Installing the Avaya Scopia® Streaming and Recording Server

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Contents

Chapter 1: Introducing Avaya Scopia® Streaming and Recording

Avaya Scopia® Streaming and Recording server

The Avaya Scopia® 8.3.2 solution introduces a new component, Avaya Scopia® Streaming and Recording server (Scopia® SR). Scopia® SR is the Avaya next generation HD streaming and recording platform, bringing significant enhancements to the Avaya Scopia® solution for streaming and recording. The Avaya Scopia® Streaming and Recording server replaces the Avaya Scopia® Content Center Recording server (SCC) server.

Before you install Scopia® SR, you must make a number of decisions in order to ensure that the solution exactly matches the requirements of your deployment. For example, you must make a decision about scalability in accordance with the size of your enterprise. For a small enterprise, you can choose a single appliance which houses all of the Scopia® SR components. For a large enterprise, you can choose a distributed solution with multiple media nodes. Scopia® SR is highly flexible and easily adaptable, whatever your requirements. In addition, you must decide if you require a high degree of redundancy and whether you would like to enable external access and storage in the 'cloud'.

If you would like users outside of the enterprise to access recordings, you can deploy Scopia® SR in a Demilitarized Zone (DMZ) or use a reverse proxy server. In this way, the Scopia® SR is similar to the Avaya Scopia® Web Collaboration server (WCS). If you would like users outside of the enterprise to access the videoconference, you must deploy the WCS in a DMZ or use a reverse proxy server. Scopia® SR and WCS also support a Network Address Translation NAT Firewall configuration in a DMZ deployment. NAT Firewall is an additional layer of security. It blocks unrequested inbound traffic.

For more information, see the *Avaya Scopia® Solution Solution Guide*, which is available on https://support.avaya.com/.

Components

The Scopia® SR consists of the following components:

- Scopia® SR Conference Point™ (CP)
- Scopia® SR Delivery Node™ (DN)
- Scopia® SR Virtual Delivery Node™ (VDN)
- Scopia® SR Manager™

Scopia® SR Conference Point™

You must configure a conference point to capture H.323 video content and deliver live and on demand webcasting. The Scopia® SR conference point includes an embedded transcoder to convert H.323 calls into Windows Media or .MP4 format.

Each conference point must be associated with a delivery node. A delivery node streams and optionally archives the content captured by the conference point and delivers it to client systems.

You can configure a conference point to be in a geographic location. This means that you can assign a location to one or more conference points which coincide with locations set for Scopia® MCUs in Scopia® Management. When a program starts, Scopia® Management includes the desired location, and a conference point close to the MCU can be selected. If there are no conference points matching the location passed by Scopia® Management, then any conference points without a location are treated as a single pool of conference points, and one of those is selected. If there are no conference points available, the call fails.

Each conference point has a limit to the number of simultaneous high definition or standard definition calls it can handle.

The CP includes the following features:

- Video conferencing H.323 capture and transcoding

- High definition support

- Scalability for up to 10 high definition (1080p) or 30 standard definition (480p) calls, which include an audio/video and data stream each

- G.711 and AAC-LC audio capture and transcoding

- H.263, H.263+, H.264 capture and transcoding

The media node or all-in-one server can include the CP and transcoder components. The H.323 video and audio and the optional H.239 stream received by the CP are sent to the internal encoder for transcoding into Windows Media™ format or H.264/AAC MP4/MPEGTS/HLS formats.

- Operating Systems: The transcoder runs on the Windows Server 2012 R2 64-bit operating system with Hyper-V (an add-on to Windows Server 2012 that allows a Linux operating system to run on the same server). The CP runs on the CentOS 6.6 64-bit operating system. Using virtualization software, this enables both applications to run two different operating systems on the same server.

- Licensing: The server requires a single media node license for the CP. The license defines the number of simultaneous H.323 connections. An H.323 connection includes audio, video, and an optional H.239 secondary stream.

- Transcoding H.323 audio and Video: The CP connects H.323 calls to the Scopia® MCUs (Multipoint Control Units). When it establishes a video connection, the CP sends the audio and video data from the MCU to the internal transcoder. The transcoder converts the data into a format that is suitable for streaming.

- Transcoding with H.239: H.239 is an ITU recommendation that allows for establishment of multiple channels within a single H.323 session. Existing videoconference equipment can be used to stream audio and video and a secondary channel can stream a slide presentation or another data stream to the viewers of a program. This function is typically used to stream slide presentations synchronized with live audio and video. If a program uses a secondary H.239 channel, the encoder inputs the second stream, decodes, scales and mixes it with the main

video input for transcoding/streaming. The streams are then sent to the DN for delivery to the distribution network. The dual stream can also be recorded as a single MP4 program.

- High definition support: The CP supports high definition video and higher rate streaming quality and bandwidth. The CP supports the following ITU recommendations:

  - H.261 up to CIF Video

  - H.262 up to CIF video

  - H.263 up to CIF video

  - H.264 up to 1080p video

  - H.263+ up to 1024 x 768 H.239 data

  - H.264 up to 1080p H.239 data

  - G.711 audio

  - AAC-LC audio

  The CP negotiates up to H.264 Level 3.2 video at 1.92 Mbps, and accepts up to 1080p and down to H.261 QCIF along with G.711 or AAC-LC audio. The streaming resolution and bandwidth rate depend on what you select for the bitrate when creating the program and what the Scopia® MCU negotiates.

Scopia® SR Delivery Node™

The DN provides on-demand and broadcast video delivery. Used alone or in a hierarchy of devices, the DN supports thousands of concurrent streams. The DN uses intelligent routing, content caching, and inherent redundancy to ensure transparent delivery of high-quality video.

Delivery nodes store all content that is created by the conference point and deliver the content to client systems. You must associate the conference point with the delivery nodes.

The Delivery Node Details dialog displays a list of **Source Programs** and **Distributed Programs**. Source programs are programs for which this delivery node is the main source for storage. Distributed programs are programs which other delivery nodes have forwarded to this delivery node.

Scopia® SR Virtual Delivery Node™ (VDN)

A virtual delivery node (VDN) delivers content to a global content delivery network (CDN) provider for cloud-based viewer playback. The appliance and the network of the CDN act as one delivery mechanism. Therefore, the VDN appliance and the CDN together create the Scopia® SR VDN solution.

Upon program creation, the publisher includes the options of distributing the program to delivery nodes and to the Scopia® SR VDN solution. VDN supports publishing recordings as well as live broadcast.

You can view the programs distributed to the VDN appliance and to be delivered to the CDN with the associated status of the program.

Scopia® SR currently only supports the HighWinds™CDN

Scopia® SR Manager™

The Scopia® SR Manager provides a web-based interface to configure and manage streaming and recording software, devices, services, and users. The Scopia® SR Manager application resides on a single hardware platform and provides access to all content in the Scopia® SR environment.

There are two Scopia® SR Manager portals:

- Scopia® SR Manager Administrator Portal: Administrators use this portal to perform the following tasks:

  - Configure and manage video communications devices

  - Manipulate content

  - Monitor user roles

  - Create and set global policies

  - Identify best practices and usage effectiveness through comprehensive reporting

  - Allow access to the VDN for CDN deployment or programs

  - Manage organizations, in a multi-tenant deployment (including what profiles, categories and CDN settings they can access)

  - Create and manage viewer mappings to associate viewers with the appropriate distribution node location

- Scopia® SR Manager Viewer Portal: Viewers select the **Recordings and Events** tab on the main Avaya Scopia® Desktop page to access the viewer portal. Viewers can perform the following tasks:

  - View programs

  - Navigate categories

  - View live or on-demand programs

Related Links

Example of a direct DMZ deployment

Figure 1: Direct DMZ Deployment on page 9 displays an example of a Scopia® SR deployment that is situated directly in the demilitarized zone (DMZ). The deployment is a centralized or all-in-one solution, which means that all of the Scopia® SR components reside on a single server. An all-in-one solution is suitable for a small or medium deployment that does not require redundancy.
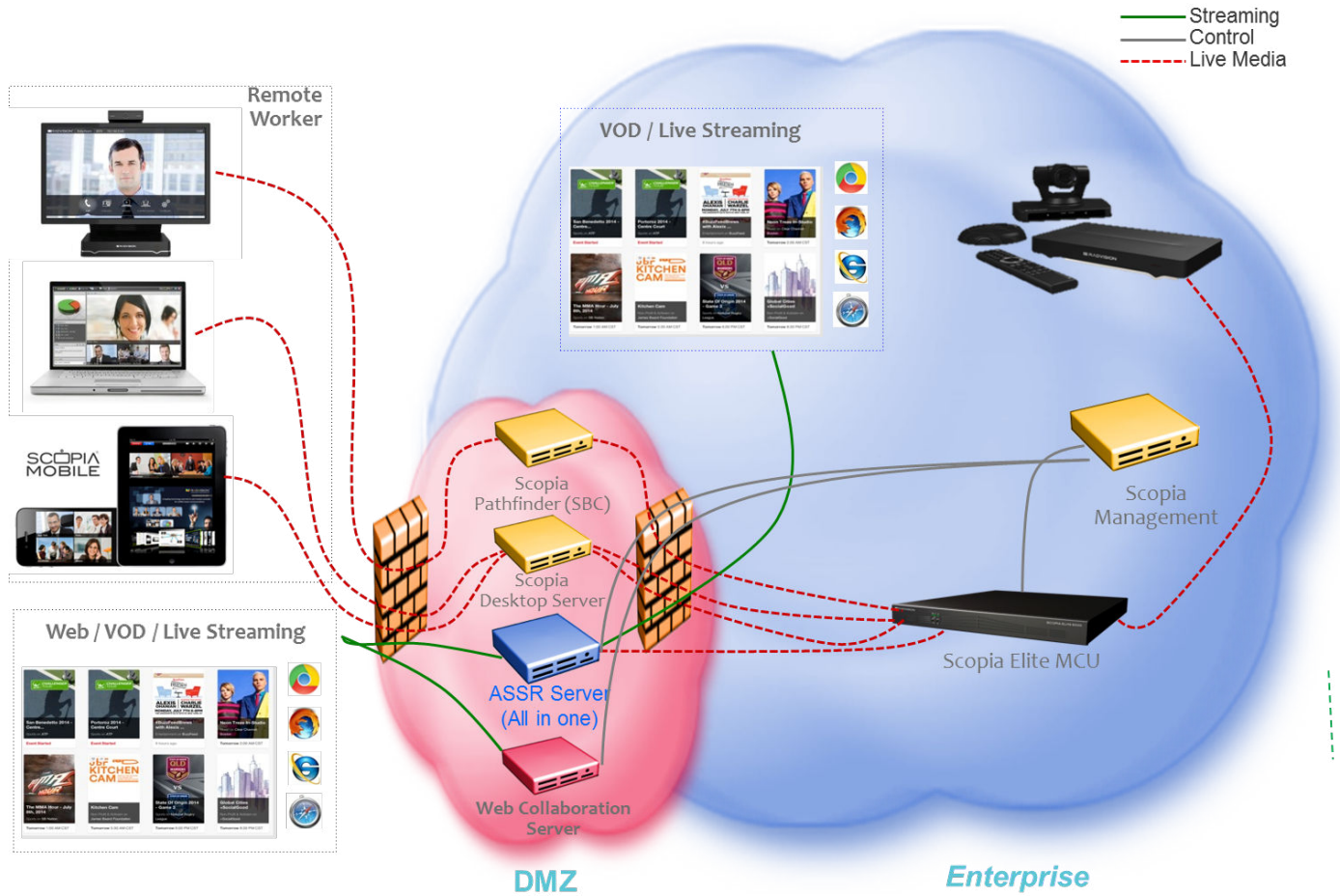
Figure 1: Direct DMZ Deployment

