay the unified look and feel which user experience across all the Avaya offerings. With a clean gallery layout, the product line has the same look and feel as other Avaya solutions including Avaya Aura Conferencing.

#### Related links

[Overview of the Scopia® Solution](#) on page 7

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## Integrating with Third Party Products

As a leading of market-proven products and technologies of unified visual communications, Scopia® Solution integrates its advanced multi-party desktop videoconferencing and connectivity with multiple standards compliant, third party systems.

To integrate with the Avaya products, refer to [Integrating Scopia® Solution with Avaya Solutions](#) on page 113.

#### Related links

[Overview of the Scopia® Solution](#) on page 7

[Integrating with Third Party Endpoints](#) on page 44

[Integrating with Third Party Unified Communications Solutions](#) on page 44

[Integrating with Third Party SIP Servers](#) on page 48

[Integrating with Third Party Telepresence Systems](#) on page 49

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## Integrating with Third Party Endpoints

Scopia® Solution's video communications infrastructure has an excellent track record of seamless integration with third party endpoints.

We have performed extensive interoperability tests on the components of the Scopia® Solution with a broad range of new and legacy third party endpoints.

For detailed information of the test results, refer to these documents:

- *Reference Guide for Interoperability of the Scopia® Elite MCU*
- *Reference Guide for Interoperability of the Avaya Scopia® XT Series*

Avaya Scopia® Management integrates with third party endpoints and can work with third party endpoints in a number of significant ways:

- Remote download of corporate address books into the third party endpoints;
- Remote software or firmware upgrade of third party endpoints;
- Remote configuration of third party endpoints to define their location for cascading properties when dialing to a conference;
- Remote editing of the Gatekeeper address for third party endpoints.

For more information on these features, see the *Administrator Guide for Avaya Scopia® Management*.

### Related links

[Integrating with Third Party Products](#) on page 43

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## Integrating with Third Party Unified Communications Solutions

Third party unified communications (UC) solutions can be easily integrated with Scopia® Solution components. UC installations offer solutions for voice and video communications, instant messaging, and whiteboard sharing across networks.

Full integration with a UC solution also requires proper integration with its user directory, with its scheduling services, and of course with its UC servers.

The Scopia® Solution integrates with any of these UC solutions:

### Related links

[Integrating with Third Party Products](#) on page 43

[Integrating with Microsoft's Unified Communications Solutions](#) on page 45

[Integrating with IBM's Unified Communications Solution](#) on page 47

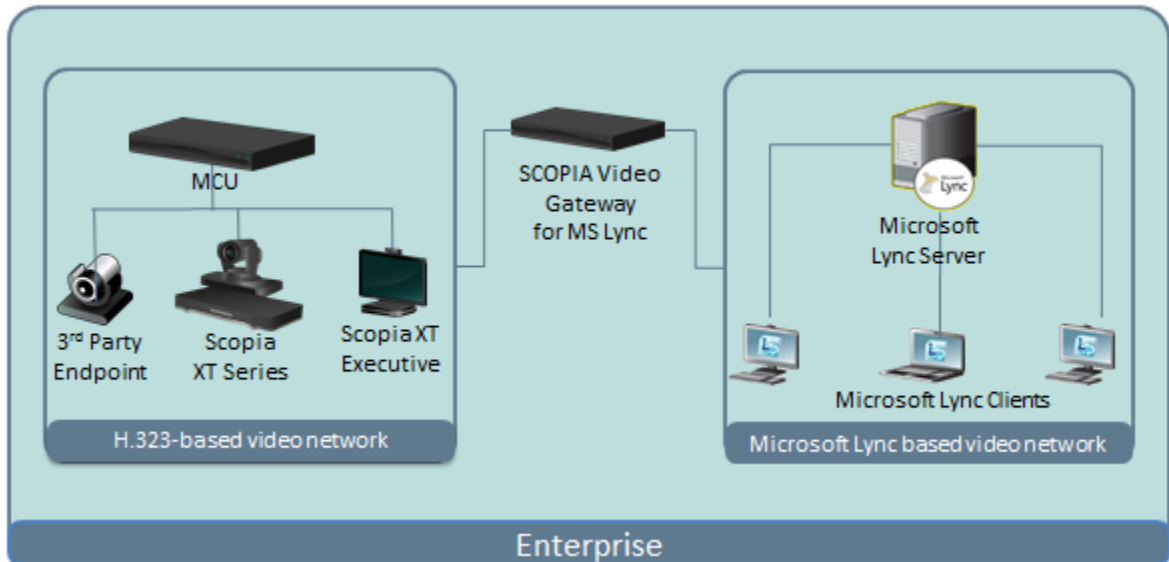
[Integrating with ALU's Unified Communications Solution](#) on page 48

## Integrating with Microsoft's Unified Communications Solutions

The Scopia® Solution components integrate with Microsoft's UC solutions on all three levels:

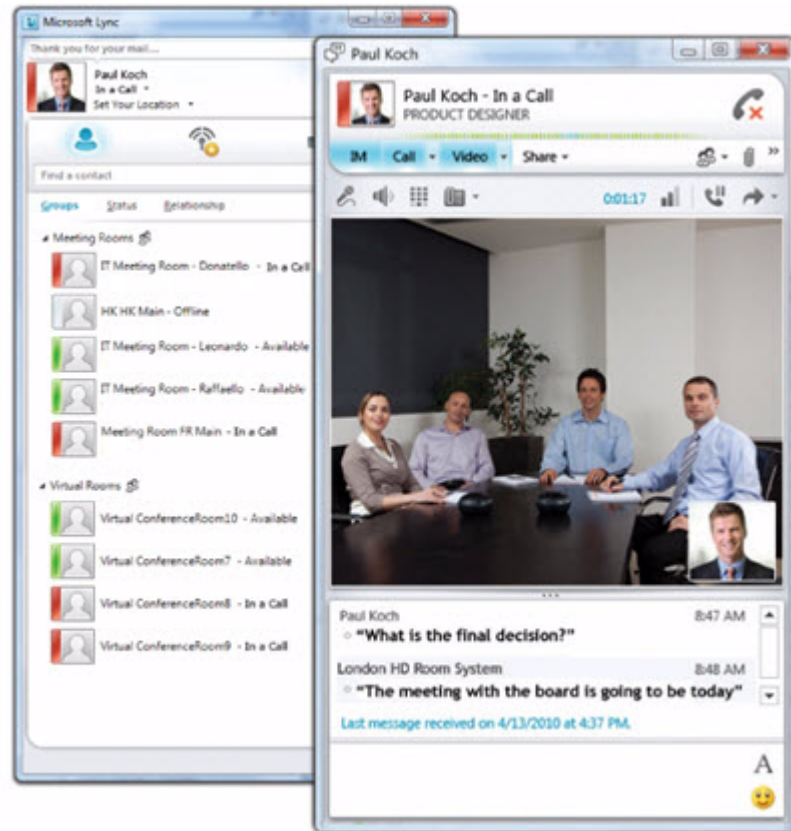
- The Scopia® Solution integrates seamlessly with deployments of Microsoft Lync or Microsoft Office Communications Server (OCS) using the Scopia® Video Gateway.

The Scopia® Video Gateway acts as a bridge between Lync endpoints and the world of H.323 endpoints ([Figure 18: Scopia® Video Gateway bridges Lync endpoints with H.323 endpoints](#) on page 45).



**Figure 18: Scopia® Video Gateway bridges Lync endpoints with H.323 endpoints**

Contacts with H.323 endpoints and room systems appear alongside Lync or OCS contacts in the Lync or OCS client window ([Figure 19: Microsoft Lync displays H.323 endpoints alongside Lync contacts](#) on page 46) and can be accessed in the same way to join voice or videoconferences.



**Figure 19: Microsoft Lync displays H.323 endpoints alongside Lync contacts**

You can check whether a Lync or H.323 contact is available, set up a point-to-point video chat or a multi-user videoconference, initiate file sharing, and send instant messaging.

For more information on integrating the Scopia® Solution with the Scopia® Video Gateway, see the *Deployment Guide for Scopia® Video Gateway* and the *Administrator Guide for Scopia® Management*.

- Integration with the corporate list of users is performed via Avaya Scopia® Management's integration with the Microsoft Active Directory.
- Scheduling of resources is performed via integration with Microsoft Outlook. There are two types of integration with Microsoft Outlook, and only one should be used in an organization:
  - The Scopia® Desktop server can integrate with Microsoft Outlook to send an ad-hoc meeting using the Outlook calendar feature, with a predefined attachment text to include a web link to the virtual room of the person sending the invitation, enabling anyone within or outside the organization to access the meeting with an automatic download of the Scopia® Desktop Client.

This method of scheduling is limited to reserving a time in the each of the participant's calendars. It does not set aside any videoconferencing resources, such as the chosen MCUs, nor will it make preparations for any cross-zone bandwidth reductions.

For more information, see the *Administrator Guide for Avaya Scopia® Management*.

- The Avaya Scopia® Management has its own integration with Microsoft Outlook, offering all the features of the Scopia® Desktop add-on, but it also reserves the videoconferencing resources like the relevant MCUs. This ensures the call will have the required bandwidth and resources reserved at the appointed time.

For more information, see the *Deployment Guide for Scopia® Add-in for Microsoft Outlook*.

## Related links

[Integrating with Third Party Unified Communications Solutions](#) on page 44

## Integrating with IBM's Unified Communications Solution

Scopia® Solution integrates with IBM's unified communications solution in a number of ways:

- Integration with IBM Sametime 8.5 and above requires Avaya Scopia® Management and the Scopia® Add-in for IBM Sametime, which enables it to communicate with IBM Sametime's server infrastructure ([Figure 20: Integrating Scopia® Solution with IBM Sametime 8.5 and above](#) on page 47).

For more information, see the *Installation / User Guide for Scopia® Add-in for IBM Sametime*.



**Figure 20: Integrating Scopia® Solution with IBM Sametime 8.5 and above**

### ! Important:

For earlier versions of IBM Sametime, use the Scopia® Add-in for IBM Lotus Notes. For more information, see the *Deployment Guide for Scopia® Add-in for IBM Lotus Notes* and *User Guide*.

- Corporate usernames can be accessed directly from Domino using Avaya Scopia® Management.
- Conference resources can be scheduled in IBM Lotus Notes calendars of the participants with Scopia® Management, which also reserves the necessary videoconferencing resources like

MCUs and bandwidth. This ensures the call will have the necessary resources reserved at the appointed time.

For more information, see the *Deployment Guide for the Scopia® Add-in for IBM Lotus Notes*.

#### Related links

[Integrating with Third Party Unified Communications Solutions](#) on page 44

## Integrating with ALU's Unified Communications Solution

Alcatel-Lucent OmniTouch My Teamwork can be set up to communicate in videoconferences using Scopia® Solution's video infrastructure.

For more information, consult with an Alcatel-Lucent representative about the setup and configuration of a Scopia® Solution video integration.

#### Related links

[Integrating with Third Party Unified Communications Solutions](#) on page 44

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## Integrating with Third Party SIP Servers

The components of the Scopia® Solution operate in dual-protocol mode, supporting both SIP and H.323 devices easily and transparently. In the SIP environment, call control functionality is accessed via third party SIP servers or proxies. There are several which integrate smoothly with Scopia® Solution components.

The third party SIP server or proxy integrations with Scopia® Solution include:

- Microsoft Lync or OCS R2 servers can be configured to integrate with Scopia® Solution. Besides integrating SIP servers, the Avaya Scopia® Management must also be configured with the IP address of the Scopia® Video Gateway which acts as a bridge between Microsoft clients outside the enterprise and the H.323 endpoints behind the enterprise's firewall.

For more information, consult these documents:

- *Deployment Guide for Scopia® Video Gateway*
- *Installation Guide for Avaya Scopia® Management*
- *Administrator Guide for Avaya Scopia® Management*
- Microsoft Lync guides

- IBM Sametime servers can be configured to integrate with Scopia® Solution. Besides integrating SIP servers, the Avaya Scopia® Management must also be configured with the Scopia® Add-in for IBM Sametime.

For more information, consult these documents:

- *Installation Guide for Avaya Scopia® Management*
- *Administrator Guide for Avaya Scopia® Management*
- IBM Sametime guides

- Alcatel-Lucent's OmniTouch deployment also includes one or more SIP servers which can be integrated with the Scopia® Solution architecture. For more information on these integrations, consult with your local Alcatel-Lucent representative.
- Broadsoft SIP servers can be configured to integrate with Scopia® Solution. Besides setting up the SIP server to connect to the Avaya Scopia® Management, the Scopia® Elite MCU, and Scopia® Management must be configured with the SIP server's address. For more information, see the *Integration Guide for Scopia® Solution in SIP Environments with Broadsoft SIP Servers*.
- The Cisco Unified Call Manager (CUCM) can be configured as a SIP proxy with Scopia® Solution's components by defining a SIP trunk from the CUCM to the Avaya Scopia® Management, and defining routing patterns which are aligned with the overall dial plan of the network.

For example, a routing pattern might define the dial prefix '5' to route the call to the Scopia® Management. Dialing the number 5-1234 would send the number 1234 to the Scopia® Management.

For more information on adding a SIP server to Scopia® Management, see *Administrator Guide for Scopia® Management*. To verify the CUCM settings for Scopia® Management connection, see *Deployment Guide for Avaya Scopia® TIP Gateway*.

- To include remote SIP endpoints in videoconferences, deploy a Session Border Controller (SBC).

#### Related links

[Integrating with Third Party Products](#) on page 43

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## Integrating with Third Party Telepresence Systems

The Scopia® Solution offers its own telepresence system, the Scopia® XT Telepresence ([Figure 21: Scopia® XT Telepresence](#) on page 50), which supports seamless integration with the Scopia® Solution components and other third party systems.



**Figure 21: Scopia® XT Telepresence**

The components of Scopia® Solution can also integrate with third party telepresence systems using Avaya Scopia® Management, Scopia® Elite MCU, and Avaya Scopia® TIP Gateway (for enhancing Cisco telepresence systems only). This technology enables smooth integration with telepresence systems using innovative screen layouts and standards-based communications protocols.

Telepresence capabilities on the Scopia® Elite 5000 Series MCU are enabled through a license key. On the Scopia® Elite 6000 Series MCU, telepresence capabilities are enabled by default with no license key required.

The Avaya Scopia® Management integrates with several third party telepresence systems:

- Logitech / LifeSize
- Cisco
- Polycom

For more information, see *Administrator Guide for Avaya Scopia® Management*.

#### **Related links**

[Integrating with Third Party Products](#) on page 43

# Chapter 2: Selecting Features of your Scopia® Solution

To determine the nature of your Scopia® Solution deployment, we recommend reviewing the features you require, and then use this as a guide to the required components of your video solution.

The list of features include:

## Related links

- [Securing Your Deployment](#) on page 51
- [Planning Scalability and High Availability in the Scopia® Solution](#) on page 56
- [Planning User Access to Videoconferences](#) on page 61
- [Streaming and Recording Videoconferences](#) on page 63
- [Superior Video Quality](#) on page 64
- [Using Network Traffic Priorities Across your Deployment](#) on page 67
- [Point-to-Point Functionality](#) on page 69
- [Auto-Attendant Functionality](#) on page 69
- [URI Dialing Functionality](#) on page 70
- [Remote Access to Videoconferencing](#) on page 71
- [Virtual Room Functionality](#) on page 73
- [User Profiles for Video Across an Enterprise](#) on page 74
- [Scheduling and Resource Reservation](#) on page 75
- [Transmitting Data Presentations](#) on page 76
- [Intuitive Video Layouts and Moderator Control](#) on page 77

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## Securing Your Deployment

Scopia® Solution deployments offer robust security in video communications based on standard protocols and powerful encryption algorithms, resulting in a well-integrated and secure solution. There are several aspects to the security of a deployment:

- The content of a video call, including its video, audio and data presentations can be encrypted to protect from eavesdroppers. Connections can also be authenticated to ensure each member of the call is who they claim to be.

In addition to the media content of a call, the signaling and management streams can also be secured when crossing network zones, depending on the nature of your deployment and network topology.

- The permissions and rights of users can be defined via user groups, to determine the functionality available to each user of the system. Enabling or disabling a feature can be achieved by defining groups and moving users among the various groups.

**! Important:**

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

The sections in this chapter are:

**Related links**

[Selecting Features of your Scopia® Solution](#) on page 51

[Authentication and Encryption](#) on page 52

[Securing Access to Functionality with User Profiles](#) on page 55

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## Authentication and Encryption

The authentication and encryption of the Scopia® Solution's infrastructure uses standard protocols and algorithms to provide a solution that is secure, effective and reliable. There are three types of data streams to a video communication in the Scopia® Solution infrastructure which can be secured:

- Media

Media refers to the live audio, video and shared data streams sent during a call.

- Signaling (call and media control)

Signaling, also known as call control, sets up, manages and ends a connection or call. Control, or media control, sets up and manages the media of a call (its audio, video and data).

- Management

Management refers to the administration messages sent between components of the Scopia® Solution as they manage and synchronize data between them.

**! Important:**

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

The sections in this chapter are:

**Related links**

[Securing Your Deployment](#) on page 51

[About Media Security](#) on page 53

[About Signaling Security](#) on page 54

[About Management Security](#) on page 55

## About Media Security

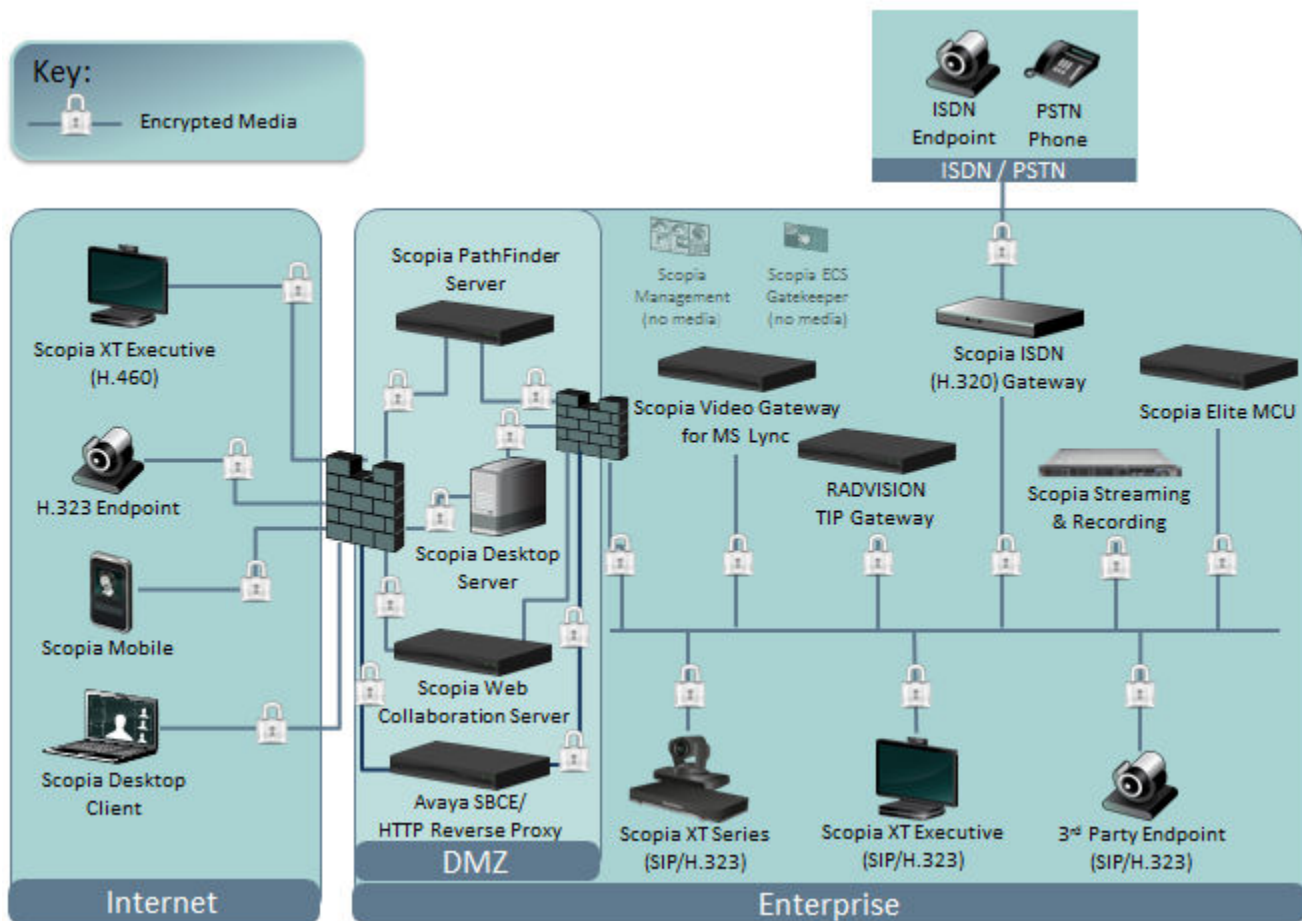
Securing the media communications in the Scopia® Solution refers to encrypting the content of a call, including its audio, video, and data presentations.

Media refers to the live audio, video and shared data streams sent during a call. Presentation and Far end camera control (FECC) are examples of information carried on the data stream. Media is transmitted via the RTP and RTCP protocols in both SIP and H.323 calls. The parallel data stream of both live video and presentation, is known as dual video.

In a Scopia® Solution deployment, call content in both SIP and H.323 environments are encrypted:

- In SIP environments, the media is encrypted and authenticated using the Secure Real-time Transport Protocol (SRTP).
- In H.323 environments, encryption of call content is secured with the H.235 encryption annex standard. H.323 endpoints can access the Scopia® PathFinder client with an encrypted H.235 connection, provided the endpoint itself supports the H.235 standard.

[Figure 22: Encrypted media connections of the Scopia® Solution](#) on page 53 gives an overview of the security of media connections in a Scopia® Solution deployment.



**Figure 22: Encrypted media connections of the Scopia® Solution**

The Scopia® Desktop server's secure connection with the Scopia® Desktop Client is another line of communication that must be secured, since it often stretches across network zones and outside the corporate network. Scopia® Desktop's media over a TCP connection is encrypted using HTTPS, while under UDP connections, media is encrypted using S-RTP, using random encryption keys exchanged over HTTPS.

Scopia® Streaming and Recording does encrypted HTTPS media on the recording playback or HLS live stream.

H.460 endpoints can access the Avaya Scopia® PathFinder server directly with an encrypted data stream.

ISDN communications via the Scopia® Gateway for ISDN works with the MCU using the secure H.235 protocol, and then connects with an ISDN endpoint using encryption in the H.233 and H.234 protocols.

### **Important:**

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

Components associated with coordinating and directing calls, such as the Avaya Scopia® Management or Avaya Scopia® ECS Gatekeeper, do not directly send or receive call content, since their function is to direct traffic and manage network connections. Therefore they do not feature in the media layer of the solution.

### **Related links**

[Authentication and Encryption](#) on page 52

## **About Signaling Security**

Signaling, also known as call control, sets up, manages and ends a connection or call. These messages include the authorization to make the call, checking bandwidth, resolving endpoint addresses, and routing the call through different servers. Signaling is transmitted via the H.225.0/Q.931 and H.225.0/RAS protocols in H.323 calls, or by the SIP headers in SIP calls. Signaling occurs before the control aspect of call setup.

Control, or media control, sets up and manages the media of a call (its audio, video and data). Control messages include checking compatibility between endpoints, negotiating video and audio codecs, and other parameters like resolution, bitrate and frame rate. Control is communicated via H.245 in H.323 endpoints, or by SDP in SIP endpoints. Control occurs within the framework of an established call, after signaling.

In a SIP environment, much of the signaling that crosses network zones is encrypted and authenticated using the Transport Layer Security (TLS) standard.

For example, all signaling messages sent from Avaya Scopia® Management's Back-to-Back User Agent to SIP servers are secured via the Transport Layer Security (TLS) protocol.

Scopia® Desktop Clients, which are the software-based endpoints that might be outside a VPN in the public network, are encrypted and authenticated over HTTPS, using either SSL or TLS.

Streaming and recording media streams are encrypted with HTTPS / SSL. If media encryption is setup for Scopia® Desktop server, it must also be enabled in Scopia® Streaming and Recording server.

#### Related links

[Authentication and Encryption](#) on page 52

## About Management Security

Management refers to the administration messages sent between components of the Scopia® Solution as they manage and synchronize data between them. Management also includes front-end browser interfaces configuring server settings on the server. Management messages are usually transmitted via protocols like HTTP, SNMP, FTP or XML. For example, Scopia® Management uses management messages to monitor the activities of an MCU, or when it authorizes the MCU to allow a call to proceed.

When management communications which are performed via a web interface, they are secured and authenticated via the HTTPS protocol.

When management messages cross network zones, they are typically encrypted and authenticated. For example, Scopia® Management's management messages to the Scopia® Desktop server are protected using TLS.

Management layer communications between Scopia® Desktop server and Scopia® Desktop Clients are encrypted and authenticated using HTTPS.

Management between Scopia® Desktop streaming and the recording, playback, and streaming server is encrypted using HTTPS.

#### Related links

[Authentication and Encryption](#) on page 52

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## Securing Access to Functionality with User Profiles

User groups and the functionality granted to each group can be defined in a number of components of the Scopia® Solution. Each server component can only be accessed with a login, and depending on the privileges of that username, different functionality is visible to that user. However, from the perspective of the Scopia® Solution, you can define a single repository of users and user groups with Avaya Scopia® Management.

Scopia® Management can define its own user database, or it can use the LDAP corporate database like Microsoft's Active Directory. The Scopia® Management user database can be pushed or downloaded to the various components of a Scopia® Solution deployment, so they are all synchronized with the same user profiles and rights.

For more information on setting up a unified user database, see the *Administrator Guide for Scopia® Management*.

#### Related links

[Securing Your Deployment](#) on page 51

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## Planning Scalability and High Availability in the Scopia® Solution

Scalability describes the ability to increase the capacity of a network device by adding another identical device (one or more) to your existing deployment. In contrast, a non-scalable solution would require replacing existing components to increase capacity.

High availability is a state where you ensure better service and less downtime by deploying additional servers. There are several strategies for achieving high availability, including deployment of redundant servers managed by load balancing systems.

There are several ways to ensure your deployment of the Scopia® Solution maintains a very high degree of availability, and also add extra capacity to your video infrastructure:

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

[High Availability of Scopia® Management](#) on page 56

[Scalability and High Availability of Avaya Scopia® Desktop servers, Avaya Scopia® PathFinder servers, and Avaya Scopia® Web Collaboration servers](#) on page 58

[Scalability with Scopia® Streaming and Recording](#) on page 58

[Scalability and High Availability with Multiple MCUs](#) on page 60

[High Availability with Alternate ECSs](#) on page 60

[Scalability and High Availability with Scopia® Video Gateway and Avaya Scopia® TIP Gateway](#) on page 61

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## High Availability of Scopia® Management

To provide high availability and continued service, you can deploy redundant Avaya Scopia® Management servers, in one of the following ways:

- Local redundancy

Deploy two Scopia® Management servers in the same location: a primary server and a secondary server. If the primary server fails, the secondary server automatically takes over without disrupting Scopia® Management functionality (does not include load balancing).

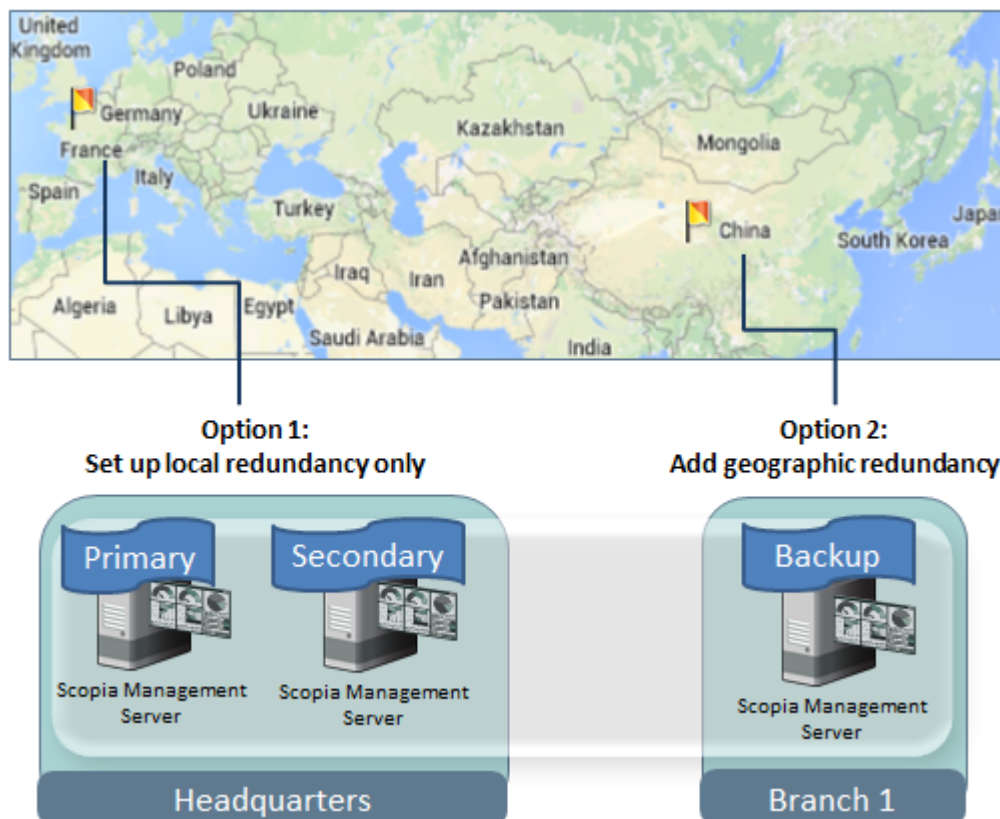
- Geographic redundancy

Deploy three Scopia® Management servers. Set up two servers as primary/secondary servers in the same location (local redundancy), and deploy the third as an off-site backup server in a different location. You can manually activate this server if the other servers fail, ensuring continued service even if there is a major failure or disaster at the main location.

### Important:

We recommend configuring the backup server while the system is inactive. This is because a huge amount of data is transferred to the remote site, which can deplete network bandwidth resources.

[Figure 23: Local and geographical redundancy](#) on page 57 illustrates the different options of deploying Scopia® Management redundancy.



**Figure 23: Local and geographical redundancy**

Scopia® Management's redundant solution requires a license, but does not require third-party load balancers. Data is continuously synchronized between all Scopia® Management servers, including the internal database, system property files, and device upgrade packages.

