



**Avaya AG2330/SR2330/SR4134
Quick Start Guide
Branch Office Solution for Microsoft OCS
2007 and 2007 R2**

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Chapter 1: New in this release

Avaya Branch Office Solution for Microsoft OCS 2007 and 2007 R2 — Quick Start Guide (NN47263-107) is a new document for release 10.2.2 of the Avaya Advanced Gateway 2330 (AG2330), Avaya Secure Router 2330 (SR2330), and Avaya Secure Router 4134 (SR4134).

New in this release

Chapter 2: Introduction

This document provides basic instruction on how to install the hardware and perform configuration of the Avaya AG2330/SR2330/SR4134 as the branch office solution for Microsoft OCS 2007 and 2007 R2. This Quick Start guide assumes familiarity with AG2330/SR2330/SR4134 configuration, Microsoft OCS 2007 and/or 2007 R2 configuration, Microsoft Windows 2003 and/or 2008 OS configuration.

Navigation

- [Microsoft OCS 2007 and 2007 R2 overview](#) on page 9
- [CS 1000, OCS, and SR4134 integration](#) on page 11
- [Mediation Server module configuration for SR4134](#) on page 21
- [CS 1000, OCS, and AG2330 integration](#) on page 41
- [Configuring the AG2330 for OCS deployment](#) on page 51

Chapter 3: Microsoft OCS 2007 and 2007 R2 overview

Microsoft Office Communications Server 2007 R2 offers instant messaging (IM), presence, Web conferencing, audio/video (A/V) conferencing, and telephony solutions that can support enterprise-level collaboration requirements. Office Communications Server 2007 R2 builds on the IM, enhanced presence, on-premises conferencing, and Enterprise Voice features that are provided by Office Communications Server 2007, providing chat room as well as additional IM, conferencing, and telephony functionality, such as interactive voice response (IVR) and conferencing auto-attendant.

To facilitate calls to and from the PSTN, OCS 2007 and 2007 R2 server requires two external components:

- Basic Media Gateway—devices that translate signaling and media between the PSTN and the OCS network
- Mediation Server—provides signaling and media translation between the OCS Server and a basic media gateway

The main functions of the Mediation Server are as follows:

- encrypting and decrypting SRTP (Secure Real-time Transport Protocol) on the Office Communications Server side
- translating SIP over TCP to SIP over mutual TLS
- translating media streams between Office Communications Server and the media gateway

A basic hybrid media gateway collocates a basic media gateway with a Mediation Server on a single device. Microsoft Mediation Server software is included along with Microsoft OCS 2007 and 2007 R2 server software package. Mediation Server (OCS 2007) requires server hardware based on 32 bit CPU and Windows 2003 operating system and Mediation Server (OCS 2007 R2) requires server hardware based on 64 bit CPU and Windows 2008 operating system.

The Avaya AG2330, Avaya SR2330, and Avaya SR4134 can all serve as basic media gateways for Microsoft OCS 2007 and 2007 R2. In addition, the SR4134 can also work as basic hybrid media gateway when installed with a medium server module. This server module comes in 2 flavours - 32 bit CPU version with Windows 2003 OS pre-installed, and 64 bit CPU version with Windows 2008 OS pre-installed.

Mediation Server modules are not supported on the AG2330 and the SR2330. The AG2330 and SR2330 require an external Mediation Server device to work with Microsoft OCS 2007 and 2007 R2 Server.

Chapter 4: CS 1000, OCS, and SR4134 integration

The SR4134 and the CS 1000 can interoperate with the Microsoft OCS solution to implement Unified Communications in the network. Unified Communications provides integrated voice, instant messaging (IM), enhanced presence, audio-video conferencing, and e-mail. By integrating the CS 1000 with the OCS, you can add Unified Communications features to your voice network while maintaining your existing CS 1000 voice infrastructure.

For configuration and planning details for the OCS 2007, see *Microsoft Office Communications Server 2007 Enterprise Voice Planning and Deployment Guide*.

For configuration and planning details for the OCS 2007 R2, see *Microsoft Office Communications Server 2007 R2 Planning Guide* and *Microsoft Office Communications Server 2007 R2 Enterprise Voice Deployment Guide*.

The following figure shows a sample network topology. In this scenario, the CS 1000 is located at the main office and the SR4134 is at the branch office. In addition, an OCS server is installed at the main office.

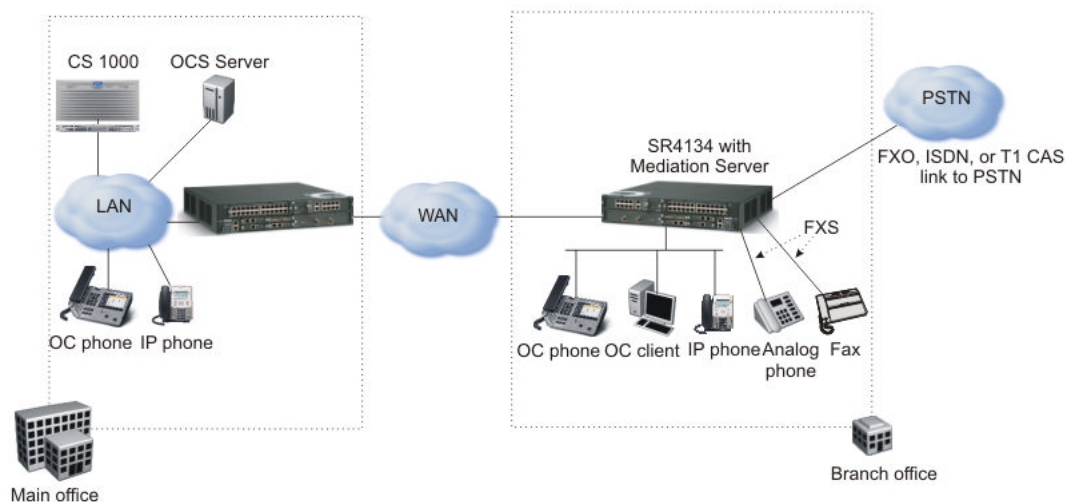


Figure 1: CS 1000, Microsoft OCS, and SR4134 interoperation

From the perspective of the OCS server, the SR4134 is a Basic Media Gateway. To translate between the proprietary Microsoft OCS network and the SIP and PSTN networks, you must install a Mediation Server module on the SR4134.

The SR2330 does not support the Mediation Server module. The SR2330 requires an external Mediation Server as it does not support medium modules.

In this example, the Mediation Server module is installed at the branch.

The SR4134 provides connections to analog phones and external PSTN trunks and the CS 1000 provides the necessary call routing for the analog and (non-OCS) IP Deskphones. For OC phones and clients, the OCS server manages primary routing, but can also forward calls to the CS 1000 network (through the Mediation Server) for routing as required. For calls between the CS 1000 and OCS networks, the Mediation Server provides the necessary transcoding to allow communication between the two networks.

In a network containing the CS 1000 with the Microsoft OCS, the `sip-ua sip-server` command must point to the CS 1000 Node IP address.

CS 1000, OCS, and SR4134 call flows

When an on-site user places a call from the OC client to a PSTN destination, the call moves through the network infrastructure as follows:

1. A user places a call from an Enterprise Voice client by dialing the number or clicking the contact information in Microsoft Office Communicator or Outlook.
2. The OCS Server, based on location profile and call routing policies, forwards the call to the Mediation Server running in the SR4134.
3. The Mediation Server routes the call to the CS 1000 network.
4. The CS 1000, based on configured call routing, forwards the call to the SR4134 Media Gateway.
5. The Media Gateway, based on topology, applies local dialing rules and passes the call to the PSTN.

The following figure shows the signaling and media flows within a network where the Mediation Server is integrated with a CS 1000 and an OCS server in the Enterprise Voice infrastructure. The figure shows the flow for an OC client call to a TDM port.

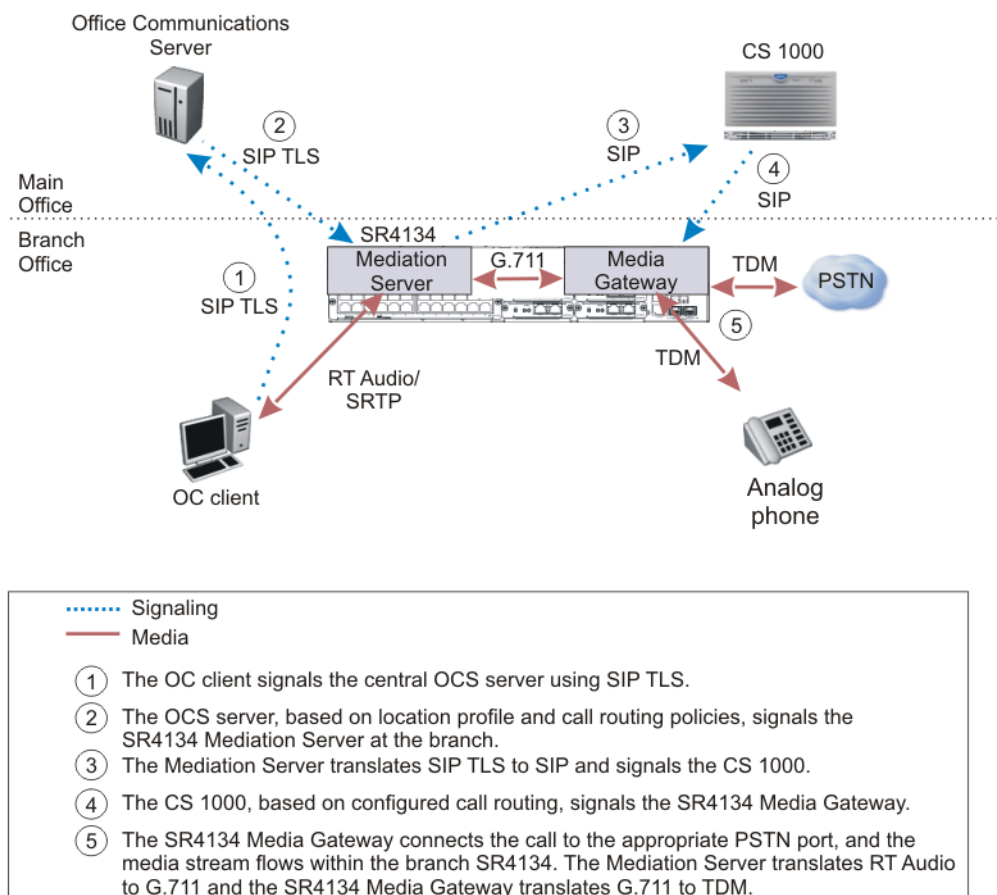


Figure 2: CS 1000, Microsoft OCS, and SR4134 sample call flow: OC client to TDM port

The following figure shows the flow for an OC client call to an Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the branch IP Deskphone through the Mediation Server at the main office. As all media from the branch traverses the WAN, this is not a recommended scenario.

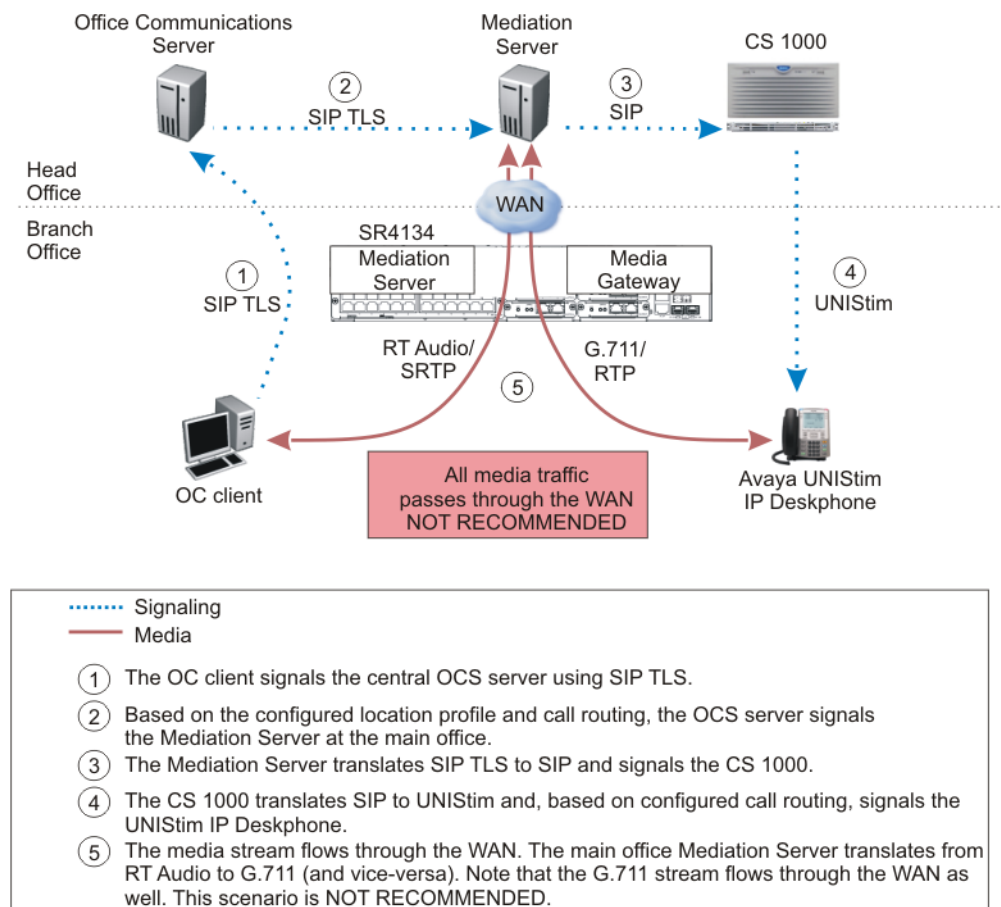


Figure 3: Call flow for branch OC client to UNISTim phone NOT RECOMMENDED

The following figure shows the flow for an OC client call to an Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the branch IP Deskphone through the Mediation Server at the branch. As all media flows within the branch, this is the recommended scenario.