In a typical small deployment, all of the Scopia® SR components reside on a single server. The Scopia® SR Manager and the transcoder run directly on the host server. The conference point (CP), delivery node (DN), and, optionally, a virtual delivery node (VDN) run as virtual servers. VDNs enable enterprises to host recordings in the cloud.

Figure 2: Components in an All-In-One Deployment

Related Links

Example of a reverse proxy deployment

Figure 3: Reverse Proxy Deployment on page 11 displays an example of a Scopia® SR deployment that includes a reverse proxy server. The deployment is a centralized or all-in-one solution.
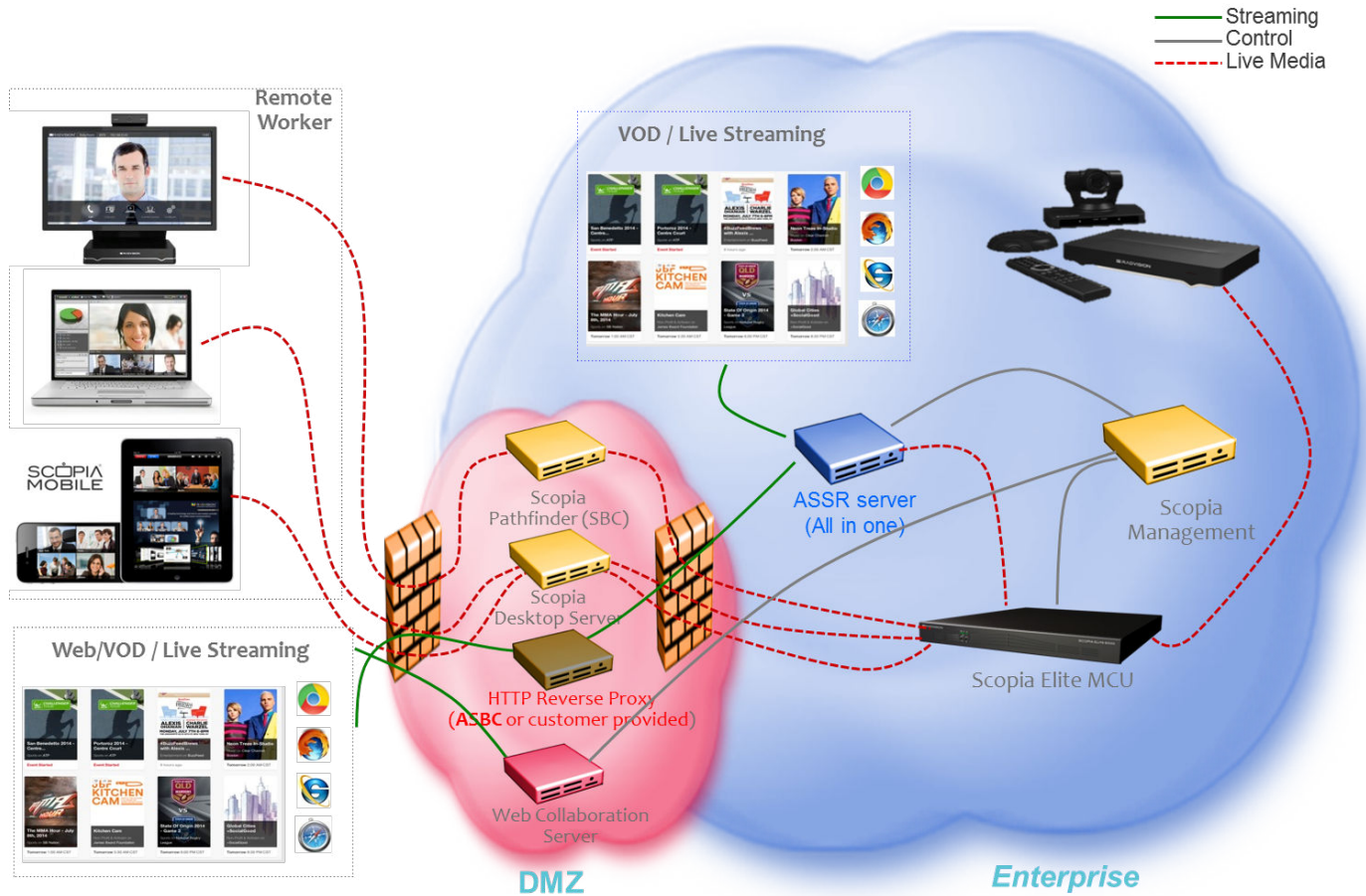
Figure 3: Reverse Proxy Deployment

Related Links

Example of a distributed deployment

on page 12 displays an example of a distributed Scopia® SR deployment. The deployment also uses a reverse proxy server. In this example, there are several delivery nodes (DNs) and/or conference points (CPs). This configuration enables Scopia® SR to host large numbers of recordings. A configuration with multiple media nodes can also provide redundancy.
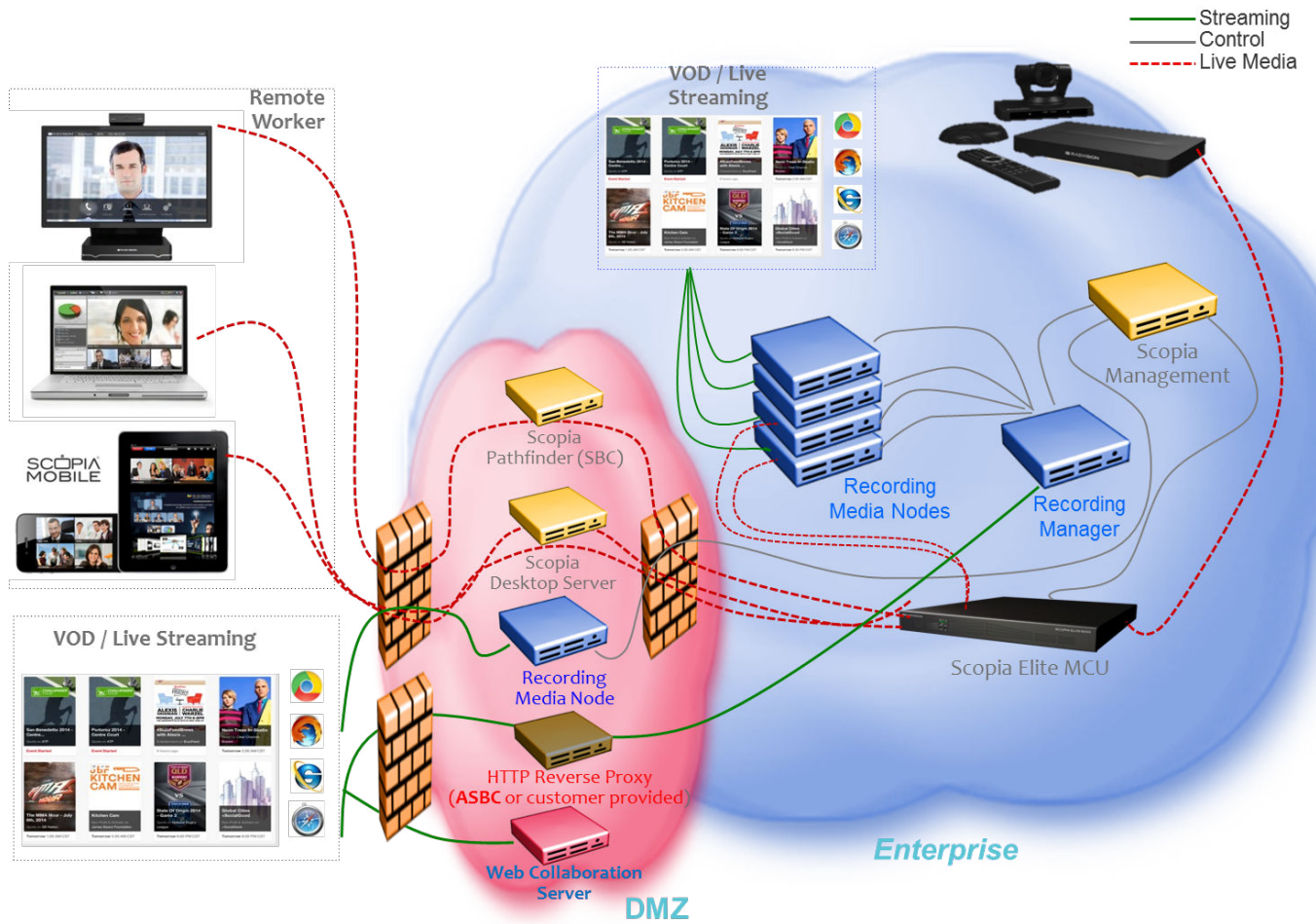
Figure 4: Distributed Deployment

In a typical distributed deployment, the Scopia® SR Manager resides on a separate, dedicated server. The various media nodes can operate as CPs, DNs, or virtual delivery nodes (VDNs). VDNs enable enterprises to host recordings in the cloud.