Deploy your Scopia® Solution by referring to component names rather than IP addresses. Using a server name (or FQDN), like *smgmt.company.com* reduces maintenance when servers switch to their backups.

Local redundancy can be deployed with an internal or external database; geographical redundancy supports only the internal database (see *Administrator Guide for Avaya Scopia® Management*).

Once Scopia® Management's high availability is configured, you can view the redundancy status in real-time, including the current status and server addresses (see *Administrator Guide for Avaya Scopia® Management* for details).

For more details on setting up additional Scopia® Management servers, see the *Administrator Guide for Avaya Scopia® Management*.

#### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

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## Scalability and High Availability of Avaya Scopia® Desktop servers, Avaya Scopia® PathFinder servers, and Avaya Scopia® Web Collaboration servers

You can configure Scopia® Desktop servers, Avaya Scopia® PathFinder servers, and Scopia® Web Collaboration servers for scalability and high availability. More servers translates to higher capacity, and with a load balancer in place, if one server fails, the remaining servers can continue working, offering even higher reliability in video services.

Add Avaya Scopia® PathFinder servers to increase capacity and reliability of remote access endpoints connecting to videoconferences in your organization.

Add Scopia® Desktop servers and Scopia® Web Collaboration servers to increase the reliability and number of Scopia® Desktop Clients connecting to your enterprise with video and data at the same time.

You can choose one of the following:

- You can deploy multiple Scopia® Desktop servers, Avaya Scopia® PathFinder servers, and Scopia® Web Collaboration servers using Radware AppDirector or F5.
- Alternatively, you can use a third party load balancer, with the added advantage of continued service even when one or more of the servers fails.

### Important:

Avaya Scopia® PathFinder servers and Scopia® Desktop servers can share the same load balancing deployment. Scopia® Management selects the Scopia® Web Collaboration servers.

When dialing out, you can configure the Avaya Scopia® ECS Gatekeeper to find a Avaya Scopia® PathFinder server at one of several IP addresses, thereby enabling ECS to perform a round robin search for an available Avaya Scopia® PathFinder server.

For more information on the configuration of each of these deployments, see the *Administrator Guide for the Scopia® Desktop server* or any of the documentation on Avaya Scopia® PathFinder server, Avaya Scopia® ECS Gatekeeper, and Scopia® Web Collaboration server.

### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

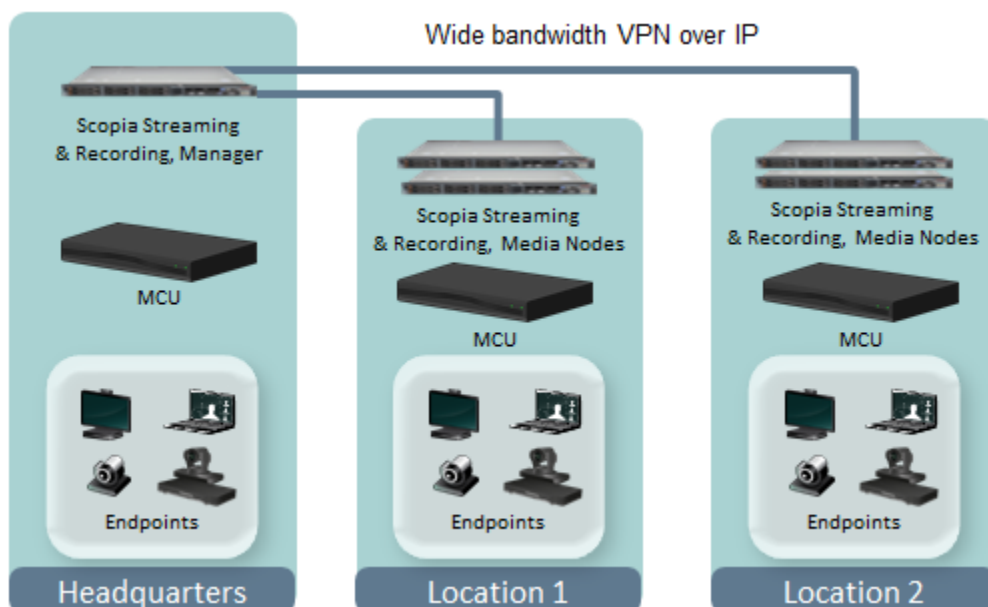
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## Scalability with Scopia® Streaming and Recording

You can deploy multiple Scopia® Streaming and Recording Media Nodes in multiple locations to get higher capacity for simultaneous recording and outgoing streaming to users. Consider the following:

- A scalable deployment is built on multiple Scopia® Streaming and Recording servers. It uses one centralized Manager running on a dedicated server and Media Nodes for delivering the streaming and/or recording functionalities on separate servers. For example, if you need a

large audience watching live streaming, focus on deploying more Media Nodes with streaming functionality.



**Figure 24: Scaling up streaming and recording**

The maximum number of live stream viewers in the system is 100,000. You can have 3,500 live stream viewers per Media Node configured for streaming only, and 1,500 viewers for combined recording and streaming Media Nodes.

- Level of required scalability

Decide how to scale up Media Nodes at each location. You can put a Media Node for local recording and streaming at each site to increase capacity and quality and minimize bandwidth over the WAN or VPN. You can also cluster Media Nodes for playback, recording, and streaming. This allows, for example, sending one copy of the stream over the WAN to other locations and have it replicated there.

If possible, install Media Nodes near Scopia® Elite MCU to avoid video loss due to bad network connection. For example, if you have MCUs in three or four different locations, and if you want people in these locations to be able to record and watch without the latency of going across long distances, consider installing one or more Media Nodes in each of the locations where the MCUs are located.

You can create viewer mappings to have users in IP zones mapped to Media Nodes in the same zone and map recording servers to the same zone (or location) as the MCU. For more information, see the *Administrator Guide for Scopia® Streaming and Recording server*.

- Using a Private Content Delivery Network (CDN), a 3rd Party CDN, or a combination of both

You can build your own private CDN with clusters of Media Nodes located within one location, or a small cluster in the main location and a large distributed environment across your organization. Viewers belonging to the organization can get their recordings and live media from their local Media Nodes without affecting the network.

If you have many viewers wanting to access streaming and recording from external networks, you can add CDN ability to your deployment by turning on a Virtual Delivery Node (VDN) that communicates with a third-party CDN such as Highwinds. External customers buy an account with Highwinds and decide how much bandwidth and storing they need.

Or, you can work with a combination of private and third-party CDNs. With this type of deployment, you can keep contents inside your private network and choose which live events and recordings go out to the CDN for external customers to watch and view.

For more information on deploying additional servers, see *Installation Guide for Scopia® Streaming and Recording server* and *Administration Guide for Scopia® Streaming and Recording server*.

#### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

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## Scalability and High Availability with Multiple MCUs

You can deploy multiple MCUs to make more simultaneous calls available in your video network. For more information on scaling your MCU deployment, see [Sizing Your Video Deployment Capacity](#) on page 80.

You do not need to deploy a load balancer for multiple MCUs. Avaya Scopia® Management can be configured to maintain high availability of video call service by coordinating amongst multiple MCUs. Avaya Scopia® Management can hot switch to an alternative unit if an MCU fails to maintain and preserve high availability of the service.

For details of how to configure Avaya Scopia® Management for high availability, see the *Administrator Guide for Avaya Scopia® Management*.

For more information on the possible location of MCUs, see [Planning a Centralized or Distributed Topology \(Cascading\) for MCU](#) on page 82.

#### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

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## High Availability with Alternate ECSs

The ECS is integrated into Scopia® Management and installed on the same server as the recommended deployment. The ECS is offered also as standalone server.

You can deploy an additional Avaya Scopia® ECS Gatekeepers to maintain high availability of gatekeeper services.

High availability makes ECS failures transparent to the endpoints that are registered to the ECS. Each active ECS can have its own alternate gatekeeper, which copies and uploads the primary ECS's registration table. If the ECS goes offline, the alternate version replaces its services within ten seconds of downtime.

The license for the alternate Avaya Scopia® ECS Gatekeeper is limited to 14 days. The 14-day period restarts each time the online and backup ECSs switch roles.

For more information, see the *Reference Guide for Avaya Scopia® ECS Gatekeeper*.

#### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

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## Scalability and High Availability with Scopia® Video Gateway and Avaya Scopia® TIP Gateway

You can deploy multiple Scopia® Video Gateways or Avaya Scopia® TIP Gateways to make more simultaneous calls from endpoints with these protocols available in your video network. For more information on scaling your gateway deployments, see [Sizing Your Video Deployment Capacity](#) on page 80.

Avaya Scopia® Management acts as the load balancer in these deployments and can hot switch to an alternative unit if one of the gateways fails to maintain and preserve high availability of the service.

For more information on the possible location of the different gateways in the Scopia® Solution, see [Solution 2: Complete Centralized Videoconferencing](#) on page 99 and other solutions detailed there.

#### Related links

[Planning Scalability and High Availability in the Scopia® Solution](#) on page 56

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## Planning User Access to Videoconferences

As part of deploying Scopia® Solution, you need to plan how users in your organization start videoconferences.

Users can either schedule a meeting in advance, and reserve the required video network resources, or they can start an instant meeting. Scheduling meetings with resources ensures a high quality user experience. If there are not enough resources during the videoconference, the system may either downgrade the video quality or block additional participants from joining.

Users can schedule meetings with resources in one of two ways:

- From Microsoft Outlook (2010 or later), using a Scopia® Management plug-in for Microsoft Outlook.
- From the Scopia® Management User Portal.

When scheduling from either one of these plug-ins for Microsoft Outlook, Scopia® Management reserves both the endpoint resources and their required MCU connections.

Users can start instant meetings in one of two ways:

- Dialing an endpoint directly from another endpoint. To dial more than one endpoint, users dial the MCU dial prefix and a virtual room number (personal or public).
- Dialing an endpoint from their virtual room in Scopia® Desktop Client, using the MCU dial prefix.

You set up the MCU prefix and virtual room numbers according to your organization's dial plan.

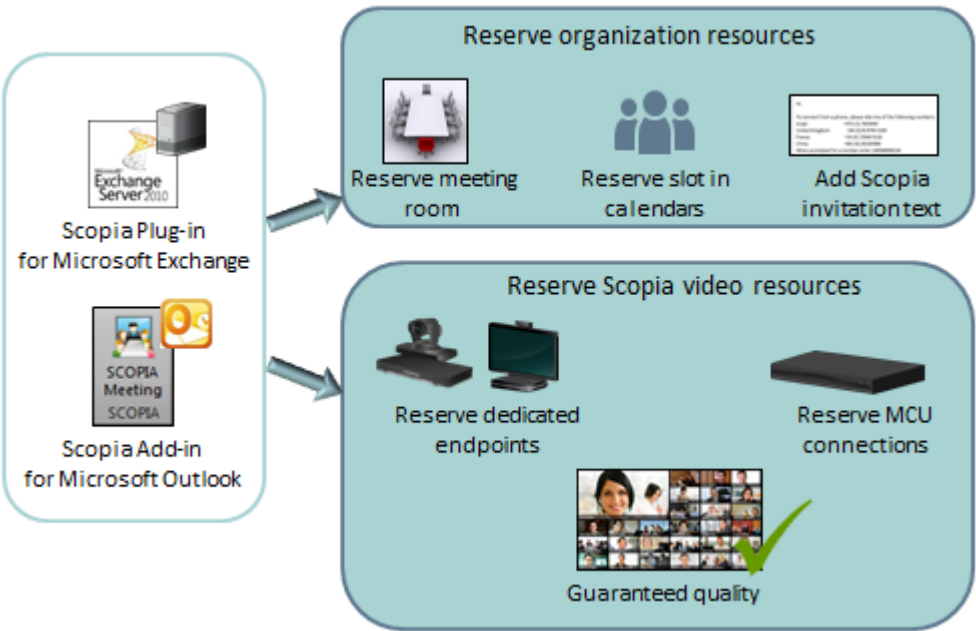


Figure 25: Planning User Access to Scheduling Meetings

The most common way for users to schedule videoconferences is from Microsoft Outlook, since they are already familiar with its interface and are using it to schedule all other (non-video) meetings. This requires deploying one of the Scopia® Management plug-ins for Microsoft Outlook.

Decide which plug-in is right for your organization by using [Table 1: Comparing features of the different Microsoft Outlook Plug-ins](#) on page 62 as a guide. For example, if users in your organization have Mac computers or schedule meetings on-the-go from their mobile devices, deploy Scopia® Plug-in for Microsoft Exchange (see *Administrator Guide for Avaya Scopia® Management*). The Scopia® Add-in for Microsoft Outlook (64-bit), allows more settings to be configured from Outlook, but requires installation on each client (see *User Guide for Scopia® Add-in for Microsoft Outlook*).

Table 1: Comparing features of the different Microsoft Outlook Plug-ins

Features	Scopia® Plug-in for Microsoft Exchange	Scopia® Add-in for Microsoft Outlook
Supported clients	Microsoft Outlook clients on PC	Microsoft Outlook clients on Windows-based PC only (64-bit)

Table continues...

Features	Scopia® Plug-in for Microsoft Exchange	Scopia® Add-in for Microsoft Outlook
	Microsoft Outlook clients on Mac Microsoft Outlook Web Application Other calendar applications (such as iOS and Windows-based mobile devices connected to Exchange)	
Installation	Installed on Microsoft Exchange server only (not on each client)	Requires installation on each user's computer
User access	All users with a virtual room (even if connecting from a public network)	Only internal users with a virtual room (cannot connect from a public network)
Advanced Meeting Settings (such as reserving extra resources)	Configured from the Scopia® Management user portal	Configured directly from Outlook

There is an additional plug-in available that does not require a user account in Scopia® Management (see *Administrator Guide for Avaya Scopia® Desktop server*). Users cannot reserve video network resources with this plug-in.

#### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

## Streaming and Recording Videoconferences

Streaming is a method to send live or recorded videoconferences in one direction to viewers. Recipients can only view the content; they cannot participate with a microphone or camera to communicate back to the meeting. There are two types of streaming supported in Scopia® Solution: unicast which sends a separate stream to each viewer, and multicast which sends one stream to a range of viewers.

The streaming functionality of the Scopia® Solution enables unicasts sending a stream directly to a streaming client address, or multicast streaming which sends a stream to multiple clients within a defined network. Live streaming sessions can be viewed using Scopia® Desktop Client or with mobile devices. HTML5, Silverlight, Flash plugins, and Windows Media Player are supported for playback viewing. Live streaming sessions are setup easily by end users from their Scopia User Portal.

A recording of a videoconference can be played back at any time. Recordings include audio, video and shared data (if presented).

Similar to live streams, recordings can be viewed either from a user's Scopia® Desktop Client content portal (Records and Events tab) or via a URL shared by the recording owner.

End users can start, stop and pause recording sessions from their Scopia® Desktop Client with a single mouse click. Recording sessions may be initiated ad hoc without the need to schedule

system resources in advance. Users may also configure their Scopia® Desktop Client to automatically record their meetings via Scopia® Desktop settings or can schedule a recording session to start automatically at a predetermined date and time from their Scopia User Portal.

From the Scopia® Desktop Client users may set and change viewer permissions (who is allowed to see a recording), organize recordings into categories and set labels and tags for searching.

In addition to the new Scopia® Streaming and Recording solution, Avaya Scopia® XT Series also has a separate built-in recording feature, enabling you to record videoconferences and store the file to a USB storage device which is attached directly to the XT Codec Unit. You can view the MP4 file on any standard media player. Some XT Series models require a license to enable this feature.

For more information on streaming and recording features and how to configure recording features in each of these products, see the documentation for that product.

#### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

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## Superior Video Quality

Scopia® Solution employs a number of algorithms in parallel to improve end-to-end video quality standards and ensure they are among the highest in the industry.

The following video quality algorithms are implemented in the Scopia® Solution:

#### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

[Scalable Video Coding Algorithm](#) on page 64

[Forward Error Correction Algorithm](#) on page 66

[NetSense Algorithm](#) on page 66

[H.264 High Profile](#) on page 67

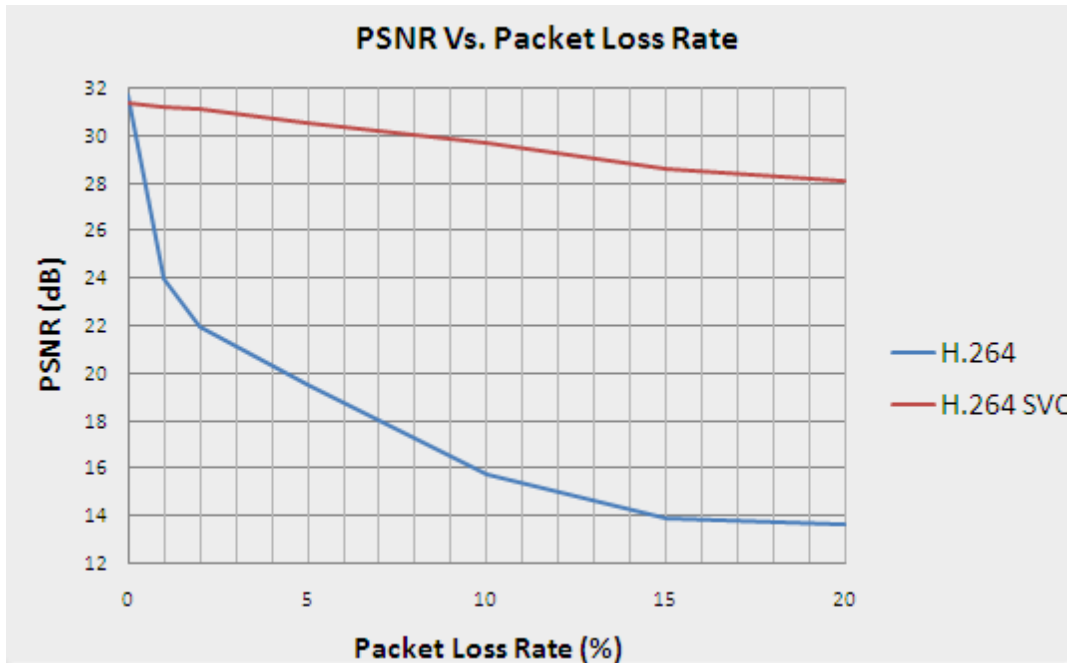
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## Scalable Video Coding Algorithm

Scalable Video Coding (SVC) is an extension to the H.264 codec standard. SVC video technology allows videoconferencing devices to send and receive multi-layered video streams composed of a small base layer and optional additional layers that enhance resolution, frame rate and quality.

Layering provides a dramatically higher degree of error resiliency and video quality with no significant need for higher bandwidth. Additionally, a single multi-layer SVC video stream can support a broad range of devices and networks.

[Figure 26: Graph showing SVC's resilience to packet loss](#) on page 65 illustrates that as the signal degrades and packet loss increases, the video quality or peak signal to noise ratio (PSNR) does not significantly fall, in comparison to the regular H.264 transmission.



**Figure 26: Graph showing SVC's resilience to packet loss**

With SVC, Scopia® Solution enables full interoperability with existing devices while enjoying all the benefits of very high network error resiliency and high quality support for room and telepresence systems. SVC will also improve the quality of connections between cascaded MCUs and allow H.264 Advanced Video Coding (AVC) endpoints to leverage the benefits of SVC.

SVC has been implemented in several components of the Scopia® Solution:

- Scopia® Elite 6000 Series MCU
- Scopia® Elite 5000 Series MCU
- Avaya Scopia® XT5000 Series
- Avaya Scopia® XT4000 Series
- Avaya Scopia® XT7000 Series
- Scopia® XT Executive
- Scopia® Desktop

By applying SVC in an MCU, rather than a gateway approach, the Scopia® Solution enables an evolution rather than revolution to reap the benefits of scalable video in a mixed video coding world. Scopia® Solution's SVC-enabled desktop and videoconferencing infrastructure interoperates with any standards-based endpoint, with no need for dedicated transcoding gateways.

#### Related links

[Superior Video Quality](#) on page 64

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## Forward Error Correction Algorithm

The Forward Error Correction (FEC) algorithm is a proactive method of sending redundant information in the video stream to preempt quality degradation. The proactive element is the reason it is referred to as a 'forward' algorithm. FEC relies on another algorithm, SVC (see [Scalable Video Coding Algorithm](#) on page 64) to identify the key frames in the video stream that should be protected by FEC.

There are several variants of the FEC algorithm. The Reed-Solomon algorithm (FEC-RS) sends redundant packets per block of information, enabling the sender (like the Scopia® Elite MCU) to manage up to 10% packet loss in the video stream with minimal impact on the smoothness and quality of the video.

FEC is implemented in several components of the Scopia® Solution:

- Scopia® Elite 6000 Series MCU
- Scopia® Elite 5000 Series MCU
- Avaya Scopia® XT5000 Series
- Avaya Scopia® XT4000 Series
- Avaya Scopia® XT7000 Series
- Scopia® XT Executive
- Scopia® Desktop

### Related links

[Superior Video Quality](#) on page 64

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## NetSense Algorithm

NetSense is a proprietary Scopia® Solution technology which optimizes the video quality according to the available bandwidth to minimize packet loss. As the available bandwidth of a connection varies depending on data traffic, NetSense dynamically scans the video stream, and then reduces or improves the video resolution to maximize quality with the available bandwidth.

Whether sending or receiving video, a Scopia® Solution product armed with NetSense can send a flow control request to other participants, including third party endpoints oblivious to NetSense, to lower or raise their video resolution based on its information of the available bandwidth. Therefore using Scopia® Solution infrastructure with third party endpoints ensures you get the best performance of that endpoint whatever the bandwidth connection.

The criteria by which NetSense is measured is three-fold:

- Can the algorithm make the most use of available bandwidth? For example, if there is an extra 200kb/s available on a connection, how much of that extra bandwidth will be used?
- What is the resulting level of packet loss?
- How quickly can the algorithm respond to changes in the bandwidth?

Our tests demonstrate that Scopia® Solution's NetSense algorithm scores consistently high on all three counts, leading to a more reliable and higher quality video signal than other products on the market.

NetSense Algorithm is supported by these products:

- Scopia® Elite 6000 Series MCU
- Scopia® Elite 5000 Series MCU
- Avaya Scopia® XT5000 Series
- Avaya Scopia® XT4000 Series
- Avaya Scopia® XT7000 Series
- Scopia® XT Executive
- Scopia® Desktop

#### Related links

[Superior Video Quality](#) on page 64

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## H.264 High Profile

H.264 High Profile is now supported throughout the components of the Scopia® Solution.

H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol. H.264 High Profile uses compression algorithms like:

- CABAC compression (Context-Based Adaptive Binary Arithmetic Coding)
- 8x8 transforms which more effectively compress images containing areas of high correlation

These compression algorithms demand higher computation requirements, which are offered with the dedicated hardware available in Scopia® Solution components. Using H.264 High Profile in videoconferencing requires that both the sender and receiver's endpoints support it. This is different from SVC which is an adaptive technology working to improve quality even when only one side supports the standard.

#### Related links

[Superior Video Quality](#) on page 64

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## Using Network Traffic Priorities Across your Deployment

Quality of Service (QoS) determines the priorities of different types of network traffic (audio, video and control/signaling), so in poor network conditions, prioritized traffic is still fully transmitted.

QoS priorities are expressed as a number for each traffic type. The higher the number, the higher its priority.

If you are adding videoconferencing to your current deployment, it is important to ensure that all Scopia® Solution components have QoS settings that match the QoS priorities of the organization:

- If QoS is not used by your organization, disable the QoS feature on the Scopia® Solution components.
- If QoS is used by your organization, find out the QoS values of the network entities used inside the private network in your organization and modify the QoS values on the Scopia® Solution components to match them.

There are three types of traffic in Scopia Solution as described in [Table 2: Types of traffic and their priorities in Scopia® Solution](#) on page 68.

**Table 2: Types of traffic and their priorities in Scopia® Solution**

Traffic type	Description	Priority	Default value
Audio	Real-time voice	First	46
Video	Real-time video and presentations	Second	34
Control/ signaling	Data related to the call connection and media management	Third	26

**! Important:**

Do not change the priorities of the traffic types when you modify the QoS values. For example, if you change the value for audio, make sure it is still the highest number for all three traffic types.

If you are planning a new deployment, we recommend that you use the default QoS settings of the Scopia® Solution to ensure consistent optimum throughput of traffic across all solution components. Configure the routers and switches to match these settings.

You must introduce QoS together with the lip-sync feature. Lip-sync is a method of marking matching packets of audio and video traffic so that they are reproduced together upon arrival. You must use QoS only in deployments where videoconferencing devices (including all endpoints) support lip-sync, because otherwise audio and video packets arrive even with a bigger time lapse than when QoS is not used. All Avaya videoconferencing endpoints support lip-sync.

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

## Point-to-Point Functionality

The point-to-point functionality enables two clients to directly communicate with a video call without using additional MCU ports. The point-to-point call can be set up in one of these ways:

- Between two H.323 endpoints, for example Avaya Scopia® XT Series products.
- Between an H.323 endpoint and a Microsoft Lync client using the services of an existing Lync deployment together with the Scopia® Video Gateway.

In the Scopia® Solution, point-to-point calls feature:

- HD video quality up to 1080p using SVC for added network tolerance. For more information, see [Scalable Video Coding Algorithm](#) on page 64.
- H.264 High Profile for additional quality with low bandwidth footprint.
- H.265 on Avaya Scopia® XT7100 to Avaya Scopia® XT7100 and other compatible vendors.
- Data presentation alongside the video call .
- List of contacts displaying the availability, or presence, of each contact at that time.
- Seamless escalation to a multi-party call.
- Secure encrypted media connection.

### Important:

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

## Auto-Attendant Functionality

Auto-Attendant, also known as video IVR, offers quick access to meetings hosted on MCUs, via a set of visual menus. Participants can select menu options using standard DTMF tones (numeric keypad). Auto-Attendant works with both H.323 and SIP endpoints.

This feature is especially useful when users are not aware of the specific number of a videoconference but would like to join by choosing from a list of active meetings.

This functionality is available in both the Scopia® Elite MCU and the Avaya Scopia® Management.

When Scopia® Management is present, we recommend using its Auto-Attendant feature in preference to the MCU, as its list of active meetings covers the entire deployment, not a single MCU.

For more information on configuring the Auto-Attendant of Scopia® Management, see *User Guide for Avaya Scopia® Management*. For details of configuring the Auto-Attendant on the MCU, see *Administrator Guide for Scopia® Elite MCU*.

## Related links

[Selecting Features of your Scopia® Solution](#) on page 51

# URI Dialing Functionality

The Scopia® Solution fully supports URI dialing, a dial format for contacting endpoints outside your organization.

URI is an address format used to locate a device on a network, where the address consists of the endpoint's name or number, followed by the domain name of the server to which the endpoint is registered. For example, `<endpoint name>@<server_domain_name>`. When dialing URI between organizations, the server might often be the Avaya Scopia® PathFinder server of the organization.

All Scopia® Solution endpoints work transparently with URI dials, including the Avaya Scopia® XT Series and Scopia® Desktop Clients. You can also perform URI dials from the conference control of Avaya Scopia® Management.

URI dialing is compatible with Avaya Scopia® PathFinder (for H.323 endpoint) and other third party firewall traversal systems such as SBCs (for SIP endpoints). Dialing an endpoint from one organization to another requires first traversing your own firewall with Scopia® PathFinder, out through the internet, and then into the firewall of the recipient's organization using their firewall traversal system (Figure 27: URI dialing between two enterprises using Scopia® PathFinder on page 70).

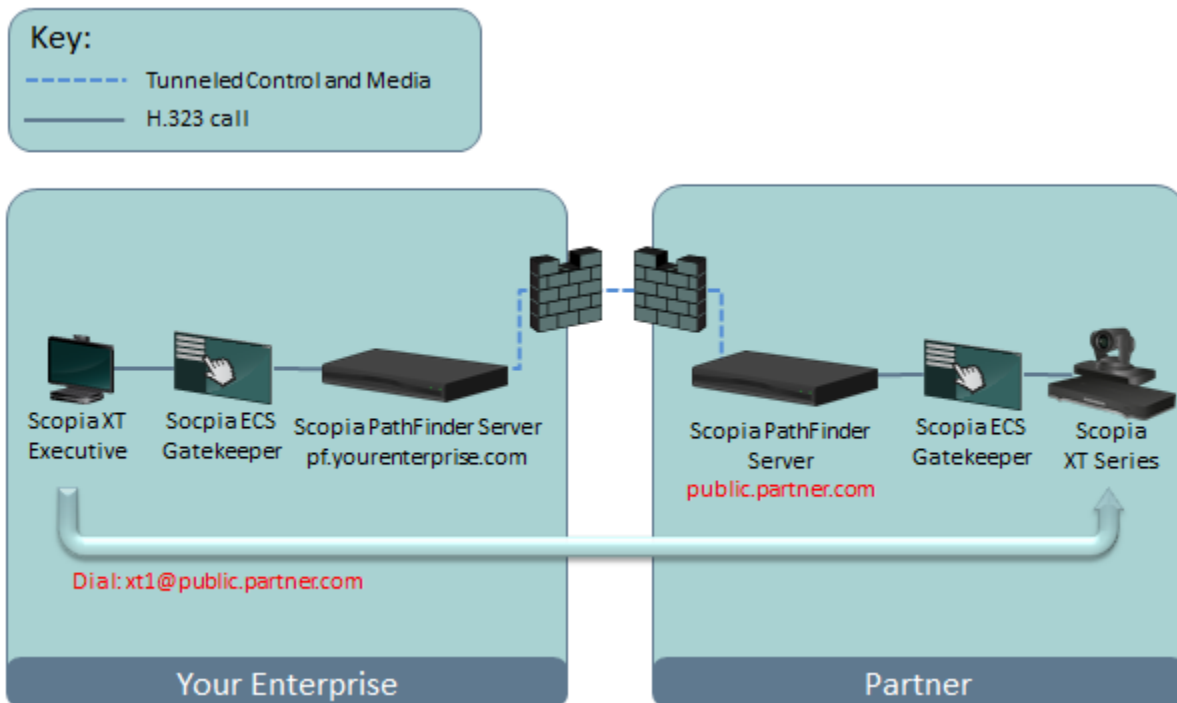


Figure 27: URI dialing between two enterprises using Scopia® PathFinder

To access an endpoint in the other company, the URI's domain name is the second company's firewall traversal system, like the name of their PathFinder server. For example, in [Figure 27: URI dialing between two enterprises using Scopia® PathFinder](#) on page 70, dialing to the partner company requires knowing the following:

- The name or number of the endpoint, in this example *xt1*
- The domain name of the PathFinder server of that company, *public.partner.com* in this example.