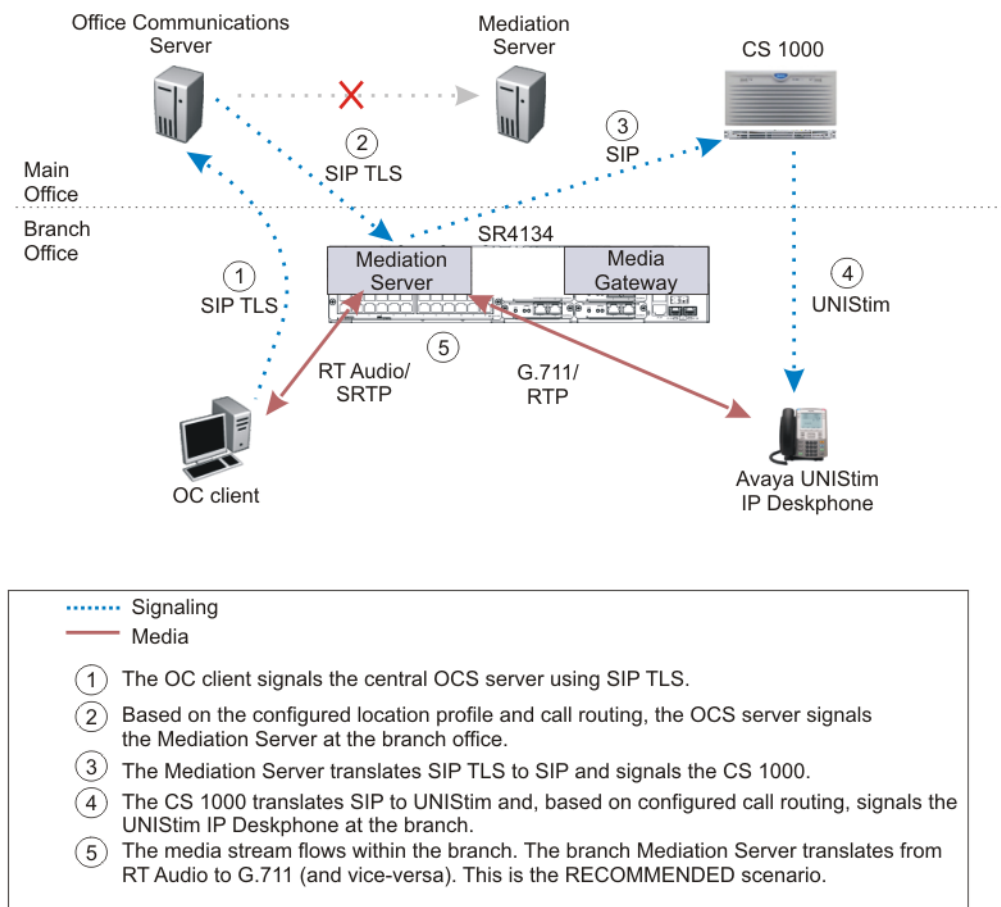


Figure 4: Call flow for branch OC client to UNISTim phone RECOMMENDED

The following figure shows the call flow between a branch OC client and a main office Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the main office IP Deskphone through the Mediation Server at the main office. As the larger G.711/RTP payload remains within the head office, this is also a recommended scenario.

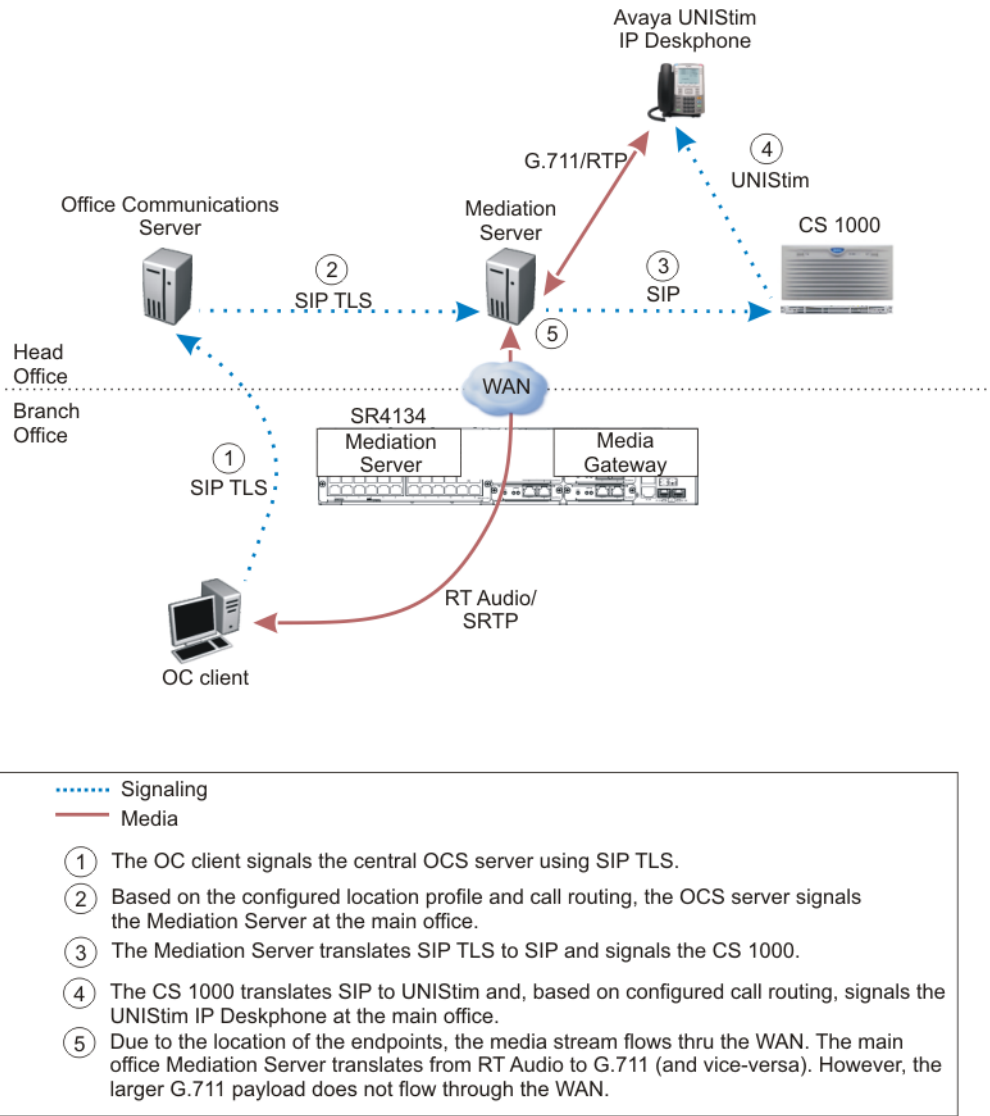


Figure 5: Call flow for branch OC client to main office UNISTim phone **RECOMMENDED**

SR4134 integration with OCS only

You can install the SR4134 in an OCS-only network without the CS 1000. In this scenario, the Media Gateway provides PSTN trunks and FXS connections to POTS phones (but not fax) for the OCS network, and the OCS server provides SIP call routing.

FXS phones cannot perform a SIP registration with the OCS network. Instead, the OCS server views FXS phones as trunk numbers.

Note that you can also install the SR2330 in an OCS-only network. However, in this case, you must also install an external Mediation Server, as the SR2330 does not support the Mediation Server module.

The following figure shows a sample network topology. In this scenario, the OCS is located at the main office and the SR4134 is located at the branch office.

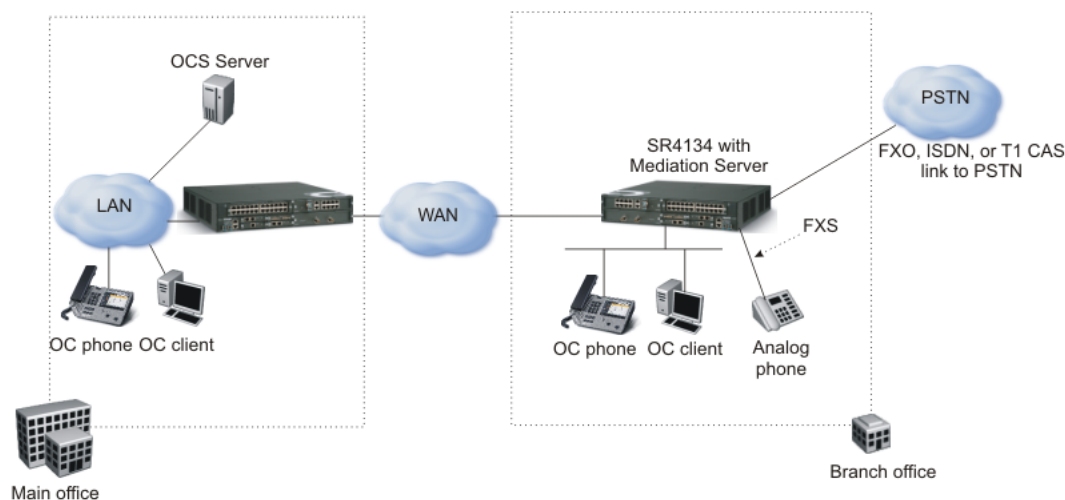


Figure 6: OCS and SR4134 interoperation

The SR4134 provides connections to external PSTN trunks and analog POTS phones. The OCS provides the necessary call routing for the branch analog phones, OC phones, and OC clients. For calls that pass between the OCS network and the PSTN, the Mediation Server provides the necessary transcoding to allow communication between the PSTN and the OCS network.

In an OCS-only solution, the `sip-ua sip-server` command must point to the IP address of the Mediation Server.

Related topics:

[OCS-only call flows](#) on page 17

OCS-only call flows

The following figure shows the signaling and media flows within a network where the SR4134 equipped with the Mediation Server module is integrated with an OCS server in the Enterprise Voice infrastructure. The figure shows the call flow between two OC clients at the branch. In this case, the OCS server routes the call back to the branch, and the media flows through the SR4134 Ethernet connections.