Recording Manager

Media Node
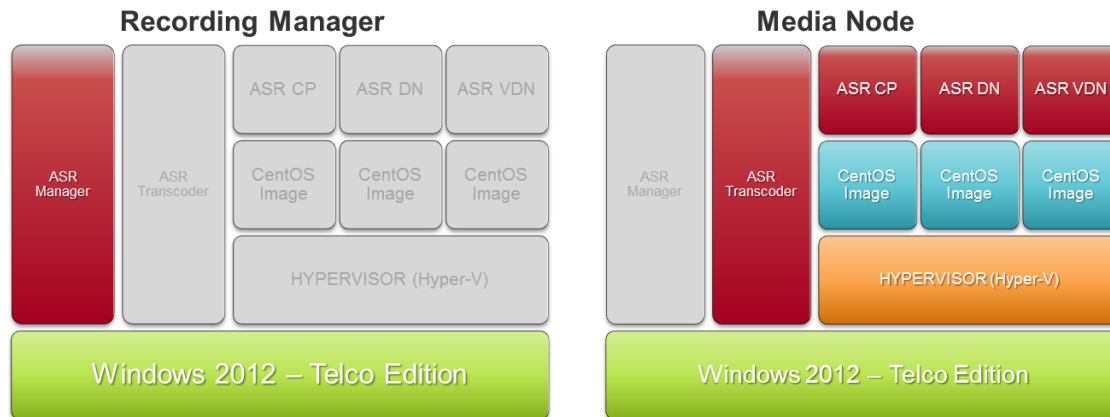
Figure 5: Components in a Distributed Deployment

Related Links

[Avaya Scopia Streaming and Recording server](#) on page 5
[Deployment choices for centralized and distributed solutions](#) on page 13

Deployment choices for centralized and distributed solutions

The Scopia® SR server performs three functions:

- Content recording
- Content delivery
- Content management

Content delivery, in this context, refers to streaming.

When you run the configuration utility (or *wizard*), you choose between three deployment options for the Avaya Scopia® Streaming and Recording server (Scopia® SR). You can choose to house all three functions on a single server. Alternatively, you can choose to house the management function on one server and the recording and delivery functions on another server or servers. This configuration involving multiple servers is called a distributed system.

If you intend to house all three functions on a single server, you must run the configuration utility on that server. On the selection screen, you must choose **All-in-One**.

If you intend to install a distributed system, you must run the configuration utility on each server in the system. On the selection screen, you must choose whether the server will house the content management or the recording and delivery functions.

Related Links

[Example of a distributed deployment](#) on page 11
[All-in-one](#) on page 14
[Content Management components only](#) on page 14
[Media Node only](#) on page 14

All-in-one

If your Scopia® SRdeployment is an all-in-one system, all Scopia® SR components reside on a single server.

Related Links

[Deployment choices for centralized and distributed solutions](#) on page 13

Content Management components only

If your Scopia® SR deployment is a distributed system, the Scopia® SR components reside on multiple servers. You must install the content management components on one server and install the recording and delivery components on another server or servers.

For a distributed system, you must run the Scopia® SR Configuration Utility on each of the servers. When you are running the configuration utility on the server which will act as the content management server, you must select **Content management components only** on the Select Configuration dialog of the configuration wizard.

Related Links

[Deployment choices for centralized and distributed solutions](#) on page 13

Media Node only

If your Scopia® SR deployment is a distributed system, the Scopia® SR components reside on multiple servers. You must install the content management components on one server and install the recording and delivery components on another server or servers.

For a distributed system, you must run the Scopia® SR Configuration Utility on each of the servers. You can install the recording component on one server and the delivery component on another server. Alternatively, you can install both aspects on a single server. In this distributed configuration, these servers act as media nodes. When you are running the configuration utility on a server which will act a media node, you must select **Media Node only** on the Select Configuration dialog of the configuration wizard.

A media node that is used for the recording component is called a Conference Point (CP).

A media node that is used for the delivery component is called a Delivery Node (DN).

Related Links

[Deployment choices for centralized and distributed solutions](#) on page 13

Example of a cloud deployment

[Figure 6: Cloud Deployment](#) on page 15 displays an example of a Scopia® SR deployment that hosts recordings in the cloud. The deployment is a centralized or all-in-one solution that uses a reverse proxy server. A cloud deployment uses a virtual delivery node (VDN) to host recordings remotely.
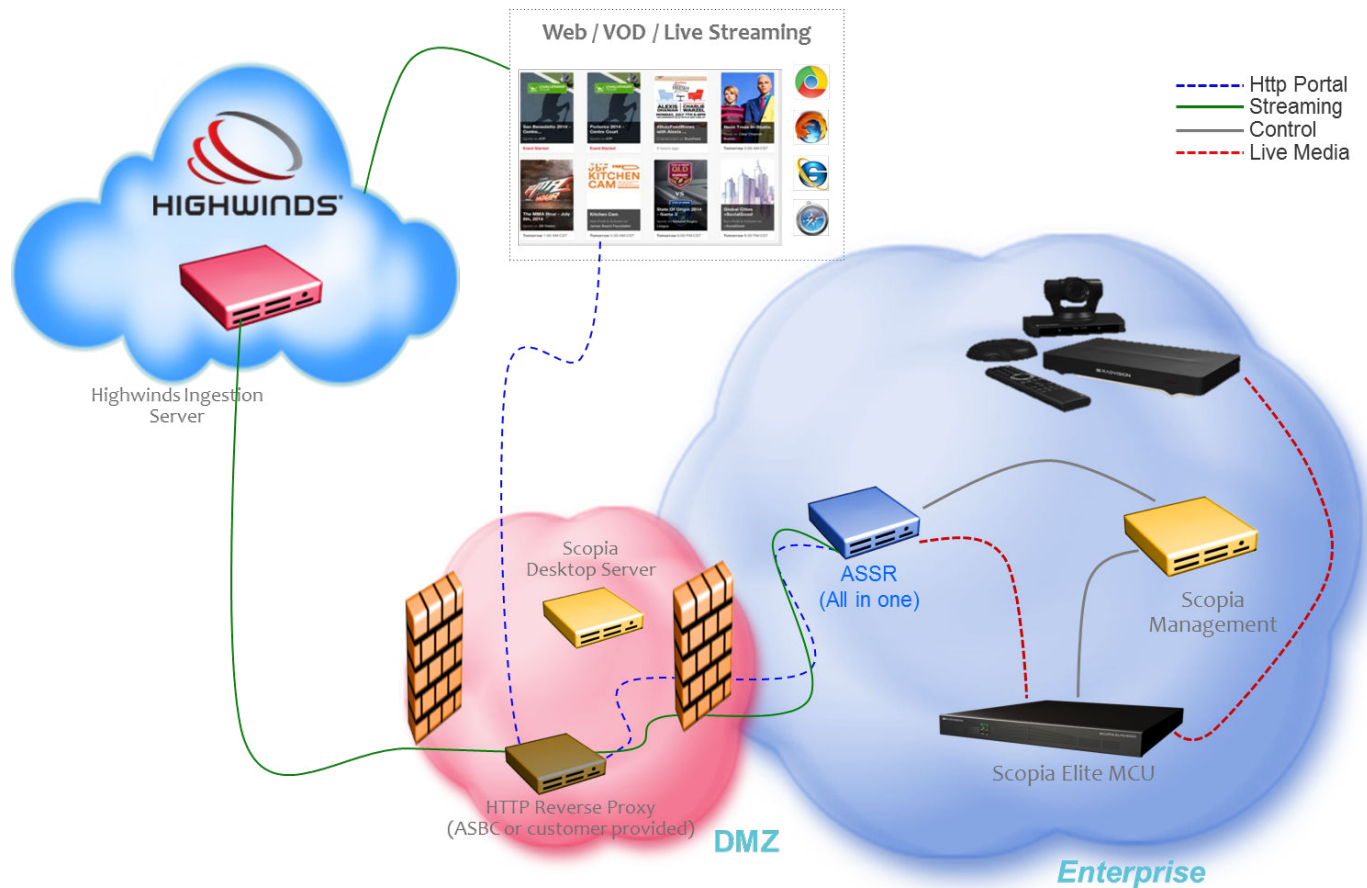
Figure 6: Cloud Deployment

Related Links

[Avaya Scopia Streaming and Recording server](#) on page 5

Scalability

Recording

Scopia® SR supports up to 10 high definition (1080p) or 30 standard definition (480p) recordings with H.239 simultaneously. The system negotiates high definition whenever possible.

The resolution negotiated is based on the configuration of the MCU service as well as the Scopia® SR profile. By limiting the profile to 480p or less, you can do 30 simultaneous recordings (trading off higher quality recordings versus the ability to do more recordings).