**! Important:**

As with regular web domain names, the name of the PathFinder server resolves to an IP address via standard DNS lookup if it has been allocated a global DNS name. If the server's IP address does not have a DNS name, the URI dial should directly specify the server's IP address instead. For example, the URI *xt1@123.456.789.1* specifies the alias followed by the server's IP address.

To set up this connection, you need to configure the PathFinder server to accept H.323 calls and forward them. You also need to configure the ECS to define one or more PathFinder servers as ECS's neighbor, to facilitate the routing of these calls.

**Related links**

[Selecting Features of your Scopia® Solution](#) on page 51

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## Remote Access to Videoconferencing

The Scopia® Solution includes a number of ways to access video calls from remote locations outside the company network. There are three categories of remote users:

- Home workers

When using a PC from home, the Scopia® Desktop Client offers an easy way to turn a PC into an HD endpoint. This technology includes all the tunneling functionality required to maintain an encrypted connection with the company while traversing both a home wireless router (NAT) and accessing a Scopia® Desktop server in the company's DMZ. For an example of this deployment, see [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

If you have a laptop with Microsoft Lync client installed, you can smoothly access a videoconference call without using a VPN connection. Your call is routed to the existing MS Audio/Video (A/V) Edge Server and uses the Scopia® Solution for network security. This deployment is depicted in [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

You can participate in a video call by using a dedicated H.323 endpoint, like the Avaya Scopia® XT Series. Your call traverses the NAT router and is routed to the Avaya Scopia® PathFinder server in the company's DMZ. For an example of this deployment, see [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

If you have a SIP endpoint, like the Avaya Scopia® XT Series that also works with the SIP protocol, you can access a remote videoconference through the Session Border Controller (SBC) deployed in the organization's DMZ. [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93 shows this deployment.

- On the road

Scopia® Mobile enables people with video-enabled phones to participate in a conference. The phone connects to the Scopia® Desktop server in the company's DMZ.

A laptop PC can be an effective way to connect to videoconferences by installing Scopia® Desktop Client. Its tunneling technology does not require any gateway or dedicated firewall traversal.

Microsoft Lync offers another way of accessing videoconference calls while using the existing MS A/V Edge Server for call routing. The Scopia® Solution components take care of network security. For an example of this deployment, see [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

- Partner organizations with their own firewall

A PC installed with Scopia® Desktop Client can join a videoconference even when it is located in a partner organization behind its firewall. Scopia® Desktop Client can easily traverse both that firewall and the firewall of the company housing the video infrastructure to reach the Scopia® Desktop server located in the DMZ. For an example of this deployment, see [Figure 36: Complete Centralized Videoconferencing solution](#) on page 101.

A laptop installed with Microsoft Lync client and pertaining to a partner organization belongs to a federation of trusted clients pre-authenticated by the MS A/V Edge Server. As such, the federated client is considered as connected inside the enterprise and can join a videoconference using the existing Lync deployment and the Scopia® Solution components, including the Scopia® Video Gateway. For an example of this deployment, see [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

If you have an H.323 endpoint which supports the secure H.460 protocol, like the Avaya Scopia® XT Series, it can directly access the Avaya Scopia® PathFinder server in the target company's DMZ.

Alternatively, H.323 endpoints which do not support the H.460 protocol would use a local gatekeeper and a Scopia® PathFinder client to navigate both firewalls. See [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93 for an illustration of a typical Avaya Scopia® PathFinder deployment.

Users located remotely with SIP endpoints can join a videoconference if your deployment includes an SBC. See [Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93.

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

## Virtual Room Functionality

A virtual room in Scopia® Desktop and Scopia® Mobile offers a virtual meeting place for instant or scheduled videoconferences. An administrator can assign a virtual room to each member of the organization. Users can send invitations to each other via a web link which brings you directly into their virtual room. Virtual meeting rooms are also dialed like phone extension numbers, where a user's virtual room number is often based on that person's phone extension number. You can personalize your virtual room with PIN numbers, custom welcome slides and so on. External participants can download Scopia® Desktop or Scopia® Mobile free to access a registered user's virtual room and participate in a videoconference.

Accessing a virtual room is easy. You can use Scopia® Desktop Client to create a web link directly to your virtual room, and then send it to others as part of your invitation, or users can dial the virtual room's number from the Scopia® Desktop web portal or directly from their endpoint.

For administrators, setting up virtual rooms is simple. Avaya Scopia® Management enables administrators to use the corporate address book to automatically set up virtual rooms for everyone in the organization based on their existing phone extension.

When you access a virtual room, you are presented with a welcome slide and an accompanying audio message.

Users can customize their personal virtual rooms from the Scopia® Desktop Client in a number of ways:

- You can define a PIN required to become the moderator of a meeting in this virtual room.
- You can also define an access PIN which would require all participants to enter it to join the meeting.
- You can create a waiting room, where the welcome slide is displayed until the moderator joins the meeting, and only then start the meeting.
- You can automatically record meetings in this virtual room.
- You can enable streaming of meetings from this virtual room, enabling participants with streaming clients like Apple QuickTime to view and hear the participants in the meeting.

For more information on how to perform these customizations, see *User Guide for Scopia® Desktop*.

There are additional customizations currently only available in Avaya Scopia® Management:

- Setting the geographical location of a virtual room in Scopia® Management.
- Automatically allocate video resources in a virtual room by reserving ports.
- When this virtual room is accessed, automatically dial out to a list of additional endpoints.

For more information on how to perform these customizations, see *User Guide for Scopia® Management*.

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

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## User Profiles for Video Across an Enterprise

For administrators, the Scopia® Solution has many features for efficient user management throughout the organization, enabling centralized management of user names, user groups, and user privileges.

There are two aspects to user management in the Scopia® Solution:

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

[Defining Video Users Across an Enterprise](#) on page 74

[Assigning Privileges for Video Users Across an Enterprise](#) on page 74

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## Defining Video Users Across an Enterprise

Profiles of users and groups of users can be defined within Avaya Scopia® Management, or they can be synchronized directly from the organization's LDAP user directory, interfacing with popular solutions like Microsoft's Active Directory or IBM's Domino.

Scopia® Management's new unified corporate address book feature synchronizes the enterprise's directory to all endpoints in the organization from one central location, making contact lists easy to manage. This feature is also fully compatible with third party endpoints, since Scopia® Management employs standard protocols when updating endpoint contact lists.

Synchronizing endpoint address books with the enterprise directory applies equally to both local and remote endpoints that may be located in different branches or sites.

For more information, see *Administrator Guide for Avaya Scopia® Management*.

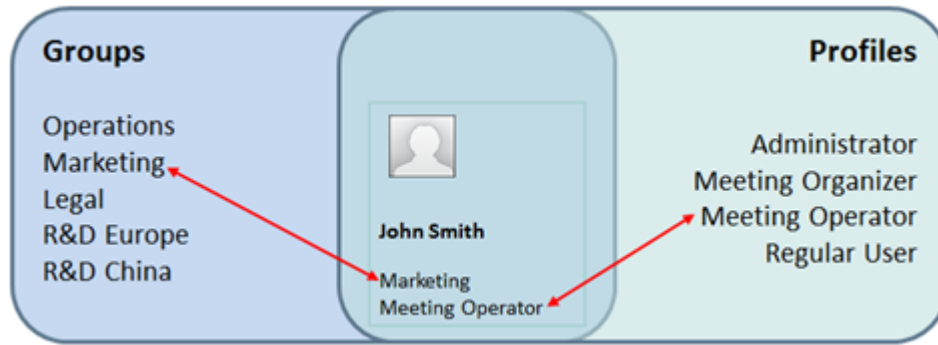
### Related links

[User Profiles for Video Across an Enterprise](#) on page 74

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## Assigning Privileges for Video Users Across an Enterprise

You can regulate user rights and privileges by assigning a profile to an individual user or a user group. A user profile is a compilation of user-related capabilities and rights, such as available meeting types, ability to schedule meetings, access to the Scopia® Desktop and Scopia® Mobile functionality, allowed bandwidth for Scopia® Desktop calls.



**Figure 28: Using user groups and profiles to define a user**

There are four predefined user profiles that can be assigned in the Avaya Scopia® Management:

- Users

Users in this category can create, participate and moderate their own meetings, view scheduled meetings, and modify their own profile, but they cannot manage their own virtual room.

- Meeting organizers

Organizers have all the abilities of regular users, but they can also manage their own virtual rooms, and personal address books. They can also create and manage meetings for others.

- Operators

Meeting operators have all the rights of organizers, and additionally they can view and manage all meetings in an organization.

- Administrators

Administrators have all the rights of an operator, and additionally they can view and manage all network devices, room terminals, and users with their virtual rooms in the organization.

- Service Provider Administrators

This category of users can manage devices and meetings across multiple organizations.

In addition to the predefined user profiles, you can configure new profiles to meet the user provisioning needs of your organization.

For more information, see *Administrator Guide for Avaya Scopia® Management*.

#### Related links

[User Profiles for Video Across an Enterprise](#) on page 74

## Scheduling and Resource Reservation

Scheduling a video meeting is similar to scheduling any other meeting. To schedule a regular meeting you need find a free slot in the participants' calendars and a free conference room.

Videoconference meetings can include both physical and virtual meeting rooms, and you may need to reserve video resources, both MCU capacity and bandwidth.

Scheduling video resources of a planned meeting reserves the required number of MCU video ports for the meeting, to ensure sufficient capacity and bandwidth at the time of the call.

These criteria lead to three videoconferencing scheduling options in the Scopia® Solution:

- Ad-hoc calls are unscheduled, and enable any endpoint to make a call.
- Time-only scheduling notifies participants of the time and virtual location of a videoconference, but no video resources are reserved.

You can use the Scopia® Add-in for Microsoft Outlook to create time-only schedules in Microsoft Outlook. For more information, see the *User Guide for Scopia® Add-in for Microsoft Outlook*.

For Lotus Notes or IBM Sametime integration, use the Scopia® Add-in for IBM Lotus Notes or Scopia® Add-in for IBM Sametime, which can act as a time-only scheduler in deployments which lack Scopia® Management. For more information, see the *Deployment Guide for Scopia® Add-in for IBM Lotus Notes*.

- Time and resource scheduling is used for meetings where high quality video is imperative. It notifies both the participants and Avaya Scopia® Management of the time, the number of participants, and the virtual location of the videoconference. Scopia® Management then reserves the number of MCU ports to be used for the meeting at that time.

Using this information, Scopia® Management will allow or disallow any ad-hoc calls made at that time based on the resources it has set aside for the scheduled meeting.

Use the Scopia® Add-in for Microsoft Outlook to create time and resource schedules in Microsoft Outlook. For more information, see the *User Guide for Scopia® Add-in for Microsoft Outlook*.

For Lotus Notes or IBM Sametime integration, use the Scopia® Add-in for IBM Lotus Notes or Scopia® Add-in for IBM Sametime, which extends its functionality to time and resource scheduling in deployments with Scopia® Management. For more information, see the *Deployment Guide for Scopia® Add-in for IBM Sametime*.

### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

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## Transmitting Data Presentations

A central feature of the Scopia® Solution is the ability to transmit shared data alongside HD video, whether as presentations or as desktop sharing, streamed as a separate H.239 data channel from a connected PC. This feature is available in:

- Avaya Scopia® XT Series
- Scopia® Desktop

- Scopia® Elite MCU
- Scopia® Management
- Scopia® Web Collaboration server

Scopia® Mobile can receive presentations.

In addition, a unique feature implemented in Scopia® Desktop Client and Scopia® Mobile is the Scopia® Content Slider. It enables conference participants viewing a presentation to go back and view slides that were previously transmitted at any time during the call, even if those slides are no longer presented in view by the conference lecturer.

Scopia® Web Collaboration server introduces white boarding and application sharing which is becoming more prevalent with users docking their tablets and ultrabooks and using both displays. This also enables remote desktop control, where a user sharing the desktop can also share the keyboard and mouse with one other meeting participant.

Scopia® Desktop Client users can download and install the new Web Collaboration plug-in. For this release, Scopia® Mobile users experience collaboration as they do today. For interoperability, the Scopia® Web Collaboration server transcodes to and from H.239 and BFCP for H.323 and SIP endpoints. If the new web collaboration feature is turned off or not available, the solution uses today's standard H.239 presentation mode.

#### Related links

[Selecting Features of your Scopia® Solution](#) on page 51

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## Intuitive Video Layouts and Moderator Control

When presenting the multiple video images in a videoconference, there is always a question of choosing the best arrangement of images on a monitor in a way that is both convenient and relevant. Key features like the automatic highlighting of a participant currently speaking makes the layout choices of the Scopia® Solution among the best in the industry.



**Figure 29: Supported layouts of the Scopia® Elite MCU**

Moderator control, sometimes known as chair control, is also a central feature in Scopia® Solution videoconferences. A moderator has special rights in a videoconference, including blocking the sound and video of other participants, inviting new participants, disconnecting others, determining video layouts, and closing meetings.

Both these functionalities are available from a number of Scopia® Solution components:

- Scopia® Desktop Clients and Scopia® Mobile
- Scopia® Control
- Scopia® Elite MCU
- Avaya Scopia® Management

Administrators can use the video layout and moderator control from the Scopia® Elite MCU to control a single MCU's videoconferences, or the Avaya Scopia® Management to manage conference layouts on a corporate level across the organization.

Participants can control their own endpoint's layout in Scopia® Desktop Client or on their Scopia® Mobile. In addition, an participants can control the layout of the Avaya Scopia® XT Series room system using Scopia® Control. You can also use the Scopia® Control to connect to the Scopia® Desktop server and connect to the meeting as a moderator.

For more information on the moderator and layout controls of the MCU, see *User Guide for Scopia® Elite MCU*. For details of configuration from the Avaya Scopia® Management, see the *User Guide for Avaya Scopia® Management*.

**Related links**

[Selecting Features of your Scopia® Solution](#) on page 51

# Chapter 3: Considerations for Choosing your Scopia® Solution

There are a number of criteria that must be considered to choose the most appropriate deployment for your organization, aside from the list detailed in [Selecting Features of your Scopia® Solution](#) on page 51:

## Related links

[Sizing Your Video Deployment Capacity](#) on page 80

[Planning a Centralized or Distributed Topology \(Cascading\) for MCU](#) on page 82

[Assessing Bandwidth for Large Organizations](#) on page 85

[Updating the Dial Plan](#) on page 90

[Setting WAN Bandwidth Limits](#) on page 92

[Choosing Firewall and NAT Traversal in the Scopia® Solution](#) on page 92

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## Sizing Your Video Deployment Capacity

Choosing the capacity of your Scopia® Solution is a key deployment consideration.

The most appropriate solution for your organization is dependent on the number of video users:

- For up to 100 users, consider deploying the SMB Solution (see [Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95).

### Important:

The SMB Solution can manage up to nine participants in a single videoconference, one meeting at a time.

- For up to 1,500 users, consider deploying the Complete Centralized Solution (see [Solution 2: Complete Centralized Videoconferencing](#) on page 99).
- For up to 400,000 users, consider deploying either the Large Centralized Solution (see [Solution 3: Large Centralized Videoconferencing](#) on page 102) or the Large Distributed Solution, depending on the organization's existing network topology.

There are additional considerations when deciding on the number of solution components required within your solution deployment.

To determine the number of MCUs required in a deployment, estimate the number of people accessing the MCU simultaneously, and the bandwidth and resolution they are using.

You can calculate the number of MCUs required by estimating:

- The number of people in your organization using the video infrastructure.
- The average number of participants expected per videoconference.
- The number of expected simultaneous videoconference calls.

If your video usage only requires one videoconference at a time for less than nine participants within and outside the company, consider deploying the new SMB Solution. For more information, see [Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95.

- The number of users requiring HD quality, versus the number requiring SD quality.

For example, the Scopia® Elite 6000 Series MCU 6140 has a maximum capacity of 40 simultaneous HD connections (or ports), each with a resolution of 1080p. But each HD connection can be switched to four lower resolution connections at 480p, enabling a mix between HD and SD users, with a maximum of  $4 \times 40 = 160$  connections at 480p.

To determine the number of room systems like the Avaya Scopia® XT Series required in a deployment, estimate:

- The number of conference rooms in your organization.
- The number of conference rooms which should be equipped with any of the models in the XT Series.

To determine the number of dedicated HD endpoints and PC-based endpoints to deploy, estimate:

- The number of employees using videoconferencing.
- The number of employees, usually executives, who would use dedicated HD endpoints like the Scopia® XT Executive.
- The remainder of employees and remote desktop users who would normally use a PC-based endpoint like the Scopia® Desktop Client.

To determine the number of Scopia® Video Gateways to deploy, estimate:

- The number of H.323 endpoints communicating simultaneously with Microsoft Lync clients.
- The number of users requiring HD quality, versus the number requiring in SD quality.
- The number of H.323 room systems you want to add to your Scopia® Video Gateway deployment.

When deploying the Scopia® Web Collaboration server, consider the following:

- The Scopia® Web Collaboration server supports up to 50 simultaneous Scopia conferences and 160 simultaneous Web Collaboration Clients for all conferences.
- You need to install one server per Scopia® Elite MCU.

To determine the number of Scopia® Streaming and Recording servers, consider the following:

- You can deploy a single all-in-one Scopia® Streaming and Recording server if you only need 10 simultaneous HD recordings (or less) and only need to stream up to 1,500 viewers at once.
- If you have larger needs or a distributed solution of MCUs, you can deploy the scalable multi-server solution for Scopia® Streaming and Recording.

This requires one Manager server and a Media Node server for every simultaneous 10 HD recordings or 1,500 streams.

If you record less and need to stream more simultaneously, you can scale the Media Node to 3,500 streams.

To determine the number of Avaya Scopia® TIP Gateways, estimate the number of Cisco Telepresence endpoints in the deployment.

The ratio depends on the number of room systems and on how much video is used. The recommended ratio is:

- High video usage demands one gateway connection per one room system.
- Medium video usage demands one gateway connection per three room systems.
- Low video usage demands one gateway connection per five room systems.

Gateways are highly scalable and can be added to your deployment as your video capacity grows.

#### Related links

[Considerations for Choosing your Scopia® Solution](#) on page 80

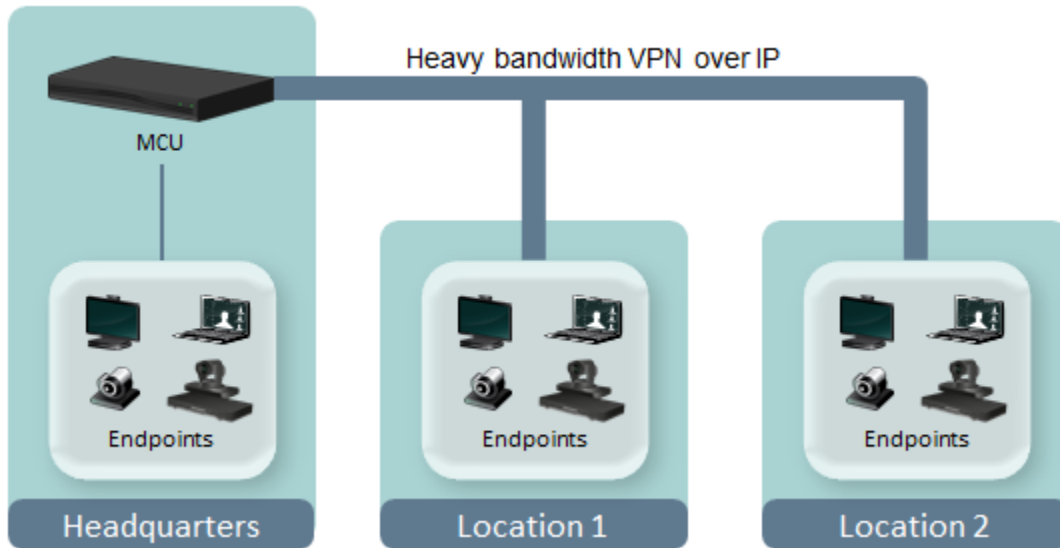
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## Planning a Centralized or Distributed Topology (Cascading) for MCU

When your organization has more than one site, like a headquarters and several branches, the Scopia® Solution offers a unique method of cutting video bandwidth costs, known as cascaded meetings.

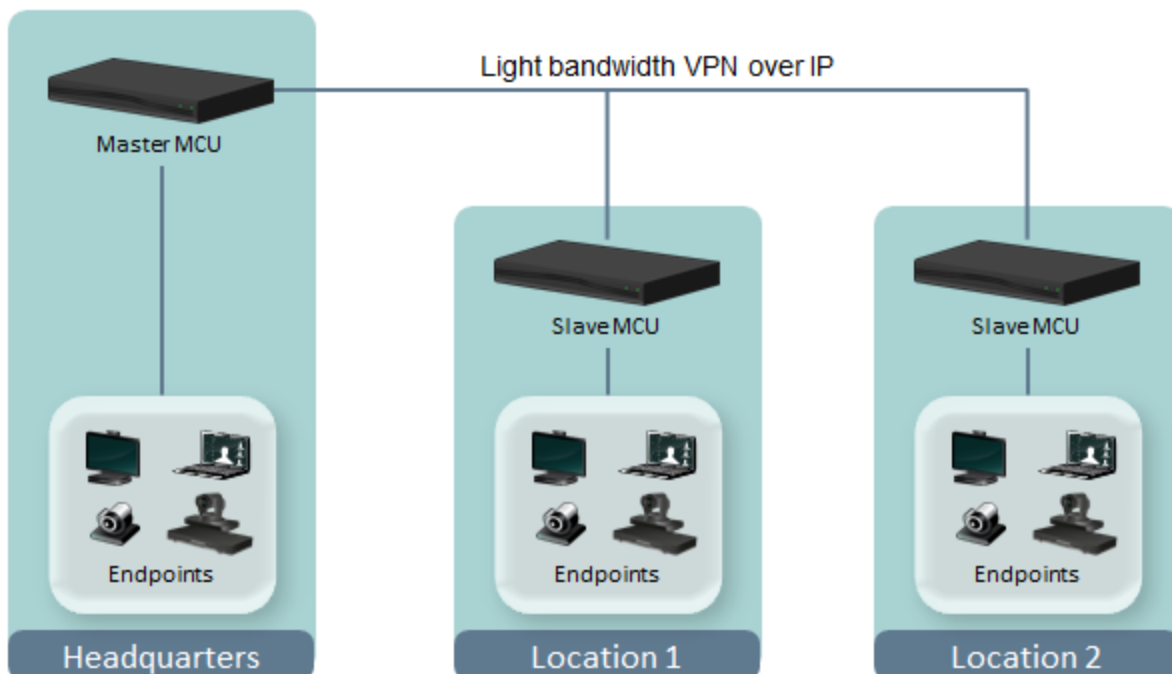
A cascaded videoconference is a meeting distributed over more than one physical Scopia® Elite MCU, where a master MCU connects to one or more slave MCUs to create a single videoconference. It increases the meeting capacity by combining the resources of several MCUs. This can be especially useful for distributed deployments across several locations, reducing bandwidth usage.

Without cascading, if you choose a centralized MCU deployment, frequent videoconferences between branches can be expensive ([Figure 30: Centralized MCU deployment, where all branches use the HQ MCU](#) on page 83).



**Figure 30: Centralized MCU deployment, where all branches use the HQ MCU**

To reduce cross-site bandwidth costs, a distributed MCU deployment ([Figure 31: Distributed MCU deployment cascading meetings for reduced WAN bandwidth](#) on page 83) can perform cascaded conferences. Participants connect to their local MCU, and the conference is cascaded by connecting between the MCUs using a fraction of the bandwidth compared to the centralized deployment. The same principles apply to an MCU in the same location, thus increasing call capacity by cascading conferences between them.



**Figure 31: Distributed MCU deployment cascading meetings for reduced WAN bandwidth**

The bandwidth used by a cascaded link is equivalent to only a single client connection in each direction: upload and download. The bandwidth value is determined by the MCU meeting type (or service), which is invoked when choosing a dial prefix for the meeting. You define the maximum bandwidth for each meeting type in the MCU. For more information on defining meeting types, see *Administrator Guide for Scopia® Elite 6000 Series MCU*.

Users do not need to choose a specific MCU. The powerful functionality of virtual rooms enables you to dial the same number anywhere in the world, while the Scopia® Solution infrastructure transparently directs you to the correct meeting on the correct MCU.

The maximum supported number of participants in a single videoconference is 500 for both the centralized and distributed MCU deployment.

Users do not need to manually enable cascading when creating meetings. This is performed transparently by Avaya Scopia® Management using sophisticated cascading algorithms.

When an endpoint initiates a meeting on an MCU, that MCU becomes the master MCU. Other MCUs which participate in the meeting are designated as slave MCUs. There are a number of factors that might influence when the system automatically chooses to cascade to a different MCU. For example, to avoid reaching the maximum bandwidth threshold, the system would attempt cascading with a different MCU, a slave MCU. Endpoints would then join the videoconference from the slave MCU. Only one level of cascading is supported: all slave MCU conferences must cascade to the same master MCU conference. Administrators can also customize the priority given to cascading in a distributed topology, as explained in *Administrator Guide for Avaya Scopia® Management*.

Cascading has the following characteristics:

- A cascaded connection uses two ports—one port on the master MCU, and one port on the slave MCU.
- Make sure that the Meeting Type (MCU service), representing the required meeting properties and accessed with a dial prefix, is available on all participating MCUs. For example, if the meeting uses MCU service 81, then 81 must exist on the master MCU and on the slave MCUs.
- Participants connecting to the slave MCU:
  - View only the default meeting layout
  - Can send and receive video with a resolution up to 720p (for Scopia® Elite 5000 Series MCU)
  - Perform actions (such as joining the meeting) via their endpoint or web interface, and not via DTMF.
- Only one participant at a time (typically the active speaker) connecting from each slave MCU can send video and be seen by other meeting participants in the video layout.
- The lecturer and any telepresence endpoint always connect to the videoconference from the master MCU. Ports are reserved on the master MCU to support these features.
- Endpoints seamlessly join a videoconference according to the cascading logic implemented on the sites. An endpoint connected to a slave MCU and trying to launch a feature which is not supported by the slave MCU gets a relevant error message. You can move an endpoint to a

master MCU when scheduling your videoconference. For more information, see *User Guide for Scopia® Management*.

- Scopia® Elite MCU does not support cascading to a Scopia® MCU.

You can customize the cascading priorities in Scopia® Management in a number of ways:

- Default to using a local MCU first, and only cascade conferences if required.
- Prioritize cascading wherever possible, to keep bandwidth costs to an absolute minimum.
- Avoid cascading as often as possible.

For more information on implementing cascading in Scopia® Management, see *Administrator Guide for Avaya Scopia® Management*.

#### Related links

[Considerations for Choosing your Scopia® Solution](#) on page 80

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## Assessing Bandwidth for Large Organizations

### About this task

As part of planning your videoconferencing solution, you must assess the bandwidth required for videoconferencing in your organization.

Most large organizations manage their data in one or more data centers around the globe. Typically, with the arrival of videoconferencing you need to increase amount of data incoming and outgoing from the data center. You must assess the bandwidth for every data center in your organization separately as described in the following steps.

For bandwidth considerations for Scopia® Streaming and Recording, see *Administrator Guide for Avaya Scopia® Streaming and Recording server*.

### Procedure

1. Estimate the number video users allocated to this data center.

Often, not every employee in an organization is a video user. Look at your organization and decide which departments and employees need video capabilities. This decision often depends on your organization's field of expertise, the kind of services or products it offers. While for some organizations it is important to add video to their technical support service, for instance, other organizations may choose to provide video capabilities for management executives only.

To illustrate how to assess bandwidth, we use an example of 10,000 video users in this topic.

2. Decide what endpoint types these users will have.

The videoconferencing experience greatly depends on the endpoint type and has a significant impact on bandwidth.

Different videoconferencing endpoints have different bandwidth requirements, depending on the resolution they support. There are five types of Scopia® Solution endpoints:

- Scopia® Mobile for access on mobile devices (low bandwidth consumption)
- Scopia® Desktop for access on desktop computers (low bandwidth consumption)
- Scopia® XT Executive for premium HD experience on a dedicated endpoint (low bandwidth consumption)
- Avaya Scopia® XT Series to participate in a videoconference from a meeting room (medium bandwidth consumption)
- Scopia® XT Telepresence for conducting the most life-like videoconferences (high bandwidth consumption).

Refer to [Scopia Endpoint Components](#) on page 30 to learn about Scopia® Solution endpoints.

3. Estimate to how many users will be assigned each endpoint type.

For example, the distribution of the 10,000 video users allocated to this data center may be like this:

**Table 3: Example of estimation of users per endpoint type**

Endpoint type	Number of users
Scopia® Mobile	200
Scopia® Desktop	10,000
Scopia® XT Executive	50
Avaya Scopia® XT Series	80
Scopia® XT Telepresence	10

**! Important:**

Typically, all video users have a Scopia® Desktop account, even if they have a video endpoint of another type.

4. Define the ratio of users in concurrent videoconferences to all users allocated to this data center.

Define the peak for how many simultaneous recordings and streaming viewers are required in this data center.

Define the peak ratio for every endpoint type separately.

Ratios may significantly vary depending on the nature of your organization. For example, in a hi-tech organization where most employees are tech-savvy, the ratio is likely to be higher than average.

**! Important:**

Even if the initial implementation of Scopia® Solution is done on a smaller scale and the learning curve in your organization is very long, focus on the target. Think what the ratio

will be when Scopia® Solution is fully deployed and people feel comfortable using it. For example, even if during the first year it is likely that only 1 in 30 Scopia® Desktop users will be in a concurrent call, the ratio you use to calculate bandwidth should be 1 in 15, which is your target.

**Table 4: Typical peak ratios per endpoint type**

Endpoint type	Ratios
Scopia® Mobile	Between 1/20 and 1/10
Scopia® Desktop	Between 1/20 and 1/10
Scopia® XT Executive	Between 1/15 and 1/10
Avaya Scopia® XT Series	Between 1/15 and 1/8
Scopia® XT Telepresence	Between 1/10 and 1/5

5. Calculate peak usage per endpoint type.

Peak usage is the maximum number of users of the same endpoint type in videoconferences happening at the same time. Calculate this value for each endpoint type separately according to the following formula:

$$\text{Peak usage} = \text{number of users} / \text{ratio}$$

For instance, if you have 10,000 Scopia® Desktop users allocated to this data center and the ratio is average, the peak usage for Scopia® Desktop is  $10,000/15 = 666$ .

6. Calculate the peak bandwidth per endpoint type according to the formula:

$$\text{Peak bandwidth} = \text{peak usage} \times \text{max bandwidth for this endpoint type}$$

[Table 5: Bandwidth consumed by different endpoint types](#) on page 87 shows possible values of maximum bandwidth for this endpoint type.