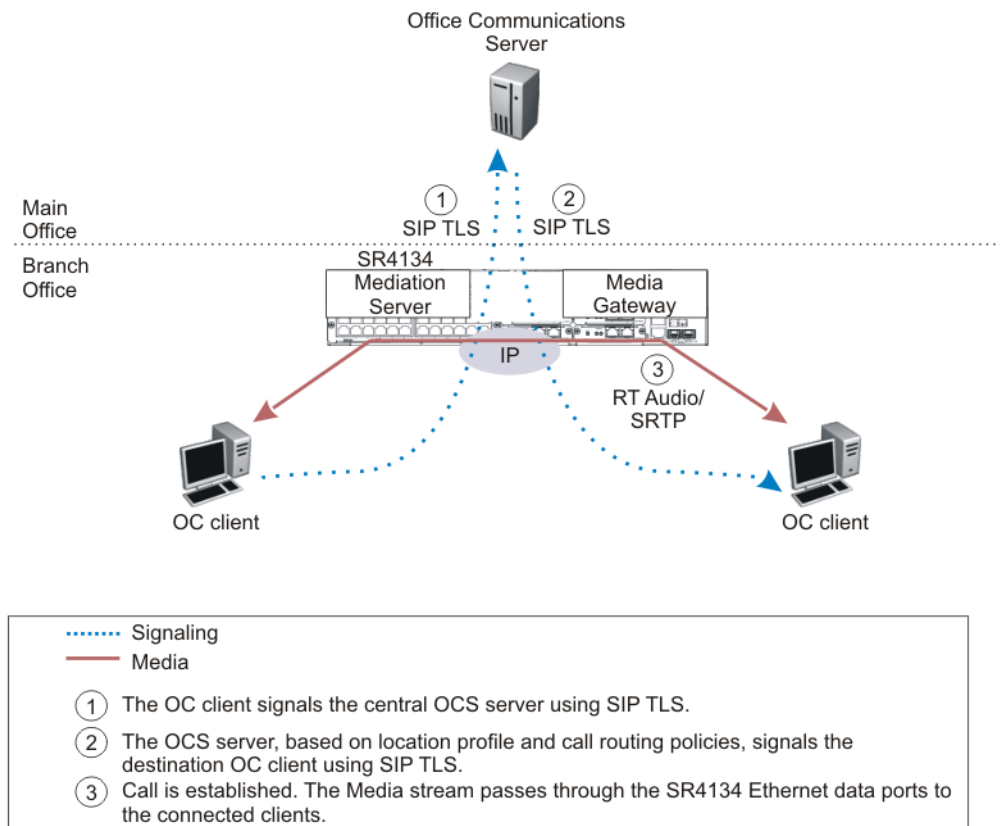


Figure 7: Call flow for OC client to OC client call

The following figure shows the call flow between an OC client and a PSTN or FXS port connected to the SR4134 Media Gateway. In this case, the OCS server routes the call to the branch Mediation Server, and the media flows through the SR4134 Media Gateway.

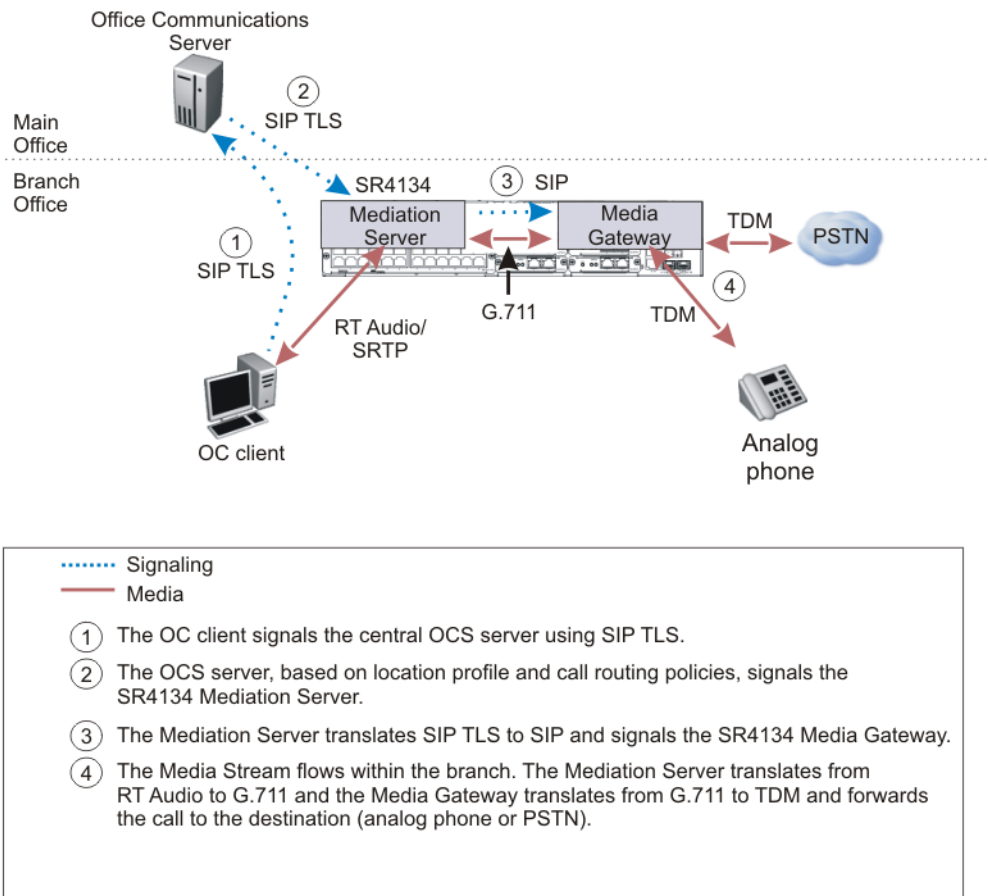


Figure 8: Call flow for OC client to TDM port

Chapter 5: Mediation Server module configuration for SR4134

Configure the Mediation Server module to allow communications between the SIP VoIP network and the Microsoft OCS network.

To transfer data to and from the SR4134, the rear of the Mediation Server module is equipped with two Gigabit Ethernet interfaces that connect to the SR4134 midplane. In the Medium module slots of the SR4134, the midplane is equipped with two corresponding Ethernet interfaces. To enable the Mediation Server module functionality, you must assign an IP address to only one of the Mediation Server interfaces and to the corresponding midplane Ethernet interface.

To configure the midplane interface, the SR4134 provides the `interface servmod <slot/port>` command. For example, if the Mediation Server module resides in slot 5, you can configure one of the connected SR4134 midplane interfaces by entering `interface servmod 5/1` or `interface servmod 5/2`.

You can assign a static IP to the Mediation Server module locally by connecting a monitor to the video display interface and connecting a keyboard and mouse to the USB ports provided. You can then configure the IP address using Windows Server OS software. Alternatively, you can connect to the Mediation Server module through the module console port and access the Windows Special Administration Console (SAC) commands to assign the IP address.

If you are configuring the module remotely, you can assign an IP address to the desired Mediation Server module interface by enabling the DHCP server on the corresponding SR4134 midplane Ethernet interface. In this case, if a static IP is desired, you can use Remote Desktop to connect to the Windows Server OS software using the assigned DHCP address, and specify a static IP address for the second Mediation Server interface.

After you assign an IP address to the module, you can configure the Mediation Server by connecting to the OCS GUI on the Microsoft OCS Server. Alternatively, you can configure the Mediation Server by connecting to the assigned IP address through the Remote Desktop feature of Windows and accessing the OCS GUI. You can also access the OCS GUI by connecting a monitor directly to the Mediation Server video display interface and connecting a keyboard and mouse to the USB ports provided.

To provide further configuration flexibility, you can configure the Mediation server module midplane interface (`interface servmod`) for DHCP Relay. You can also add the interface to a VLAN.

Prerequisites

- Ensure that the Mediation Server module is properly inserted into one of the medium slots of the SR4134 and has been properly detected by the router. Use the **show chassis** command to ensure that the module status displays in NORMAL mode.
- Ensure that the Windows Server OS software on the Mediation Server module has booted successfully and that you can log on to Windows Server OS software using the Windows administrator logon information.
- Ensure that the Mediation Server running on the module has been successfully added to the domain of the OCS network in which it is configured.
- Ensure that the Mediation Server running on the module has been successfully activated with the OCS network in which it is configured.

For details on how to execute the last two steps, see *Microsoft Office Communications Server 2007 Enterprise Voice Planning and Deployment Guide* or *Microsoft Office Communications Server 2007 R2 Enterprise Voice Deployment Guide*.

Mediation Server module configuration procedures

The following task flow shows you the sequence of procedures you perform to configure the Mediation Server module. To link to the referenced procedures, see [Mediation Server module configuration navigation](#) on page 23.

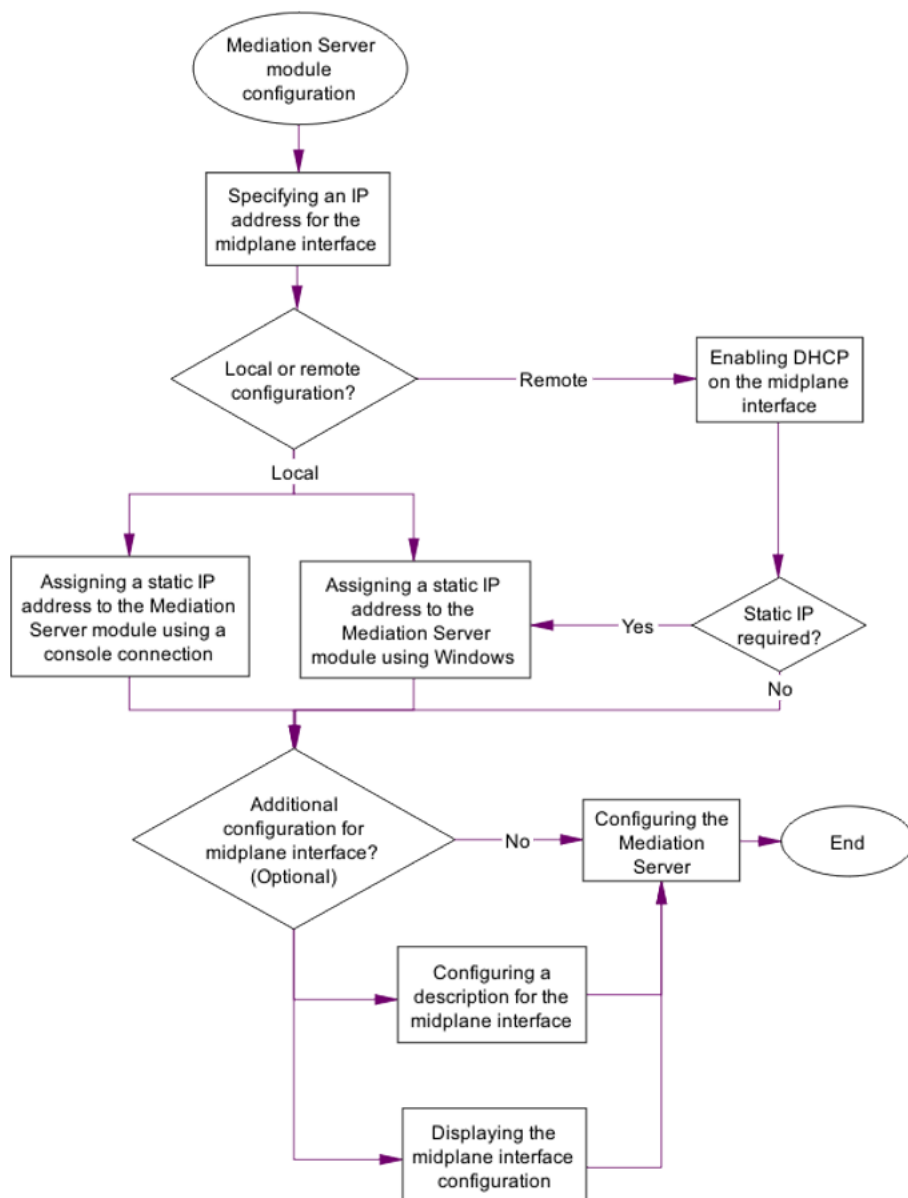


Figure 9: Mediation Server module configuration procedures

Mediation Server module configuration navigation

- [Specifying an IP address for the midplane interface](#) on page 24
- [Enabling DHCP on the midplane interface](#) on page 24

- [Assigning a static IP address to the Mediation Server module using Windows](#) on page 27
- [Assigning a static IP address to the Mediation Server module using a console connection](#) on page 25
- [Configuring a description for the midplane interface](#) on page 27
- [Displaying the midplane interface configuration](#) on page 28
- [Configuring the Mediation Server](#) on page 28

Specifying an IP address for the midplane interface

Use this procedure to specify an IP address for one of the midplane Ethernet interfaces that connects to the Mediation Server module.

By default, no IP address is assigned to the interface.

Procedure steps

1. To enter configuration mode, enter:

```
configure terminal
```
2. To select midplane interface configuration, enter:

```
interface servmod <slot/port>
```
3. To specify an IP address for the midplane interface, enter:

```
ip address <ip-address> <subnet-mask>
```
4. To enable the interface, enter:

```
no shutdown
```

Enabling DHCP on the midplane interface

Use this procedure to enable DHCP on the midplane Ethernet interface.

To enable the Mediation Server module functionality, you must configure an IP address on one of the Mediation Server interfaces. If you are configuring the Mediation Server remotely, you can enable the DHCP server on one of the connected SR4134 midplane Ethernet interfaces to assign an IP address to the Mediation Server module.