Scopia® SR supports a mix of resolutions, and can do three standard definition calls for every one high definition call. So, for example, if the system is licensed for 10 concurrent recordings, you can do any of the combinations of calls in .

Table 1: Call Combinations

High Definition	Standard Definition
0	30
1	27
2	24
3	21
4	18
5	15
6	12
7	9
8	6
9	3
10	0

Playback

On a standalone media node configured for DN only, Scopia® SR supports up to 3,500 viewers at 720p / 768K for live broadcast or video on demand playback simultaneously.

On all-in-one servers or media nodes configured with DN and CP, Scopia® SR supports up to 1,500 viewers at 720p / 768K for live broadcast or video on demand playback simultaneously.

Related Links

System requirements

Before you log on to Scopia® SR Manager administration pages, your client system must meet the system requirements listed in

Table 2: Requirements

Component	Requirement
Operating system	• Mac OS X 10.7 (Lion) or later • Windows Vista™ • Windows 20XX • Windows 7™ (32 and 64 Bit) • Windows 8™
Web browser	• Microsoft Internet Explorer 8.0™ or later • Mozilla Firefox 35™ or later (Mac or Windows) • Chrome 30™ or later (Mac or Windows)

Table continues…

Component	Requirement
	• Safari 6™ or later (Mac)
	JavaScript must be enabled.

Before you log on to Scopia® SR Manager user pages, your client system must meet the system requirements listed in Table 3: Requirements on page 17.

Table 3: Requirements

Component	Requirement
Web browser	• Microsoft Internet Explorer 8.0™ or later
	• Mozilla Firefox 35™ or later (Mac or Windows)
	• Chrome 30™ or later (Mac, Windows, or Android)
	• Safari 6™ or later (Mac, iOS)
	JavaScript must be enabled.
Operating system	• Mac OS X 10.7 (Lion) or later
	• Windows Vista™
	• Windows 20XX
	• Windows 7™ (32 and 64 Bit)
	• Windows 8™
	• iOS
	• Android
Media Player	Microsoft Windows Media Player™ Release 9.0, 10.0, or 11.0 to view programs.
Silverlight	Microsoft Silverlight™ player to view programs.
HTMLV5 Browsers	A select number of browsers support video playback directly for MP4 VoD files including:
	• Internet Explorer 9, 10, 11
	• Safari 6™ or later
	• Chrome 30™ or later
IOS Tablet and Phones, Android Tablets and Phones, Windows Phones/Tablets	Playback function for MP4 VoD files

 Note:

To support non-Western language character sets, install the particular language pack on the client system from which you are accessing the Scopia® SR Manager. Refer to the operating system documentation for your system.

Related Links

Avaya Scopia Streaming and Recording server on page 5

Chapter 2: Installing the new streaming and recording server

Installation checklist

Follow the steps in this checklist to install the Avaya Scopia® Streaming and Recording server (Scopia® SR).

➕ **Tip:**

It is a good idea to print out this checklist and to mark each task as you complete it.

No.	Task	Description	Notes	✔
1	Learn more about the new streaming and recording server and figure out your deployment type.	Avaya Scopia® Streaming and Recording server on page 5		
2	Connect the LAN cables, keyboard, mouse, and monitor.	Physically connecting the new server on page 19		
3	Start up the server.	Starting the new server on page 20	You require the Microsoft Windows product key.	
4	Configure the server using the Avaya Scopia® Streaming and Recording server Configuration Wizard.	Configuring the new server on page 21		
5	Set the IP addresses and apply the licenses.	Licensing the new server on page 24		
6	Configure the network that each device will use to communicate with the Scopia® SR Manager.	Configuring external addresses for public interfaces on page 33	Before registering devices, you may want to set which network each device uses to communicate	

Table continues…

No.	Task	Description	Notes	✔
			with the Scopia® SR Manager. This forces the proper communication path to and from the Scopia® SR Manager no matter which IP the Scopia® SR Manager uses to communicate with the Scopia® SR device.	
7	Register each of the components with the main server.	Registering each of the components on page 34		

Physically connecting the new server

Before you begin

You require a keyboard, a mouse, and a monitor. You also require several IP addresses and up to four category 5e LAN cables. Ensure that you received the following items with your Avaya Scopia® Streaming and Recording server (Scopia® SR):

- Power cords
- Rack mount kit

Procedure

1. Connect the keyboard, mouse, and monitor.

2. Connect the LAN cable(s).

   Scopia® SR comes with four 1 Gbit NICs which are bonded. Connect to at least one or all four. They all respond with a single IP address.

   Figure 7: Front and Rear Views on page 20 displays the unit.

Front View

Rear View

USB   Network Connections   Power

Figure 7: Front and Rear Views

3. Connect the power cable.

4. Power up the unit.

Next steps

Return to the to see your next task.

Starting the new server

The Microsoft Windows™ 2012 R2 license is already configured on your server.

Procedure

1. Start up the server.

2. Press Ctrl+Alt+Delete to log in.

3. Choose **C** to configure the network settings.

   You can configure the network addresses statically or dynamically. Avaya recommends using statically assigned IP addresses, as the IP address needs to remain constant. If you do choose to use dynamically assigned IP addresses, your network must be DHCP-enabled.

4. Choose **S** for statically assigned IP addresses or **D** for dynamically assigned IP addresses.

   If you choose **D**, the setup tries to obtain an address. If you choose **S**, you are prompted to enter the IP address.

5. Enter your subnet mask by choosing an appropriate prefix length.

6. Enter the gateway address.

   You must enter a valid gateway address that fits within the IP and subnet mask that you previously entered. The system provides a valid range of IPs that you can use for the gateway. You must pick one of these IP addresses.

7. Enter your primary DNS Server IP.

This is a mandatory step.

8. **(Optional)** Enter a secondary DNS IP or press **Enter** if you want to skip this step.

9. **(Optional)** Enter a DNS suffix.

   You should enter a DNS suffix for FQDN/SSL configurations.

10. Enter the server host name, or press **Enter** to use the default generated hostname.

    You should enter a hostname for FQDN/SSL configurations.

11. Confirm the configuration and select **Y** if it is correct, or **N** if you would like to reenter the data.

    When you enter **Y**, the server reboots.

12. When the server starts up again, press Ctrl+Alt+Delete to log in.

13. **(Optional)** Synchronize the time on the new server with the time on your NTP server.

    a. Click on the time and date in the task bar.

    b. Click **(Change date and time settings...)**.

    c. On the Date and Time tab, perform the following actions:

       • Set the correct date and time using the **Change date and time** button.

       • Set the correct timezone using the **Change timezone** button.

    d. On the Internet Time tab, click **Change settings...** and perform the following actions:

       • Ensure that **Synchronize with an Internet time server** is selected.

       • Enter the NTP server in the **Server** list.

       • Click **OK**.

14. Click **OK**.

Next steps

Return to the [Installation checklist](#) on page 18 to see your next task.

Configuring the new server

The Avaya Scopia® Streaming and Recording server Configuration Utility launches automatically when the operating system is loaded for the first time. You can also run the configuration utility at any time from the Start menu or from the desktop shortcut.

If you previously installed a Delivery Node (DN), either as part of an all-in-one deployment or on its own, you can add or remove a Virtual Delivery Node (VDN) without disrupting the server configuration. If you have not previously installed a DN, the configuration utility erases any previous configurations on the Scopia® SR server.

About this task

Ths task describes how to configure Scopia® SR in an enterprise deployment. If yours is a service provider deployment, the steps vary slightly.

Procedure

1. On the Choose Setup Language dialog, select your preferred language.

2. On the next screen, click **Next**.

   The first time you run the configuration utility, a Welcome screen is displayed.

   If you run the configuration utility again, a Warning screen is displayed.

3. On the End-User License Agreement screen, select **I accept the terms of the License Agreement** to accept the license agreement.

4. Click **Next**.

5. On the Select Configuration screen, select your deployment type.

   For more information, see
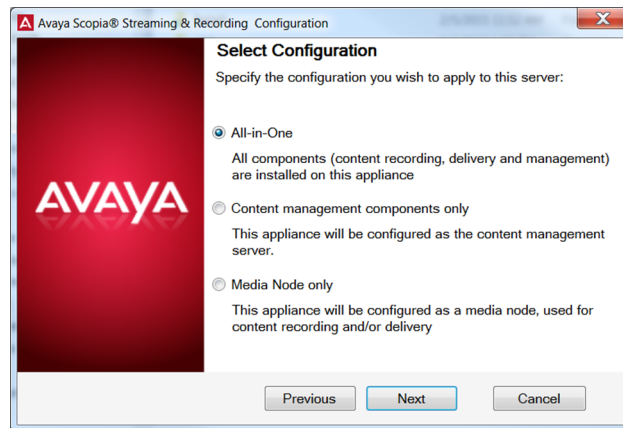
Figure 8: Select Configuration

6. On the Deployment Type screen, perform one of the following actions:

   • If you have selected **All-in-One** on the Select Configuration screen, select **Enterprise deployment** or **Multi-tenant** to match your Scopia® Management deployment.
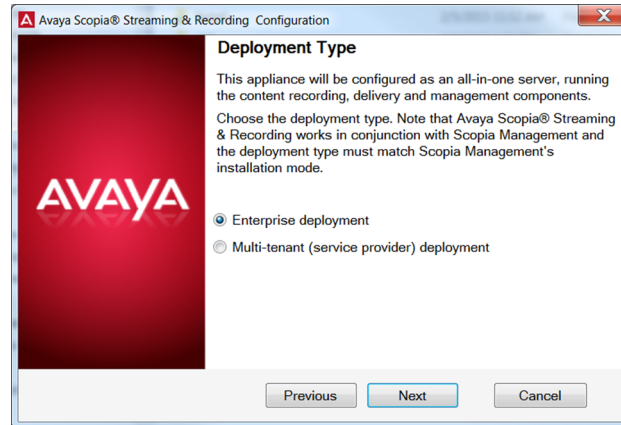
Figure 9: Deployment Type

- If you have selected **Content management components only** on the Select Configuration screen, select **Enterprise deployment** or **Multi-tenant** to match your Scopia® Management deployment. The screen is similar to Figure 9: Deployment Type on page 23.