**Table 5: Bandwidth consumed by different endpoint types**

Endpoint type	Resolution	Maximum bandwidth consumption
Scopia® Mobile	720p	768 Kbps
Scopia® Desktop	720p	768 Kbps
Scopia® XT Executive	720p at 30fps	768 Kbps
Avaya Scopia® XT Series	1080p at 60fps	2560 Kbps
Scopia® XT Telepresence	1080p at 60fps	7680 Kbps

In our example, the peak bandwidth (under condition that the ratio is average) is going to be as follows:

**Table 6: Example of peak bandwidth calculation per endpoint types**

Endpoint type	Peak Usage	Maximum bandwidth consumption	Peak bandwidth
Scopia® Mobile	13	512 Kbps	6,656 Kbps
Scopia® Desktop	666	768 Kbps	523,476 Kbps
Scopia® XT Executive	4	768 Kbps	3,072 Kbps
Avaya Scopia® XT Series	8	2,560 Kbps	20,480 Kbps
Scopia® XT Telepresence	1	7,680 Kbps	7,680 Kbps

Calculate the number of live streams you want to support, what type of streaming (for example 1080P 2M), and figure how many streaming Media Nodes need to be deployed in this data center.

- Calculate the total bandwidth for this data center by adding all values of peak bandwidth per endpoint type. This value is your rough bandwidth estimation.

In our example your total bandwidth value is 561,364 Mbps.

- Fine-tune your estimation by deciding on the following bandwidth effective policies supported in Scopia® Solution:
  - Compressing video by using H.264 High Profile. H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol. See [Table 7: Optimized bandwidth consumption](#) on page 88.

**Table 7: Optimized bandwidth consumption**

Endpoint type	Resolution	Maximum bandwidth	Maximum bandwidth with High Profile
Scopia® Mobile	480p	512 Kbps	384 Kbps
Scopia® Desktop	720p	768 Kbps	512 Kbps
Scopia® XT Executive	720p at 30fps	768 Kbps	512 Kbps
Avaya Scopia® XT Series	1080p at 60fps	2,560 Kbps	2 Mbps
Scopia® XT Telepresence	1080p at 60fps	7,680 Kbps	6 Mbps

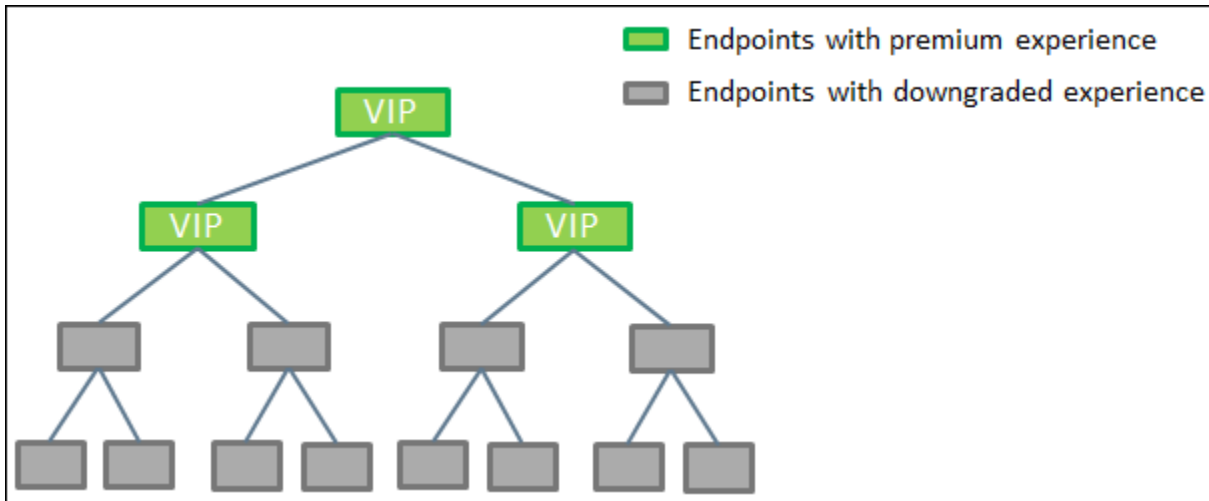
**+ Tip:**

Some Avaya endpoints do not support H.264 High Profile, for example some older Avaya Scopia® XT Series models, Scopia® VC240 or legacy third-party endpoints.

- Diverting videoconferences from an MCU that reached its capacity limit during peak hours to an idle MCU in a data center in a different time zone.
- Guaranteeing bandwidth for VIP endpoints at the expense of other endpoints.

This method suits hierarchical organizations where fluctuations in quality of the video for high-ranking managers are not acceptable.

In this case you can assign the VIP status to XT Series and Scopia® XT Executive endpoints used by management and configure Scopia® Management not to downgrade their video quality even at times when there is not enough bandwidth. This is achieved by downgrading experience of regular users and using the saved bandwidth to provide premium experience to the VIP endpoints, as shown in [Figure 32: Example of a hierarchical organization](#) on page 89.



**Figure 32: Example of a hierarchical organization**

- Setting bandwidth limits for Scopia® Desktop users.

You can define different maximum bandwidth for Scopia® Desktop authenticated users and guests using Scopia® Management. The maximum bandwidth configured in Scopia® Management cannot exceed the maximum bandwidth configured on a Scopia® Desktop to which the users connect. For more information see *Administrator Guide for Scopia® Management*.

- Setting bandwidth limits for Scopia® Streaming and Recording

In the Media Node configuration of Scopia® Streaming and Recording, you can control the amount of bandwidth used for caching Media Node recordings from one zone to another to not fill up the WAN pipe.

- Rejecting calls upon reaching the maximum bandwidth.

You can use your Scopia® Management to setting the bandwidth limits for calls across locations, or the bandwidth dedicated to calls within a location and defining the system behavior. For more information see *Administrator Guide for Scopia® Management*.

9. Finally, you need to add margins to make sure that even in poor network conditions video quality does not drop below the standard you decided on.

Consider your organization's culture and practices: how tolerant will videoconference participants be to noticeable fluctuations in video quality? If participants, especially VIP

endpoint owners, do not expect degraded video quality, make sure that the margin you add is enough to guarantee sufficient bandwidth at any time.

**! Important:**

An average margin is 20% of your fine-tuned estimation.

**Related links**

[Considerations for Choosing your Scopia® Solution](#) on page 80

## Updating the Dial Plan

A dial plan defines a way to route a call and to determine its characteristics. In traditional telephone networks, prefixes often denote geographic locations. In videoconferencing deployments, prefixes are also used to define the type and quality of a call. For example, dial 8 before a number for a lower bandwidth call, or 6 for an audio-only call, or 5 to route the call to a different branch.

Adding video to a typical, phone-only deployment requires changing the dial plan of your organization.

To plan the update to your current dial plan, you begin with analyzing the existing deployment. There are two types of dial plans as described in [Table 8: Types of dial plans](#) on page 90:

**Table 8: Types of dial plans**

Type	Description	Example
International	The dial plan duplicates exactly the same dialing prefixes as traditional telephone networks, where the prefixes denote geographic locations. Locations are classified: internal extensions, local numbers, long distance and international numbers. Each location class has a prefix class to match.  Result: if users are in different locations, they must dial all prefixes to reach a destination, but if they are in the same location, they can omit the shared prefixes.	+1-212-282-9248 for a destination in USA, where "+" is for an international call, "1" is for the US, "212" is for the state of New York, "282" is for the area in the state, and "9248" is the actual number within the area.
Proprietary	The dial plan uses proprietary prefixes created for destinations inside your organization that replace traditional external prefixes which can be very long.  Result: A user dials a short combination of a prefix and an extension.	49248, for a destination in USA, where "4" denotes the country, the state and the area and "9248" is the actual number within the area.

When you add videoconferencing to your existing deployment, every video user has at least two devices: a regular audio phone, which has a defined number, and one or several new

videoconferencing endpoints. Your task is, essentially, deciding what number to assign to the videoconferencing endpoints.

You can define the dial plan for the video device in one of the following ways:

- Using ID dialing (forking).

The user has only one number (ID) for all devices assigned; it may be a phone, a Scopia® XT Executive, a Scopia® Desktop Client and a Scopia® Mobile device. When this number is dialed, all devices ring. The user takes the call on the device most suitable at this moment. The type of the call and its quality depend on the device used to answer the call. The moment the user takes the call, the other devices stop ringing. For example, you dial 6789 to reach a user, and both his phone and Scopia® XT Executive start ringing. If the user accepts the call on his phone, he joins the videoconference with audio only. If the user accepts the call on his Scopia® XT Executive, he joins the videoconference with audio and video in HD at up to 1080p at 60 frames per second.

This is the simplest dial plan from the end-user perspective, as people only need to remember one number, and they always reach users wherever they may be. However, this method may require more time to implement.

**! Important:**

This option may require upgrading your dial plan system if your current system does not support ID dialing.

- Assigning a prefix for the video device.

The user keeps the old number for the phone and is assigned a prefix for the videoconferencing endpoint. You may add one prefix for all videoconferencing endpoints or separate prefixes for different types of videoconferencing endpoints assigned to this user. For example, to call a user on his phone, you need to dial 6789; to reach him on his Scopia® XT Executive, you must dial 11-6789, because 11 is the prefix for his videoconferencing endpoint.

- Assigning a separate number for the video device.

The user has two different numbers: one for the phone and one for the videoconferencing endpoint. For example, to call a user on his phone, you need to dial 6789; to reach him on his Scopia® XT Executive, you must dial 1234.

**Table 9: Adding video to an existing telephone dial plan**

	Phone number	ID dialing	Prefix for video endpoint	Separate number for video endpoint
Proprietary dial plan	6789	6789	11-6789	1234
International dial plan	1-212-282-6789	1-212-282-6789	11-1-212-282-6789	1-212-282-1234
User experience		Users need to remember only one number for all devices.	Users must remember the main number and one or more prefixes.	Users need to remember a number for every assigned device.

#### Related links

[Considerations for Choosing your Scopia® Solution](#) on page 80

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## Setting WAN Bandwidth Limits

Avaya Scopia® Management includes a bandwidth management functionality which enables administrators to set limits on WAN bandwidth usage, and trigger system alerts when that usage rises above a defined threshold. You can also define the system behavior when the bandwidth limit has been reached.

This powerful feature enables administrators to monitor and manage WAN bandwidth usage and keep it under a defined limit at all times.

#### Related links

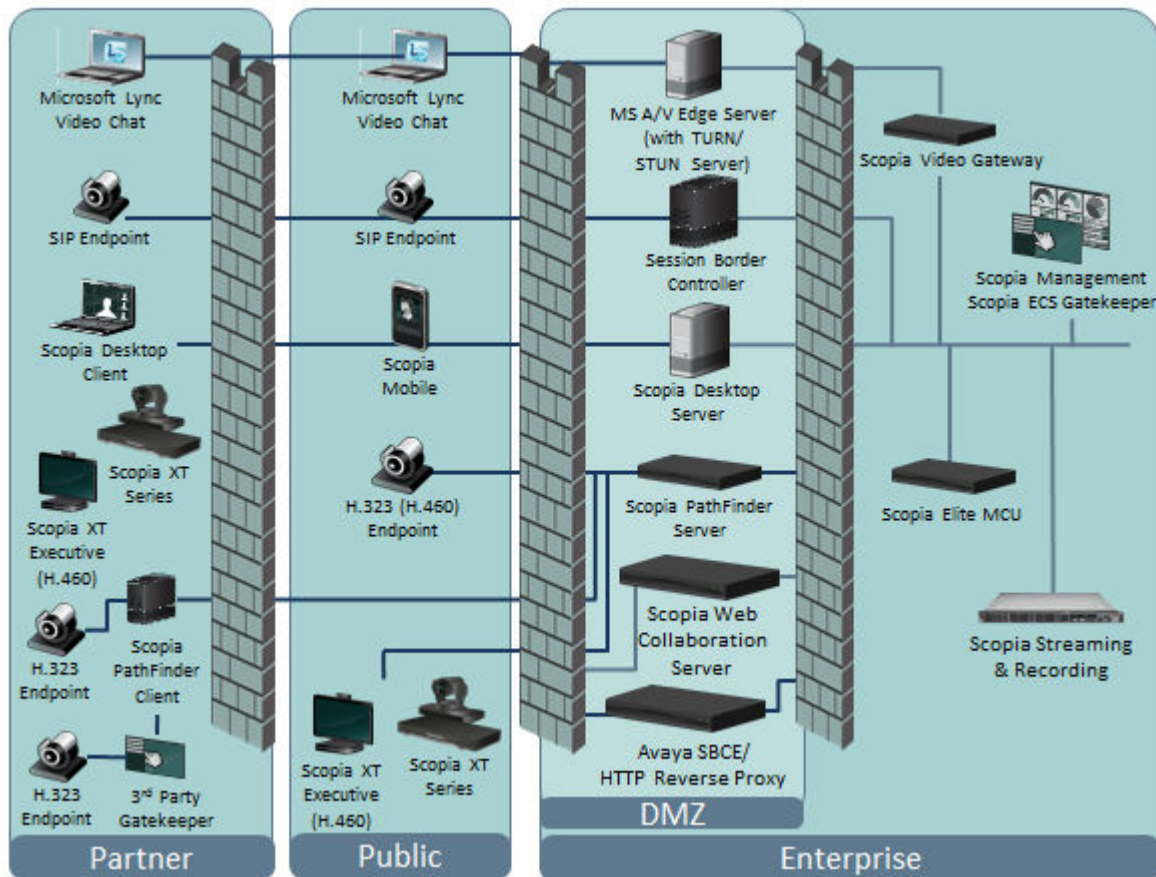
[Considerations for Choosing your Scopia® Solution](#) on page 80

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## Choosing Firewall and NAT Traversal in the Scopia® Solution

The Scopia® Solution provides a number of firewall and NAT traversal options allowing remote endpoints and clients to securely access the organization's protected network and initiate or join videoconferences. For a full description of Scopia® Solution products, see [Components of the Scopia® Solution](#) on page 14.

[Figure 33: Firewall and NAT traversal in the Scopia® Solution](#) on page 93 illustrates how these components interact with the means for protecting the organization against intrusive attempts:



**Figure 33: Firewall and NAT traversal in the Scopia® Solution**

- Remote H.323–standards endpoints can directly and securely dial into a meeting or an endpoint via Scopia® PathFinder that provides a complete firewall and NAT traversal solution for H.323 deployments:

This includes:

- XT Series endpoints that are registered to PathFinder server via H.323 (with or without H.460)
- H.460 compliant endpoints that are registered to PathFinder server
- Guest endpoints (unregistered H.323 endpoints)
- Multiple endpoints (can include non-H.460 endpoints) at a remote site that use Scopia® PathFinder client as a proxy to communicate with PathFinder server. This is useful if, for example, the organization has insufficient IP addresses available or if they have non-H.460 endpoints.

Other key features of Scopia® PathFinder for seamless and intuitive connectivity between enterprises, partners, and home workers include:

- Full compatibility with Avaya Scopia® ECS Gatekeeper features such as enhanced dial plan, hierarchy, conference hunting, CDR records, and API for integration.

- Solving enterprise and remote site traversal issues without reconfiguring current security measures in existing firewalls.
- Using PathFinder server in a single or dual NIC configuration depending on the customer security policy and firewall utilization.
- URI dialing (for details, see [URI Dialing Functionality](#) on page 70).
- Remote XT Series SIP endpoints can use the Avaya Session Border Controller for Enterprise (Avaya SBCE) to securely traverse the organization's firewall and call into a meeting or an endpoint. The Avaya SBCE only supports remote workers using registered endpoints that are controlled by the enterprise.

For information on the Avaya SBCE, see *Avaya Session Border Controller for Enterprise Overview and Specification*. For configuring the XT Series SIP endpoints and Avaya SBCE to work together, see the *Deployment Guide for Avaya Scopia® XT Series* and *Administering Avaya Session Border Controller for Enterprise*.

**\* Note:**

Avaya has tested the Acme Packet session border controller for interoperability with the Scopia® Solution. For interoperability with other third party SBCs, contact Avaya Support.

Other key features of the Avaya SBCE include support of Far End Camera Control (FECC) and Binary Floor Control Protocol (BFCP).

- Scopia® Desktop Clients and Scopia® Mobile devices have their own secure traversal methods and are connected directly to the Scopia® Desktop server located in the DMZ.
- Streaming clients use the Avaya SBCE reverse proxy functionality (or Avaya authorized, third party proxies) to connect the Media Node and Manager of the Scopia® Streaming and Recording server. For a list of third party reverse proxies, see *Administration Guide for Avaya Scopia® Streaming and Recording server*.

A reverse proxy is a web server that terminates connections with clients and makes new connections to backend servers on their behalf. A backend server is defined as a server to which the reverse proxy makes a connection to fulfill the request from the client. These backend servers can take various forms, and reverse proxy can be configured differently to handle each of them.

- Remote Microsoft Lync clients traverse firewalls using the Microsoft Audio/Video (MS A/V) Edge Server. The server integrates the TURN/STUN which enables remote endpoints to securely access the organization network. With the Scopia® Video Gateway bridging between Lync and H.323 networks, remote Microsoft Lync clients can join an H.323 videoconference.

### Related links

[Considerations for Choosing your Scopia® Solution](#) on page 80

# Chapter 4: Standalone Scopia® Solution Deployments

The various components of the Scopia® Solution can be combined to fit the existing network topology and the video requirements of the organization. This section details several generic Scopia® Solution deployments in different types of organization.

For details of how to add Scopia® Solution's powerful videoconferencing features to existing Avaya deployments, see [Integrating Scopia® Solution with Avaya Solutions](#) on page 113.

## Related links

[Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95

[Solution 2: Complete Centralized Videoconferencing](#) on page 99

[Solution 3: Large Centralized Videoconferencing](#) on page 102

[Solution 4: Large Distributed Videoconferencing](#) on page 107

[Solution 5: Video Platform for Cloud Services](#) on page 110

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## Solution 1: Small Medium Business Solution for Videoconferencing

The Small Medium Business (SMB) solution brings high quality videoconferencing at a price that is significantly lower than typical business video deployments.

## Related links

[Standalone Scopia® Solution Deployments](#) on page 95

[Features of the Small Medium Business Solution for Videoconferencing](#) on page 95

[Limitations of the Small Medium Business Solution for Videoconferencing](#) on page 98

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## Features of the Small Medium Business Solution for Videoconferencing

The Small Medium Business (SMB) Solution offers a full HD video experience to businesses of approximately 10 to 50 or more employees, with perhaps one or more meeting rooms and some

remote desktop and mobile users. It is both simple to deploy, and it has an easy administration control.

The SMB solution features the Avaya Scopia® XT Series SMB Edition, which has two central components: a Avaya Scopia® XT Series model with a license to enable its embedded MCU for hosting videoconferences on the device, and the Scopia® XT Desktop server which enables PC-based Scopia® Desktop Clients and mobile users running Scopia® Mobile to join the videoconference from inside and outside the organization (see [Figure 34: SMB Solution with Avaya Scopia® XT Series SMB Edition](#) on page 97).

When an XT Series model hosts a videoconference, you can purchase a license for up to four participants or up to nine participants in a conference (including the XT Series device itself). You can upgrade from one license to another via the Avaya Licensing Portal.

In summary, the capacity of the SMB solution is as follows:

**Table 10: Capacity of SMB Solution for Videoconferencing**

Max video users	Max simultaneous participants per organization	Max simultaneous point-to-point calls	Number of MCUs
10 to 50	4 or 9	Dependent on number of endpoints	1 built-in MCU in the Avaya Scopia® XT Series SMB Edition

The XT Series represents an innovative and unique combination of a room system endpoint with an embedded MCU, enabling you to set up a videoconferencing deployment with minimal budgetary requirements. It also includes local recording on a USB storage device connected to the XT Codec Unit.

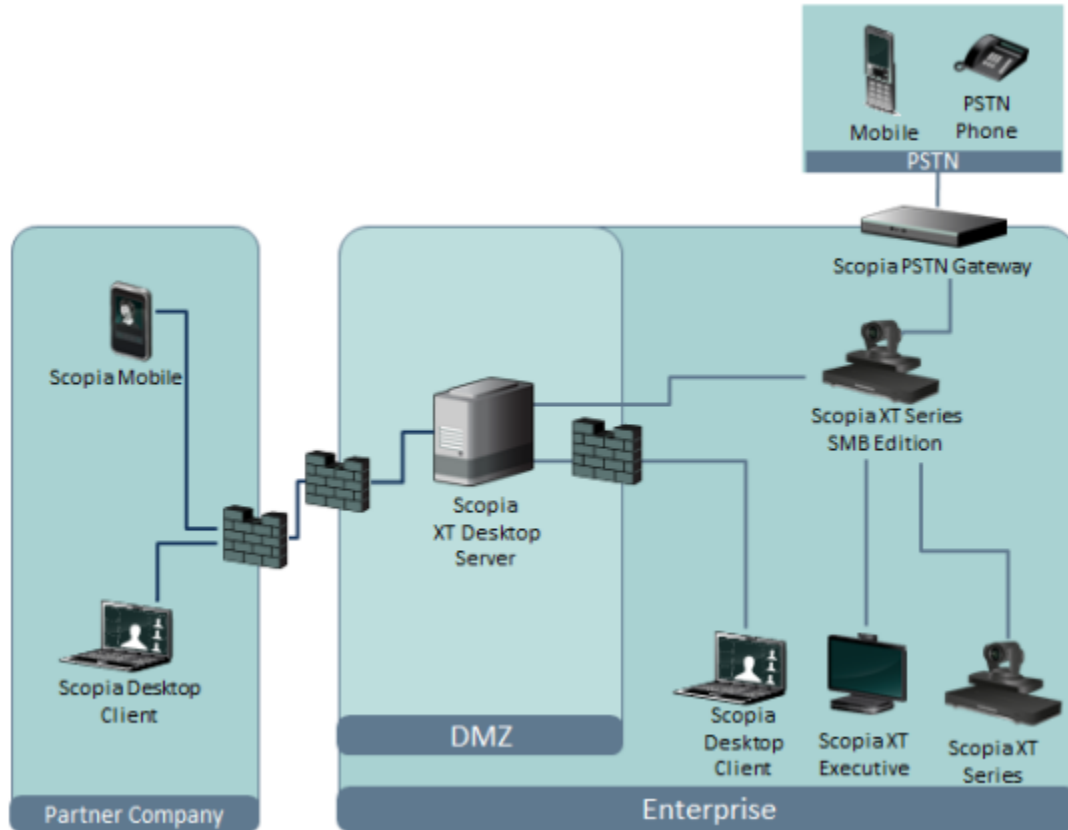
An H.323 or SIP endpoint within the firewall, like the Scopia® XT Executive or the XT Series or another H.323 compliant endpoint can also connect to the hosting Avaya Scopia® XT Series SMB Edition by dialing its extension or IP address ([Figure 34: SMB Solution with Avaya Scopia® XT Series SMB Edition](#) on page 97). For more information about the list of endpoints compatible with the XT Series, see the *Reference Guide for Codec Interoperability Guide for Avaya Scopia® XT Series*.

The Scopia® XT Desktop comes with built-in NAT and firewall traversal (see [Figure 34: SMB Solution with Avaya Scopia® XT Series SMB Edition](#) on page 97), enabling secure remote connections from Scopia® Mobile or Scopia® Desktop Clients to be made to the conference hosted on the XT Series.

Scopia® Mobile and Scopia® Desktop Clients can be distributed freely without any licensing restrictions. Scopia® Mobile runs on an iPhone or iPad, while Scopia® Desktop Client runs on a PC or Mac with a standard internet browser, making it easy to invite partners or investors to join videoconferences with no additional cost. A meeting organizer simply distributes the web address of the Scopia® XT Desktop server to invite participants to a video call.

You also have the option to connect to PSTN environments, enabling participants with a PSTN phone or a mobile phone to connect to a videoconference using the Scopia® Gateway for PSTN.

This makes the SMB solution dependent on almost no ancillary infrastructure, just one general purpose server, making it easy to install, benefitting from high-quality videoconferencing, and making it perfectly suited to small and medium-sized organizations working with tight budgets and small-scale infrastructure needs.



**Figure 34: SMB Solution with Avaya Scopia® XT Series SMB Edition**

In deployments where you need to connect endpoints in the open internet, place the Avaya Scopia® XT Series in the DMZ and connect all endpoints directly to it, as shown in [Figure 35: SMB Solution with the Avaya Scopia® XT Series in the DMZ](#) on page 98.

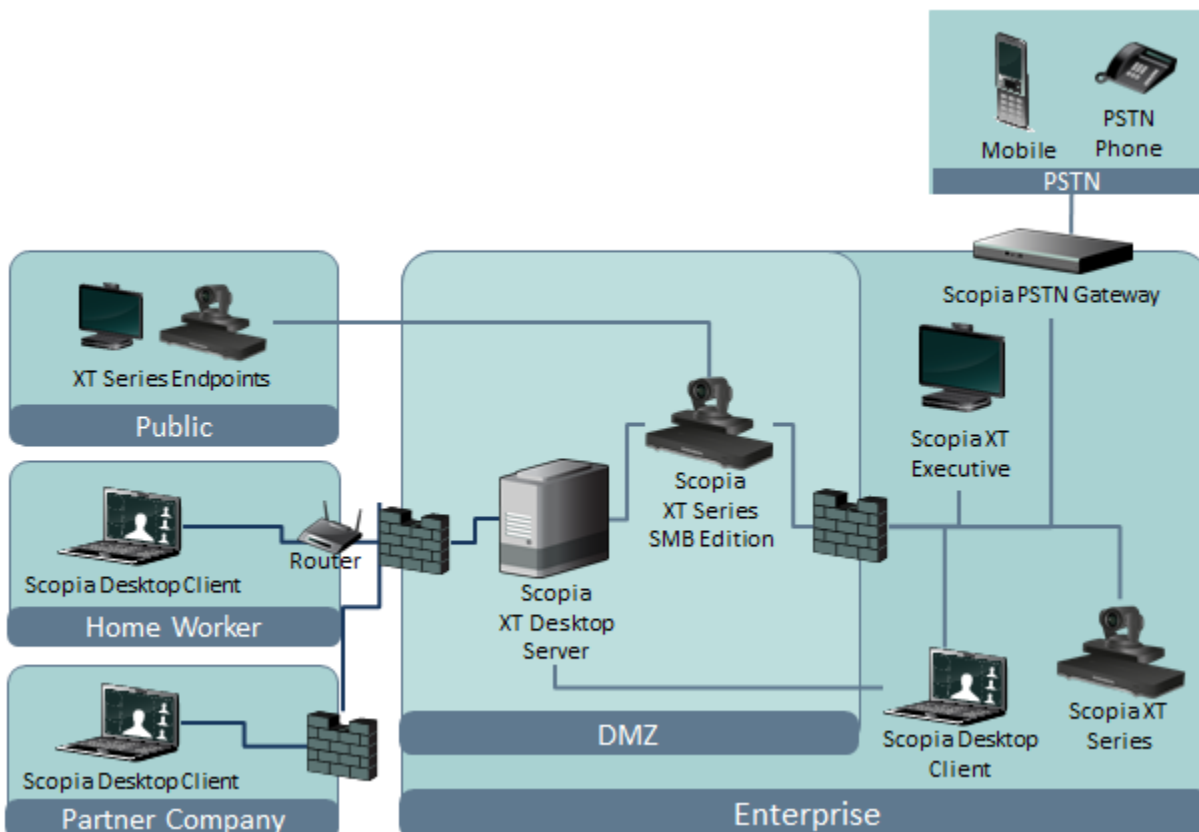


Figure 35: SMB Solution with the Avaya Scopia® XT Series in the DMZ

#### Related links

[Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95

## Limitations of the Small Medium Business Solution for Videoconferencing

While the SMB solution offers compelling value, it has a number of limitations:

- This is not a scalable solution. The maximum number of participants in a conference for the Avaya Scopia® XT Series SMB Edition is nine, and it can only hold one conference at a time. Moving to more simultaneous conferences requires purchasing a different standalone MCU (like the Scopia® Elite MCU).
- For complete SVC, FEC and H.264 High Profile support, use any of the Avaya Scopia® XT Series except the Scopia® XT1200 which does not yet benefit from SVC and H.264 High Profile (see [Superior Video Quality](#) on page 64).
- There is no network central management, including intelligent bandwidth management, address book synchronizations or remote upgrading. These features are available with the Avaya Scopia® Management.

- Limited user experience:
  - The layout of the videoconference screen cannot be customized.
  - There is no integration with unified communications systems like Microsoft Lync, Microsoft OCS, or IBM Sametime.

#### Related links

[Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95

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## Solution 2: Complete Centralized Videoconferencing

The Complete Centralized Videoconferencing solution fits larger organizations, bringing a scalable solution for multiple simultaneous conferences. It delivers higher video quality, improved user experience, and the ability to stream and record videoconferences.

#### Related links

[Standalone Scopia® Solution Deployments](#) on page 95

[Features of Complete Centralized Videoconferencing Solution](#) on page 99

[Limitations of the Complete Centralized Videoconferencing Solution](#) on page 102

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## Features of Complete Centralized Videoconferencing Solution

The Complete Centralized Videoconferencing solution offers the full range of Scopia® Solution features, particularly multiple simultaneous conferences, by deploying the minimal complete set of videoconferencing infrastructure at the company's site ([Figure 36: Complete Centralized Videoconferencing solution](#) on page 101).

The Complete Centralized solution is suited for companies with a single main branch containing several meeting rooms. The capacity of this solution is as follows:

**Table 11: Capacity of Complete Centralized Videoconferencing solution**

Max video users	Max simultaneous participants per organization	Max simultaneous point-to-point calls	Number of MCUs
1,500	120 or 160	Depending on the number of endpoints	1 or 2

#### Important:

This solution is highly scalable. To increase capacity, you can add more of the same components like extra MCUs and Scopia® Desktop servers.

This solution also supports a mix of full high definition (HD) calls and standard definition calls, where resources can be allocated dynamically. A user connecting in HD is equivalent to four connections in standard definition. Therefore an organization can support a mix of SD and HD users until the full capacity of the device is reached.

As part of its inherent scalability, the single server located in the DMZ can be separated into separate servers as required. For more information, see the Large Centralized solution ([Solution 3: Large Centralized Videoconferencing](#) on page 102).

Improved video quality is provided via the Scopia® Elite MCU's implementation of scalable video coding (SVC) and forward error correction (FEC) algorithms, delivering higher quality and smoother video for which Scopia® Solution's products are well-known. Scopia® Elite 6000 Series MCU also supports H.264 High Profile for enabling higher quality calls over lower bandwidths.