Procedure steps

1. To enter configuration mode, enter:

```
configure terminal
```

2. To select DHCP server configuration, enter:

```
ip dhcp
```

3. To configure DHCP on the interface to which the Mediation Server module is connected, enter:

```
interface servmod<slot/port>
```

4. To specify DHCP pool configuration, enter:

```
pool <DHCP-pool-name>
```

5. To specify a subnet for the DHCP pool, enter:

```
network <network/mask>
```

This step describes the configuration of a subnet pool from which the DHCP server can assign an IP address. Alternatively, under the `ip dhcp` subtree, you can use the `hwaddr` and `host` commands to configure a manual DHCP binding. If you choose this alternative configuration, the remaining steps in this procedure remain the same.

6. To specify a default router for the DHCP pool, enter the IP address of the midplane interface configured in the previous procedure:

```
default_router <mid-plane-interface-ip>
```

7. To specify a DNS server address for the DHCP pool, enter:

```
dnsserver <A.B.C.D>
```

8. To commit the DHCP configuration, enter:

```
commit exit
```

9. To enable the DHCP server on the interface, enter:

```
enable
```

10. To display the IP address assigned by the DHCP server to the Mediation Server module interface, enter:

```
show ip dhcp bindings
```

Assigning a static IP address to the Mediation Server module using a console connection

By default, no IP address is assigned to the Mediation Server module interfaces.

Use this procedure to assign a static IP address to the Mediation Server module using a console connection.

By connecting to the Mediation Server module through the console port, you can access the Windows Special Administration Console (SAC) commands. You can use the SAC commands to assign a static IP address to the Mediation Server module.

To access the SAC commands on the Mediation Server module, connect a terminal or a workstation running terminal emulation software to the Mediation Server module console port using the console cable that ships with the SR4134.

Procedure steps

1. On your terminal or workstation, set the Baud rate for the console connection to 9600.
2. Connect the male RJ-45 connector to the Mediation Server module console port.
3. Connect the female DB-9 to RJ-45 adapter to the opposite end of the console cable, if necessary.
4. Connect the RJ-45 or female DB-9 connector (dependent on your equipment) into your terminal or PC.

The system displays the `SAC>` prompt.

5. To set the IP address of the Mediation Server module, enter the following command

```
SAC> i <network#> <ip-address> <subnet-mask> <gateway>
```

6. To verify whether the IP address has been successfully entered, enter:

```
SAC> i
```

7. To display the other commands available using the console CLI, enter:

```
SAC> help
```

Variable	Value
<network#>	Specifies the network number. This value must be 2.
<ip-address>	Specifies the static IP address to assign to the Mediation Server module.
<subnet-mask>	Specifies the subnet mask for the Mediation Server module IP address. This value must be the same as the subnet mask used for the SR4134 midplane Ethernet interface.
<gateway>	Specifies the gateway for the Mediation Server module. This value must be the IP address of the SR4134 midplane Ethernet interface.

Assigning a static IP address to the Mediation Server module using Windows

By default, no IP address is assigned to the Mediation Server module interfaces.

If you have physical access to the SR4134, you can attach a keyboard and mouse to the Mediation Server module USB ports and connect a monitor to the video port. By directly accessing the module in this way, you can assign a static IP address to one of the module interfaces using Windows Server OS software.

If you only have remote access to the SR4134, you must first assign an IP address to one of the module interfaces using DHCP. Then you can access the module using Remote Desktop and, if desired, assign a static IP to a module interface using Windows Server OS software.

Whether you access the Mediation Server module directly or remotely, you can use this procedure to assign a static IP address to one of the Mediation Server module interfaces.

1. Log on to Windows Server OS software using the Administrator account.
Default username/password combination is: Administrator/setup.
2. Select **Start > Control Panel**.
3. Click **Network Connections**.
4. Right-click the desired local area connection and choose **Properties**.
5. From the **This connection uses the following items** box, select **Internet Protocol (TCP/IP)**.
6. Click **Properties**.
7. Select **Use the following IP address**.
8. In the **IP address** box, enter the IP address to assign to this network adapter.
9. In the **Subnet mask** box, enter the subnet mask.
10. In the **Default Gateway** box, enter the midplane Ethernet interface IP address.
11. In the **Preferred DNS server** box, enter the preferred DNS server.
12. In the **Alternate DNS server** box, enter the alternate DNS server.
13. Click **OK**.

Configuring a description for the midplane interface

Use this procedure to configure a description for the midplane Ethernet interface.

Procedure steps

1. To enter configuration mode, enter:

```
configure terminal
```

2. To select Mediation Server module configuration, enter:

```
interface servmod <slot/port>
```

3. To configure a description for the midplane interface configuration, enter:

```
[no] description "<description>"
```

Table 1: Variable definitions

Variable	Value
"<description>"	Specifies a description for the interface. Valid value is a character string from 1 to 15 characters in length, delimited by quotation marks (" ").
[no]	Removes the description.

Displaying the midplane interface configuration

Use this procedure to display the configuration of the midplane Ethernet interface.

Procedure steps

To display the midplane Ethernet interface configuration, enter:

```
show interface servmod <slot/port>
```

Configuring the Mediation Server

Use this procedure to configure the Mediation Server. You must configure the Mediation Server to communicate with the Microsoft Office Communications Server 2007 on one side and the Media Gateway on the other.

After you assign an IP address to the Mediation Server module, you can configure the Mediation Server by connecting to the OCS GUI on the Microsoft OCS Server. Alternatively, you can configure the Mediation Server by connecting to the assigned IP address through the Remote Desktop feature of Windows and accessing the OCS GUI. Or, you can access the OCS GUI by connecting a monitor directly to the Mediation Server video display interface and connecting a keyboard and mouse to the USB ports provided.

Avaya recommends that you enable Automatic Updates for the Windows Server OS software and Mediation Server software. Avaya also recommends that you backup your Mediation

Server software and configuration. For backup and restore information, see *Avaya Secure Router 2330/4134 Troubleshooting* (NN47263-700).

This section provides a summary of the required Mediation Server configuration steps. For additional detailed configuration and overview information for the Mediation Server and the OCS, see *Microsoft Office Communications Server 2007 Enterprise Voice Planning and Deployment Guide* or *Microsoft Office Communications Server 2007 R2 Enterprise Voice Deployment Guide*.

Prerequisites

- The Mediation Server module IP address.
- The Media Gateway bound interface IP address (previously specified using the `voice service voip sip bind all ipv4:x.x.x.x` command).
- The FQDN of the collocated A/V Edge Server and Media Relay Authentication Server for this Mediation Server. Contact the OCS system administrator for details.
- The default location profile used by this Mediation Server. Contact the OCS system administrator for details.
- The FQDN and port of the Communications Server internal next hop. This server could be a Director or pool. Contact the OCS system administrator for details.
- You must be a member of the RTCUniversalServerAdmins group or have been delegated to perform this task by a member of that group.

Procedure steps

1. Log on to the Windows Server OS software running on the Mediation Server.

Default username/password combination is: Administrator/setup.

Avaya recommends you change the default password as soon as possible to ensure only authorized personnel can access the Mediation Server. Record the new password in a safe place. Avaya also recommends that you create at least one additional user account with administrator privileges to be used if the first username/password combination is lost.

2. Click **Start**, point to **Administrative Tools**, and then click **Office Communications Server 2007**.
3. Expand the appropriate forest node.
4. Expand the **Mediation Servers** node, right-click the Mediation Server to be configured, click **Properties**, and then click the **General** tab.

The screenshot shows a Windows-style dialog box titled "ac008255.ocs2007demo.corp.avaya.com Properties". It has three tabs: "General", "Next Hop Connections", and "Certificate". The "General" tab is selected. Inside the dialog, there is a folder icon and the text "Mediation Server". Below this, there are several configuration fields: "EQDN:" with a text box containing "ac008255.ocs2007demo.corp.avaya.com"; "Communications Server listening IP address:" with a dropdown menu showing "47.11.161.117"; "Gateway listening IP address:" with a dropdown menu also showing "47.11.161.117"; "A/V Edge Server:" with a dropdown menu showing "(None)"; "Default location profile:" with a dropdown menu showing "Belleville" and a "View" button next to it; and "Media port range:" with two text boxes containing "60000" and "64000" separated by a "to" label. At the bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

Figure 10: General tab (OCS 2007)

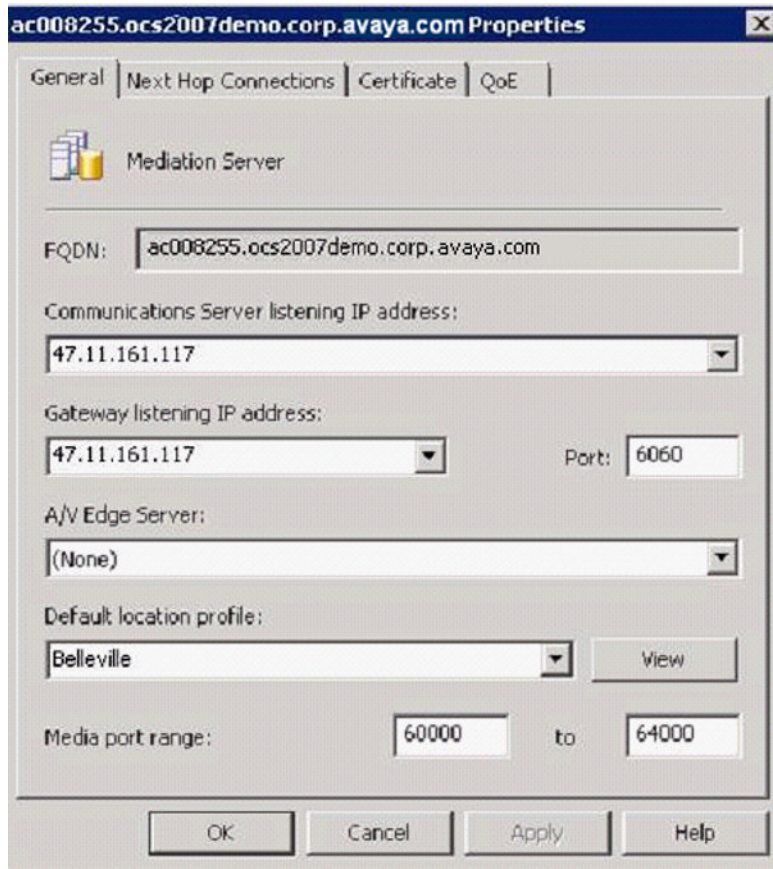


Figure 11: General tab (OCS 2007 R2)

5. In the **FQDN** box, make sure the FQDN listed matches that of the Mediation Server you have selected.
6. From the list of IP addresses displayed in the **Communications Server listening IP address** list, select the Mediation Server IP address.

! Important:

If the IP address selected in this step does not match the Mediation Server IP address, Communications Server traffic will be directed toward an interface that is not listening for such traffic and away from the one that is.

7. From the list of IP addresses displayed in the **Gateway listening IP address** list, select the same Mediation Server IP address.
8. From the **A/V Edge Server** list, select the A/V Edge Server that hosts the A/V Authentication Service for this Mediation Server. Contact the OCS system administrator for details.

! Important:

If the A/V Edge Server that hosts the A/V Authentication Service for this Mediation Server does not appear in the list, that means that the A/V Edge Server on which the service is collocated has not been entered into the A/V Edge Servers list on the Edge Servers tab of the Global Properties page. You will need to add the A/

V Edge Server to the previous list before it will appear in the A/V Edge Server list on the Mediation Server tab. For more information, see *Microsoft Office Communications Server 2007 Edge Server Deployment Guide* or *Microsoft Office Communications Server 2007 R2 Edge Server Deployment Guide*.

9. In the **Default location profile** list, select the default location profile for this Mediation Server. Contact the OCS system administrator for details.
10. In **Media port range**, accept the default range of 60000 to 64000.

 Important:

The default range media port range enables the OCS server to handle up to 1000 simultaneous calls. Reducing the port range greatly reduces server capacity and should be undertaken only for specific reasons by an administrator who is knowledgeable about media port requirements, and scenarios. For this reason, altering the default port range is not generally recommended. Organizations that employ IPSec for packet security are advised to disable it for media ports because the security handshake required by IPSec delays call setup. IPSec is unnecessary for media ports because SRTP encryption secures all media traffic between the Mediation Server and the internal Communications Server network.