- If you have selected **Media Node only** on the Select Configuration screen, select whether you want to install the recording and delivery (streaming) components, the recording components, or the delivery components by selecting **Configure content recording and streaming components**, **Configure content recording components only**, or **Configure content streaming components only**.

Figure 10: Deployment Type

7. Click **Next**.

8. **(Optional)** At this point, you can choose to install a Virtual Delivery Node (VDN).

   You should only use a VDN if you subscribe to the HighWinds Content Delivery Network (CDN). CDN is a cloud-based streaming system.

   a. Select **Install a Virtual Delivery Node (VDN) on this server**.

   b. Click **Next**.

9. On the Finish Configuration screen, click **Finish**.

The Scopia® SR Configuration Utility installs the Scopia® SR components.

10. On the Complete Configuration screen, click **View Addresses** to display the MAC addresses of the Scopia® SR.

   You require these MAC addresses in order to license the Scopia® SR. The MAC addresses are also stored in `C:\assrconfigtool\MAC_Addresses.txt`.

11. Make note of the MAC addresses.

   This information is required when you access the Avaya PLDS system to obtain a license key.

Next steps

Return to the to see your next task.

Licensing checklist

Follow the steps in this checklist to license the Avaya Scopia® Streaming and Recording server (Scopia® SR).

No.	Task	Description	Notes	✔
1	Set the IP address of each of the remaining components. You have already set the IP address of the Scopia® SR Manager.	Setting the IP address of the recording component (Conference Point) on page 25 Setting the IP address of the delivery component (Delivery Node) on page 28		
2	Restart services.	Restarting services on page 29		
3	Apply the license to each of the components.	Applying the license to the management component on page 29 Applying the license to the recording component (Conference Point) on page 30 Applying the license to the delivery component (Delivery Node) on page 31	You must apply the license to all components.	

Related Links

Applying the license to the recording component (Conference Point) on page 30
Applying the license to the delivery component (Delivery Node or Virtual Delivery Node) on page 31

Setting the IP address of the recording component (Conference Point)

The recording component is known as the conference point or CP.

About this task

You should set an IPv4 address.

Before you begin

Obtain the Avaya Scopia® Streaming and Recording server license keys from the Avaya Product Licensing and Delivery System (PLDS).

Procedure

1. Double-click on the Hyper-V Manager shortcut on the desktop.

2. In the Virtual Machines panel, double-click on the **CP** entry.
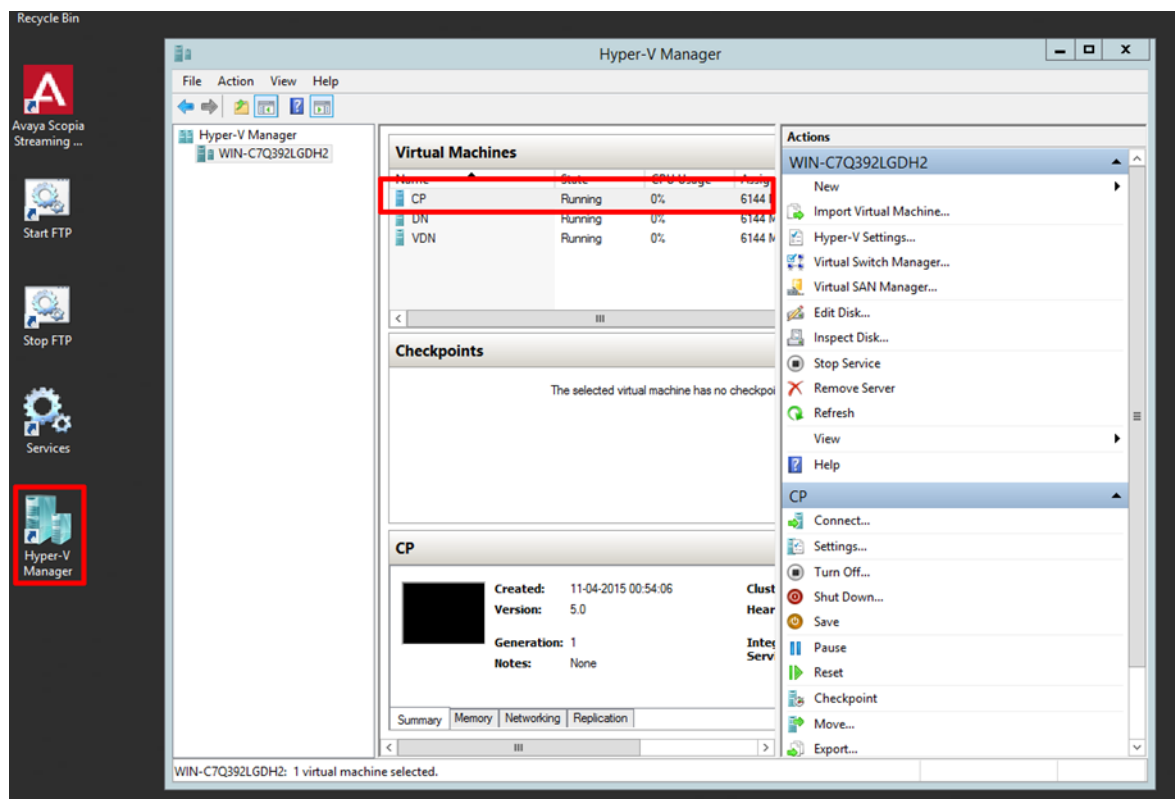
Figure 11: Hyper-V Manager

3. On the Log-in screen, select **Other** and enter `root` in the **Username** field.

4. Click **Log-in**.

5. Enter `Avaya123!` in the **Password** field.

   This is the default password.

6. On the CP Virtual Machine Connection screen, double-click on the **Network** icon.

7. On the Terminal window, highlight **Device configuration** and press `Enter`.
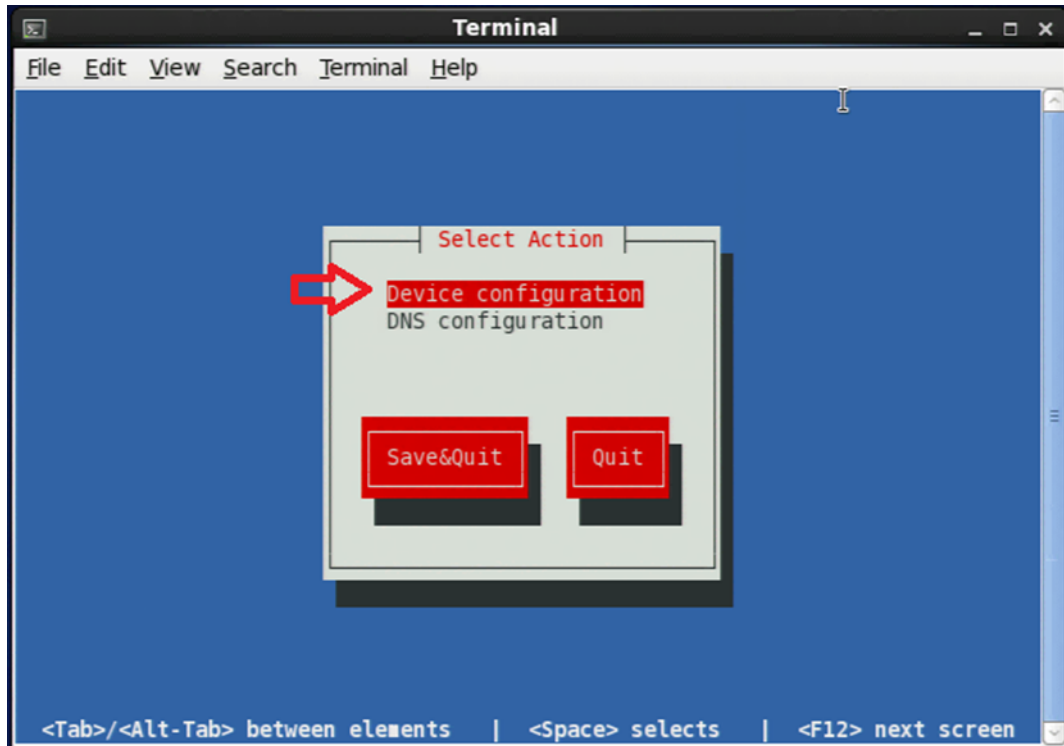
Figure 12: Device Configuration

