User Guide for Avaya Scopia® Elite 6000 Series MCU

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Chapter 1 | About the Avaya Scopia® Elite MCU

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

The MCU supports communications in the board room, at the desktop, in the home, or on the road over wireless.

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 QCIF 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 1: 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.

Chapter 2 | Making Calls on a Scopia® Elite MCU

To start or join a meeting with multiple participants, you need an MCU like the Scopia® Elite MCU.

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.

This section explains how to start or join a meeting instantly or by using an auto-attendant number which your system administrator has defined in the organization's dial plan. The section also includes recommendations on how to optimize your videoconference experience.

Navigation

Tips for Participating in a Videoconference

There are several general recommendations you should follow to optimize your videoconferencing experience.

We recommend that you read this section before participating in a videoconference for the first time.

- Use natural gestures and speak normally as in a real meeting.
- Do not rustle paper or tap on the table or the microphone.
- Keyboard clicking can be disruptive to the videoconference, so we recommend using the mute when listening but not actively participating.
- Zooming too close can show that your eyes are not looking directly at the camera, in some cases. Set the zoom of the built-in camera so the frame includes the user's head and upper body.
- If you are using a laptop during a meeting, do not place it too close to the microphone. Noise produced by the computer fan may interfere with audio quality.
- Always mute the microphone before moving it.
- Avoid using your cellular phones during your meeting to avoid electromagnetic interference.

Starting or Joining an Instant Meeting

About this task

To host instant or scheduled meetings with multiple participants, you need an MCU like the Scopia® Elite MCU.

Participants meet in a virtual room which they access from Scopia® Desktop or from dedicated endpoints by using a dial prefix followed by the meeting ID. The dial prefix determines the MCU meeting type. Meeting types (also known as MCU services) are meeting templates which determine the core characteristics of a meeting. They determine if the meeting is audio only or audio and video, they determine the default video layout, type of encryption, PIN protection, and many other features.

The following procedure describes how to start or join an instant meeting. To host scheduled meetings, see *User Guide for Scopia® Management*.

Before you begin

Select the dial prefix and meeting ID for your meeting. These are part of your company's dial plan.

If you invite participants outside your network, verify the dialing information for an external endpoint with your system administrator.

Procedure

1. Start your meeting using Scopia® Desktop or a dedicated endpoint.

2. Tell the participant about the dial prefix and meeting ID.

   Participants join by entering the dial prefix and meeting ID in the Scopia® Desktop user portal or by dialing from dedicated endpoints.

Starting or Joining a Meeting with the Auto-Attendant

About this task

Use the Auto-Attendant to create or join a new videoconference. Auto-Attendant, also known as video IVR, offers quick access to meetings hosted on MCUs, via a set of visual menus. You can only access the Auto-Attendant before starting a meeting.

Procedure

1. Contact your system administrator and verify the auto-attendant number. By default, the auto-attendant number is set to *1800*.

   Scopia® Management determines the auto-attendant number in your organization.

2. From the endpoint, dial the auto-attendant number, then perform one of these actions:

   - Dial **0** on your keypad to create a new meeting.

- Dial the number corresponding to the meeting to join from the list of existing meetings.

  Do not confuse this DTMF menu with the in-call moderator menu (Moderating a Meeting on the Scopia® Elite MCU on page 13), which is only available during an ongoing meeting.
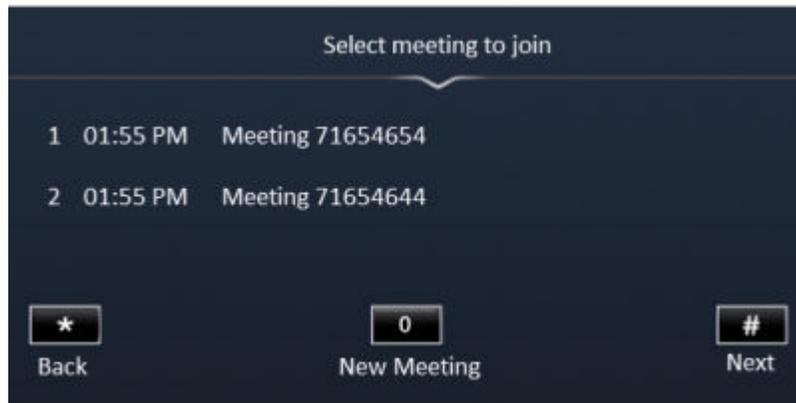
Figure 2: MCU Auto-Attendant menu