11. Click the **Next Hop Connections** tab.

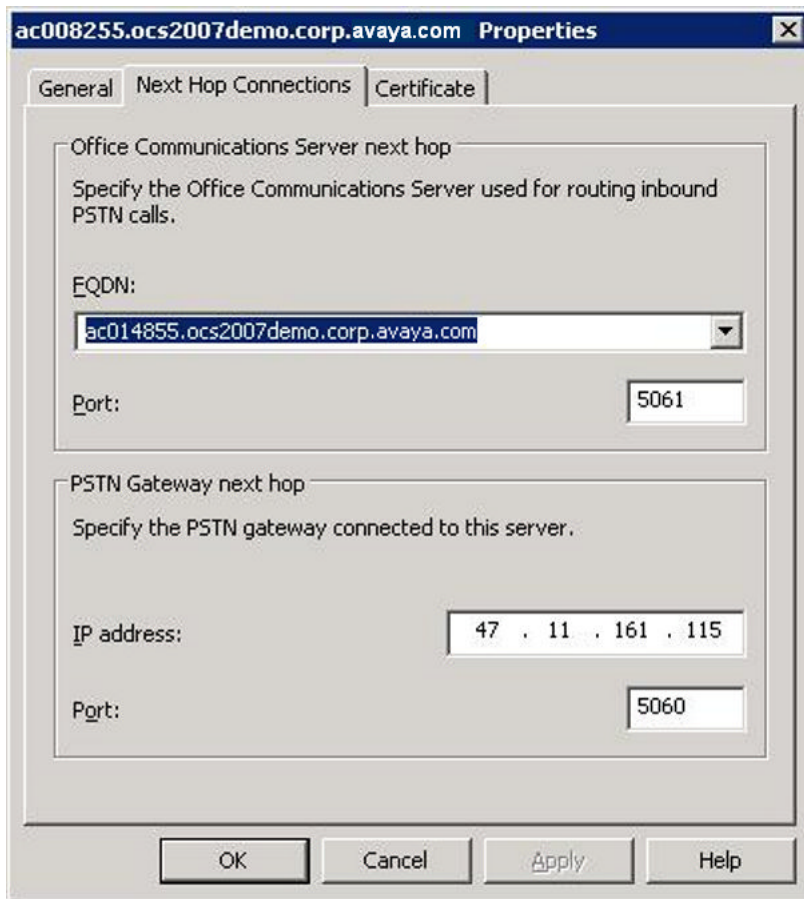


Figure 12: Next Hop Connections tab (OCS 2007)

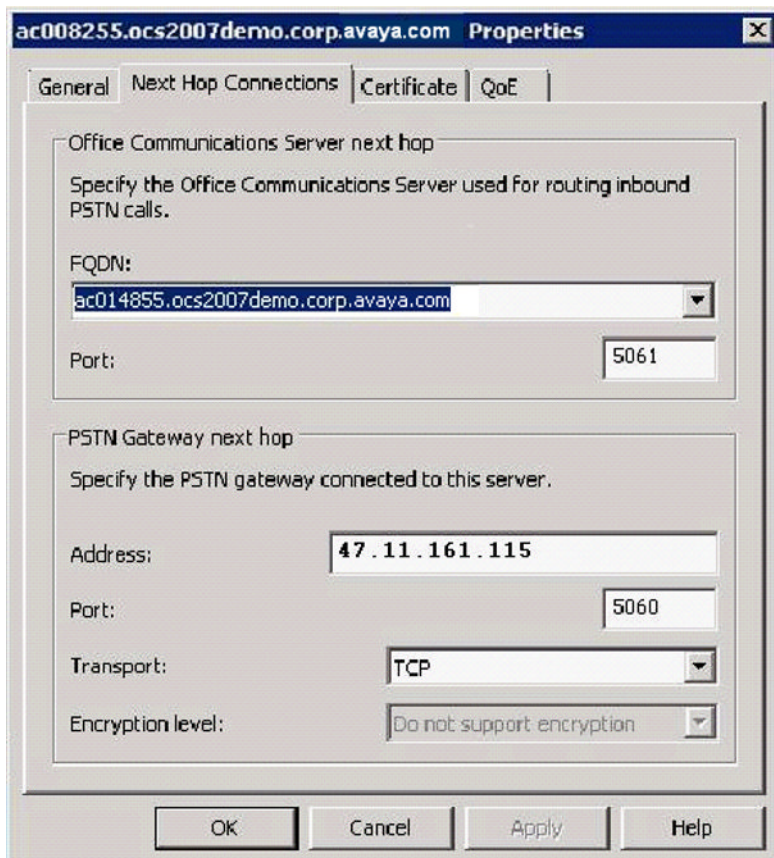


Figure 13: Next Hop Connections tab (OCS 2007 R2)

12. On the **Next Hop Connections** tab under Office Communications Server next hop:
 - In the **FQDN** list, select the FQDN of the next-hop OCS server. This server could be a Director or pool. Contact the OCS system administrator for details.
 - In the **Port** box, accept the default of 5061 for TLS.
13. On the **Next Hop Connections** tab under PSTN Gateway next hop:
 - In the **IP address** box, if the CS 1000 and OCS are not collocated, then enter the SR4134 bound interface address that was specified using the **voice service voip sip bind all ipv4:x.x.x.x** command. (This can be a LAN or WAN IP).
 - If the CS 1000 and OCS are collocated, then enter the IP address of the CS 1000 Node IP.
 - In the **Port** box, accept the default of 5060 for TCP.
14. Click the **Certificate** tab.



Figure 14: Certificate tab

15. In the Certificate tab, assign the Server Certificate provided by the OCS system administrator.
16. Click **OK**.

SR4134 configuration examples for the Mediation Server module

The following sections provide examples of the specific configurations required to integrate the SR4134 with the OCS 2007. The two main scenarios discussed are the SR4134 integrated with OCS only (see [SR4134 configuration example with OCS only](#) on page 36) and the SR4134 integrated with OCS and the Avaya CS 1000 (see [SR4134 configuration example with OCS and CS 1000](#) on page 37).

SR4134 configuration example with OCS only

The following figure shows a typical deployment of an OCS-only scenario. Here, OCS clients running in the remote branch office register themselves with the OCS server at the main office. When the OCS clients call a PSTN number, the OCS server at the main office forwards the call based on its routing policies to the Mediation Server module in the SR4134. The Mediation Server then forwards the call to the SR4134 Media gateway, which in turn connects the call to the PSTN.

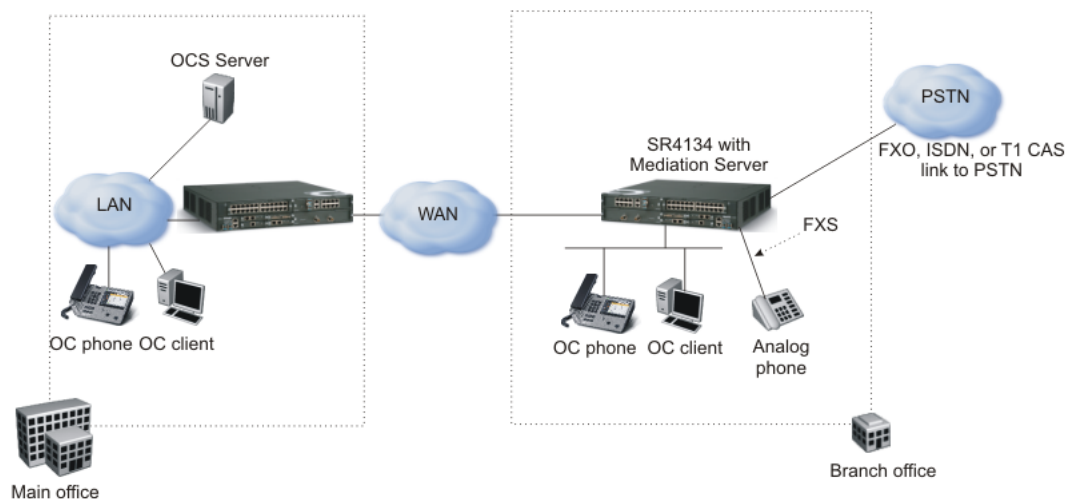


Figure 15: OCS and SR4134

The following is the sample IP address configuration for the above setup on the SR4134. In this example, the SR4134 VLAN IP is 47.80.235.163 and the Mediation Server IP is 47.80.235.164

Procedure steps

1. Enter configuration mode:

```
configure terminal
```

2. Configure a VLAN with IP address

```
vlan database
vlan 10
exit database
```

```
interface vlan vlan10
ip address 47.80.235.163 255.255.255.0
exit vlan
```

3. Configure the SR4134 Ethernet interface to connect with the existing network:

```
interface ethernet 0/1
switchport
switchport pvid 10
```

```
spanning-tree
spanningtree-disable
portfast
exit spanning-tree
exit ethernet
```

4. Configure the Mediation Server module interface:

```
interface servmod 6/1
switchport
switchport pvid 10
spanning-tree
spanningtree-disable
exit spanning-tree
exit servmod
```

5. Configure the OCS Mediation Server IP as the next-hop SIP server for the SR4134 Media Gateway, as well as the SIP transport protocol.

```
sip-ua
sip-server ipv4:47.80.235.164:5060
transport tcp
exit
```

6. Specify the IP address of the bound Media Gateway interface.

```
voice service voip
sip
bind all ipv4:47.80.235.163
exit 2
```

SR4134 configuration example with OCS and CS 1000

In this scenario, the OCS 2007 Server and the Avaya CS 1000 are running in the head office and the Mediation Server module is running in the branch office SR4134. The Media Gateway running in the SR4134 continues to act as a trunking gateway to route calls from OCS Clients and Avaya IP Deskphones to PSTN networks.

The following figure shows a typical deployment of this scenario. Here OCS clients running in the remote branch office register themselves with the OCS Server and Avaya IP Deskphones register with the CS 1000 at the head office.

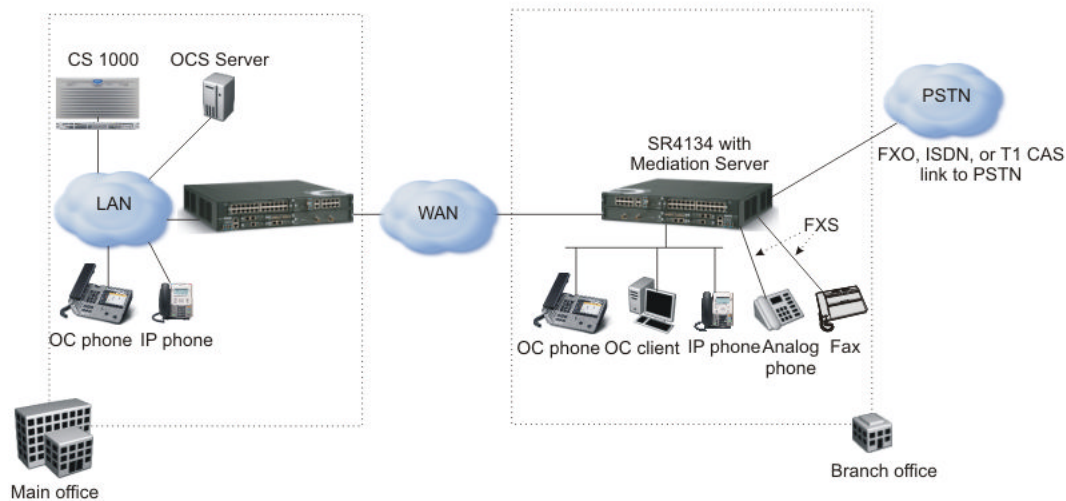


Figure 16: CS 1000, Microsoft OCS, and SR4134 interoperation

When an Avaya IP Deskphone calls a PSTN number, the CS 1000 forwards the call based on its routing policies to the branch SR4134 Media gateway, which then connects the call to the PSTN.

When the branch OC clients call a PSTN number, the OCS server at the head office forwards the call based on its routing policies to the Mediation Server module in the branch SR4134. The Mediation Server forwards the call to the CS 1000 at the head office. The CS 1000 then forwards the call to the SR4134 Media Gateway. And finally, the Media Gateway connects the call to the PSTN.

With this call flow, even though the signaling flow does multiple hops through the WAN, the media flows within the branch office SR4134.

SR4134 configuration

The following is the sample IP address configuration for the above setup in the SR4134. The only difference in this configuration from the one used for the OCS-only scenario is that the SIP server IP address in the SR4134 is now the Node IP address of the CS 1000 rather than the IP address of the Mediation Server.

In this example, the SR4134 VLAN IP address is 47.80.235.163 and the CS 1000 node IP is 47.80.235.100.