The user interface of videoconferences can also be customized with several advanced features, including changing the layout presentation of multiple video streams, and scrolling back and forth on a data presentation independently of the slides displayed by a lecturer.

The Complete Centralized Videoconferencing solution offers the complete feature set of the Scopia® Solution, including:

- Integrate the Scopia® Desktop server with its built-in firewall traversal methods. Scopia® Desktop Client and Scopia® Mobile devices connect directly to the server in the DMZ, enabling their users to join videoconferences.
- Stream video calls to a client using Scopia® Streaming and Recording.
- Record video calls using Scopia® Streaming and Recording, or record locally to a USB storage device attached to an XT Series endpoint.
- Deploy the Avaya SBCE or an HTTP reverse proxy if users access recording and streaming outside the corporate network. For more information on the Avaya SBCE, see *Avaya Session Border Controller for Enterprise Overview and Specification*. For a list of Avaya-authorized proxies, see the *Administration Guide for Avaya Scopia® Streaming and Recording server*.
- Catch up with slides that were previously presented in video call using the Scopia® Content Slider. This feature stores presented slides on the client side, to give control of the order and pace of presentation to conference participants.
- Integrate with Avaya Scopia® Management which manages the organization's network, including full integration with the organization's active directory and intelligent bandwidth management.
- Schedule video meetings using integration with Microsoft Outlook, and reserve the necessary resources and bandwidth for the call.
- Support complete firewall traversal solutions, allowing remote endpoints (H.323, SIP, and Microsoft Lync clients) to initiate or join videoconferences ([Choosing Firewall and NAT Traversal in the Scopia® Solution](#) on page 92).
- Include remote ISDN (H.320) endpoints in calls via the Scopia® Gateway.
- Integrate with Avaya UC deployments ([Integrating Scopia® Solution with Avaya Solutions](#) on page 113).

- Integrate video functionality with other UC tools such as IBM Sametime or Alcatel-Lucent OmniTouch My Teamwork.
- Secure calls across zones using powerful encryption standards.
- Assign dial numbers to video endpoints and route calls to endpoints using Avaya Scopia® ECS Gatekeeper.
- Assign virtual rooms to users and intelligently route a user's dialed number to their virtual room.

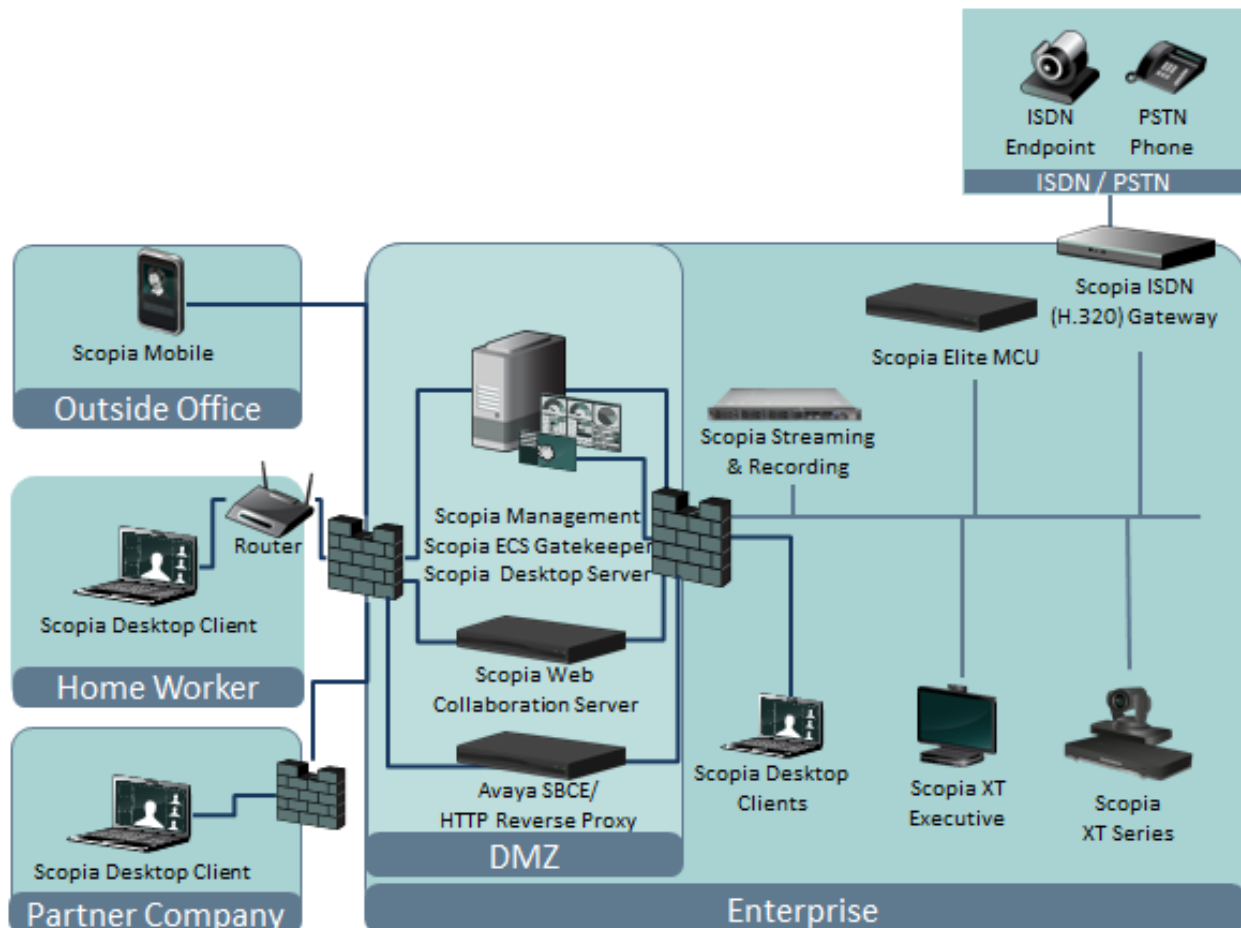


Figure 36: Complete Centralized Videoconferencing solution

#### Related links

[Solution 2: Complete Centralized Videoconferencing](#) on page 99

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## Limitations of the Complete Centralized Videoconferencing Solution

There are a number of limitations of the Complete Centralized Videoconferencing solution:

- A centralized deployment requires all calls to be directed to the MCUs located in one place. This puts a strain on bandwidth if videoconferences involve many remote endpoints.
- This solution does not include support for high availability through redundant infrastructure. Nevertheless, since this is a scalable solution, redundancy can be added if required. For more information, see the alternative solution deployments in this chapter.
- The maximum number of participants tested and approved for a single videoconference is 500.
- This solution supports up to 10 simultaneous HD recordings and streams up to 1,500 viewers at once.

### Related links

[Solution 2: Complete Centralized Videoconferencing](#) on page 99

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## Solution 3: Large Centralized Videoconferencing

The Large Centralized Videoconferencing solution is aimed at large organizations. This solution can also be used by service providers, offering a scalable solution with high availability and service preservation for up to 400,000 users.

### Related links

[Standalone Scopia® Solution Deployments](#) on page 95

[Features of the Large Centralized Videoconferencing Solution](#) on page 102

[Integrating Unified Communications into Large Centralized Solutions](#) on page 104

[Limitations of the Large Centralized Videoconferencing Solution](#) on page 106

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## Features of the Large Centralized Videoconferencing Solution

The Large Centralized Videoconferencing solution builds on the scalability of the Complete Centralized solution by adding more capacity and strengthening availability and service preservation, enabling commitments to promised levels of availability.

The Large Centralized solution is suited for service providers or large enterprises whose video infrastructure is deployed in the main branch with several meeting rooms. The capacity of this solution is as follows:

**Table 12: Capacity of Large Centralized Videoconferencing solution**

Max video users	Max simultaneous multi-point participants	Max simultaneous point-to-point calls	Number of MCUs
400,000	5,000	Depending on the number of endpoints	40

**! Important:**

This solution is highly scalable. To increase capacity, you can add more of the same components like extra MCUs and Scopia® Desktop servers.

This solution also supports a mix of full high definition (HD) calls and standard definition calls, where resources can be allocated dynamically. A user connecting in HD is equivalent to four connections in standard definition. Therefore an organization can support a mix of SD and HD users until the full capacity of the device is reached.

The features of the Large Centralized Videoconferencing solution includes all those from the Complete Centralized Videoconferencing solution ([Features of Complete Centralized Videoconferencing Solution](#) on page 99) with several important additions:

- A single videoconference can accommodate far more participants, more than the capacity of two MCUs, by cascading several MCUs in a single conference.

The maximum supported number of participants in a single videoconference is 500.

- Redundancy of key components including:
  - Avaya Scopia® Management for high availability
  - Avaya Scopia® ECS Gatekeeper for scalability and high availability
  - Scopia® Elite MCU for scalability and high availability
  - Avaya Scopia® PathFinder servers can be clustered behind a load balancing system for scalability and high availability.
  - Scopia® Desktop servers are clustered behind the same load balancer for scalability and high availability.

This solution also accommodates the deployment of one or more Scopia® Desktop servers in the private network to facilitate internal calls and meetings.

- Scalability of Scopia® Streaming and Recording Media Nodes. The maximum number of HD recordings is 1,000. The maximum number of streaming viewers is 100,000.
- Scalability and high availability of Scopia® Web Collaboration servers.
- Avaya Scopia® TIP Gateway for scalability and high availability

For more information on configuring scalability and high availability, see [Planning Scalability and High Availability in the Scopia® Solution](#) on page 56.

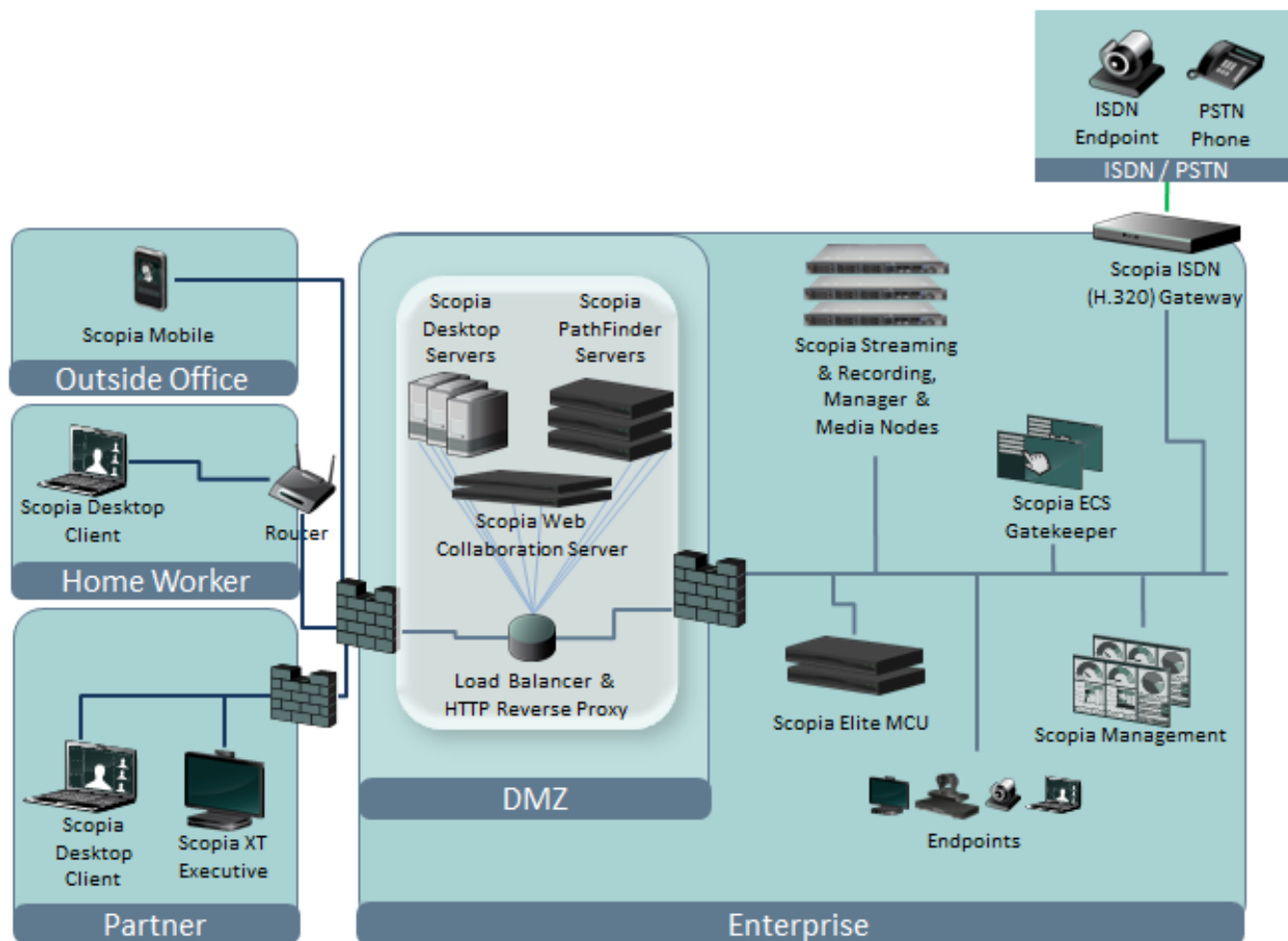


Figure 37: Large Centralized Videoconferencing Solution

## Related links

[Solution 3: Large Centralized Videoconferencing](#) on page 102

## Integrating Unified Communications into Large Centralized Solutions

Unified communications (UC) solutions offer text chat or instant messaging, voice and video communications, and whiteboard sharing across networks. For details of integrating with Avaya's unified communications deployments, see [Integrating Scopia® Solution with Avaya Solutions](#) on page 113.

Scopia® Solution's supported third party UC integrations are Microsoft Lync (or its predecessor, Microsoft Office Communicator) and IBM Sametime with IBM Lotus Notes. For more information on the different dimensions of each integration, see [Integrating with Third Party Unified Communications Solutions](#) on page 44.

**! Important:**

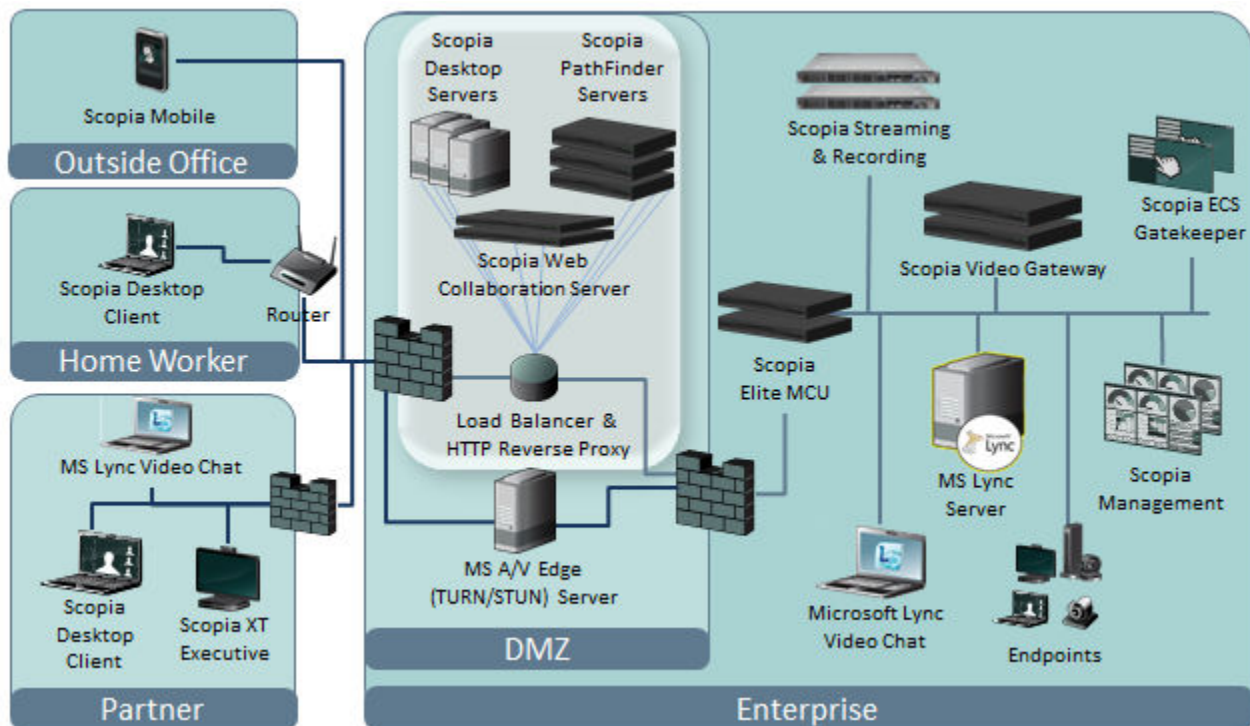
This section highlights the example of the Large Centralized Solution, though the other solutions can also be integrated with each UC deployment.

In addition, the full extent of third party servers required for UC deployments is not listed here. For a complete list of UC servers required, refer directly to the vendor's documentation. Deployment diagrams focus on their integration with Scopia® Solution components only.

- Integration with Microsoft Lync UC

Integrating a Lync deployment with the Scopia® Solution enables videoconferences between H.323 endpoints and Microsoft Lync clients using the MS A/V Edge Server with TURN/STUN and ICE Servers, located in the DMZ (see [Figure 38: Microsoft Lync integration with Large Centralized Solution](#) on page 105).

It also requires the deployment of the Scopia® Video Gateway to be installed in the enterprise network (see [Figure 38: Microsoft Lync integration with Large Centralized Solution](#) on page 105).



**Figure 38: Microsoft Lync integration with Large Centralized Solution**

Calls from Lync clients are routed through the Microsoft servers, the Scopia® Video Gateway, and the MS Lync Server to the relevant H.323 endpoints or MS Lync clients, and vice-versa. Avaya Scopia® Management manages the deployment.

- Integration with IBM Sametime UC

Integrating an IBM Sametime deployment enables videoconferences between H.323 endpoints and IBM Sametime clients using the IBM Sametime TURN/STUN in the DMZ (see [Figure 39: IBM Sametime integration with Large Centralized solution](#) on page 106).

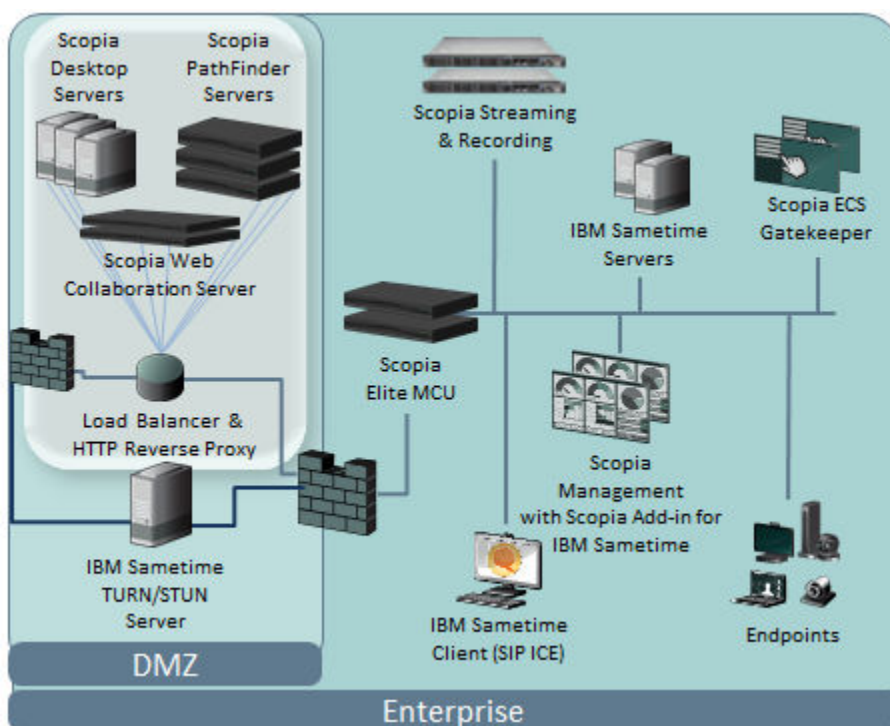


Figure 39: IBM Sametime integration with Large Centralized solution

#### Related links

[Solution 3: Large Centralized Videoconferencing](#) on page 102

## Limitations of the Large Centralized Videoconferencing Solution

The limitations of the Large Centralized solution are:

- A centralized deployment requires all calls to be directed to the MCUs located in one place. This puts a strain on bandwidth if videoconferences involve many remote endpoints.
- The maximum number of participants tested and approved for a single videoconference is 500.

#### Related links

[Solution 3: Large Centralized Videoconferencing](#) on page 102

## Solution 4: Large Distributed Videoconferencing

The Large Distributed Videoconferencing solution is aimed at large organizations with multiple branches, offering a distributed, scalable solution with high availability and service preservation for up to 400,000 users.

### Related links

[Standalone Scopia® Solution Deployments](#) on page 95

[Features of the Large Distributed Videoconferencing Solution](#) on page 107

[Limitations of the Large Distributed Videoconferencing Solution](#) on page 109

## Features of the Large Distributed Videoconferencing Solution

The Large Distributed Videoconferencing solution builds on the inherent scalability of the Scopia® Solution by geographically distributing the same video capacity over several branches within a VPN, opening to the possibility of significant savings in WAN bandwidth costs.

The Large Distributed solution is suited for large enterprises structured as a headquarters and several branches. Typically, each branch would have one or more meeting rooms, and the headquarters would have several meeting rooms, where the video infrastructure is distributed throughout the headquarters and the branches. The capacity of this solution is as follows:

**Table 13: Capacity of Large Distributed Videoconferencing solution**

Max video users	Max simultaneous multi-point participants	Max simultaneous point-to-point calls	Number of MCUs
400,000	5,000	Depending on the number of endpoints	40

### ! Important:

This solution is highly scalable. To increase capacity, you can add more of the same components like extra MCUs and Scopia® Desktop servers.

This solution also supports a mix of full high definition (HD) calls and standard definition calls, where resources can be allocated dynamically. A user connecting in HD is equivalent to four connections in standard definition. Therefore an organization can support a mix of SD and HD users until the full capacity of the device is reached.

The main advantage of a distributed architecture is felt when a videoconference includes participants from several locations, like the headquarters, several branches, and endpoints located outside the VPN. Avaya Scopia® Management's intelligent bandwidth management ensures that the WAN bandwidth costs are minimized according to the configuration set up by the system administrators.

In Large Distributed solutions ([Figure 40: Large Distributed Videoconferencing Solution](#) on page 109):

- Branches of the enterprise are connected to the headquarters via a secured VPN.

- Each branch can have its own local MCU deployment if required. This may be one or more MCU units, depending on the branch's requirements for call capacity and high availability. Avaya Scopia® Management views the set of MCUs as a single virtual MCU, so the management is transparent to administrators.
- Each branch can have its own local Scopia® Desktop server and Scopia® Web Collaboration server deployment if required. This can be more than one server depending on the branch's requirements for call capacity and high availability.
- Each branch can have its own local Avaya Scopia® PathFinder server.
- Each branch can have its own local Media Node for Scopia® Streaming and Recording.
- Each branch can have its own Lync deployment and Scopia® Video Gateway. Federated Lync clients are authenticated by the Microsoft A/V Edge Server and connected to the enterprise network as if they were part of it.
- Communicating with remote endpoints outside the organization is handled in the same way as the other deployments, encompassing all types of endpoints ([Choosing Firewall and NAT Traversal in the Scopia® Solution](#) on page 92):
  - H.323 endpoints without H.460 compliance using Scopia® PathFinder client ;
  - H.323 endpoints which support H.460;
  - Scopia® Desktop Clients with their own built-in firewall traversal;
  - MS Lync clients forming a federation of clients;
  - Remote SIP endpoints communicate via a third-party Session Border Controller (SBC).
- The Avaya Scopia® Management's most useful functionality in distributed topologies enables remote management of the entire video infrastructure, including synchronizing with the Active Directory, remote updates of firmware across the enterprise, and advanced dial plans for virtual rooms.

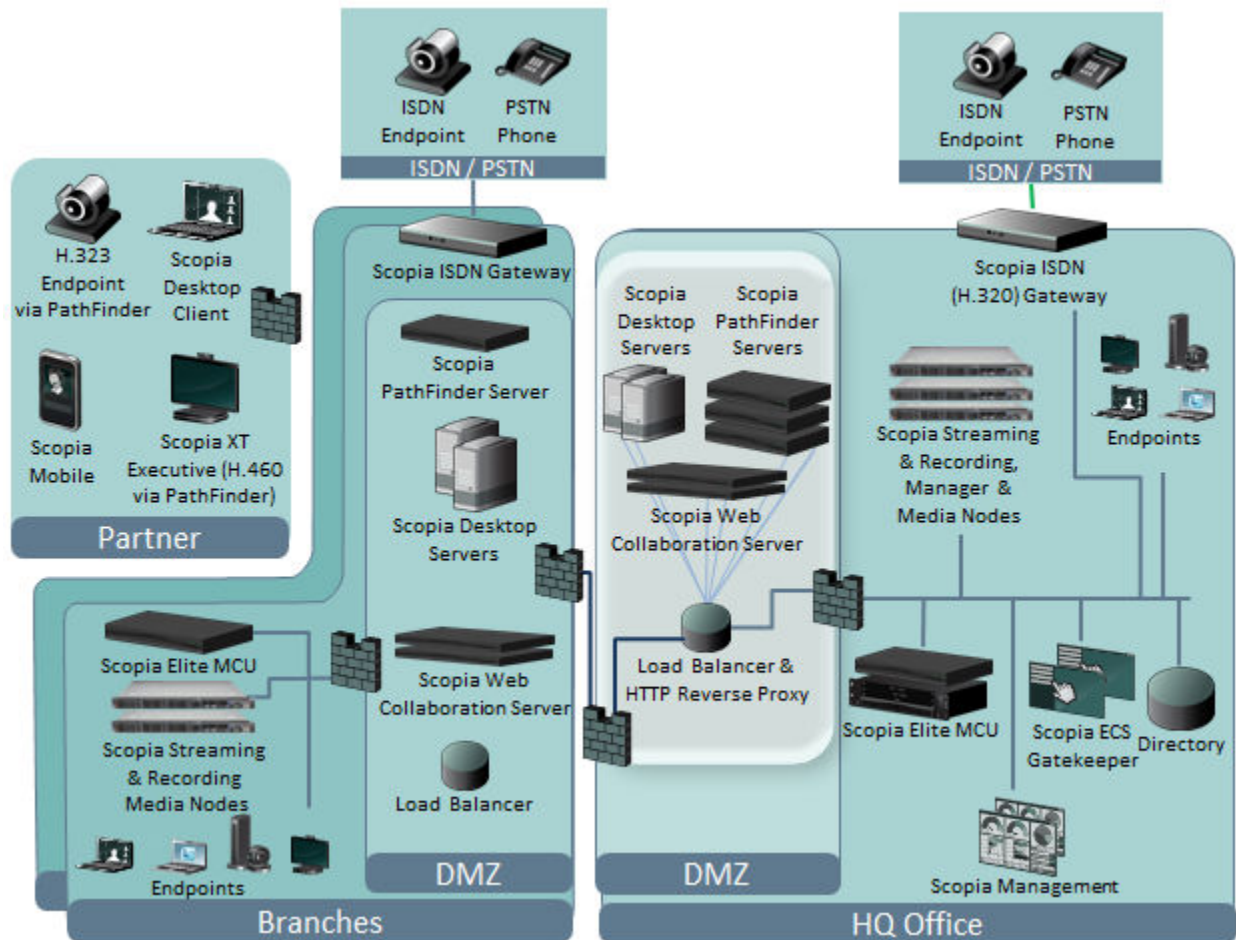


Figure 40: Large Distributed Videoconferencing Solution

**Related links**

[Solution 4: Large Distributed Videoconferencing](#) on page 107

**Limitations of the Large Distributed Videoconferencing Solution**

The limitations of the Large Distributed Videoconferencing solution are:

- Automatic cascading of videoconferences across more than one MCU brings flexibility and low bandwidth in a large enterprise, but it is possible that smaller conferences might be unnecessarily cascaded between different MCUs.
- The maximum number of participants tested and approved for a single videoconference is 500.

**Related links**

[Solution 4: Large Distributed Videoconferencing](#) on page 107

## Solution 5: Video Platform for Cloud Services

The Video Platform for Cloud Services enables service providers to offer hosted video services to their customers. While service providers host the video hardware and infrastructure, their customers can enjoy full HD videoconferencing as a paid service.

Service providers can add high-quality HD videoconferencing to their customers, who can enjoy the benefits of full HD video communications as a paid service. The video infrastructure would remain hosted by the service provider, while their customers deploy only endpoints like personal endpoints, telepresence systems, room systems, PCs or mobile devices.

The Platform for Cloud Services is unique in enabling service providers to share video resources between different organizations. The platform is highly scalable, and has the following maximum capacity:

**Table 14: Capacity of Video Platform for Cloud Services solution**

Max number of video users	Max number of simultaneous multi-point meeting connections	Max number of simultaneous point-to-point calls	Number of MCUs
400,000	5,000	Depending on the number of endpoints	40

### Important:

This solution is highly scalable. To increase capacity, you can add more of the same components like extra MCUs and Scopia® Desktop servers.

This solution also supports a mix of full high definition (HD) calls and standard definition calls, where resources can be allocated dynamically. A user connecting in HD is equivalent to four connections in standard definition. Therefore an organization can support a mix of SD and HD users until the full capacity of the device is reached.

The platform also enables service providers to set up their infrastructure distributed over several sites or hosted in one centralized site. The platform also offers tools for management, monitoring and quick diagnosis of problems, easing the demands on technicians and administrators. It can even be integrated into existing management tools or service portals through a comprehensive set of API's.

The obvious advantage with this deployment is its ability to deliver the highest quality video solutions as a paid service. Service providers can promote superb video communications as an additional service over their competitors, while their customers benefit from videoconferencing without needing to install and maintain the Scopia® Solution infrastructure.

In cloud platform solutions ([Figure 41: Video Platform for Cloud Services Solution](#) on page 111):

- The service provider hosts all the hardware and management systems of the Scopia® Solution. Their enterprise customers can access the full range of HD video features using any video endpoint compliant with SIP or H.323 protocols.