Chapter 3 | Personalizing your MCU Video Layout During a Meeting

About this task

If your endpoint uses a DTMF keypad, you can change your own video layout while participating in a meeting and without affecting the other participants' layout. 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 following personal layouts are available for different numbers of participants.
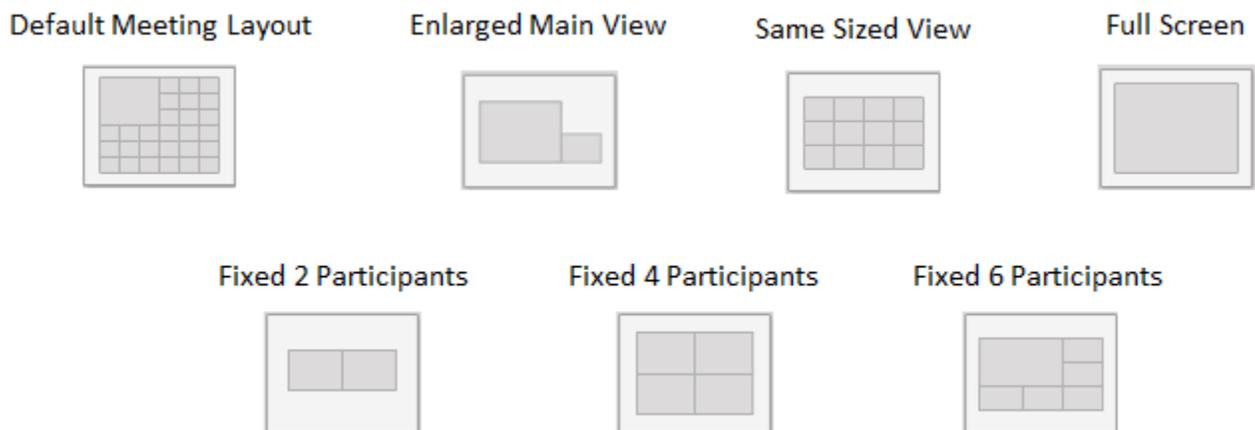
Figure 3: Video layout options

🛈 **Important:**

The default meeting layout is usually a dynamic layout that automatically adapts depending on the number of participants in the meeting.

Viewing shared content during a meeting activates an additional set of video layouts (Figure 4: Gallery layouts with content sharing on page 11).

Figure 4: Gallery layouts with content sharing

- Vertical strip of participants and enlarged shared content. This is the default gallery layout. The strip automatically adapts to include up to six participants in the meeting.
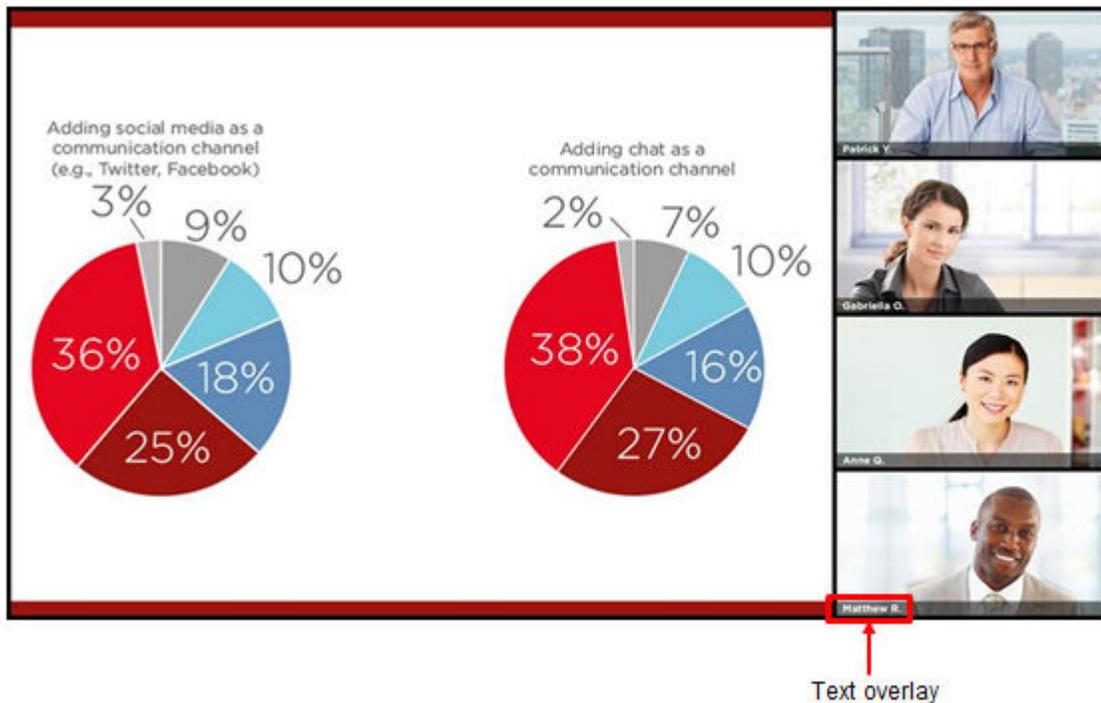
Figure 5: Gallery layout example with text overlay