Procedure steps

1. Enter configuration mode:

```
configure terminal
```

2. Configure a VLAN with IP address:

```
vlan database
vlan 10
exit database
```

```
interface vlan vlan10
ip address 47.80.235.163 255.255.255.0
exit vlan
```

3. Configure the SR4134 Ethernet interface to connect with the existing network:

```
interface ethernet 0/1
switchport
switchport pvid 10
spanning-tree
spanningtree-disable
portfast
exit spanning-tree
exit ethernet
```

4. Configure the Mediation Server module interface:

```
interface servmod 6/1
switchport
switchport pvid 10
spanning-tree
spanningtree-disable
exit spanning-tree
exit servmod
```

5. Configure the CS 1000 Node IP as the next hop SIP server for the SR4134 Media Gateway, as well as the SIP transport protocol.

```
sip-ua
sip-server ipv4:47.80.235.100:5060
transport tcp
exit
```

6. Specify the IP address of the bound Media Gateway interface.

```
voice service voip
sip
bind all ipv4:47.80.235.163
exit 2
```


Chapter 6: CS 1000, OCS, and AG2330 integration

The Avaya AG2330 and the Avaya CS 1000 can interoperate with the Microsoft OCS solution to implement Unified Communications in the network. Unified Communications provides integrated voice, instant messaging (IM), enhanced presence, audio-video conferencing, and e-mail. By integrating the CS 1000 with the OCS, you can add Unified Communications features to your voice network while maintaining your existing CS 1000 voice infrastructure.

For configuration and planning details for the OCS, see *Microsoft Office Communications Server 2007 Enterprise Voice Planning and Deployment Guide*.

The following figure shows a sample network topology. In this scenario, the CS 1000 is located at the main office and the AG2330 is at the branch office. In addition, an OCS server is installed at the main office.



Note:

The Avaya SR2330 can also be used in the same deployment instead of the Avaya AG2330. In addition to gateway functionality, the SR2330 can provide data routing functionality.

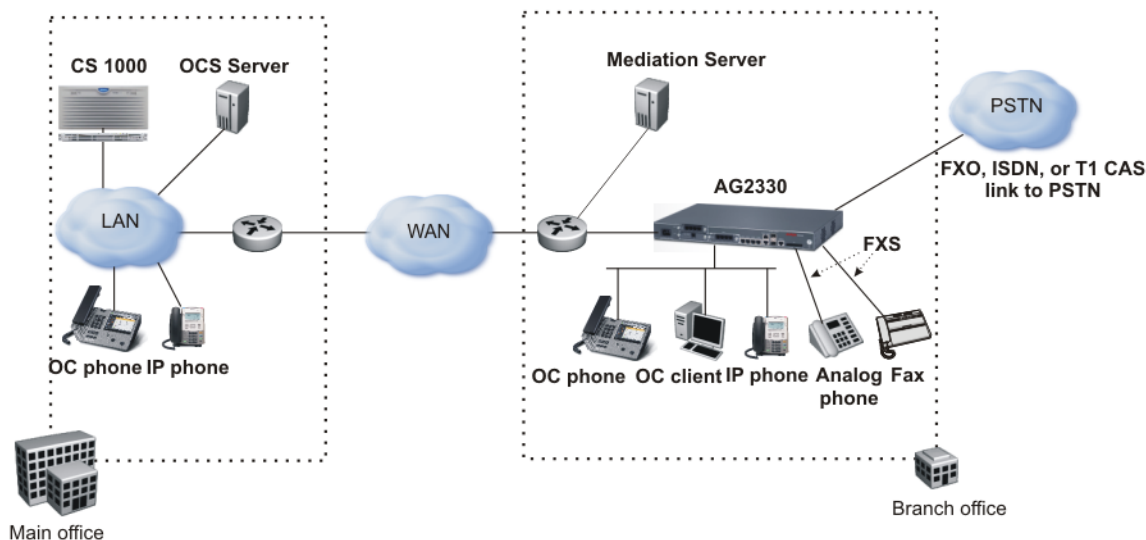


Figure 17: CS 1000, Microsoft OCS, and AG2330 interoperation

From the perspective of the OCS server, the AG2330 is a Basic Media Gateway. To translate between the proprietary Microsoft OCS network and the SIP and PSTN networks, you must install a Mediation Server in the network. The Mediation Server runs the Microsoft Mediation Server software on top of Microsoft Windows Server 2003.

The Mediation Server software performs the necessary signaling and media transcoding for calls between the OCS network and the Media Gateway. The Mediation Server translates SIP and PSTN calls to OC

client connections and translates calls from OC clients to the Media Gateway for routing to the PSTN or SIP network.

The main functions of the Mediation Server are as follows:

- Translating SIP over TCP (on the gateway side) to SIP over Mutual TLS (on the Enterprise Voice side).
- Encrypting and decrypting SRTP on the OCS side.
- Translating media streams between the OCS and the Media Gateway.

The AG2330 requires an external Mediation Server. It cannot run Mediation Server software directly on the gateway.

In this example, the Mediation Server is installed at the branch.

The AG2330 provides connections to analog phones and external PSTN trunks and the CS 1000 provides the necessary call routing for the analog and (non-OCS) IP Phones. For OC phones and clients, the OCS server manages primary routing, but can also forward calls to the CS 1000 network (through the Mediation Server) for routing as required. For calls between the CS 1000 and OCS networks, the Mediation Server provides the necessary transcoding to allow communication between the two networks.

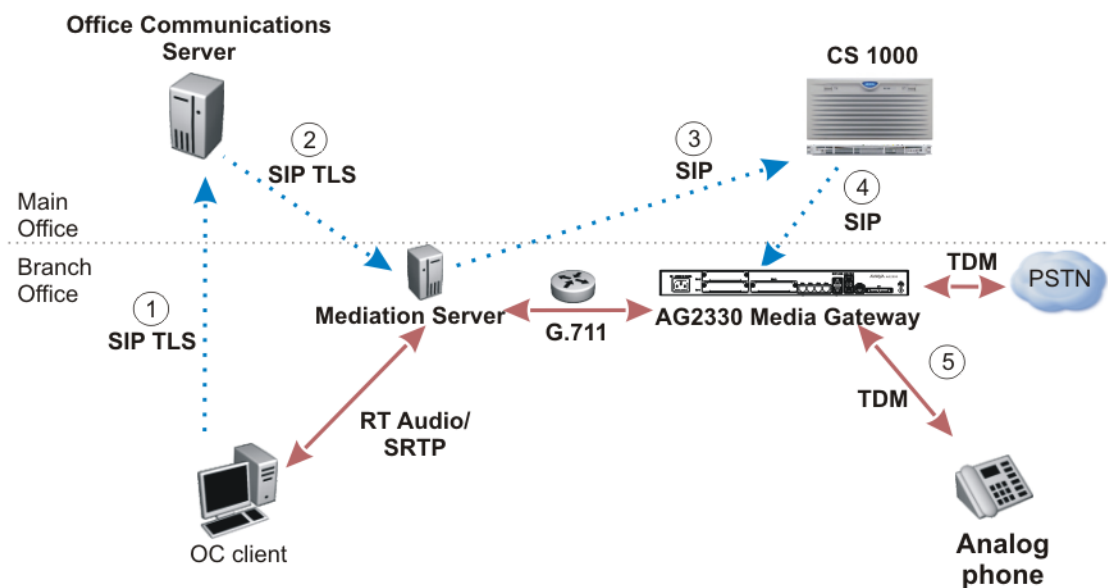
In a network containing the CS 1000 with the Microsoft OCS, the `sip-ua sip-server` command must point to the CS 1000 Node IP address.

CS 1000, OCS, and AG2330 call flows

When an on-site user places a call from the OC client to a PSTN destination, the call moves through the network infrastructure as follows:

1. A user places a call from an Enterprise Voice client by dialing the number or clicking the contact information in Microsoft Office Communicator or Outlook.
2. The OCS Server, based on location profile and call routing policies, forwards the call to the Mediation Server.
3. The Mediation Server routes the call to the CS 1000 network.
4. The CS 1000, based on configured call routing, forwards the call to the AG2330 Media Gateway.
5. The Media Gateway, based on topology, applies local dialing rules and passes the call to the PSTN.

The following figure shows the signaling and media flows within a network where the Mediation Server is integrated with a CS 1000 and an OCS server in the Enterprise Voice infrastructure. The figure shows the flow for an OC client call to a TDM port.



..... Signaling
 — Media

- ① The OC client signals the central OCS 2007 server using SIP TLS.
- ② The OCS 2007 server, based on location profile and call routing policies, signals the Mediation Server at the branch.
- ③ The Mediation Server translates SIP TLS to SIP and signals the CS 1000.
- ④ The CS 1000, based on configured call routing, signals the AG2330 Media Gateway.
- ⑤ The AG2330 Media Gateway connects the call to the appropriate PSTN port, and the media stream flows within the branch. The Mediation Server translates RT Audio to G.711 and the AG2330 Media Gateway translates G.711 to TDM.

Figure 18: CS 1000, Microsoft OCS, and AG2330 sample call flow: OC client to TDM port

The following figure shows the flow for an OC client call to an Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the branch IP Phone through the Mediation Server at the main office. As all media from the branch traverses the WAN, this is not a recommended scenario.

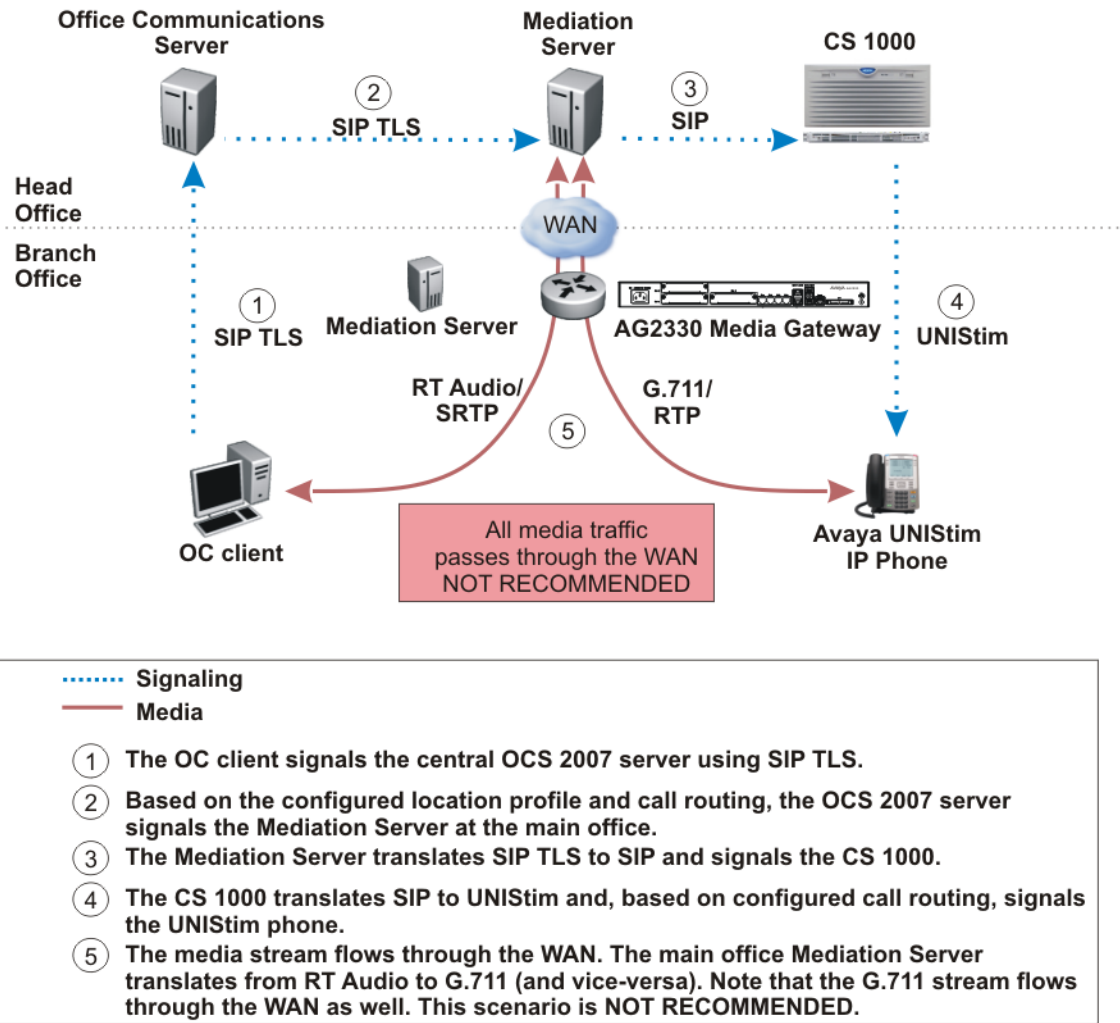


Figure 19: Call flow for branch OC client to UNISTim phone NOT RECOMMENDED

The following figure shows the flow for an OC client call to an Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the branch IP Phone through the Mediation Server at the branch. As all media flows within the branch, this is the recommended scenario.