8. On the Select A Device window, highlight **eth0** and press `Enter`.
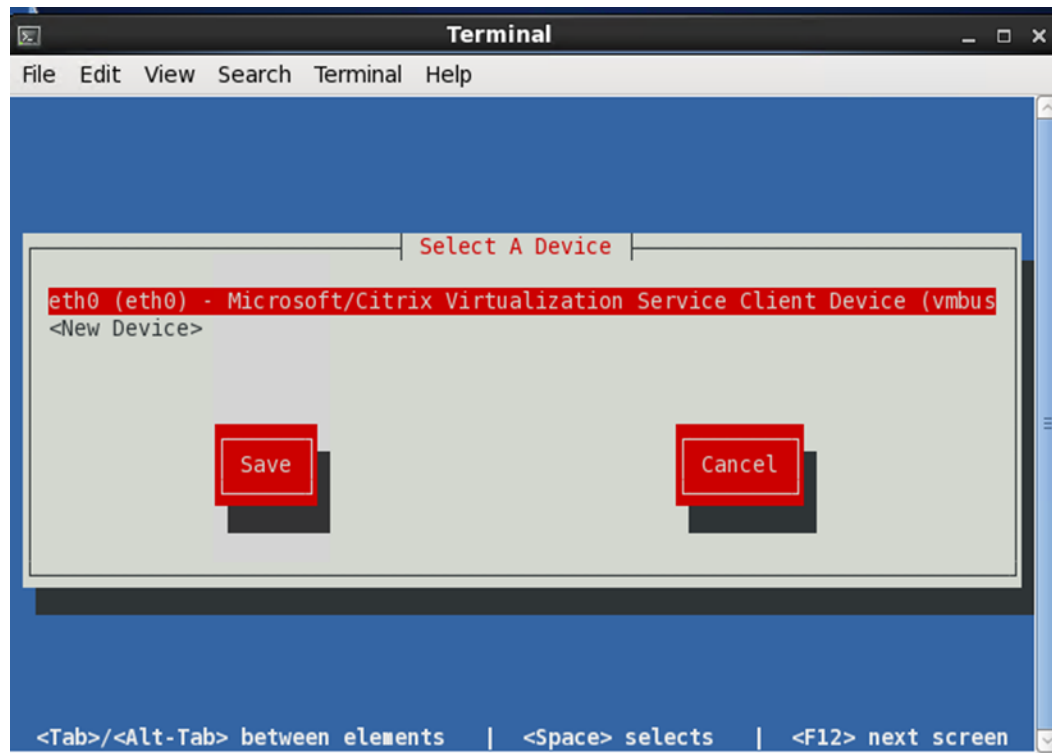
Figure 13: eth0

9. Use the **Tab** key to highlight **Use DHCP** and press the **Spacebar** key to disable DHCP.

10. Use the **Tab** key to navigate to the other fields and enter the following details:

   • Static IP

   • Netmask

   • Default gateway IP

   • Primary DNS Server

   • Secondary DNS Server

Installing the Avaya Scopia® Streaming and Recording Server   27
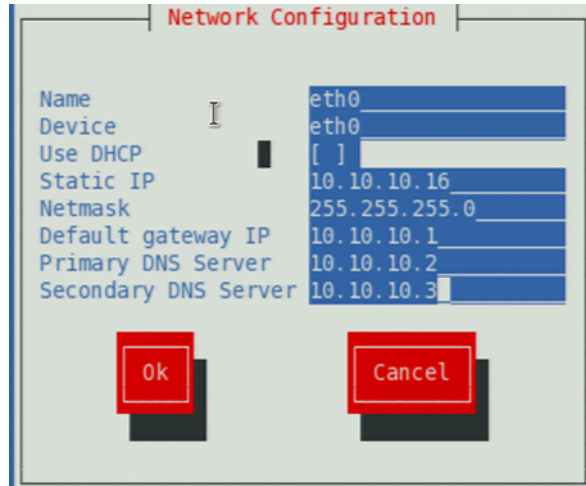
Figure 14: Network Configuration

11. Use the **Tab** key to highlight **Ok** and press `Enter`.

12. On the Select A Device window, use the **Tab** key to highlight **Save** and press `Enter`.

13. Restart Network Services:

    a. Right-click on the desktop and select **Open in Terminal** from the right-click menu options.

    b. In the terminal window, type `service network restart`.

Next steps

Return to the [Licensing checklist](#) on page 24 to see your next task.

Related Links

[Licensing checklist](#) on page 24

Setting the IP address of the delivery component (Delivery Node)

A Delivery Node (DN) can be a Virtual Delivery Node (VDN). You should only use a VDN if you subscribe to the HighWinds Content Delivery Network (CDN). CDN is a cloud-based streaming system. The delivery component is also called streaming.

Procedure

Use the same set of steps that you used for [Setting the IP address of the recording component (Conference Point)](#) on page 25.

Next steps

Return to the [Licensing checklist](#) on page 24 to see your next task.

Related Links

[Licensing checklist](#) on page 24

Restarting services

About this task

The services that you must restart are:

- Apache Tomcat
- Apache 2.2
- Avaya Scopia® Streaming and Recording server Transcoder

Procedure

1. Double-click on the Services icon on the desktop.

2. On the Services screen, right-click **Apache Tomcat 7.0 Tomcat7** and select **Restart** from the right-click menu options.

3. Repeat 2 on page 29 for **Apache2.2** and the **Avaya Scopia Streaming & Recording Transcoder**.

Next steps

Return to the Licensing checklist on page 24 to see your next task.

Related Links

Licensing checklist on page 24

Applying the license to the management component

Procedure

1. Type `http://<wildcat manager IP>` in a web browser.

2. Log in using the following credentials:

   - Username: `admin`
   - Password: `admin`

3. At the prompt, enter the license key in the **License Information** field and click **Update**.

4. Refresh the browser.

Next steps

Return to the Licensing checklist on page 24 to see your next task.

Related Links

Licensing checklist on page 24

Applying the license to the recording component (Conference Point)

Procedure

1. Double-click on the Hyper-V Manager shortcut on the desktop.

2. In the Virtual Machines panel, double-click on the **CP** entry.
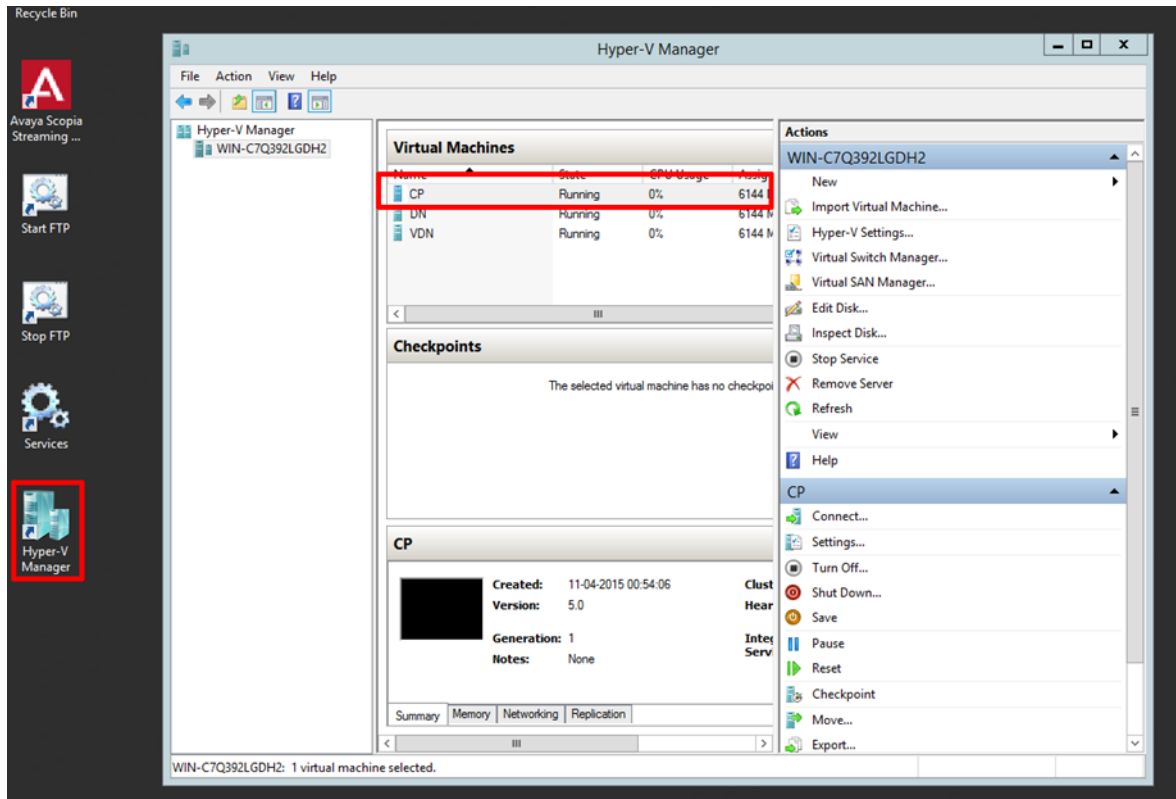
Figure 15: Hyper-V Manager

3. On the Log-in screen, select **Other** and enter `root` in the **Username** field.

4. Click **Log-in**.

5. Enter `Avaya123!` in the **Password** field.

   This is the default password.

6. Double-click on the **Conference Point Web Interface** icon to launch a web browser.

7. On the Conference Point license screen, enter the license key in the **License Key** field and click **Submit**.

Figure 16: Conference Point

Next steps

Return to the to see your next task.

Related Links

Applying the license to the delivery component (Delivery Node or Virtual Delivery Node)

There can only be a single virtual delivery node (VDN) in a deployment.

Procedure

1. Double-click on the Hyper-V Manager shortcut on the desktop.

2. In the Virtual Machines panel, double-click on the **DN** or **VDN** entry.

    You should only use a VDN if you subscribe to the HighWinds Content Delivery Network (CDN). CDN is a cloud-based streaming system.

3. On the Log-in screen, select **Other** and enter `root` in the **Username** field.

4. Click **Log-in**.

5. Enter `Avaya123!` in the **Password** field.

   This is the default password.