- Horizontal strip of participants and enlarged shared content. The strip automatically adapts to include up to six participants in the meeting.
- Full screen showing shared content.

For example, some endpoints format images for a 4:3 screen, while others use the 16:9 format. This mismatch between endpoints can create unused vertical or horizontal strips around the image. Choosing a different layout can optimize your video experience.

You can always rotate back to the traditional layout shown in . Endpoints such as Avaya Flare Experience or Microsoft Lync automatically display the default vertical strip when content sharing starts.

Procedure

1. Press **0** on your endpoint's remote control to activate the personal video layout mechanism.

2. To change how participants are displayed in the layout, continue to press **0** to rotate through the personal video layout options shown in .

3. (Optional) Press **#** to automatically adjust the size of the video display to better fit your endpoint screen.

4. By default, your own image is not in the video layout. Press **1** to add your image, and press **1** to remove it.

5. By default, the video layout shows text overlays (Figure 5: Gallery layout example with text overlay on page 11). Press **2** to remove them, and press **2** to return them to the video layout.

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Chapter 4 | Moderating a Meeting on the Scopia® Elite MCU

During an ongoing MCU meeting, you can perform moderator functions using numeric dial keys (DTMF) from your endpoint's remote control or keypad. DTMF, or touch-tone, is the method of dialing on touch-tone phones, where each number is translated and transmitted as an audio tone.

To access the moderator in-call menu, press the star key (*) during the call.

The DTMF moderator menu is for endpoints with DTMF keypads, like the Avaya Scopia® XT Series or third party endpoints. The visual menu is also read aloud, enabling both audio and video endpoints to access these functions.

❗ Important:

The same moderator functions are available from the native menus of Scopia® Desktop or the XT Series, so it is unnecessary to access this DTMF menu from those endpoints.

The DTMF menu is not the same as the Auto-Attendant menu (), which is available only before a meeting begins.

There are two versions of the DTMF moderator menu:

- As a participant who is not the moderator of the meeting, you can access a limited set of features via DTMF during a meeting.
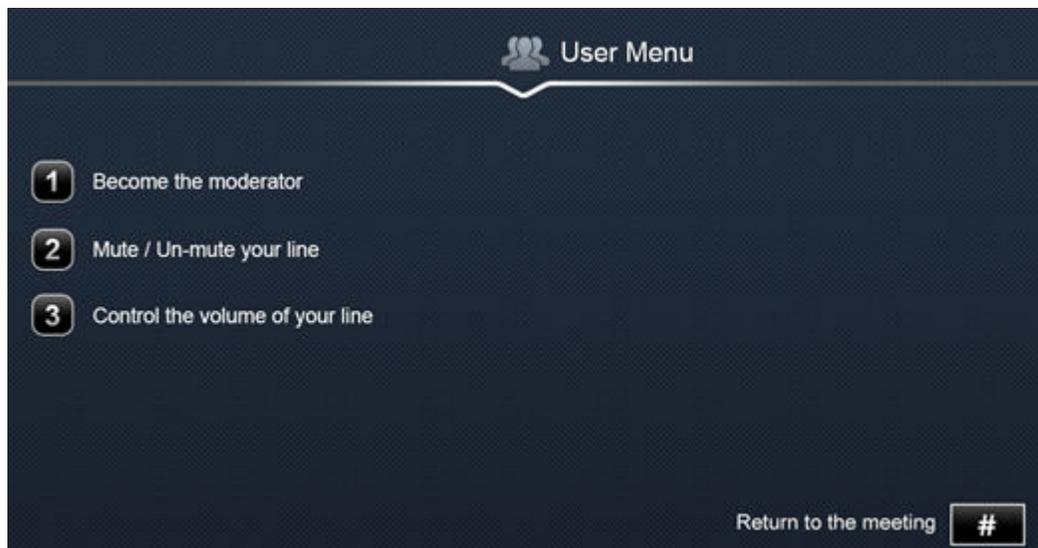
Figure 6: MCU DTMF menu for non-moderator participants