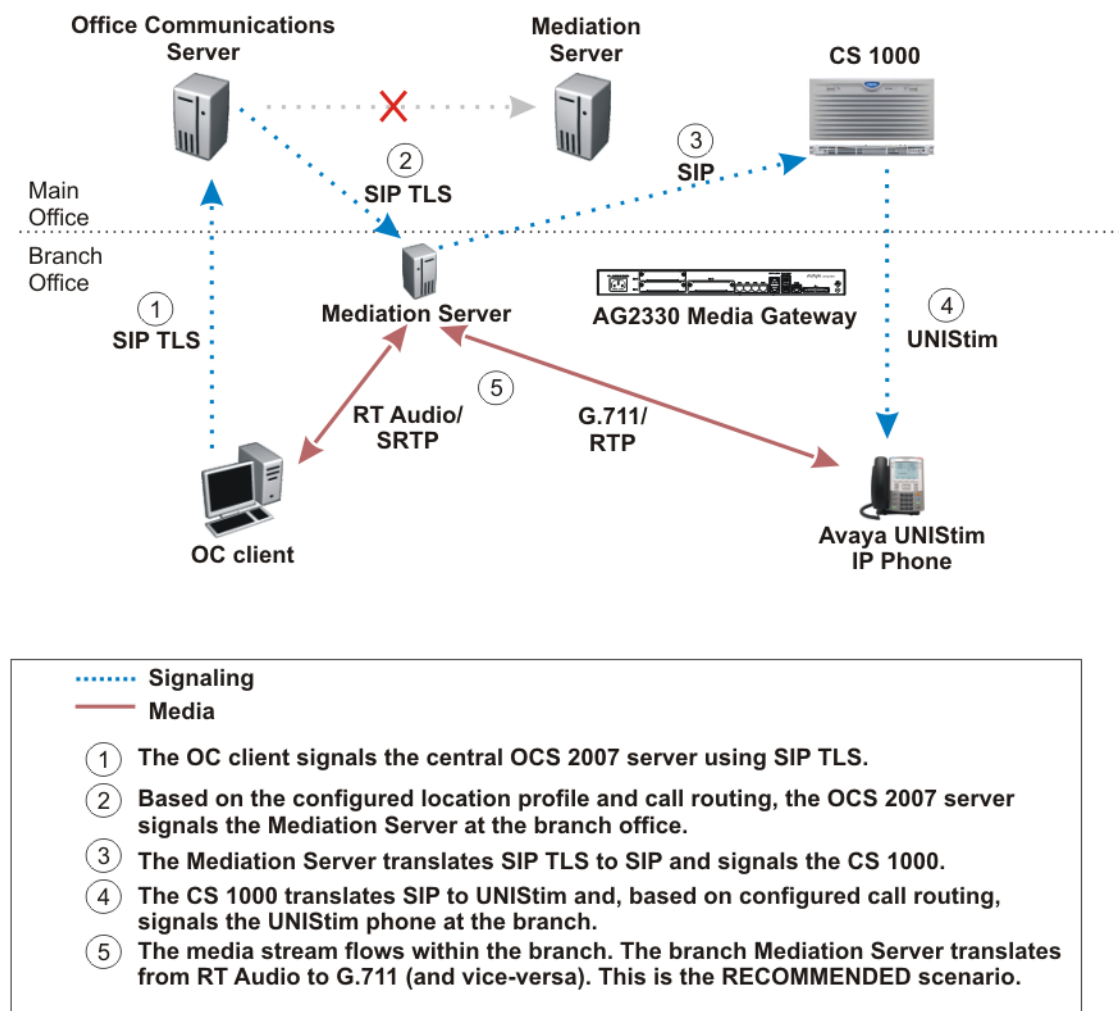
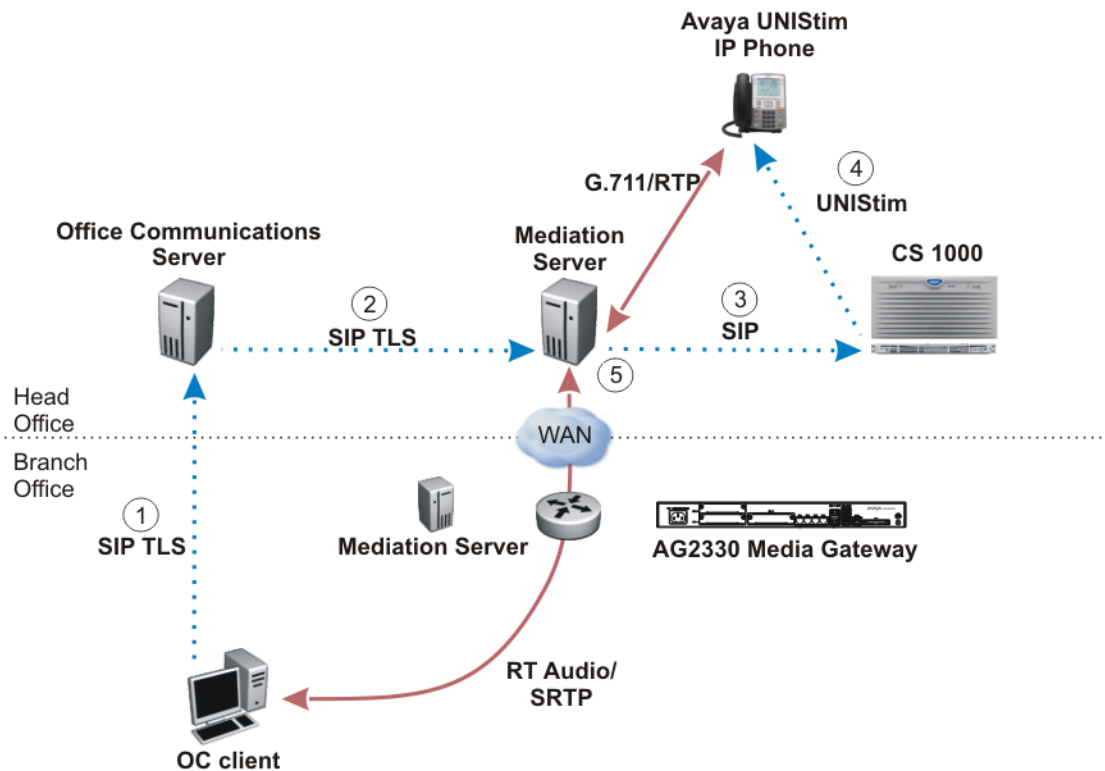


Figure 20: Call flow for branch OC client to UNISTim phone RECOMMENDED

The following figure shows the call flow between a branch OC client and a main office Avaya UNISTim phone. In this case, the OCS server policies are configured to route calls between the branch OC client and the main office IP Phone through the Mediation Server at the main office. As the larger G.711/RTP payload remains within the head office, this is also a recommended scenario.



..... Signaling
 — Media

- ① The OC client signals the central OCS 2007 server using SIP TLS.
- ② Based on the configured location profile and call routing, the OCS 2007 server signals the Mediation Server at the main office.
- ③ The Mediation Server translates SIP TLS to SIP and signals the CS 1000.
- ④ The CS 1000 translates SIP to UNISTim and, based on configured call routing, signals the UNISTim phone at the main office.
- ⑤ Due to the location of the endpoints, the media stream flows thru the WAN. The main office Mediation Server translates from RT Audio to G.711 (and vice-versa). However, the larger G.711 payload does not flow through the WAN.

Figure 21: Call flow for branch OC client to main office UNISTim phone RECOMMENDED

AG2330 integration with OCS only

You can install the AG2330 in an OCS-only network without the CS 1000. In this scenario, the Media Gateway provides PSTN trunks and FXS connections to POTS phones (but not fax) for the OCS network, and the OCS server provides SIP call routing.

FXS phones cannot perform a SIP registration with the OCS network. Instead, the OCS server views FXS phones as trunk numbers.

The following figure shows a sample network topology. In this scenario, the OCS is located at the main office and the AG2330 is located at the branch office.

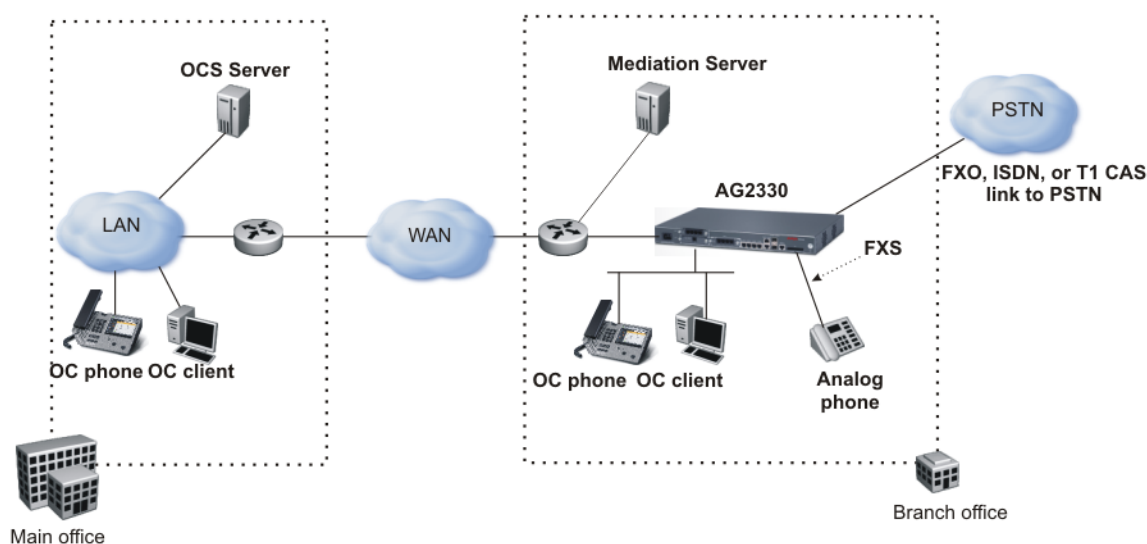


Figure 22: OCS and AG2330 interoperation

The AG2330 provides connections to external PSTN trunks and analog POTS phones. The OCS provides the necessary call routing for the branch analog phones, OC phones, and OC clients. For calls that pass between the OCS network and the PSTN, the Mediation Server provides the necessary transcoding to allow communication between the PSTN and the OCS network.

In an OCS-only solution, the `sip-ua sip-server` command must point to the IP address of the Mediation Server.

Related topics:

[OCS-only call flows](#) on page 47

OCS-only call flows

The following figure shows the signaling and media flows within a network where the AG2330 and the Mediation Server are integrated with an OCS server in the Enterprise Voice

infrastructure. The figure shows the call flow between two OC clients at the branch. In this case, the OCS server routes the call back to the branch, and the media flows through the AG2330 Ethernet connections.

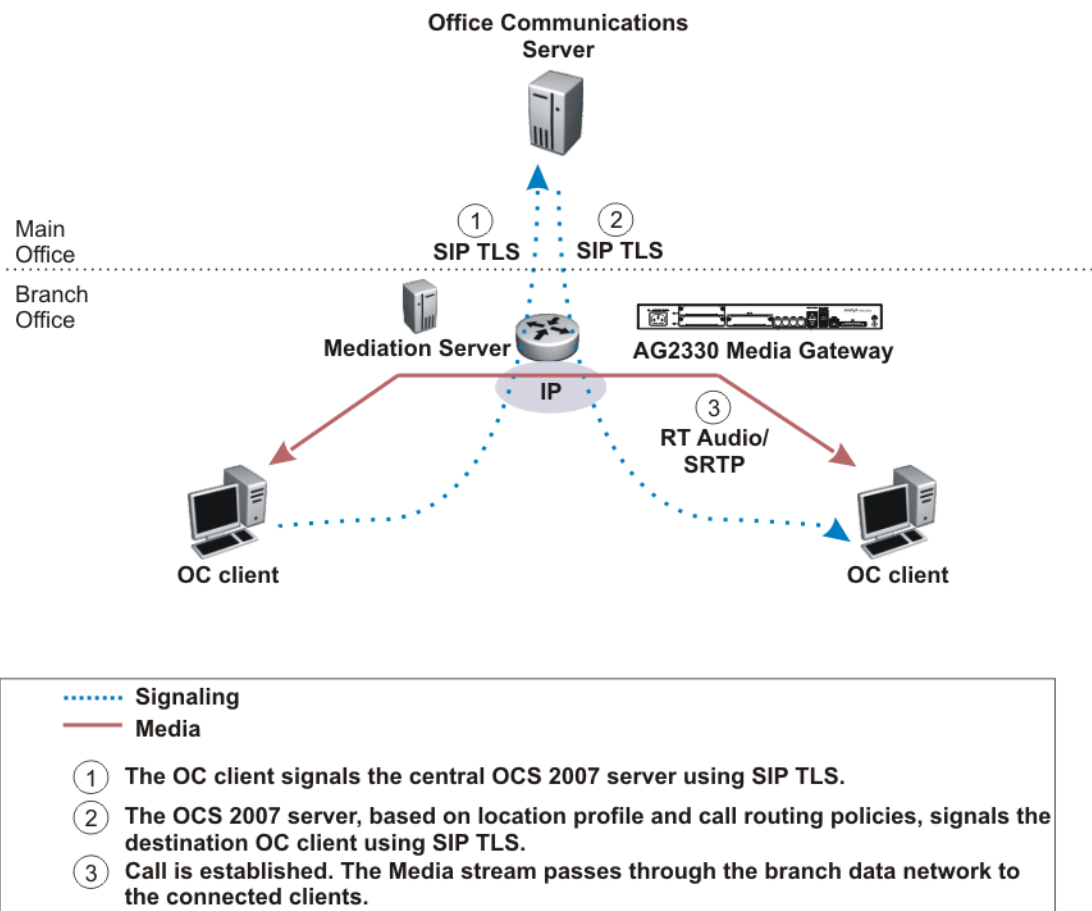


Figure 23: Call flow for OC client to OC client call

The following figure shows the call flow between an OC client and a PSTN or FXS port connected to the AG2330 Media Gateway. In this case, the OCS server routes the call to the branch Mediation Server, and the media flows through the AG2330 Media Gateway and the Mediation Server in the branch.