- Scopia® Management enables the sharing of video resources between different organizations, allowing service providers to dynamically allocate resources where needed and ensuring bandwidth management policies are maintained.
- Connectivity to the enterprise is managed over a dedicated VPN or over the public internet using standard firewall traversal protocols such as H.460 and STUN/TURN.
- Privacy is crucial to service providers and their customers. The Platform for Cloud Services enables all communication to be fully secured using standard protocols like H.235 and TLS/SRTP.
- The Scopia® Solution also allows you to integrate with local unified communications deployments that may be present in an enterprise, or even with cloud-based UC offerings like those from Microsoft Lync. For more information, see the *Deployment Guide for Scopia® Video Gateway*.
- Scopia® Solution's field-proven interoperability is another key feature which differentiates it from other solutions. Service Providers need to know their solution works out-of-the-box with all major standards-based endpoints. For a comprehensive interoperability report, see the *Reference Guide for Interoperability of Scopia® Elite MCU or Avaya Scopia® XT Series*.

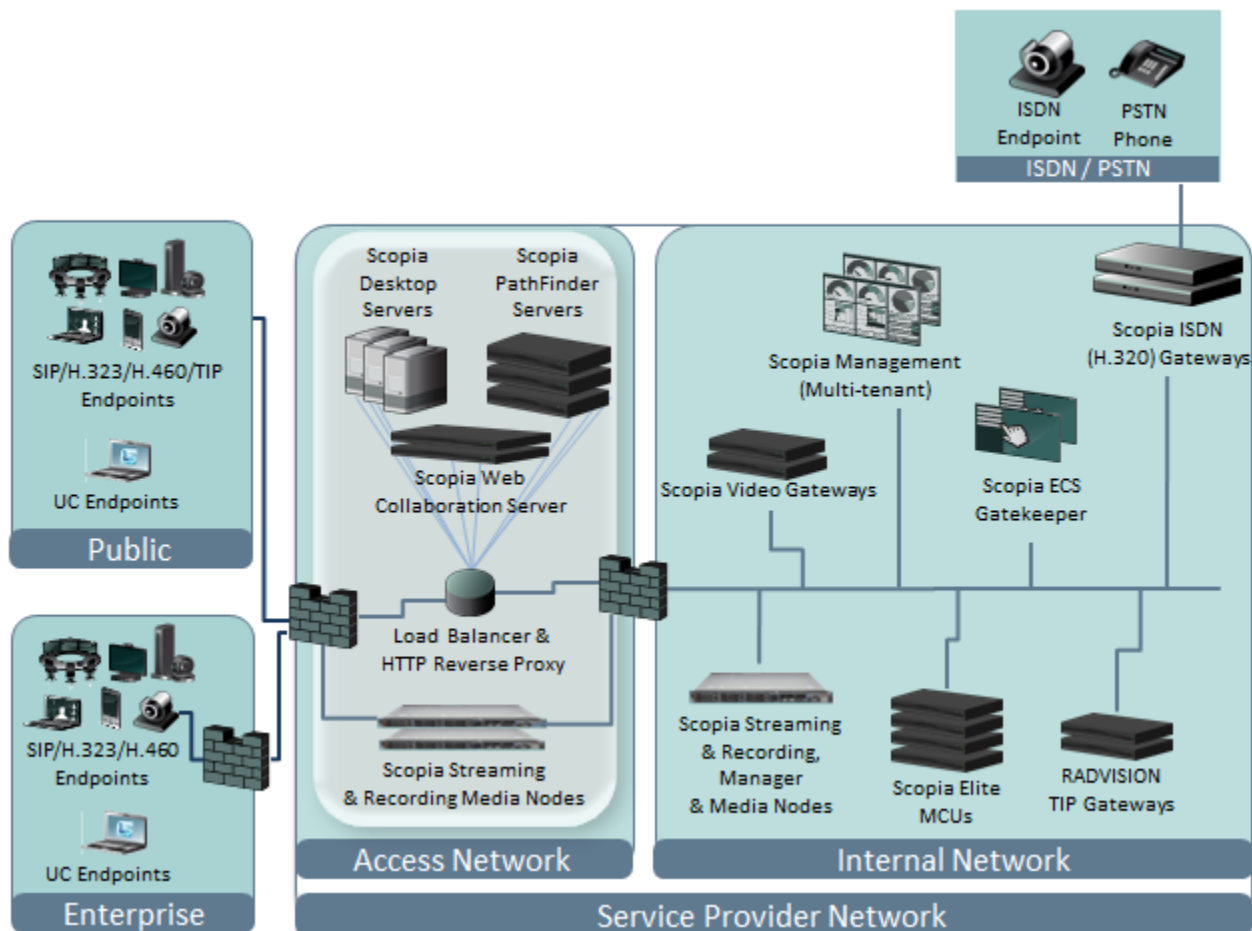


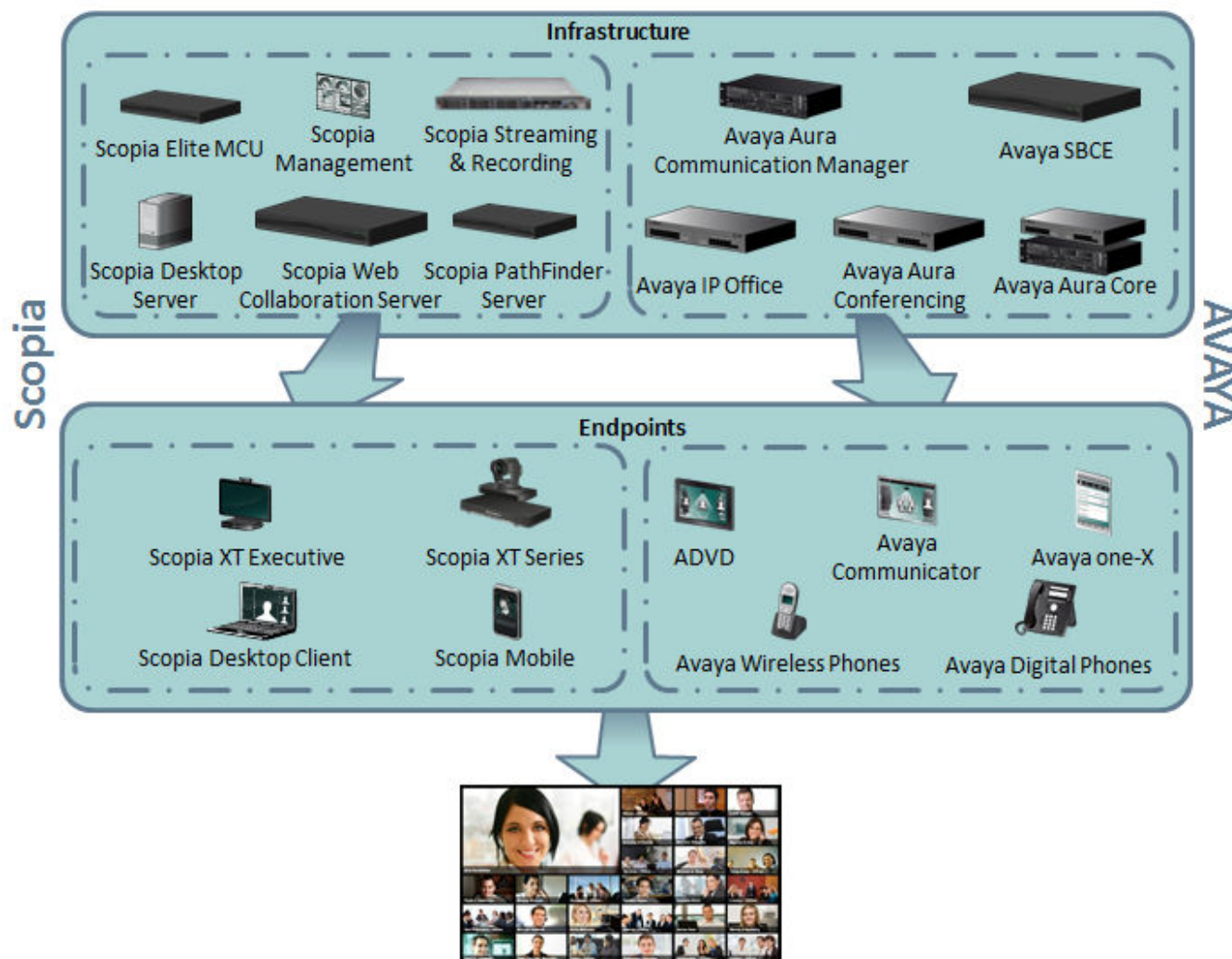
Figure 41: Video Platform for Cloud Services Solution

**Related links**

[Standalone Scopia® Solution Deployments](#) on page 95

# Chapter 5: Integrating Scopia® Solution with Avaya Solutions

The components of Scopia® Solution version 7.7 onwards are part of the Avaya portfolio, working with Avaya unified communications products, including Avaya Aura Core 6.2 and above, Avaya Aura Communication Manager 6.3.10 and above, Avaya Aura Conferencing 8.0, Avaya IP Office Platform 9.1 and 10.0, and Avaya SBCE 6.3 and above. Integrating Scopia® Solution products enhances the existing unified communications infrastructure by adding powerful videoconferencing features.



**Figure 42: Integrating Scopia® Solution and Avaya products for videoconferencing**

For Avaya Aura Core 6.2 (and above), Avaya Aura Communication Manager 6.3.10 (and above), Avaya Aura Conferencing 8.0, and Avaya SBCE 6.3 (and above) deploy the Centralized Videoconferencing Solution.

We recommend to acquaint yourself with the [Standalone Scopia® Solution Deployments](#) on page 95 to understand how the various solution components interact to deliver a cohesive videoconferencing experience.

#### Related links

[Integrating Avaya Aura 6.3.10 Session Manager with Scopia® Solution](#) on page 115

[Integrating Avaya Aura Communication Manager with Scopia® Solution](#) on page 117

[Integrating Avaya Aura Conferencing \(AAC\) 8 with Scopia® Solution](#) on page 118

[Integrating Avaya IP Office with Scopia® Solution](#) on page 120

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## Integrating Avaya Aura 6.3.10 Session Manager with Scopia® Solution

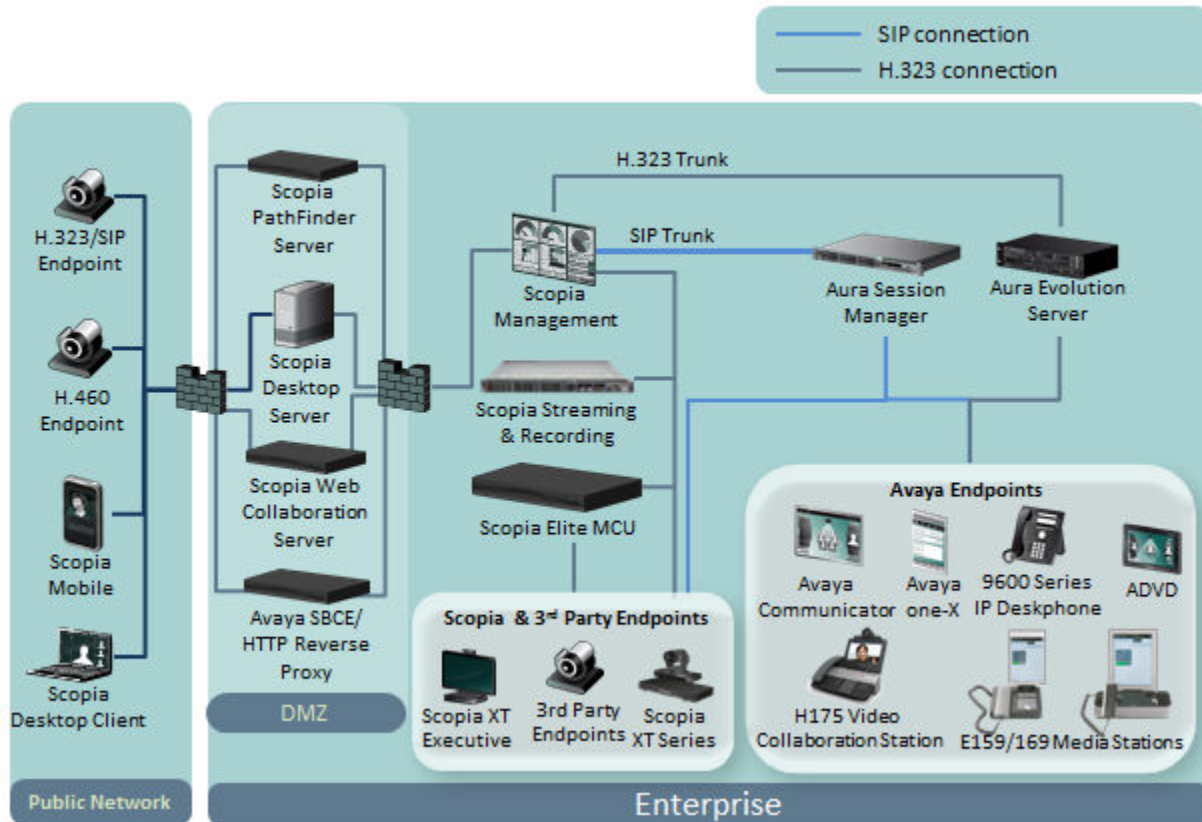
Avaya Aura 6.3.10 is Avaya's unified communications platform for medium size and large organizations, supporting voice, video, messaging, and presence in H.323 and SIP environments, plus many other industry standard communications protocols.

The major components of this platform are Avaya Aura Session Manager, which handles all SIP communications, and Avaya Aura Evolution Server which is responsible for H.323 communications and much of the unified communications functionality: conferencing, centralized voice mail, call transfer, auto attendant, etc.

By integrating Avaya Aura with the Scopia® Solution you can enhance your solution with the following benefits:

- Point-to-point video calls between any Avaya endpoint (both H.323 and SIP) and H.323 endpoints (like XT Series and Scopia® XT Executive endpoints).
- High-end premium videoconferencing experience including continuous presence (CP), control, moderating, high definition (HD).
- Connecting to the outside world: remote H.323 endpoints, H.460 endpoints, Scopia® Desktop Clients, and Scopia® Mobile.
- Scheduling and resource management: you can schedule meetings using integration with Microsoft Outlook. You can also customize meeting invitations to include dialing information for Avaya endpoints.

You can integrate Avaya Aura 6.3.10 with the Centralized Videoconferencing solution as shown in [Figure 43: Integrating Avaya Aura Solution 6.3.10 with the Centralized Videoconferencing Solution](#) on page 116. For information about the Centralized Videoconferencing solution, refer to [Solution 2: Complete Centralized Videoconferencing](#) on page 99.



**Figure 43: Integrating Avaya Aura Solution 6.3.10 with the Centralized Videoconferencing Solution**

As with most Scopia® Solution deployments, Avaya Scopia® Management coordinates all the video network traffic, both H.323 and SIP. Two Aura servers manage SIP and H.323 traffic independently:

- Avaya SIP endpoints register with Avaya Aura Session Manager.
- Avaya H.323 endpoints are registered with the Avaya Aura Evolution Server.
- The Avaya Scopia® XT4000 Series, Avaya Scopia® XT5000 Series, Avaya Scopia® XT7000 Series, and Avaya Scopia® XT Executive work in both SIP and H.323 environments. In an H.323 environment they can register with Scopia® Management's gatekeeper, while in SIP environments, they can register directly with the Aura Session Manager. For maximum flexibility, you can maintain both registrations simultaneously.

For Scopia® Solution components, Avaya Scopia® Management has a single connection to Scopia® Elite MCU to handle both SIP and H.323 endpoints, allowing all endpoints to participate in videoconferences.

Avaya Scopia® Management is connected to Avaya Session Manager using SIP protocol and to Avaya Aura Evolution Server with H.323 protocol. This allows Avaya SIP and H.323 endpoints connect to videoconferences hosted on Scopia® Elite MCU and participate in point-to-point calls between Avaya H.323/SIP endpoints and Scopia® Solution's endpoints, both inside and outside the private network.

Communicating with remote H.323 and H.460 endpoints outside the organization is performed through Avaya Scopia® PathFinder server. Scopia® Desktop Clients and Scopia® Mobile devices

have their own built-in firewall traversal feature and are connected directly to the Scopia® Desktop server located in the DMZ.

For a full description of Scopia® Solution products, refer to [Components of the Scopia® Solution](#) on page 14.

#### Related links

[Integrating Scopia® Solution with Avaya Solutions](#) on page 113

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## Integrating Avaya Aura Communication Manager with Scopia® Solution

Avaya Aura Communication Manager 6.3.10 is an IP telephony platform that provides unified communications solutions for H.323. It is suitable for organizations of all sizes. Avaya Aura Communication Manager delivers audio capabilities as well as PBX features, high reliability and scalability.

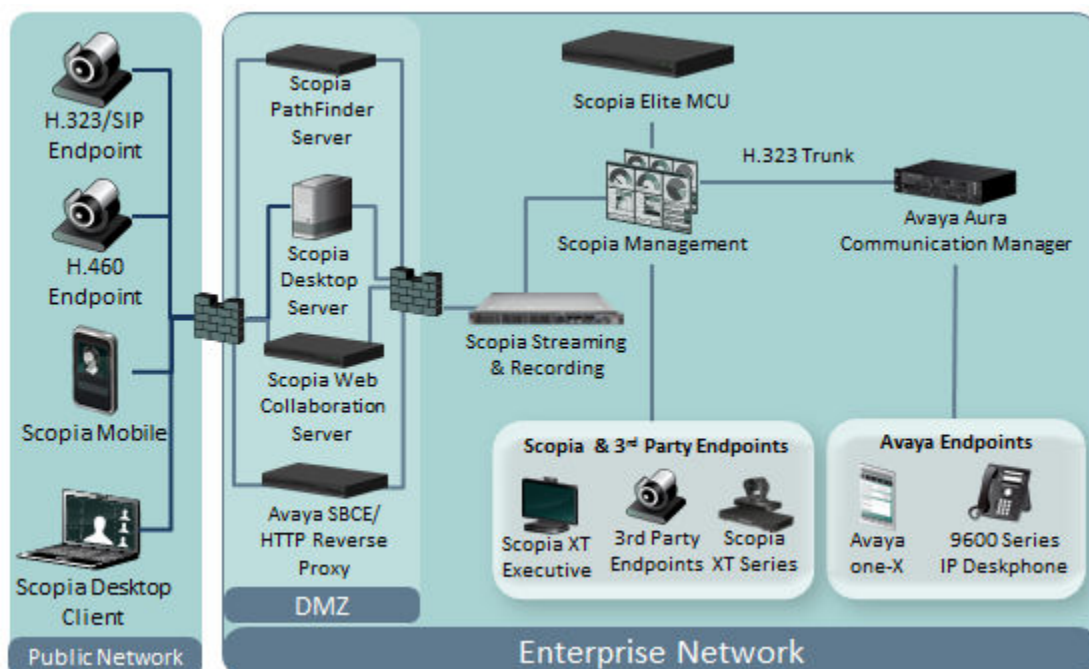
When you integrate your Communication Manager deployment with Scopia® Solution, you augment it with the following benefits:

- Create direct audio calls between Avaya endpoints and video endpoints (both Scopia® Solution and third party).
- Connect Avaya endpoints to a videoconference with audio only.
- Connect to remote endpoints.

#### Important:

Using encryption is subject to local regulation. In some countries it is restricted or limited for usage. For more information, consult your local reseller.

You can integrate Avaya Aura Communication Manager with the Centralized Videoconferencing solution as shown in [Figure 43: Integrating Avaya Aura Solution 6.3.10 with the Centralized Videoconferencing Solution](#) on page 116. For information about the Centralized Videoconferencing solution, refer to [Solution 2: Complete Centralized Videoconferencing](#) on page 99.



**Figure 44: Integrating Aura Communication Manager with Centralized Videoconferencing Solution**

Avaya Scopia® Management connects to the Communication Manager via H.323 and also manages the Scopia® Solution endpoints and the Scopia® Elite MCU with H.323.

Communicating with remote H.323 and H.460 endpoints outside the organization is performed through Avaya Scopia® PathFinder server. Scopia® Desktop Clients and Scopia® Mobile devices have their own built-in firewall traversal feature and are connected directly to the Scopia® Desktop server located in the DMZ.

For a description of Scopia® Solution products, refer to [Components of the Scopia® Solution](#) on page 14.

#### Related links

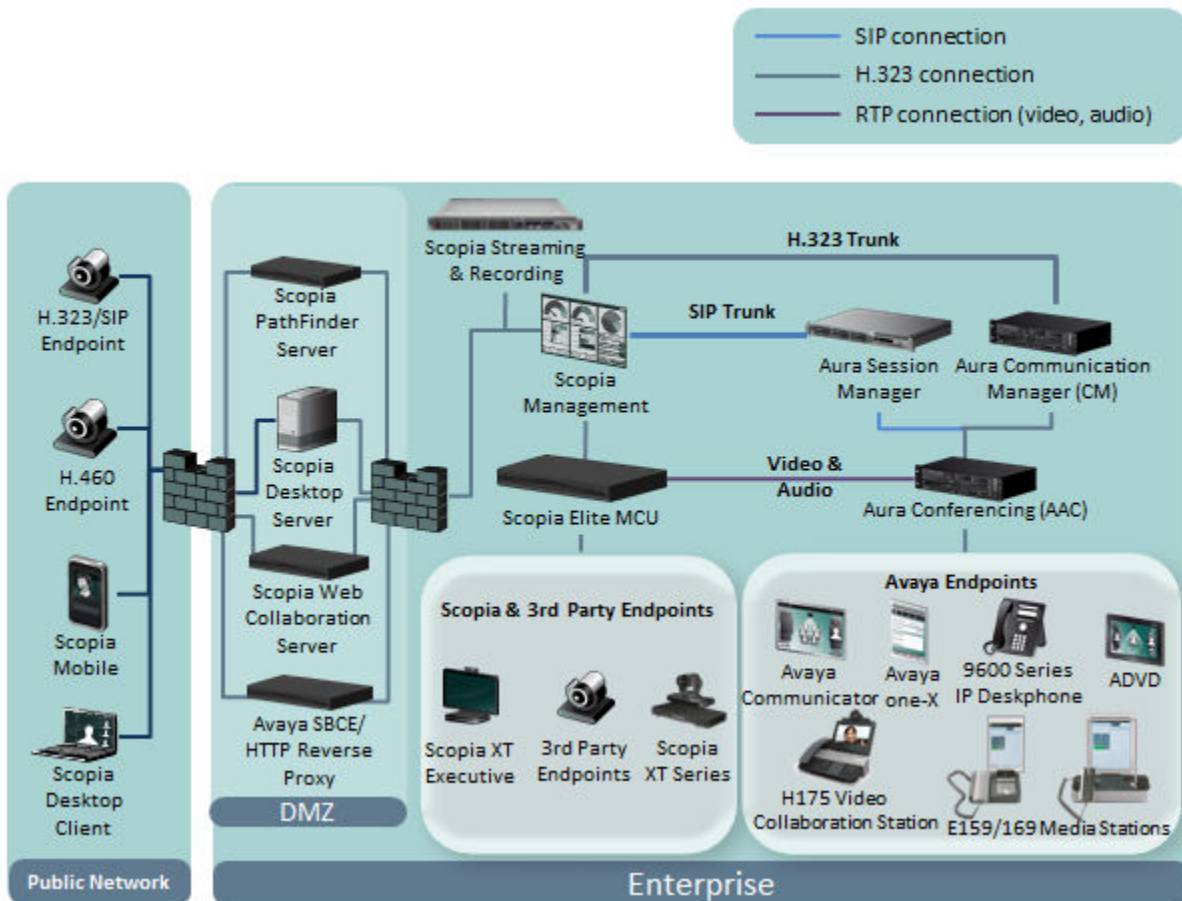
[Integrating Scopia® Solution with Avaya Solutions](#) on page 113

## Integrating Avaya Aura Conferencing (AAC) 8 with Scopia® Solution

This topology enables the combination of powerful videoconferencing features in Scopia® Elite MCU with the conferencing features of AAC 8 to create a combined conference of both endpoints with video and audio endpoints working together.

In this deployment ([Figure 45: Integrating AAC 8 with the Centralized Videoconferencing Solution](#) on page 119), the AAC 8 forms a cascaded conference with the MCU to create a combined virtual space where video and audio endpoints work together. A SIP trunk connects the Avaya Aura

Session Manager to Scopia® Management, while the media itself is transmitted between the MCU and the Avaya Aura Conferencing (AAC) via an RTP connection.



**Figure 45: Integrating AAC 8 with the Centralized Videoconferencing Solution**

A joint meeting combined the two sets of endpoints in the same virtual space, so that Avaya endpoints connecting via the AAC are displayed as an **Audio Link**, while video endpoints connecting via the MCU are labeled **Video Link**. Participants dial in by specifying the virtual room, which is equivalent to the AAC's participant code.

Communicating with remote H.323 and H.460 endpoints outside the organization is performed through Avaya Scopia® PathFinder server. Scopia® Desktop Clients and Scopia® Mobile devices have their own built-in firewall traversal feature and are connected directly to the Scopia® Desktop server located in the DMZ.

For a detailed description of Scopia® Solution products, refer to [Components of the Scopia® Solution](#) on page 14. To configure Scopia® Management for combining meetings with the AAC, see *Administration Guide for Scopia® Management*.

#### Related links

[Integrating Scopia® Solution with Avaya Solutions](#) on page 113

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## Integrating Avaya IP Office with Scopia® Solution

Avaya IP Office is a telephony solution for the SMB organizations (up to 1000 users), providing easy communication for users inside the organization's private network.

Integrating IP Office with Scopia® Solution allows you to introduce the high-end video experience to point-to-point calls as well as conferences.

While this solution functions with the regular Avaya Scopia® XT Series, there are two new dedicated products released for these implementations up to 250 users: XT Server for IP Office for the SMB solution and XT Endpoint with Embedded Server for IP Office for the Centralized Videoconferencing Solution.

For more information, see the documentation for these products.

Refer to the following sections to review the benefits of deploying the Small Business Solution or Centralized Videoconferencing Solution.

### Related links

[Integrating Scopia® Solution with Avaya Solutions](#) on page 113

[Integrating Avaya IP Office with the SMB Solution](#) on page 120

[Integrating Avaya IP Office with Centralized Videoconferencing Solution](#) on page 121

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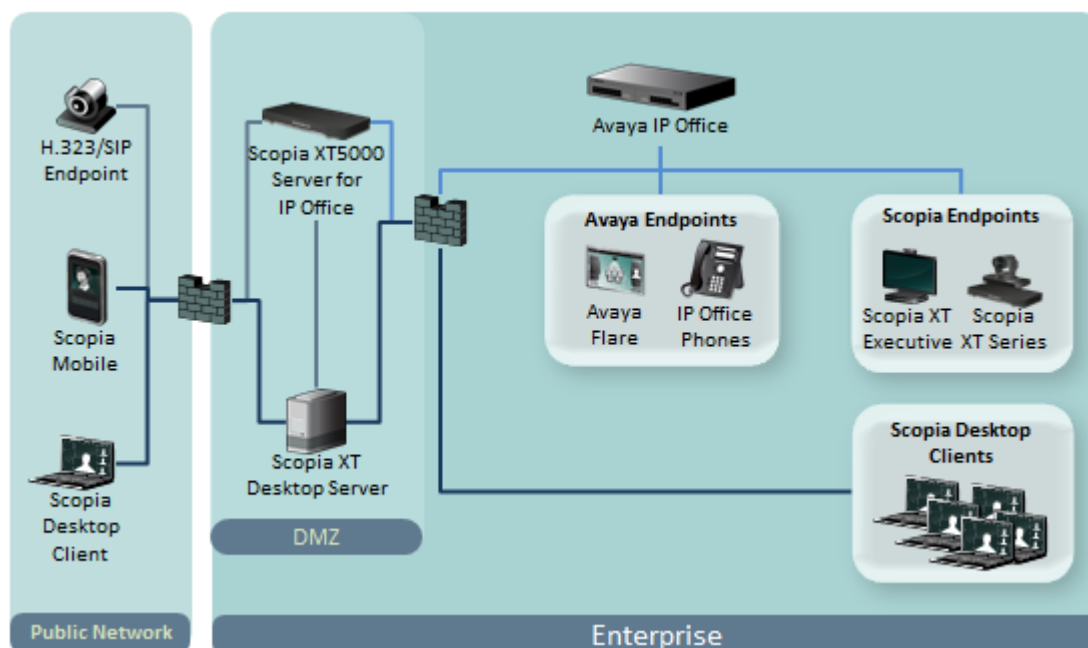
## Integrating Avaya IP Office with the SMB Solution

Avaya IP Office is a telephony solution for the SMB organizations (up to 1000 users), providing easy communication for users inside the organization's private network.

If your organization is smaller than 250 employees, you can enhance your solution by integrating Avaya IP Office with Scopia® Solution for SMB deployments ([Solution 1: Small Medium Business Solution for Videoconferencing](#) on page 95). The benefits of the integration are:

- Point-to-point calls and conferences between Avaya endpoints and Scopia® Solution endpoints in the private network.
- High-end video experience.
- Connecting to remote H.323/SIP endpoints outside the private network.
- Connecting remote users with high-end video using Scopia® Desktop and Scopia® Mobile.
- A complete, yet affordable video solution

When integrating with the Small Medium Business (SMB) solution as shown in [Figure 46: Integrating Avaya IP Office with the SMB Solution](#) on page 121, you deploy the XT Server for IP Office for hosting videoconferences, the Scopia® XT Desktop server for Scopia® Desktop Client and Scopia® Mobile connectivity, and the XT5000 Series for connectivity with remote H.323 endpoints.



**Figure 46: Integrating Avaya IP Office with the SMB Solution**

In this solution the XT Server hosts videoconferences of up to nine users, one meeting at a time. Locating the XT Server in the DMZ enables remote H.323 endpoints to connect to the meeting. It performs SIP registering out of the box to IP Office's PBX.

The Scopia® XT Desktop server is located in the DMZ to enable Scopia® Desktop Clients and Scopia® Mobile devices to join meetings. The Scopia® XT Desktop server has its own built-in firewall traversal features.

This solution's main limitation is its non-scalability. It can host only one meeting at a time for up to nine participants. For a larger integrations with IP Office, see [Integrating Avaya IP Office with Centralized Videoconferencing Solution](#) on page 121.

For description of Scopia® Solution products, refer to [Components of the Scopia® Solution](#) on page 14.

#### Related links

[Integrating Avaya IP Office with Scopia® Solution](#) on page 120

## Integrating Avaya IP Office with Centralized Videoconferencing Solution

Avaya IP Office is a telephony solution for the SMB organizations (up to 1000 users), providing easy communication for users inside the organization's private network.