- As a moderator, you can access the complete list of moderator functions to perform.
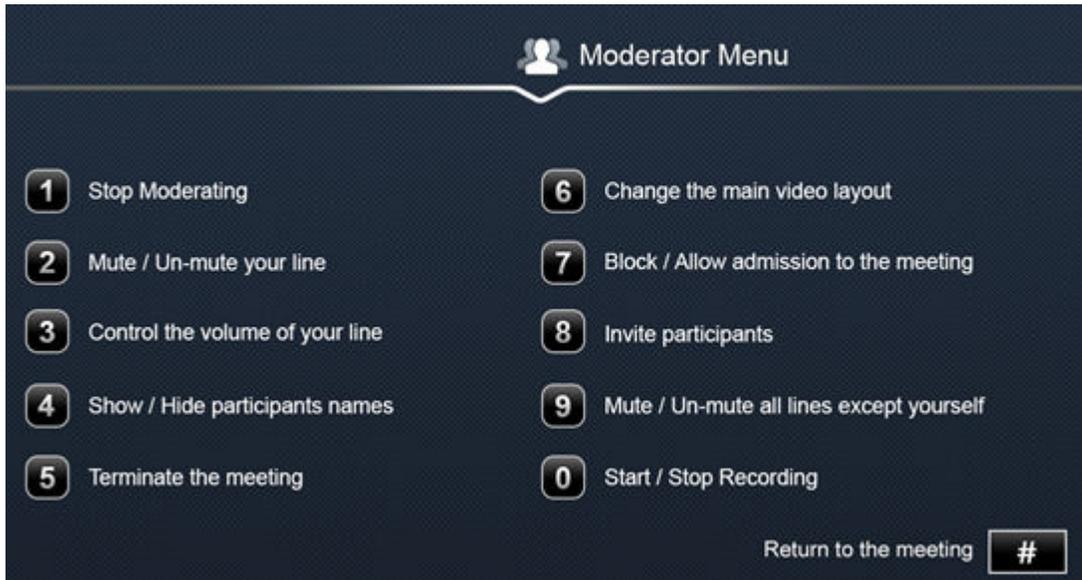
Figure 7: MCU DTMF moderator menu

To become a moderator, select **1** and enter the moderator PIN number, if required. To stop moderating the meeting, press **1** again.

During a meeting, other participants can see an audio-only icon at the top of their screen (Figure 8: Visual representation of audio-only participants on page 14), showing the number of audio-only participants and the name of the audio-only active speaker.

Figure 8: Visual representation of audio-only participants

Glossary of Terms for Scopia® Solution

1080p

See Full HD on page 19.

2CIF

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.

2SIF

2SIF describes a video resolution of 704 x 240 pixels (NTSC) or 704 x 288 (PAL). This is often adopted in IP security cameras.

4CIF

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.

4SIF

4SIF describes a video resolution of 704 x 480 pixels (NTSC) or 704 x 576 (PAL). This is often adopted in IP security cameras.

720p

See HD on page 22.

AAC

AAC is an audio codec which compresses sound but with better results than MP3.

Alias

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.

AGC (Automatic Gain Control)

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.

Auto-Attendant

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.

Balanced Microphone

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.

BFCP (Binary Floor Control Protocol)

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.

Bitrate

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).

Call Control

See Signaling on page 30.

Cascaded Videoconference

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.

CIF

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).

Content Slider

The Scopia® Content Slider stores the data already presented in the videoconference and makes it available for participants to view during the meeting.

Continuous Presence

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.

Control

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.

CP

See

Dedicated Endpoint

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.

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.

Dial Prefix

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.

Distributed Deployment

A distributed deployment describes a deployment where the solution components are geographically distributed in more than one network location.

DNS Server

A DNS server is responsible for resolving domain names in your network by translating them into IP addresses.

DTMF

DTMF, or touch-tone, is the method of dialing on touch-tone phones, where each number is translated and transmitted as an audio tone.

Dual Video

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.

Dynamic Video Layout

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.

E.164

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 #.

Endpoint

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.

Endpoint Alias

See Alias on page 15.

FEC

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.