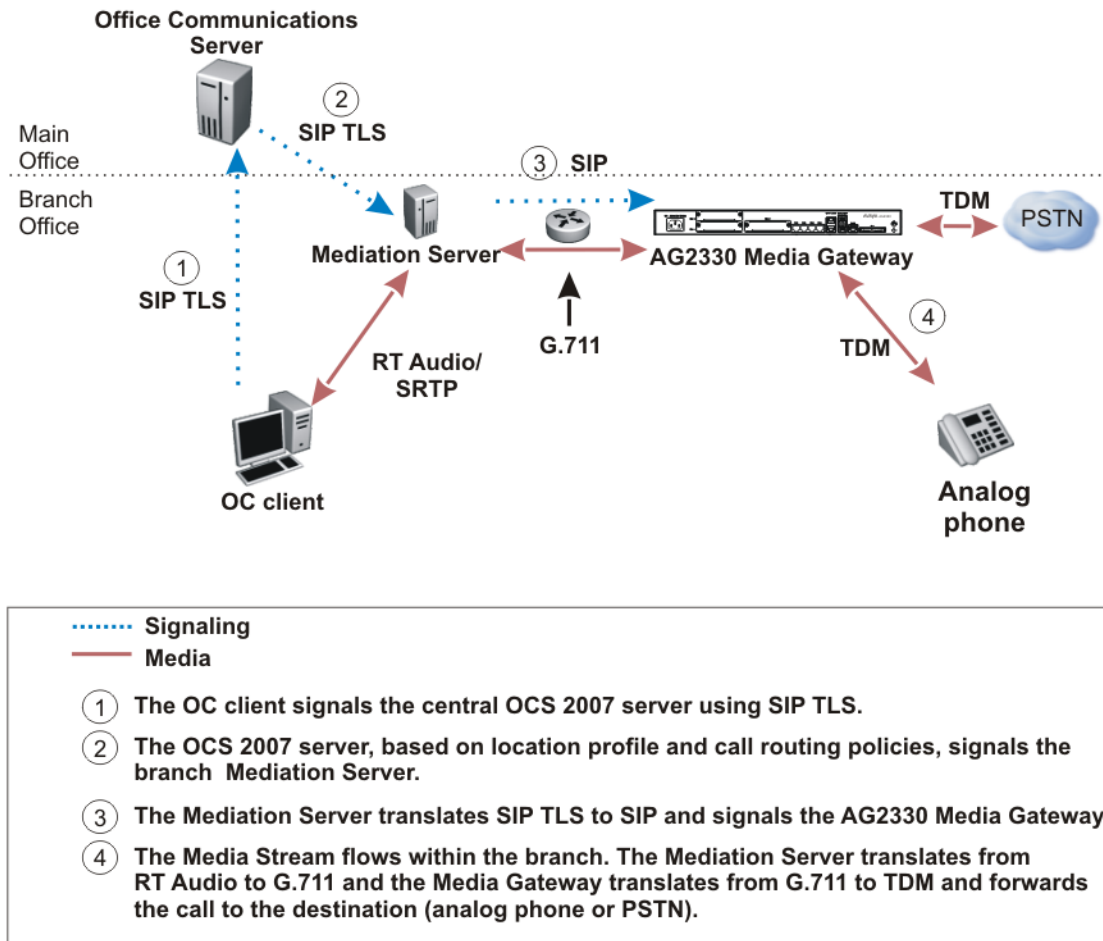


Figure 24: Call flow for OC client to TDM port

Chapter 7: Configuring the AG2330 for OCS deployment

The branch Microsoft Mediation Server must be configured to communicate with the Microsoft Office Communications Server 2007 on one side and the Avaya AG2330 on the other side. For detailed configuration and overview information for the Mediation Server and the OCS, see *Microsoft Office Communications Server 2007 Enterprise Voice Planning and Deployment Guide*. In a deployment with both Avaya CS 1000 and OCS, the Mediation Server PSTN Gateway parameter must be configured as the IP address of the CS 1000 Node IP. With an OCS only deployment, the AG2330 bound interface address that was specified using the `voice service voip sip bind all ipv4:x.x.x.x` command must be used.

AG2330 configuration example with OCS only

The following figure shows a typical deployment of an OCS-only scenario. Here, OCS clients running in the remote branch office register themselves with the OCS server at the main office. When the OCS clients call a PSTN number, the OCS server at the main office forwards the call based on its routing policies to the Mediation Server at the branch office. The Mediation Server then forwards the call to the AG2330 Media gateway, which in turn connects the call to the PSTN.

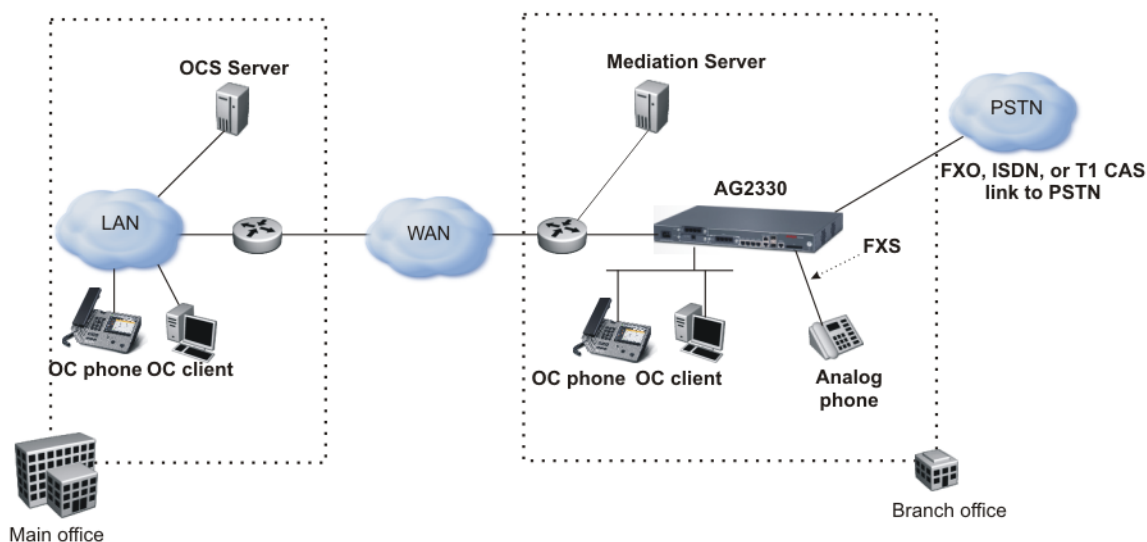


Figure 25: OCS and AG2330

OCS-only configuration example

The following procedure shows the IP address configuration required for the above setup in the AG2330.

Procedure steps

1. Enter configuration mode:

```
configure terminal
```

2. Configure the AG2330 Ethernet interface to connect with the existing network:

```
interface ethernet 0/1
ip address 47.80.235.163 255.255.255.0
exit ethernet
```

3. Configure the OCS Mediation Server IP as the next-hop SIP server for the Media Gateway, as well as the SIP transport protocol.

```
sip-ua
sip-server ipv4:47.80.235.164:5060
transport tcp
exit
```

4. Specify the IP address of the bound Media Gateway interface.

```
voice service voip
sip
bind all ipv4:47.80.235.163
exit 2
```

AG2330 configuration example with OCS and CS 1000

In this scenario, the OCS 2007 Server and the Avaya CS 1000 are running in the head office and the Mediation Server is running in the branch office together with the AG2330. The Media Gateway running in the AG2330 continues to act as a trunking gateway to route calls from OCS Clients and Avaya IP Phones to PSTN networks.

The following figure shows a typical deployment of this scenario. Here OCS clients running in the remote branch office register themselves with the OCS Server and Avaya IP phones register with the CS 1000 at the head office.

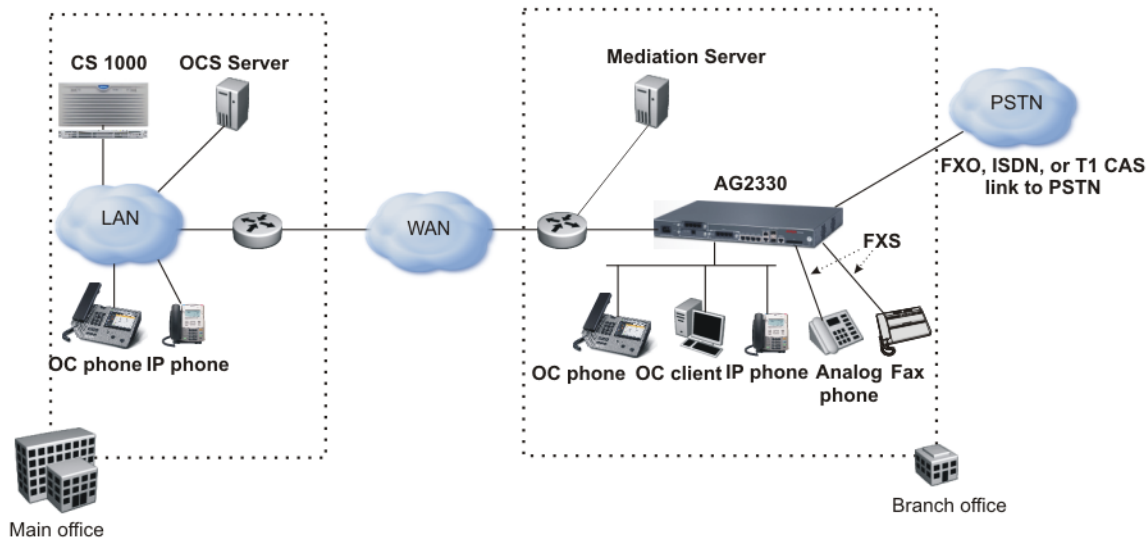


Figure 26: CS 1000, Microsoft OCS, and AG2330 interoperation

When an Avaya IP phone calls a PSTN number, the CS 1000 forwards the call based on its routing policies to the branch AG2330 Media gateway, which then connects the call to the PSTN.

When the branch OC clients call a PSTN number, the OCS server at the head office forwards the call based on its routing policies to the Mediation Server in the branch. The Mediation Server forwards the call to the CS 1000 at the head office. The CS 1000 then forwards the call to the AG2330 Media Gateway. And finally, the Media Gateway connects the call to the PSTN.

With this call flow, even though the signaling flow does multiple hops through the WAN, the media flows within the branch office.

AG2330 configuration

The following is the sample IP address configuration for the above setup in the AG2330. The only difference in this configuration from the one used for the OCS-only scenario is that the SIP server IP address in the AG2330 is now the Node IP address of the CS 1000 rather than the IP address of the Mediation Server.

Procedure steps

1. Enter configuration mode:

```
configure terminal
```

2. Configure the AG2330 Ethernet interface to connect with the existing network:

```
interface ethernet 0/1
ip address 47.80.235.163 255.255.255.0
exit ethernet
```

3. Configure the CS 1000 Node IP as the next hop SIP server for the Media Gateway, as well as the SIP transport protocol.

```
sip-ua
sip-server ipv4:47.80.235.100:5060
transport tcp
exit
```

4. Specify the IP address of the bound Media Gateway interface.

```
voice service voip
sip
bind all ipv4:47.80.235.163
exit 2
```