If your organization has between 250 and 1000 employees, we recommend integrating with the Centralized Videoconferencing Solution ([Solution 2: Complete Centralized Videoconferencing](#) on page 99).

The benefits of integrating IP Office with the Centralized Videoconferencing Solution are:

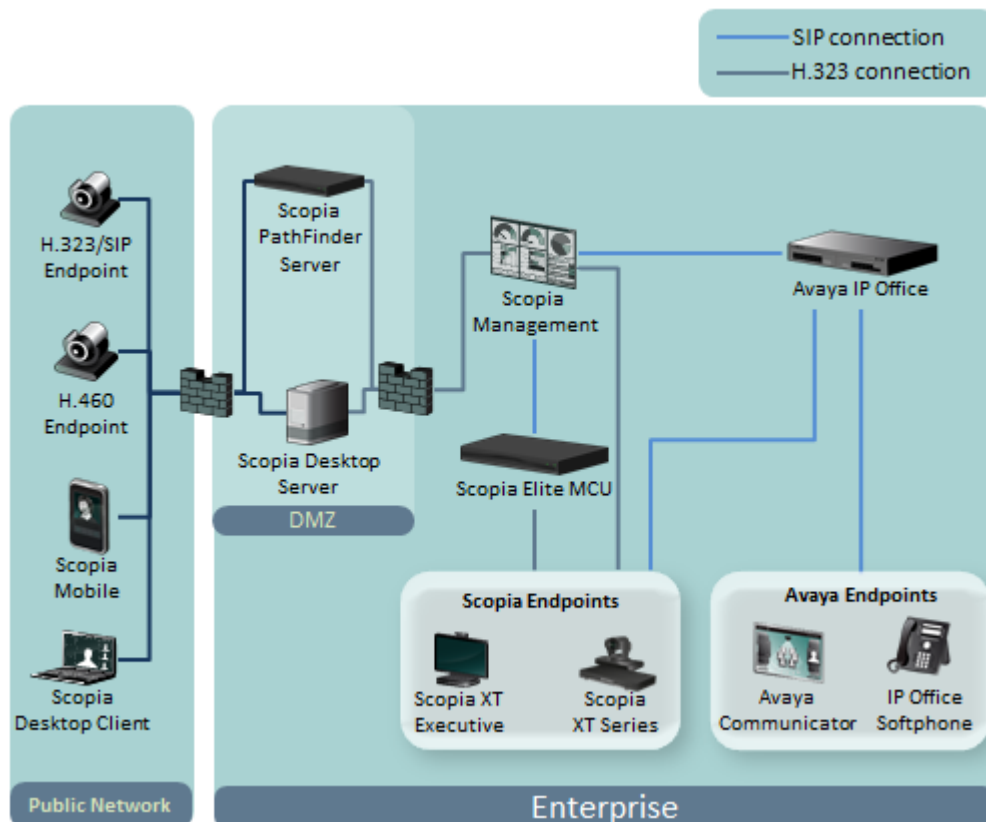
- Point-to-point calls and conferences between Avaya endpoints and Scopia® Solution endpoints both inside and outside the private network.
- Unlimited capacity for videoconferences
- Videoconferences with full HD video experience using Scopia® Elite MCU
- Scheduling and resource management

You can schedule meetings using integration with Microsoft Outlook, furthermore, you can customize meeting invitations to include dialing information for Avaya endpoints.

- Connecting remote users with high-end video using Scopia® Desktop and Scopia® Mobile.

Virtual room functionality

- High-end video experience



**Figure 47: Integrating Avaya IP Office with Centralized Videoconferencing Solution**

In this solution, Avaya Scopia® Management is connected to IP Office using SIP, while being connected to Scopia® Solution components using H.323. The Scopia® Management is connected to the Scopia® Elite MCU using both SIP and H.323 to allow Avaya SIP endpoints to participate in videoconferences hosted on the Scopia® Elite MCU.

Avaya Scopia® XT Series endpoints are registered to IP Office via native SIP registration, and also as H.323 endpoints to the Avaya Scopia® Gatekeeper (part of Scopia® Management).

Communicating with remote H.323 and H.460 endpoints outside the organization is performed via Avaya Scopia® PathFinder server. Scopia® Desktop Client s and Scopia® Mobile devices have their own built-in firewall traversal feature and are connected directly to the Scopia® Desktop server located in the DMZ.

**Related links**

[Integrating Avaya IP Office with Scopia® Solution](#) on page 120

# Chapter 6: Installing or Upgrading the Scopia® Solution

This section describes the procedures to be followed for installing or upgrading the Scopia® Solution 8.3. The version numbers for each of the components tested as complete Scopia® Solution are:

- Version 8.3.1 of Avaya Scopia® Management
- Version 8.3.0 of Avaya Scopia® ECS Gatekeeper, if your deployment requires a standalone gatekeeper.
- Version 8.3.1 of Scopia® Elite 6000 Series MCU and/or version 7.7.6 of Scopia® Elite 5000 Series MCU
- Version 8.3.1 of Scopia® Desktop
- Version 8.3.0 of Avaya Scopia® Streaming and Recording server
- Version 8.3.2 of Avaya Scopia® Web Collaboration server
- Version 8.3.0 of Avaya Scopia® PathFinder
- Version 5.7 of Scopia® Gateway 320
- Version 7.7 of Scopia® Video Gateway
- Version 7.7 of Avaya Scopia® SIP Gateway
- Version 8.0 of Avaya Scopia® TIP Gateway
- Version 8.3.0 of Avaya Scopia® XT5000 Series, Avaya Scopia® XT4000 Series, Avaya Scopia® XT Executive and /or version 2.5.4 of Scopia® XT1200
- Version 8.3.1 of Scopia® Control for XT Series
- Version 8.3.1 of Scopia® Mobile for Apple iOS or for Android

To install or upgrade to version 8.3 of the Scopia® Solution, follow these procedures:

## Related links

[Preparing to Install or Upgrade your Scopia® Solution](#) on page 125

[Installing the Scopia® Solution for the First Time](#) on page 127

[Testing and Activating an Installed Scopia® Solution](#) on page 130

[Upgrading an Existing Scopia® Solution](#) on page 132

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# Preparing to Install or Upgrade your Scopia® Solution

## About this task

Before starting an upgrade or installation of the Scopia® Solution, there are a number of preparation steps to ensure you are ready to begin the installation.

## Procedure

1. Verify you have the technical documentation of each of the components of the Scopia® Solution that you intend to install. Newly released solution components typically have a dedicated Installation or Deployment Guide:
  - Installation Guide for Avaya Scopia® Management
  - Installation Guide for Scopia® Desktop server(contains instructions for migrating recordings to the new Avaya Scopia® Streaming and Recording server)
  - Installation Guide and Administrator Guide for Scopia® Elite MCU
  - Installation Guide for Avaya Scopia® Web Collaboration server
  - Installation and Administration Guide for Avaya Scopia® Streaming and Recording server (includes migration recording instructions)
  - Release Notes for the Scopia® Solution
  - User Guide and Release Notes for the Scopia® Gateway
  - Deployment Guide for Avaya Scopia® PathFinder server
  - Installation Guide and Administrator Guide for Avaya Scopia® XT Series
  - Installation Guide and Administrator Guide for Scopia® XT Executive
  - Deployment Guide for Scopia® XT Telepresence
  - Deployment Guide and User Guide for Scopia® Video Gateway
  - Deployment Guide for Avaya Scopia® TIP Gateway
  - Deployment Guide for Avaya Scopia® SIP Gateway
2. Verify you have the license keys relevant for your deployment:
  - Scopia® Desktop server license key
  - License key for Scopia® Streaming and Recording server
  - License key for Scopia® Web Collaboration server
  - Avaya Scopia® PathFinder server license key
  - Scopia® Elite MCU license key
  - Scopia® Gateway license key
  - License key for Scopia® Video Gateway
  - Avaya Scopia® TIP Gateway license key
  - Avaya Scopia® SIP Gateway license key

- Avaya Scopia® XT Series license key

Online licenses and upgrade packages can be found at Avaya Product Licensing and Delivery System (PLDS).

3. Verify you have the software installation disc for Scopia® Solution products.

You need the installation disk for these products:

- Avaya Scopia® Management product disc
- Scopia® Desktop server product disc
- Scopia® PathFinder client installation kit
- Avaya Scopia® ECS Gatekeeper product disc if your deployment requires a standalone gatekeeper.

When upgrading, ensure you have downloaded all relevant upgrade packages to a drive which is easily accessible.

The hardware components of the Scopia® Solution, such as Scopia® Elite MCU, Scopia® Web Collaboration server, Scopia® Video Gateway, Avaya Scopia® SIP Gateway, Avaya Scopia® TIP Gateway, Avaya Scopia® PathFinder server and Avaya Scopia® XT Series are always shipped with the latest version pre-installed.

In cases where you need to upgrade or downgrade the version installed, see [Upgrading an Existing Scopia® Solution](#) on page 132.

4. Set aside the time required to perform the installation or upgrade. That time is the sum total of the following components:

- The time required for a graceful shutdown of existing services. This is important when performing an upgrade.
- The time required for the upgrade or installation procedure itself (see [Table 15: Typical times required to install or upgrade Scopia® Solution components](#) on page 126).
- The time required for the initial configuration of the newly installed product.
- The time required to test the service after upgrade to verify all functionality is working correctly.

When performing upgrades to an existing installation, be sure to book all the available videoconferencing ports in advance, for the duration of the entire upgrade procedure, to prevent users from scheduling meetings at that time.

**Table 15: Typical times required to install or upgrade Scopia® Solution components**

Product	Average installation time	Average upgrade time
Avaya Scopia® Management	4 hours	40 mins
Avaya Scopia® ECS Gatekeeper (standalone)	1 hour	20 mins
Scopia® Elite MCU	1 hour	20 mins

*Table continues...*

Product	Average installation time	Average upgrade time
Scopia® Desktop server	2 hours	30 mins
Scopia® Web Collaboration server	2 hours	30 mins
Scopia® Streaming and Recording server	2 hours	30 mins
Avaya Scopia® PathFinder server	3 hours	15 mins
Scopia® Desktop Client	10 mins	2 mins
Scopia® Mobile	10 mins	3 mins
Scopia® PathFinder client	1 hour	10 mins
Scopia® Gateway 320	3 hours	15 mins
Scopia® Video Gateway	8 hours	LAN upload: 10 mins WAN upload: up to 1 hour for a minor upgrade; a few hours for a major upgrade.
Avaya Scopia® SIP Gateway	4 hours	LAN upload: 10 mins WAN upload: up to 1 hour for a minor upgrade; a few hours for a major upgrade.
Avaya Scopia® TIP Gateway	5 hours	WAN upload: up to 1 hour for a minor upgrade; a few hours for a major upgrade.
Scopia® XT Executive	30 mins	5 mins
Scopia® XT Telepresence	4.5 hours (not including furniture)	15 mins
Avaya Scopia® XT Series	3 hours	5 mins

**Related links**

[Installing or Upgrading the Scopia® Solution](#) on page 124

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## Installing the Scopia® Solution for the First Time

**About this task**

Install a new deployment of the Scopia® Solution components in the following order:

1. Avaya Scopia® Management
2. Avaya Scopia® ECS Gatekeeper if working in standalone mode
3. Scopia® Elite MCU
4. Scopia® Desktop server and Scopia® Desktop Clients
5. Scopia® Web Collaboration server
6. Avaya Scopia® Streaming and Recording server

7. Scopia® Gateway 320
8. Avaya Scopia® PathFinder
9. Scopia® Video Gateway
10. Avaya Scopia® TIP Gateway
11. Avaya Scopia® SIP Gateway
12. Scopia® XT Telepresence
13. Endpoints: Scopia® XT Executive and/or Avaya Scopia® XT Series

## Before you begin

Verify you have the necessary server hardware and operating system prerequisites for these software components:

- For Avaya Scopia® Management, see the *Installation Guide for Avaya Scopia® Management*.
- For Avaya Scopia® ECS Gatekeeper, see the *Reference Guide for Avaya Scopia® ECS Gatekeeper*, if your deployment requires a standalone gatekeeper.
- For Scopia® Desktop server, see the *Installation Guide of Scopia® Desktop*.
- For Scopia® Web Collaboration server, see the *Installation Guide of Scopia® Web Collaboration server*.

Furthermore, verify you have the physical environment and connectivity requirements for these hardware components:

- For Scopia® Elite MCU, see the *Installation Guide for Scopia® Elite MCU*.
- For Scopia® Web Collaboration server, see the *Installation Guide of Scopia® Web Collaboration server*.
- For Scopia® Streaming and Recording server, see the *Installation Guide of Scopia® Desktop*.
- For Scopia® Gateway, see the *Administrator Guide for Scopia® Gateway*.
- For Avaya Scopia® PathFinder server, see the *User Guide for Avaya Scopia® PathFinder server*.
- For Scopia® Video Gateway, see the *Deployment Guide for Scopia® Video Gateway*.
- For Avaya Scopia® SIP Gateway, see the *Deployment Guide for Avaya Scopia® SIP Gateway*.
- For Avaya Scopia® TIP Gateway, see the *Deployment Guide for Avaya Scopia® TIP Gateway*.
- For Scopia® XT Telepresence, see the *Deployment Guide for Scopia® XT Telepresence*.
- For Avaya Scopia® XT Series, see the *Installation Guide for Avaya Scopia® XT Series*.

## Procedure

1. Set up the hardware physically and switch on each unit.
  - a. Set up and switch on the hardware components of the Scopia® Solution, and assign an IP address to each.
  - b. Set up and switch on the server PCs for the software components, and ensure their IP addresses are also properly assigned.

- c. Perform basic IP connectivity tests, like ping or telnet, on each of the components to ensure their IP addresses can be readily accessed.
- 2. Install the software components of the Scopia® Solution.

Typically the upgrade or downgrade of firmware is not required, since the product is delivered with the latest version already installed. Only change the firmware in the rare case where a different version is required for full compatibility with other solution components.

- a. Install Avaya Scopia® Management on a server. For more information, see the *Installation Guide for Avaya Scopia® Management*.
- b. Install Avaya Scopia® ECS Gatekeeper on a server. For more information, see the *Installation Guide for Avaya Scopia® ECS Gatekeeper*.

If you are using the internal gatekeeper of Scopia® Management, do not install the standalone gatekeeper.

- c. Upgrade or downgrade the firmware of the Scopia® Elite MCU units if required.
- d. Install Scopia® Desktop server. For more information, see the *Installation Guide for Scopia® Desktop server*.
- e. Install Scopia® Web Collaboration server. For more information, see the *Installation Guide for Scopia® Web Collaboration server*.
- f. Install Scopia® Streaming and Recording server. For more information, see *Installation and Administration Guides for Scopia® Streaming and Recording server*.
- g. Upgrade or downgrade the firmware of the Scopia® Gateway. For more information, see the *Deployment Guide for Scopia® Gateway*.
- h. Upgrade or downgrade the firmware of the Avaya Scopia® PathFinder server. For more information, see the *Deployment Guide for Avaya Scopia® PathFinder server*.
- i. Upgrade or downgrade the firmware of the Scopia® Video Gateway. For more information, see the *Deployment Guide for Scopia® Video Gateway*.
- j. Upgrade or downgrade the firmware of the Avaya Scopia® SIP Gateway. For more information, see the *Deployment Guide for Avaya Scopia® SIP Gateway*.
- k. Upgrade or downgrade the firmware of the Avaya Scopia® TIP Gateway. For more information, see the *Deployment Guide for Avaya Scopia® TIP Gateway*.
- l. Upgrade or downgrade the firmware of the Avaya Scopia® XT Series if relevant. For more information, see the *Installation Guide for Avaya Scopia® XT Series*.
- 3. Define the following Scopia® Solution components and verify their connectivity:
  - a. If relevant, define Avaya Scopia® ECS Gatekeeper in Scopia® Management.
  - b. Define Scopia® Elite MCU in Scopia® Management.
  - c. From Avaya Scopia® Management, synchronize with each MCU to retrieve their profile.  
We recommend starting with the default MCU meeting type (service).
  - d. Define at least three H.323 endpoints in Avaya Scopia® Management.

- e. Create a videoconference by dialing from the H.323 endpoints to the MCU's default service.
  - f. Install at least two Scopia® Desktop Clients by accessing the Scopia® Desktop server's portal from PCs.
  - g. Install at least one Scopia® Mobile app on an iOS device.
  - h. Define Scopia® Gateway in Scopia® Management.
  - i. Define at least one ISDN endpoint in Scopia® Management. Initially we recommend using one of the default services.
  - j. Create a new conference by inviting the ISDN endpoint to the conference.
  - k. Define the Scopia® Video Gateway in Scopia® Management.
  - l. Define the Avaya Scopia® SIP Gateway and/or Avaya Scopia® TIP Gateway in Scopia® Management.
  - m. Define the Avaya Scopia® PathFinder in Scopia® Management.
4. Perform the integration tests to verify the system works as a whole. For more information, see [Testing and Activating an Installed Scopia® Solution](#) on page 130.
  5. After the components are in place and you have verified they communicate with each other in videoconferences, you can start customizing the settings of each component. This might include:
    - LDAP directory integration
    - Securing your deployment
    - Redundancy and high availability
    - SIP server integration
    - Recording and streaming, and so on.

We recommend performing each of these configurations one at a time, incrementally conducting tests to ensure the basic functionality and additional configurations are functioning properly.

#### Related links

[Installing or Upgrading the Scopia® Solution](#) on page 124

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## Testing and Activating an Installed Scopia® Solution

### About this task

After the installation or upgrade of each Scopia® Solution component has been completed, you must test the integration and functionality of the system as a whole, and then activate the videoconferencing services throughout the organization.

**+ Tip:**

Wait until all components of the system have been properly installed to perform integration tests. All components of the Scopia® Solution should have aligned version numbers.

This section outlines the recommended tests after installation or upgrades have been completed.

**Before you begin**

If you are installing the Scopia® Solution for the first time, ensure you have already completed the following procedures:

- [Preparing to Install or Upgrade your Scopia® Solution](#) on page 125
- [Installing the Scopia® Solution for the First Time](#) on page 127

Alternatively, if you are completing a system upgrade, ensure you have performed the following:

- [Backing Up Current Scopia® Solution Settings](#) on page 133
- [Stopping Scopia® Solution Services](#) on page 134
- [Upgrading Scopia® Solution Components](#) on page 134

**Procedure**

1. Perform a point-to-point call between two room systems which are registered with either Avaya Scopia® ECS Gatekeeper (standalone) or the gatekeeper built-in to Avaya Scopia® Management.
2. Access the Scopia® Management user portal and start a videoconference, then invite two endpoints. Verify the videoconference starts correctly.
3. From a client PC, connect to the Scopia® Desktop server's web portal and run the automatic Scopia® Desktop Client installation or upgrade.
4. Create a conference on an MCU with a variety of endpoint types, including room systems and one or more Scopia® Desktop Clients. If you are deploying Scopia® Mobile, include one or more mobile devices.

From one of the Scopia® Desktop Clients, share a presentation, and verify its visibility in the other endpoints.

From one of the Scopia® Desktop Clients, invite another participant.

Ensure you can view the presentation and all participants from the Scopia® Mobile device.

5. If you have deployed the Scopia® Video Gateway, perform a point-to-point call between an Microsoft Lync client and an H.323 endpoint.
6. If you have deployed the Avaya Scopia® SIP Gateway, perform a point-to-point call between a remote IBM Sametime client and an H.323 endpoint. Verify the IBM Sametime client can present data to the other caller.
7. If you have deployed the Scopia® Mobile, start a videoconference from a Scopia® Desktop Client, using the virtual room, and then from Scopia® Mobile, enter the virtual room number to join the meeting. Verify that you can see the Scopia® Mobile's video on Scopia® Desktop Client, and that you can see the video sent by Scopia® Desktop Client on the Scopia® Mobile device. Try sharing data from Scopia® Desktop Client, and verify that you can see the content clearly on Scopia® Mobile.

8. Create a conference on an MCU with a variety of endpoint types, including room systems, H.323 endpoints, SIP endpoints, and one or more Scopia® Desktop Clients.

From one of the Scopia® Desktop Client, share a presentation, and verify its visibility in the other endpoints.

From one of the Scopia® Desktop Clients, invite another participant.

9. Make a point-to-point call from a room system like the Avaya Scopia® XT Series to an ISDN endpoint and verify correct functionality. Then terminate the call.

Make the same point-to-point call in the other direction, calling from the ISDN endpoint to the room system. Verify it functions correctly, then terminate the call.

10. Create a conference on an MCU. Access the Avaya Scopia® Management and dial from there to an ISDN endpoint to add it to the conference.

Perform the same test by dialing from the MCU conference control to the ISDN endpoint to invite it to the conference.

11. Access an H.460 compliant remote endpoint, and dial in to an existing conference using the Avaya Scopia® PathFinder server.

Access an H.323 endpoint that does not support H.460. Dial in to an existing conference via the Scopia® PathFinder client and Avaya Scopia® PathFinder server.

#### Related links

[Installing or Upgrading the Scopia® Solution](#) on page 124

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## Upgrading an Existing Scopia® Solution

Before you begin upgrading your Scopia® Solution, verify you have downloaded the necessary upgrade packages stored locally.

Also verify you have the technical documentation for the products being upgraded.

The steps required to upgrade an existing Scopia® Solution should be performed in this order:

#### Related links

[Installing or Upgrading the Scopia® Solution](#) on page 124

[Backing Up Current Scopia® Solution Settings](#) on page 133

[Stopping Scopia® Solution Services](#) on page 134

[Upgrading Scopia® Solution Components](#) on page 134

## Backing Up Current Scopia® Solution Settings

### About this task

Before the upgrade itself, it is important to backup the current settings of your existing Scopia® Solution.

### Procedure

1. Back up the Avaya Scopia® Management settings on the server. For more information see *Administrator Guide for Scopia® Management*.
2. Backup your Scopia® Desktop server configuration. For more information, see *Administrator Guide for Scopia® Desktop server*.
3. Backup your Scopia® Streaming and Recording server configuration. For more information, see the Release Notes for the Scopia® Solution.
4. Backup your Scopia® Web Collaboration server configuration. For more information, see the Release Notes for the Scopia® Solution.
5. Backup the Avaya Scopia® ECS Gatekeeper configuration with the export feature in the ECS user interface. For more information, see the *User Guide for Avaya Scopia® ECS Gatekeeper*.
6. Backup the Scopia® Elite MCU configuration file using the Backup Configuration feature in the MCU user interface. For more information, see *Administrator Guide for Scopia® Elite MCU*.
7. Use Avaya Scopia® Management to back up the following components:
  - Scopia® Gateway
  - Avaya Scopia® PathFinder server
  - Avaya Scopia® XT Series (including Scopia® XT Telepresence)
  - Scopia® Video Gateway
  - Avaya Scopia® SIP Gateway
  - Avaya Scopia® TIP Gateway

For more information, see *Administrator Guide for Scopia® Management*.

8. Backup the Scopia® PathFinder client configuration file using the Avaya Scopia® PathFinder's **Backup/Restore** menu. For more information, see *User Guide for Scopia® PathFinder client*.
9. Continue the upgrade process by stopping all Scopia® Solution services. For more information, see [Stopping Scopia® Solution Services](#) on page 134.

### Related links

[Upgrading an Existing Scopia® Solution](#) on page 132

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## Stopping Scopia® Solution Services

### About this task

This section is part of the procedure to upgrade your Scopia® Solution deployment to a newer version. It details how to halt all currently active videoconferencing services, and ensure no one starts new video calls during the upgrade.

### Before you begin

Before performing the steps in this section, ensure you have already backed up your system. For more information, see [Backing Up Current Scopia® Solution Settings](#) on page 133.

### Procedure

1. Access the Avaya Scopia® Management administrator portal.
2. Use the main dashboard to view the current video usage in the company.
3. If there is ongoing video usage, you can either wait for all meetings to end, or terminate all meetings from Scopia® Management.

Reserving all ports beforehand for the designated upgrade period ensures that no new meetings can be started during this time. For more information, see [Preparing to Install or Upgrade your Scopia® Solution](#) on page 125.

4. Upgrade each component in the correct order. For more information, see [Upgrading Scopia® Solution Components](#) on page 134.

### Related links

[Upgrading an Existing Scopia® Solution](#) on page 132

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## Upgrading Scopia® Solution Components

### About this task

This section details the steps required to perform the actual upgrades of each of the components in the Scopia® Solution.

### Before you begin

Before implementing the actual upgrades of each Scopia® Solution component, ensure you have already performed the following steps:

- [Backing Up Current Scopia® Solution Settings](#) on page 133
- [Stopping Scopia® Solution Services](#) on page 134

### Important:

Do not perform integration tests of the upgrade until all the upgrades have been properly installed. To perform correctly as an integrated solution, all the components of the Scopia® Solution should have aligned version numbers.

Perform your solution component upgrades in the following order:

1. Avaya Scopia® Management
2. Avaya Scopia® ECS Gatekeeper if working in standalone mode
3. Scopia® Desktop server and Scopia® Desktop Clients
4. Scopia® Web Collaboration server
5. Scopia® Streaming and Recording server
6. Scopia® Elite MCU and/or Scopia® MCU
7. Scopia® Gateway 320
8. Scopia® Video Gateway
9. Avaya Scopia® SIP Gateway
10. Avaya Scopia® TIP Gateway
11. Endpoints: Avaya Scopia® XT Series (including the units in the Scopia® XT Telepresence)
12. Avaya Scopia® PathFinder

If the component is on a remote site, perform the upgrade locally by copying the upgrade file to the site.

## Procedure

1. Upgrade your Avaya Scopia® Management by following the procedure in the *Release Notes for Avaya Scopia® Management*. The process may vary depending on the release number and the size of the jump from the current installation to the new release.

The installation guide specifies different procedures depending on whether your deployment has Scopia® Management with a built-in gatekeeper, or if your Scopia® Management is standalone.

If you have more than one instance of Scopia® Management, upgrade the main (master) first, then upgrade any auxiliary (slave) servers.

2. Upgrade the standalone Avaya Scopia® ECS Gatekeeper if relevant.

If you have more than one instance of Avaya Scopia® ECS Gatekeeper, upgrade the master first, then upgrade any slave ECS components.

3. Upgrade your Scopia® Desktop server as defined in the *Installation Guide for Scopia® Desktop*.

Scopia® Desktop Client and Scopia® Mobile are automatically upgraded when they access the upgraded Scopia® Desktop server.

4. Upgrade your Scopia® Web Collaboration server as defined in the *Release Notes for Scopia® Solution*.

5. Upgrade your Scopia® Streaming and Recording server as defined in the *Release Notes for Scopia® Solution*.

6. Upgrade the following components with Avaya Scopia® Management:

- Scopia® Gateway 320

- Scopia® Video Gateway
- Avaya Scopia® SIP Gateway
- Avaya Scopia® XT Series units (including the units in the Scopia® XT Telepresence)
- Scopia® XT Executive

For more information, see *Administrator Guide for Scopia® Management*.

7. Upgrade your Avaya Scopia® PathFinder servers and Clients by following the procedures detailed in the *Deployment Guide for Avaya Scopia® PathFinder*.
8. Perform the system tests outlined in [Testing and Activating an Installed Scopia® Solution](#) on page 130.

#### **Related links**

[Upgrading an Existing Scopia® Solution](#) on page 132

# Glossary

<b>1080p</b>	See <a href="#">Full HD</a> on page 141.
<b>2CIF</b>	2CIF describes a video resolution of 704 x 288 pixels (PAL) or 704 x 240 (NTSC). It is double the width of CIF, and is often found in CCTV products.
<b>2SIF</b>	2SIF describes a video resolution of 704 x 240 pixels (NTSC) or 704 x 288 (PAL). This is often adopted in IP security cameras.
<b>4CIF</b>	4CIF describes a video resolution of 704 x 576 pixels (PAL) or 704 x 480 (NTSC). It is four times the resolution of CIF and is most widespread as the standard analog TV resolution.
<b>4SIF</b>	4SIF describes a video resolution of 704 x 480 pixels (NTSC) or 704 x 576 (PAL). This is often adopted in IP security cameras.
<b>720p</b>	See <a href="#">HD</a> on page 143.
<b>AAC</b>	AAC is an audio codec which compresses sound but with better results than MP3.
<b>AGC (Automatic Gain Control)</b>	Automatic Gain Control (AGC) smooths audio signals through normalization, by lowering sounds which are too strong and strengthening sounds which are too weak. This is relevant with microphones situated at some distance from the speaker, like room systems. The result is a more consistent audio signal within the required range of volume.
<b>Alias</b>	An alias in H.323 represents the unique name of an endpoint. Instead of dialing an IP address to reach an endpoint, you can dial an alias, and the gatekeeper resolves it to an IP address.
<b>Auto-Attendant</b>	Auto-Attendant, also known as video IVR, offers quick access to meetings hosted on MCUs, via a set of visual menus. Participants can select menu options using standard DTMF tones (numeric keypad). Auto-Attendant works with both H.323 and SIP endpoints.
<b>Avaya Scopia® Streaming and Recording Manager</b>	The Avaya Scopia® Streaming and Recording Manager provides a web-based interface to configure and manage Scopia® Streaming and Recording server software, devices, services, and users. The Scopia® Streaming and Recording server Manager application resides on a single

	hardware platform and provides access to all content in the Scopia® Streaming and Recording server environment.
<b>Avaya Scopia® Streaming and Recording Manager Portals</b>	<p>The Scopia® Streaming and Recording server Manager provides a portal for administering content. When you log in to the web interface, you can access the Administrator portal.</p> <p>The Manager also provides the Viewer portal. This portal is embedded within the Avaya Scopia® Desktop User portal. Use the User portal to schedule Scopia® Streaming and Recording server broadcasts.</p>
<b>Balanced Microphone</b>	A balanced microphone uses a cable that is built to reduce noise and interference even when the cable is long. This reduces audio disruptions resulting from surrounding electromagnetic interference.
<b>BFCP (Binary Floor Control Protocol)</b>	BFCP is a protocol which coordinates shared videoconference features in SIP calls, often used by one participant at a time. For example, when sharing content to others in the meeting, one participant is designated as the presenter, and is granted the floor for presenting. All endpoints must be aware that the floor was granted to that participant and react appropriately.
<b>Bitrate</b>	Bitrate is the speed of data flow. Higher video resolutions require higher bitrates to ensure the video is constantly updated, thereby maintaining smooth motion. If you lower the bitrate, you lower the quality of the video. In some cases, you can select a lower bitrate without noticing a significant drop in video quality; for example during a presentation or when a lecturer is speaking and there is very little motion. In video recordings, the bitrate determines the file size for each minute of recording. Bitrate is often measured in kilobits per second (kbps).
<b>Call Control</b>	See <a href="#">Signaling</a> on page 148.
<b>Cascaded Videoconference</b>	A cascaded videoconference is a meeting distributed over more than one physical Scopia® Elite MCU, where a master MCU connects to one or more slave MCUs to create a single videoconference. It increases the meeting capacity by combining the resources of several MCUs. This can be especially useful for distributed deployments across several locations, reducing bandwidth usage.
<b>CDN</b>	Scopia® SR enables you to publish content to the cloud, using a virtual delivery node (VDN) and a content delivery network (CDN). The VDN and the network of the CDN act as one delivery mechanism. When a user creates a recording (program), they can choose to distribute it to the CDN, as well as to the regular delivery node (DN).
<b>CIF</b>	CIF, or Common Intermediate Format, describes a video resolution of 352 × 288 pixels (PAL) or 352 x 240 (NTSC). This is sometimes referred to as Standard Definition (SD).