6. Double-click on the **Delivery Node Web Interface** icon to launch a web browser.

7. On the Delivery Node license screen, enter the license key in the **License Key** field and click **Submit**.

8. Select the type of delivery node.

   The available options are:

   • DN (Delivery Node)

   • VDN (Virtual Delivery Node)
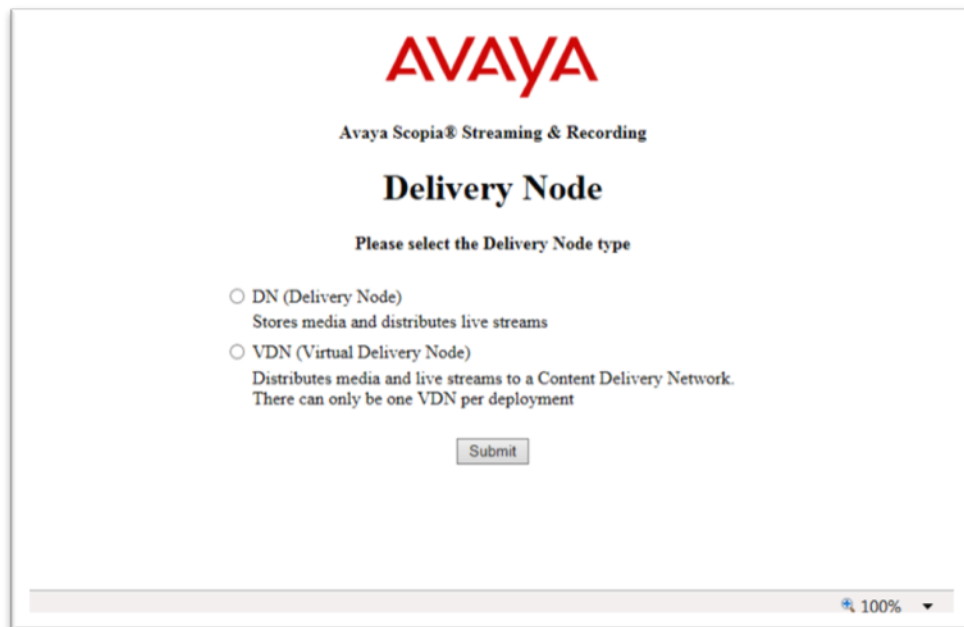
Figure 17: Delivery Node

9. Click **Submit**.

   The DN or VDN is ready for use. The login screen is displayed.

Next steps

Return to the Installation checklist on page 18 to see your next task.

Related Links

Licensing checklist on page 24

Configuring external addresses for public interfaces

About this task

To secure the Scopia® SR public interfaces, proper certificates have to be generated. The certificates have to match the fully qualified domain name (FQDN) or the IP address of the machine. Avaya recommends setting the use of FQDNs.

When you configure your system to use FQDNs, they need to be used to register every device with the Scopia® SR Manager.

You must also configure Scopia® SR to use external addresses, using the FQDN, and not the IP address.

Procedure

1. Configure the external address of the delivery node.

    a. Type `https://<DN IP Address>` in a web browser.

    b. Log in using the following credentials:

        • Username: `administrator`

        • Password: `administrator`

    c. Click the **Network** tab.

    d. Enter the external address in the **External Address (optional)** field in the **Global Network Configuration** section.

    e. Click **Submit**.

2. Configure the external address for the conference point.

    a. Type `https://<CP IP Address>` in a web browser.

    b. Log in using the following credentials:

        • Username: `administrator`

        • Password: `administrator`

    c. Navigate to **System Configuration** > **Network Configuration**.

    d. Enter the external address in the **External Address (optional)** field in the **Global Network Configuration** section.

    e. Click **Finish**.

3. Configure the external address for the transcoder.

    a. Type `https://<CP IP Address>` in a web browser.

    b. Log in using the following credentials:

        • Username: `administrator`

        • Password: `administrator`

    c. Navigate to **System Configuration** > **Transcoder Configuration**.

    d. Enter the external address in the **Transcoder Address** field.

    e. Click **Finish**.

> ✴ **Note:**
>
> If you are using IP addresses, the certificates have to be generated for the IP address. The IP address has to be included on both the **Common Name** field and the **Subject Alternative Name** field when generating the certificates. If the IP address is not included in the **Subject Alternative Name** field, certain devices, such as Mac computers or Android mobile devices may not operate correctly.

Registering each of the components

After you have applied a license to each of the components of the Avaya Scopia® Streaming and Recording server, you must register them with the Avaya Scopia® Streaming and Recording server Manager.

You must register all delivery nodes, virtual delivery nodes, and conference points with the Manager. In addition, you must register the transcoder with the conference point. You do not have to register the transcoder with the Manager.

About this task

The registration process is the same for all delivery nodes, virtual delivery nodes, and conference points.

Procedure

1. Type `http://<Scopia® SR manager IP>` in a web browser.

2. Log in to Scopia® SR using the following credentials:

   • Username: `admin`

   • Password: `admin`

3. Select the **Devices** tab.

4. Click on **Register Devices** from the left **Actions** menu.

5. Enter the IP address or FQDN of the component that you want to register and click **Register**.

6. Repeat 5 on page 34 for each of the components.

7. **(Optional)** Verify the registration for the conference point.

   a. Type `https://<CP IP Address>` in a web browser.

   b. Log in using the following credentials:

      • Username: `administrator`

      • Password: `administrator`

   c. From the left menu bar, click **System Configuration**.

    d. Click **Enable Services**.

    e. Under Manage Device, click **Configure**.

    f. Verify that the **Manage Registration State** is Registered and the **Manager Host** is the proper manager IP.

8. **(Optional)** Verify the registration for the delivery node or virtual delivery node.

    a. Type `https://<DN IP Address>` in a web browser.

    b. Log in using the following credentials:

      • Username: `administrator`

      • Password: `administrator`

    c. From the menu bar, click **Configuration**.

    d. Verify that the **Manage Registration State** is Registered and the **Network Address** is the proper manager IP.

9. Register the transcoder.

    a. Type `https://<CP IP Address>` in a web browser.

    b. Log in using the following credentials:

      • Username: `administrator`

      • Password: `administrator`

    c. From the left menu bar, click **System Configuration**.

    d. Click **Transcoder Configuration**.

    e. Enter the IP address of the transcoder and click **Finish**.
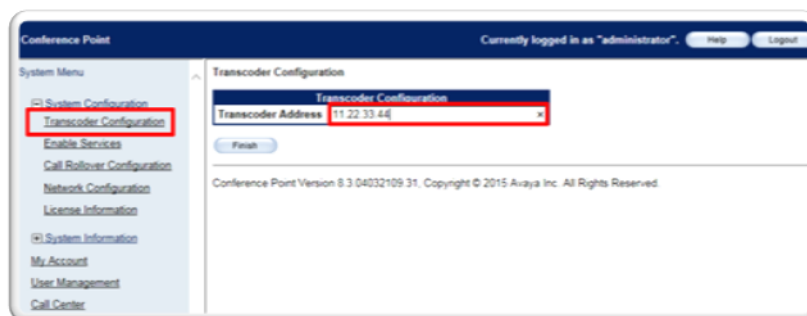
Figure 18: Transcoder Registration

Next steps

Return to the to see your next task.

Related Links

Unregistering each of the components on page 36

Unregistering each of the components

If you plan to move a device to a different Scopia® SR environment, unregister the device before changing its location. If you do not unregister the device using the Scopia® SR Manager, you must unregister it using its local web interface before you can register it to the new Scopia® SR environment.

About this task

The process of unregistering is the same for all delivery nodes, virtual delivery nodes, and conference points.

Procedure

1. Log in to Scopia® SR.

2. Click the **Devices** tab.

3. From the **Browse** menu, select the device you want to access.

   A list of devices of that type is displayed.

4. Select one of the devices.

   The device details dialog is displayed.

5. Click **Unregister**.

Related Links

[Registering each of the components](#) on page 34

Chapter 3: Configuring components

Configuring delivery nodes

Delivery nodes store all content that is created by the conference point and deliver the content to client systems. You must associate the conference point with the delivery nodes.

The Delivery Node Details dialog displays a list of **Source Programs** and **Distributed Programs**. Source programs are programs for which this delivery node is the main source for storage. Distributed programs are programs which other delivery nodes have forwarded to this delivery node.

Procedure

1. Log in to Scopia® SR using the following credentials:

   • Username: `admin`

   • Password: `admin`

2. Select the **Devices** tab.

3. From the **Browse** menu on the left, click **Delivery Nodes**.

4. Click the name of the delivery node to display the delivery node details.
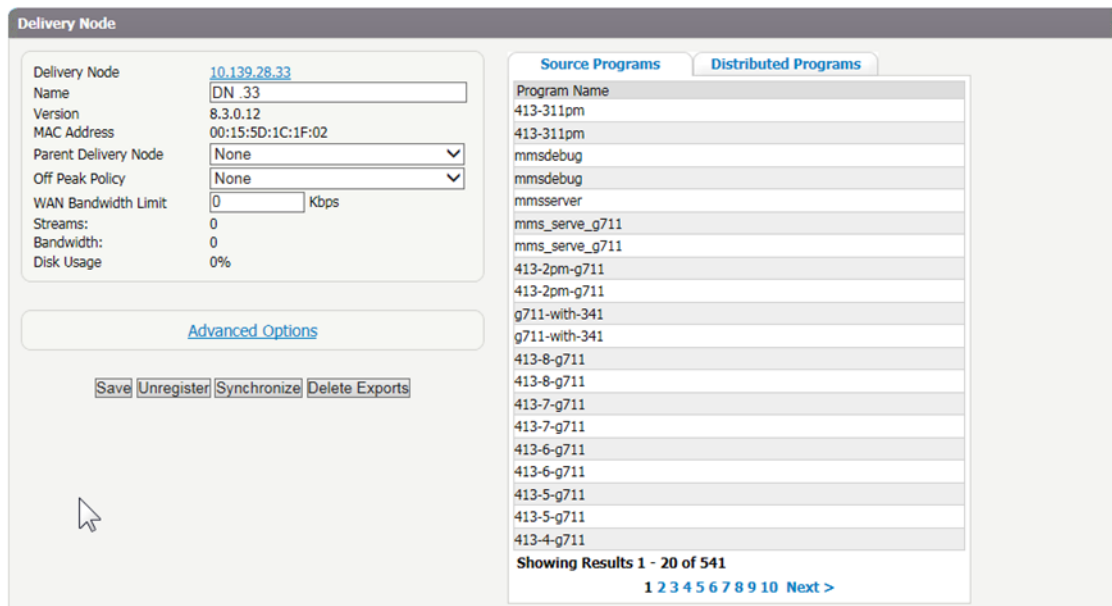
Figure 19: Delivery Node Details

5. Configure the settings, as described in <u>Table 4: Delivery Node Details</u> on page 38.

Table 4: Delivery Node Details

Field Name	Description
Name	Enter a name for the delivery node.
Version	Verify the version and MAC address of the delivery node.
Parent Delivery Node	Select a delivery node. The **Parent Delivery Node** distributes content to the delivery node. If this is a core or parent for the system then leave this set to **None**.
WAN Bandwidth Limit	Specify the maximum bandwidth, in Kbps, that this delivery node can use when receiving/transferring content. If you enter **0** (zero), the bandwidth is unlimited.