FECC

Far End Camera Control (FECC) is a feature of endpoint cameras, where the camera can be controlled remotely by another endpoint in the call.

Forward Error Correction

See FEC on page 19.

FPS

See Frames Per Second on page 19.

Frame Rate

See Frames Per Second on page 19.

Frames Per Second

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.

Full HD

Full HD, or Full High Definition, also known as 1080p, describes a video resolution of 1920 x 1080 pixels.

Full screen Video Layout

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).

Gatekeeper

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.

Gateway

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.

GLAN

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.

H.225

H.225 is part of the set of H.323 protocols. It defines the messages and procedures used by gatekeepers to set up calls.

H.235

H.235 is the protocol used to authenticate trusted H.323 endpoints and encrypt the media stream during meetings.

H.239

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.

H.243

H.243 is the protocol used with H.323 endpoints enabling them to remotely manage a videoconference.

H.245

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.

H.261

H.261 is an older protocol used to compress CIF and QCIF video resolutions. This protocol is not supported by the XT Series.

H.263

H.263 is an older a protocol used to compress video. It is an enhancement to the H.261 protocol.

H.264

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.

H.264 Baseline Profile

See H.264 on page 21.

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.

H.320

H.320 is a protocol for defining videoconferencing over ISDN networks.

H.323

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.

H.323 Alias

See Alias on page 15.

H.350

H.350 is the protocol used to enhance LDAP user databases to add video endpoint information for users and groups.

H.460

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.

HD

A HD ready device describes its high definition resolution capabilities of 720p, a video resolution of 1280 x 720 pixels.

High Availability

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.

High Definition

See HD on page 22.

High Profile

See H.264 High Profile on page 21.

HTTPS

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.

Image Resolution

See Resolution on page 28.

kbps

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).

KBps

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.

LDAP

LDAP is a widespread standard database format which stores network users. The format is hierarchical, where nodes are often represented as *branch location > department > sub-department*, or *executives > managers > staff members*. 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.

Lecture Mode

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.

Load balancer

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).

Location

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.

Management

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.

MBps

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.

MCU

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.

MCU service

See Meeting Type on page 25.

Media

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 17.

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.

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.

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.

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.

NetSense

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.

Packet Loss

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.

PaP Video Layout

The PaP (Picture and Picture) view shows up to three images of the same size.

Phantom Power

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.

PiP Video Layout

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.

Point-to-Point

Point-to-point is a feature where only two endpoints communicate with each other without using MCU resources.

PoP Video Layout

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.

Prefix

See Dial Prefix on page 18.

PTZ Camera

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.

Q.931

Q.931 is a telephony protocol used to start and end the connection in H.323 calls.

QCIF

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.

Quality of Service (QoS)

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.

Recordings

A recording of a videoconference can be played back at any time. Recordings include audio, video and shared data (if presented). In Scopia® Desktop, any participant with moderator rights can record a meeting. Users can access Scopia® Desktop recordings from the Scopia® Desktop web portal or using a web link to the recording on the portal.

Redundancy

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.

Registrar

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.

Resolution

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.

Restricted Mode

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.

Room System

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.

RTP

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.

RTCP

Real-time Control Transport Protocol, used alongside RTP for sending statistical information about the media sent over RTP.

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 17.

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 25.

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.

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.

SIP Server

A SIP server is a network device communicating via the SIP protocol.

SIP URI

See URI on page 33.

SIP Registrar

See Registrar on page 28.

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.

Slider

See Content Slider on page 17.

SNMP

Simple Network Management Protocol (SNMP) is a protocol used to monitor network devices by sending messages and alerts to their registered SNMP server.

Software endpoint

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.

SRTP

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.

SSO

See Single Sign On on page 30.

Standard Definition

See SD on page 29.

Streaming

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.

STUN

A STUN server enables you to directly dial an endpoint behind a NAT or firewall by giving that computer's public internet address.

SVC

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.

SQCIF

SQCIF defines a video resolution of 128 x 96 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).

Unbalanced Microphone

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.

Unicast Streaming

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.

URI

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.

URI Dialing

Accessing a device via its URI on page 33.

User profile

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.

VFU

See Video Fast Update (VFU) on page 34.

VGA

VGA defines a video resolution of 640 x 480 pixels.

Videoconference

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.

Video Fast Update (VFU)

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.

Video Layout

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.

Video Resolution

See Resolution on page 28.

Video Switching

See Switched video on page 32.

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.