<b>Conference Point</b>	The Avaya Scopia® Streaming and Recording Conference Point is a video conferencing gateway appliance that captures standard or high definition video conferences. It transcodes, creates, and records the video conferences in a streaming media format. You can use it to capture H.323 video for instant video webcasting or on-demand publishing.
<b>Content Slider</b>	The Scopia® Content Slider stores the data already presented in the videoconference and makes it available for participants to view during the meeting.
<b>Continuous Presence</b>	Continuous presence enables viewing multiple participants of a videoconference at the same time, including the active speaker. This graphics-intensive work requires scaling and mixing the images together into one of the predefined video layouts. The range of video layouts depends on the type of media processing supported, typically located in the MCU.
<b>Control</b>	Control, or media control, sets up and manages the media of a call (its audio, video and data). Control messages include checking compatibility between endpoints, negotiating video and audio codecs, and other parameters like resolution, bitrate and frame rate. Control is communicated via H.245 in H.323 endpoints, or by SDP in SIP endpoints. Control occurs within the framework of an established call, after signaling.
<b>CP</b>	See <a href="#">Continuous Presence</a> on page 139.
<b>Dedicated Endpoint</b>	A dedicated endpoint is a hardware endpoint for videoconferencing assigned to a single user. It is often referred to as a personal or executive endpoint, and serves as the main means of video communications for this user. For example, Scopia® XT Executive. It is listed in the organization's LDAP directory as associated exclusively with this user.
<b>Delivery Node</b>	The Avaya Scopia® Streaming and Recording Delivery Node provides on-demand and broadcast video delivery. You can use it alone or in a hierarchy of devices. It supports thousands of concurrent streams. The Delivery Node uses intelligent routing, content caching, and inherent redundancy to ensure transparent delivery of high-quality video.
<b>Dial Plan</b>	A dial plan defines a way to route a call and to determine its characteristics. In traditional telephone networks, prefixes often denote geographic locations. In videoconferencing deployments, prefixes are also used to define the type and quality of a call. For example, dial 8 before a number for a lower bandwidth call, or 6 for an audio-only call, or 5 to route the call to a different branch.
<b>Dial Prefix</b>	A dial prefix is a number added at the beginning of a dial string to route it to the correct destination, or to determine the type of call. Dial prefixes are

	defined in the organization's dial plan. For example, dial 9 for an outside line, or dial 6 for an audio only call.
<b>Distributed Deployment</b>	A distributed deployment describes a deployment where the solution components are geographically distributed in more than one network location.
<b>DNS Server</b>	A DNS server is responsible for resolving domain names in your network by translating them into IP addresses.
<b>DTMF</b>	DTMF, or touch-tone, is the method of dialing on touch-tone phones, where each number is translated and transmitted as an audio tone.
<b>Dual Video</b>	Dual video is the transmitting of two video streams during a videoconference, one with the live video while the other is a shared data stream, like a presentation.
<b>Dynamic Video Layout</b>	The dynamic video layout is a meeting layout that switches dynamically to include the maximum number of participants it can display on the screen (up to 9 on the XT Series, or up to 28 on Scopia® Elite MCU). The largest image always shows the active speaker.
<b>E.164</b>	E.164 is an address format for dialing an endpoint with a standard telephone numeric keypad, which only has numbers 0 - 9 and the symbols: * and #.
<b>Endpoint</b>	An endpoint is a tool through which people can participate in a videoconference. Its display enables you to see and hear others in the meeting, while its microphone and camera enable you to be seen and heard by others. Endpoints include dedicated endpoints, like Scopia® XT Executive, software endpoints like Scopia® Desktop Client, mobile device endpoints like Scopia® Mobile, room systems like XT Series, and telepresence systems like Scopia® XT Telepresence.
<b>Endpoint Alias</b>	See <a href="#">Alias</a> on page 137.
<b>FEC</b>	Forward Error Correction (FEC) is a proactive method of sending redundant information in the video stream to preempt quality degradation. FEC identifies the key frames in the video stream that should be protected by FEC. There are several variants of the FEC algorithm. The Reed-Solomon algorithm (FEC-RS) sends redundant packets per block of information, enabling the sender (like the Scopia® Elite MCU) to manage up to ten percent packet loss in the video stream with minimal impact on the smoothness and quality of the video.
<b>FECC</b>	Far End Camera Control (FECC) is a feature of endpoint cameras, where the camera can be controlled remotely by another endpoint in the call.

<b>Forward Error Correction</b>	See <a href="#">FEC</a> on page 140.
<b>FPS</b>	See <a href="#">Frames Per Second</a> on page 141.
<b>Frame Rate</b>	See <a href="#">Frames Per Second</a> on page 141.
<b>Frames Per Second</b>	Frames Per Second (fps), also known as the frame rate, is a key measure in video quality, describing the number of image updates per second. The average human eye can register up to 50 frames per second. The higher the frame rate, the smoother the video.
<b>FTP</b>	The File Transfer Protocol (FTP) is a standard network protocol used to transfer computer files from one host to another host over a TCP-based network, such as the Internet. FTP is built on a client-server architecture and uses separate control and data connections between the client and the server. FTP users may authenticate themselves using a clear-text sign-in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it.
<b>Full HD</b>	Full HD, or Full High Definition, also known as 1080p, describes a video resolution of 1920 x 1080 pixels.
<b>Full screen Video Layout</b>	The full screen view shows one video image. Typically, it displays the remote presentation, or, if there is no presentation, it displays the other meeting participant(s).
<b>Gatekeeper</b>	A gatekeeper routes audio and video H.323 calls by resolving dial strings (H.323 alias or URI) into the IP address of an endpoint, and handles the initial connection of calls. Gatekeepers also implement the dial plan of an organization by routing H.323 calls depending on their dial prefixes. Scopia® Management includes a built-in Avaya Scopia® Gatekeeper, while ECS is a standalone gatekeeper.
<b>Gateway</b>	A gateway is a component in a video solution which routes information between two subnets or acts as a translator between different protocols. For example, a gateway can route data between the headquarters and a partner site, or between two protocols like the TIP Gateway, or the Scopia® 100 Gateway.
<b>GLAN</b>	GLAN, or gigabit LAN, is the name of the network port on the XT Series. It is used on the XT Series to identify a 10/100/1000MBit ethernet port.
<b>H.225</b>	H.225 is part of the set of H.323 protocols. It defines the messages and procedures used by gatekeepers to set up calls.
<b>H.235</b>	H.235 is the protocol used to authenticate trusted H.323 endpoints and encrypt the media stream during meetings.

<b>H.239</b>	H.239 is a widespread protocol used with H.323 endpoints, to define the additional media channel for data sharing (like presentations) alongside the videoconference, and ensures only one presenter at a time.
<b>H.243</b>	H.243 is the protocol used with H.323 endpoints enabling them to remotely manage a videoconference.
<b>H.245</b>	H.245 is the protocol used to negotiate call parameters between endpoints, and can control a remote endpoint from your local endpoint. It is part of the H.323 set of protocols.
<b>H.261</b>	H.261 is an older protocol used to compress CIF and QCIF video resolutions. This protocol is not supported by the XT Series.
<b>H.263</b>	H.263 is an older a protocol used to compress video. It is an enhancement to the H.261 protocol.
<b>H.264</b>	H.264 is a widespread protocol used with SIP and H.323 endpoints, which defines video compression. Compression algorithms include 4x4 transforms and a basic motion comparison algorithm called P-slices. There are several profiles within H.264. The default profile is the H.264 Baseline Profile, but H.264 High Profile uses more sophisticated compression techniques.
<b>H.264 Baseline Profile</b>	See <a href="#">H.264</a> on page 142.
<b>H.264 High Profile</b>	<p>H.264 High Profile is a standard for compressing video by up to 25% over the H.264 Baseline Profile, enabling high definition calls to be held over lower call speeds. It requires both sides of the transmission (sending and receiving endpoints) to support this protocol. H.264 High Profile uses compression algorithms like:</p> <ul style="list-style-type: none"><li>• CABAC compression (Context-Based Adaptive Binary Arithmetic Coding)</li><li>• 8x8 transforms which more effectively compress images containing areas of high correlation</li></ul> <p>These compression algorithms demand higher computation requirements, which are offered with the dedicated hardware available in Scopia® Solution components. Using H.264 High Profile in videoconferencing requires that both the sender and receiver's endpoints support it. This is different from SVC which is an adaptive technology working to improve quality even when only one side supports the standard.</p>
<b>H.320</b>	H.320 is a protocol for defining videoconferencing over ISDN networks.
<b>H.323</b>	H.323 is a widespread set of protocols governing the communication between endpoints in videoconferences and point-to-point calls. It defines the call signaling, control, media flow, and bandwidth regulation.

<b>H.323 Alias</b>	See <a href="#">Alias</a> on page 137.
<b>H.350</b>	H.350 is the protocol used to enhance LDAP user databases to add video endpoint information for users and groups.
<b>H.460</b>	H.460 enhances the standard H.323 protocol to manage firewall/NAT traversal, employing ITU-T standards. Endpoints which are already H.460 compliant can communicate directly with the PathFinder server, where the endpoint acts as an H.460 client to the PathFinder server which acts as an H.460 server.
<b>HD</b>	A HD ready device describes its high definition resolution capabilities of 720p, a video resolution of 1280 x 720 pixels.
<b>High Availability</b>	High availability is a state where you ensure better service and less downtime by deploying additional servers. There are several strategies for achieving high availability, including deployment of redundant servers managed by load balancing systems.
<b>High Definition</b>	See <a href="#">HD</a> on page 143.
<b>High Profile</b>	See <a href="#">H.264 High Profile</a> on page 142.
<b>HTTP</b>	<p>The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web.</p> <p>Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text. HTTP is the protocol to exchange or transfer hypertext.</p>
<b>HTTPS</b>	HTTPS is the secured version of the standard web browser protocol HTTP. It secures communication between a web browser and a web server through authentication of the web site and encrypting communication between them. For example, you can use HTTPS to secure web browser access to the web interface of many Scopia® Solution products.
<b>Image Resolution</b>	See <a href="#">Resolution</a> on page 147.
<b>KBps</b>	Kilobytes per second (KBps) measures the bitrate in kilobytes per second, not kilobits, by dividing the number of kilobits by eight. Bitrate is normally quoted as kilobits per second (kbps) and then converted to kilobytes per second (KBps). Bitrate measures the throughput of data communication between two devices.
<b>kbps</b>	Kilobits per second (kbps) is the standard unit to measure bitrate, measuring the throughput of data communication between two devices. Since this counts the number of individual bits (ones or zeros), you must divide by eight to calculate the number of kilobytes per second (KBps).

<b>LDAP</b>	LDAP is a widespread standard database format which stores network users. The format is hierarchical, where nodes are often represented as <i>branch location &gt; department &gt; sub-department, or executives &gt; managers &gt; staff members</i> . The database standard is employed by most user directories including Microsoft Active Directory, IBM Sametime and others. H.350 is an extension to the LDAP standard for the videoconferencing industry.
<b>Lecture Mode</b>	Scopia® Desktop's lecture mode allows the participant defined as the lecturer to see all the participants, while they see only the lecturer. All participants are muted except the lecturer, unless a participant asks permission to speak and is unmuted by the lecturer. This mode is tailored for distance learning, but you can also use it for other purposes like when an executive addresses employees during company-wide gatherings.
<b>Load balancer</b>	A load balancer groups together a set (or cluster) of servers to give them a single IP address, known as a virtual IP address. It distributes client service requests amongst a group of servers. It distributes loads according to different criteria such as bandwidth, CPU usage, or cyclic (round robin). Load balancers are also known as application delivery controllers (ADC).
<b>Location</b>	A location is a physical space (building) or a network (subnet) where video devices can share a single set of addresses. A distributed deployment places these components in different locations, often connected via a VPN.
<b>Management</b>	Management refers to the administration messages sent between components of the Scopia® Solution as they manage and synchronize data between them. Management also includes front-end browser interfaces configuring server settings on the server. Management messages are usually transmitted via protocols like HTTP, SNMP, FTP or XML. For example, Scopia® Management uses management messages to monitor the activities of an MCU, or when it authorizes the MCU to allow a call to proceed.
<b>MBps</b>	Megabytes per second (MBps) is a unit of measure for the bitrate. The bitrate is normally quoted as kilobits per second (kbps) and then converted by dividing it by eight to reach the number of kilobytes per second (KBps) and then by a further 1000 to calculate the MBps.
<b>MCU</b>	An MCU, or Multipoint Control Unit, connects several endpoints to a single videoconference. It manages the audio mixing and creates the video layouts, adjusting the output to suit each endpoint's capabilities.
<b>MCU service</b>	See <a href="#">Meeting Type</a> on page 145.
<b>Media</b>	Media refers to the live audio, video and shared data streams sent during a call. Presentation and Far end camera control (FECC) are examples of information carried on the data stream. Media is transmitted via the RTP

and RTCP protocols in both SIP and H.323 calls. The parallel data stream of both live video and presentation, is known as dual video.

**Media Control**

See [Control](#) on page 139.

**Meeting Type**

Meeting types (also known as MCU services) are meeting templates which determine the core characteristics of a meeting. For example, they determine if the meeting is audio only or audio and video, they determine the default video layout, the type of encryption, PIN protection and many other features. You can invoke a meeting type by dialing its prefix in front of the meeting ID. Meeting types are created and stored in the MCU, with additional properties in Scopia® Management.

**Moderator**

A moderator has special rights in a videoconference, including blocking the sound and video of other participants, inviting new participants, disconnecting others, determining video layouts, and closing meetings. In Scopia® Desktop Client, an owner of a virtual room is the moderator when the room is protected by a PIN. Without this protection, any participant can assume moderator rights.

**MTU**

The MTU, or Maximum Transmission Unit, is the maximum size of data packets sent around your network. This value must remain consistent for all network components, including servers like the MCU and Scopia® Desktop server, endpoints like XT Series and other network devices like LDAP servers and network routers.

**Multi-Point**

A multi-point conference has more than two participants.

**Multi-tenant**

Service provider, or multi-tenant, deployments enable one installation to manage multiple organizations. All the organizations can reside as tenants within a single service provider deployment. For example, Scopia® Management can manage a separate set of users for each organization, separate local administrators, separate bandwidth policies etc. all within a single multi-tenant installation.

**Multicast Streaming**

Multicast streaming sends a videoconference to multiple viewers across a range of addresses, reducing network traffic significantly. Scopia® Desktop server multicasts to a single IP address, and streaming clients must tune in to this IP address to view the meeting. Multicasts require that routers, switches and other equipment know how to forward multicast traffic.

**NAT**

A NAT, or Network Address Translation device, translates external IP addresses to internal addresses housed in a private network. This enables a collection of devices like endpoints in a private network, each with their own internal IP address, can be represented publicly by a single, unique IP address. The NAT translates between public and private addresses, enabling users to place calls between public network users and private network users.

<b>NetSense</b>	NetSense is a proprietary Scopia® Solution technology which optimizes the video quality according to the available bandwidth to minimize packet loss. As the available bandwidth of a connection varies depending on data traffic, NetSense's sophisticated algorithm dynamically scans the video stream, and then reduces or improves the video resolution to maximize quality with the available bandwidth.
<b>Packet Loss</b>	Packet loss occurs when some of the data transmitted from one endpoint is not received by the other endpoint. This can be caused by narrow bandwidth connections or unreliable signal reception on wireless networks.
<b>PaP Video Layout</b>	The PaP (Picture and Picture) view shows up to three images of the same size.
<b>Phantom Power</b>	Microphones which use phantom power draw their electrical power from the same cable as the audio signal. For example, if your microphone is powered by a single cable, it serves both to power the microphone and transmit the audio data. Microphones which have two cables, one for sound and a separate power cable, do not use phantom power.
<b>PiP Video Layout</b>	The PiP (Picture In Picture) view shows a video image in the main screen, with an additional smaller image overlapping in the corner. Typically, a remote presentation is displayed in the main part of the screen, and the remote video is in the small image. If the remote endpoint does not show any content, the display shows the remote video in the main part of the screen, and the local presentation in the small image.
<b>Point-to-Point</b>	Point-to-point is a feature where only two endpoints communicate with each other without using MCU resources.
<b>PoP Video Layout</b>	The PoP (Picture out Picture) view shows up to three images of different size, presented side by side, where the image on the left is larger than the two smaller images on the right.
<b>Prefix</b>	See <a href="#">Dial Prefix</a> on page 139.
<b>PTZ Camera</b>	A PTZ camera can pan to swivel horizontally, tilt to move vertically, and optically zoom to devote all the camera's pixels to one area of the image. For example, the XT Standard Camera is a PTZ camera with its own power supply and remote control, and uses powerful lenses to achieve superb visual quality. In contrast, fixed cameras like webcams only offer digital PTZ, where the zoom crops the camera image, displaying only a portion of the original, resulting in fewer pixels of the zoomed image, which effectively lowers the resolution. Fixed cameras also offer digital pan and tilt only after zooming, where you can pan up to the width or length of the original camera image.

<b>Q.931</b>	Q.931 is a telephony protocol used to start and end the connection in H.323 calls.
<b>QCIF</b>	QCIF, or Quarter CIF, defines a video resolution of 176 × 144 pixels (PAL) or 176 x 120 (NTSC). It is often used in older mobile handsets (3G-324M) limited by screen resolution and processing power.
<b>Quality of Service (QoS)</b>	Quality of Service (QoS) determines the priorities of different types of network traffic (audio, video and control/signaling), so in poor network conditions, prioritized traffic is still fully transmitted.
<b>Recordings</b>	A recording of a videoconference can be played back at any time. Recordings include audio, video and shared data (if presented). Users can access recordings from the Scopia® Desktop web portal or using a web link to the recording on the portal.
<b>Redundancy</b>	Redundancy is a way to deploy a network component, in which you deploy extra units as 'spares', to be used as backups in case one of the components fails.
<b>Registrar</b>	A SIP Registrar manages the SIP domain by requiring that all SIP devices register their IP addresses with it. For example, once a SIP endpoint registers its IP address with the Registrar, it can place or receive calls with other registered endpoints.
<b>Resolution</b>	Resolution, or image/video resolution, is the number of pixels which make up an image frame in the video, measured as the number of horizontal pixels x the number of vertical pixels. Increasing resolution improves video quality but typically requires higher bandwidth and more computing power. Techniques like SVC, H.264 High Profile and FEC reduce bandwidth usage by compressing the data to a smaller footprint and compensating for packet loss.
<b>Restricted Mode</b>	Restricted mode is used for ISDN endpoints only, when the PBX and line uses a restricted form of communication, reserving the top 8k of each packet for control data only. If enabled, the bandwidth values on these lines are in multiples of 56kbps, instead of multiples of 64kbps.
<b>Room System</b>	A room system is a hardware videoconferencing endpoint installed in a physical conference room. Essential features include its camera's ability to PTZ (pan, tilt, zoom) to allow maximum flexibility of camera angles enabling participants to see all those in the meeting room or just one part of the room.
<b>RTCP</b>	Real-time Control Transport Protocol, used alongside RTP for sending statistical information about the media sent over RTP.
<b>RTP</b>	RTP or Real-time Transport Protocol is a network protocol which supports video and voice transmission over IP. It underpins most videoconferencing

protocols today, including H.323, SIP and the streaming control protocol known as RTSP. The secured version of RTP is SRTP.

**RTSP**

RTSP or Real-Time Streaming Protocol controls the delivery of streamed live or playback video over IP, with functions like pause, fast forward and reverse. While the media itself is sent via RTP, these control functions are managed by RTSP

**Sampling Rate**

The sampling rate is a measure of the accuracy of the audio when it is digitized. To convert analog audio to digital, it must collect or sample the audio at specific intervals. As the rate of sampling increases, it raises audio quality.

**SBC**

A Session Border Controller (SBC) is a relay device between two different networks. It can be used in firewall/NAT traversal, protocol translations and load balancing.

**Scalability**

Scalability describes the ability to increase the capacity of a network device by adding another identical device (one or more) to your existing deployment. In contrast, a non-scalable solution would require replacing existing components to increase capacity.

**Scopia® Content Slider**

See [Content Slider](#) on page 139.

**SD**

Standard Definition (SD), is a term used to refer to video resolutions which are lower than HD. There is no consensus defining one video resolution for SD.

**Service**

Also known as MCU service. See [Meeting Type](#) on page 145.

**SIF**

SIF defines a video resolution of 352 x 240 pixels (NTSC) or 352 x 288 (PAL). This is often used in security cameras.

**Signaling**

Signaling, also known as call control, sets up, manages and ends a connection or call. These messages include the authorization to make the call, checking bandwidth, resolving endpoint addresses, and routing the call through different servers. Signaling is transmitted via the H.225.0/Q.931 and H.225.0/RAS protocols in H.323 calls, or by the SIP headers in SIP calls. Signaling occurs before the control aspect of call setup.

**Single Sign On**

Single Sign On (SSO) automatically uses your network login and password to access different enterprise systems. Using SSO, you do not need to separately login to each system or service in your organization.

**SIP**

Session Initiation Protocol (SIP) is a signaling protocol for starting, managing and ending voice and video sessions over TCP, TLS or UDP. Videoconferencing endpoints typically are compatible with SIP or H.323, and in some cases (like Avaya Scopia® XT Series), an endpoint can be

compatible with both protocols. As a protocol, it uses fewer resources than H.323.

<b>SIP Registrar</b>	See <a href="#">Registrar</a> on page 147.
<b>SIP Server</b>	A SIP server is a network device communicating via the SIP protocol.
<b>SIP URI</b>	See <a href="#">URI</a> on page 151.
<b>Slider</b>	See <a href="#">Content Slider</a> on page 139.
<b>SNMP</b>	Simple Network Management Protocol (SNMP) is a protocol used to monitor network devices by sending messages and alerts to their registered SNMP server.
<b>Software endpoint</b>	A software endpoint turns a computer or portable device into a videoconferencing endpoint via a software application only. It uses the system's camera and microphone to send image and sound to the other participants, and displays their images on the screen. For example, Scopia® Desktop Client or Scopia® Mobile.
<b>SQCIF</b>	SQCIF defines a video resolution of 128 x 96 pixels.
<b>SRTP</b>	Secure Real-time Transport Protocol (SRTP) adds security to the standard RTP protocol, which is used to send media (video and audio) between devices in SIP calls. It offers security with encryption, authentication and message integrity. The encryption uses a symmetric key generated at the start of the call, and being symmetric, the same key locks and unlocks the data. So to secure transmission of the symmetric key, it is sent safely during call setup using TLS.
<b>SSO</b>	See <a href="#">Single Sign On</a> on page 148.
<b>Standard Definition</b>	See <a href="#">SD</a> on page 148.
<b>Streaming</b>	Streaming is a method to send live or recorded videoconferences in one direction to viewers. Recipients can only view the content; they cannot participate with a microphone or camera to communicate back to the meeting. There are two types of streaming supported in Scopia® Solution: unicast which sends a separate stream to each viewer, and multicast which sends one stream to a range of viewers.
<b>STUN</b>	A STUN server enables you to directly dial an endpoint behind a NAT or firewall by giving that computer's public internet address.
<b>SVC</b>	SVC extends the H.264 codec standard to dramatically increase error resiliency and video quality without the need for higher bandwidth. It is especially effective over networks with high packet loss (like wireless networks) which deliver low quality video. It splits the video stream into layers, comprising a small base layer and then additional layers on top

which enhance resolution, frame rate and quality. Each additional layer is only transmitted when bandwidth permits. This allows for a steady video transmission when available bandwidth varies, providing better quality when the bandwidth is high, and adequate quality when available bandwidth is poor.

**SVGA**

SVGA defines a video resolution of 800 x 600 pixels.

**Switched video**

Switching is the process of redirecting video as-is without transcoding, so you see only one endpoint's image at a time, usually the active speaker, without any video layouts or continuous presence (CP). Using video switching increases the port capacity of the Scopia® Elite MCU only by four times.

**! Important:**

Use switched video only when all endpoints participating in the videoconference support the same resolution. If a network experiences high packet loss, switched video might not be displayed properly for all endpoints in the videoconference.

**SXGA**

SXGA defines a video resolution of 1280 x 1024 pixels.

**Telepresence**

A telepresence system combines two or more endpoints together to create a wider image, simulating the experience of participants being present in the same room. Telepresence systems always designate one of the endpoints as the primary monitor/camera/codec unit, while the remainder are defined as auxiliary or secondary endpoints. This ensures that you can issue commands via a remote control to a single codec base which leads and controls the others to work together as a single telepresence endpoint.

**Telepresence - Dual row telepresence room**

Dual row telepresence rooms are large telepresence rooms with two rows of tables that can host up to 18 participants.

**TLS**

TLS enables network devices to communicate securely using certificates, to provide authentication of the devices and encryption of the communication between them.

**Transcoding**

Transcoding is the process of converting video into different sizes, resolutions or formats. This enables multiple video streams to be combined into one view, enabling continuous presence, as in a typical videoconferencing window.

**UC (Unified Communications)**

UC, or unified communications deployments offer solutions covering a wide range of communication channels. These include audio (voice), video, text (IM or chat), data sharing (presentations), whiteboard sharing (interactive annotations on shared data).

<b>Unbalanced Microphone</b>	An unbalanced microphone uses a cable that is not especially built to reduce interference when the cable is long. As a result, these unbalanced line devices must have shorter cables to avoid audio disruptions.
<b>Unicast Streaming</b>	Unicast streaming sends a separate stream of a videoconference to each viewer. This is the default method of streaming in Scopia® Desktop server. To save bandwidth, consider multicast streaming.
<b>URI</b>	URI is an address format used to locate a device on a network, where the address consists of the endpoint's name or number, followed by the domain name of the server to which the endpoint is registered. For example, <i>&lt;endpoint name&gt;@&lt;server_domain_name&gt;</i> . When dialing URI between organizations, the server might often be the Avaya Scopia® PathFinder server of the organization.
<b>URI Dialing</b>	Accessing a device via its <a href="#">URI</a> on page 151.
<b>User profile</b>	A user profile is a set of capabilities or parameter values which can be assigned to a user. This includes available meeting types (services), access to Scopia® Desktop and Scopia® Mobile functionality, and allowed bandwidth for calls.
<b>VFU</b>	See <a href="#">Video Fast Update (VFU)</a> on page 151.
<b>VGA</b>	VGA defines a video resolution of 640 x 480 pixels.
<b>Video Fast Update (VFU)</b>	Video Fast Update (VFU) is a request for a refreshed video frame, sent when the received video is corrupted by packet loss. In response to a VFU request, the broadcasting endpoint sends a new intra-frame to serve as the baseline for the ongoing video stream.
<b>Video Layout</b>	A video layout is the arrangement of participant images as they appear on the monitor in a videoconference. If the meeting includes a presentation, a layout can also refer to the arrangement of the presentation image together with the meeting participants.
<b>Video Resolution</b>	See <a href="#">Resolution</a> on page 147.
<b>Video Switching</b>	See <a href="#">Switched video</a> on page 150.
<b>Videoconference</b>	A videoconference is a meeting of more than two participants with audio and video using endpoints. Professional videoconferencing systems can handle many participants in single meetings, and multiple simultaneous meetings, with a wide interoperability score to enable a wide variety of endpoints to join the same videoconference. Typically you can also share PC content, like presentations, to other participants.
<b>Viewer Portal</b>	The Avaya Scopia® Streaming and Recording Viewer Portal is embedded in the Avaya Scopia® Desktop user portal. To access the Viewer Portal, you can select <b>Recordings and Events</b> on the main Scopia® Desktop page.

From the Viewer Portal, you can watch recordings and navigate through the categories.

**Virtual Delivery Node** The Avaya Scopia® Streaming and Recording Virtual Delivery Node (VDN) is a device to push content to an external Content Delivery Network (CDN). The method for publishing content to a CDN is tightly coupled to the Avaya Scopia® Streaming and Recording platform which allows a company's video assets to be managed from a central location.

If you want to use a VDN and a CDN, you must buy cloud storage and services from Highwinds™, with the appropriate bandwidth and capacity for your needs. You apply the credentials you receive from Highwinds in the Avaya Scopia® Streaming and Recording Manager to securely access the CDN.

**Virtual Room** A virtual room in Scopia® Desktop and Scopia® Mobile offers a virtual meeting place for instant or scheduled videoconferences. An administrator can assign a virtual room to each member of the organization. Users can send invitations to each other via a web link which brings you directly into their virtual room. Virtual meeting rooms are also dialed like phone extension numbers, where a user's virtual room number is often based on that person's phone extension number. You can personalize your virtual room with PIN numbers, custom welcome slides and so on. External participants can download Scopia® Desktop or Scopia® Mobile free to access a registered user's virtual room and participate in a videoconference.

**VISCA Cable** A crossed VISCA cable connects two PTZ cameras to enable you to use the same remote control on both.

**Waiting Room** A waiting room is a holding place for participants waiting for the host or moderator to join the meeting. While waiting, participants see a static image with the name of the owner's virtual room, with an optional audio message periodically saying the meeting will start when the host arrives.

**Webcast** A webcast is a streamed live broadcast of a videoconference over the internet. Enable Scopia® Desktop webcasts by enabling the streaming feature. To invite users to the webcast, send an email or instant message containing the webcast link or a link to the Scopia® Desktop portal and the meeting ID.

**WUXGA** WUXGA defines a video resolution of 1920 x 1200 pixels.

**XGA** XGA defines a Video resolution of 1024 x 768 pixels.

**Zone** Gatekeepers like Avaya Scopia® ECS Gatekeeper split endpoints into zones, where a group of endpoints in a zone are registered to a

gatekeeper. Often a zone is assigned a dial prefix, and usually corresponds to a physical location like an organization's department or branch.