6. **(Optional)** If you have configured your system to enable individual delivery nodes to specify the distribution policy, then an additional panel is displayed. Configure the settings, as described in <u>Table 5: Override Default Distribution Policy Panel</u> on page 38.

Table 5: Override Default Distribution Policy Panel

Field	Description
Unicast Only	Select to enable only unicasting from the source delivery node.
Multicast Only	Select to enable only multicasting from the source delivery node.
Multicast and Unicast (Unicast Rollover if Multicast is Unsuccessful)	Select to enable the stream to be unicast from the source delivery node if the client does not support multicasting. If you select this option but multicast facilities are not available on the source delivery node, the unicast rollover does not occur.

7. **(Optional)** Click **Advanced Options** and configure the settings as described in <u>Table 6: Advanced Options</u> on page 38.

Table 6: Advanced Options

Field	Description
Distribute All Programs	Select to take all the programs in the system from other source nodes and copy them to this delivery node.
Replace with new DN	Use this setting when bringing on a replacement delivery node for an older or broken system.

8. Click **Save**.

Configuring conference points

You must configure a conference point to capture H.323 video content and deliver live and on demand webcasting. The Scopia® SR conference point includes an embedded transcoder to convert H.323 calls into Windows Media or .MP4 format.

Each conference point must be associated with a delivery node. A delivery node streams and optionally archives the content captured by the conference point and delivers it to client systems.

You can configure a conference point to be in a geographic location. This means that you can assign a location to one or more conference points which coincide with locations set for Scopia® MCUs in Scopia® Management. When a program starts, Scopia® Management includes the desired location, and a conference point close to the MCU can be selected. If there are no conference points matching the location passed by Scopia® Management, then any conference points without a location are treated as a single pool of conference points, and one of those is selected. If there are no conference points available, the call fails.

Each conference point has a limit to the number of simultaneous high definition or standard definition calls it can handle.

Procedure

1. Log in to Scopia® SR using the following credentials:

   - Username: `admin`

   - Password: `admin`

2. Select the **Devices** tab.

3. From the **Browse** menu on the left, click **Conference Points**.

4. Click the name of the conference point to display the conference point details.

Figure 20: Conference Point Details

5. Configure the settings, as described in

Table 7: Conference Point Details

Field Name	Description
Name	Enter a name for the conference point.
Version	Verify the version and MAC address of the conference point.
Source DN	Select a delivery node. Alternatively, you can select a delivery node from the **Source Group** field.
Source Group	Select a delivery node. Alternatively, you can select a delivery node from the **Source DN** field. The Source Group field displays any distribution groups. A distribution group is a group of delivery nodes and these groups offer redundancy. If one of the delivery nodes in a group is not available, an alternative delivery node from the same group is selected.
Location	Enter a location. The location must match a location specified for a Scopia® MCU in Scopia® Management. If you are not specifying locations in Scopia® Management, you can leave it blank.
Gatekeeper IP	Enter the IP address for the gatekeeper with which you plan to register. The gatekeeper must

Table continues…

Field Name	Description
	be the same as the one used by Scopia® Management.
Gatekeeper Service Prefix	This is an optional field. Enter the service prefix designator for this conference point. You can leave this field as blank.

6. Click **Save**.

Specifying polling intervals and the network address

About this task

You must specify how frequently the Scopia® SR communicates with the other components, such as the conference points and delivery nodes. You must also specify the network on which the Scopia® SR resides. The polling interval should be in proportion to the number of devices. The fewer the devices, the shorter the intervals. For example, if you have over 200 delivery nodes, Avaya recommends setting the polling to 5 minutes.

The polling frequency affects the latency between the status transitions of the remote device and the appearance of the status on the details page for the device.

Procedure

1. Log in to Scopia® SR.

2. Click the **Global Policies** tab.

3. Click **General Options**.

4. Configure the settings, as described in .

   Table 8: Polling Settings

Field Name	Description
Conference Point Polling Frequency	Specify how often the Scopia® SR Manager checks for device configuration or status changes for each of the conference points.
Delivery Node Polling Frequency	Specify how often the Scopia® SR Manager checks for device configuration or status changes for each of the delivery nodes.
Network Address for Device Communication	Enter the IP address or the DNS address that the Scopia® SR Manager should use to access the devices in the system.

5. Click **Save**.

Adding and Modifying Scopia® Streaming and Recording servers in Scopia® Management

About this task

This section explains how to configure Avaya Scopia® Streaming and Recording server settings in Scopia® Management. For example, you can configure the URL of the Avaya Scopia® Desktop server that users connect to in order to see broadcasts.

> ❗ **Important:**

If you are using the Avaya Scopia® Content Center Recording server or the Avaya Scopia® Content Center Streaming server , you need to configure and manage the servers using the Avaya Scopia® Desktop server. For more information, see the *Administrator Guide for Avaya Scopia® Desktop server*.

> ❗ **Important:**

Once you configure a Scopia® Streaming and Recording server you cannot revert back to the Scopia® Content Center Streaming server or the Scopia® Content Center Recording server .

Procedure

1. Access the Scopia® Management administrator portal.

2. In the **Devices** tab, select **Streaming & Recording Server**.

3. If you are modifying the Scopia® Streaming and Recording server select the link in the **Name** column , or select **Add** to create the Scopia® Streaming and Recording server profile. The **Add Streaming & Recording Server** page appears (Figure 21: Adding an Avaya Scopia Streaming and Recording server on page 42).

Figure 21: Adding an Avaya Scopia® Streaming and Recording server

4. Configure the Scopia® Streaming and Recording server's settings, as described in (Table 9: Configuring the Avaya Scopia Streaming and Recording on page 43).

Table 9: Configuring the Avaya Scopia® Streaming and Recording

Field Name	Description
Name	Enter a name to identify the Scopia® Streaming and Recording server.
IP address/FQDN	Enter the management IP address or the FQDN of the Scopia® Streaming and Recording server. This is the address that clients use to access the Scopia® Streaming and Recording server portal within Scopia® Desktop. If the server is being deployed in the DMZ, this value must be an FQDN or an IP address that everyone can access. If the server is being deployed inside the network but is accessible externally using reverse proxy, this value must be an FQDN which resolves to the reverse proxy when outside the network.
Username	Enter the administrative username used to login to the Scopia® Streaming and Recording server portal. The default is **admin**. If you change the username in the Scopia® Streaming and Recording server, you must update the username here.
Password	Enter the administrative password used to login to the Scopia® Streaming and Recording server portal. The default is **admin**. If you change the password in the Scopia® Streaming and Recording server, you must update the password here.
Secure connection using HTTPS	**❗ Important:** This option is not available until you first configure the server in Scopia® Management, and it connects to the Scopia® Streaming and Recording server. When you subsequently open this screen, the option only becomes available if you have a regular license. If you have a non-encrypted license you cannot secure the connection. Select to enable HTTPS, which encrypts the communication between the Scopia® Streaming and Recording server and the client. It is important to be consistent. If the Avaya Scopia® Desktop server is configured for HTTPS, you must select this checkbox to ensure that the Scopia® Streaming and Recording server matches the Avaya Scopia® Desktop server. To enable HTTP deselect the checkbox. 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.
URL	Enter the URL of the Avaya Scopia® Desktop server you are using to view broadcasts. The URL must be in the format *http://<web URL>:<port number>/scopia*. If you are using a load balancer, enter the URL of the load balancer.

5. Select **OK** to save your changes.

Glossary

1080p	See [Full HD](#) on page 48.
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 49.
AAC	AAC is an audio codec which compresses sound but with better results than MP3.
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.
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.
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.
Avaya Scopia® Streaming and Recording Manager	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.

Avaya Scopia® Streaming and Recording Manager Portals	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. 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.
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. Bitrate is often measured in kilobits per second (kbps).
Call Control	See Signaling on page 55.
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).
Conference Point	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.

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 Continuous Presence on page 46.

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.

Delivery Node   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.

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 44.
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 47.
FPS	See Frames Per Second on page 47.
Frame Rate	See Frames Per Second on page 47.
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 49.
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 44.
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 49.

High Profile　　See H.264 High Profile on page 49.

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 54.

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.

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).

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 51.
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 46.
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 toplace 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 46.

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). Users can access 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.

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

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.

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 46.
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 51.
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.
SIP Registrar	See Registrar on page 53.
SIP Server	A SIP server is a network device communicating via the SIP protocol.
SIP URI	See URI on page 57.
Slider	See Content Slider on page 46.
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.
SQCIF	SQCIF defines a video resolution of 128 x 96 pixels.

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 55.
Standard Definition	See SD on page 55.
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.
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 57.
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 58.
VGA	VGA defines a video resolution of 640 x 480 pixels.
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 54.
Video Switching	See [Switched video](#) on page 56.
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.
Viewer Portal	The Avaya Scopia® Streaming and Recording Viewer Portal is embedded in the Avaya Scopia® Desktopuser portal. To access the Viewer Portal, you can select **Recordings and Events** 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.