



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya IP Office Release 9.1.7 with Calabrio Call Recording and Quality Management Version 9.5.1 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the Calabrio Call Recording and Quality Management solution to interoperate with Avaya IP Office Release 9.1.7.

Calabrio Call Recording and Quality Management uses the port mirroring feature in the Avaya layer 2 switch to capture real-time RTP streams from Avaya SIP endpoints that register to the IP Office to produce recordings of phone activity for SIP endpoint.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for the Calabrio Call Recording and Quality Management solution to interoperate with Avaya IP Office Release 9.1.7.

Calabrio Call Recording and Quality Management (CRQM) uses the port mirroring feature on the Avaya layer 2 switch to capture real-time RTP streams from Avaya SIP endpoints that register to the IP Office to produce recordings of phone activity for SIP agent and SIP endpoint. Avaya IP Office system, that was used for the compliance test was an IPO 500V2 platform.

2. General Test Approach and Test Results

The general test approach was to focus on the ability for calls to be recorded. Calls were manually placed from the public switched telephone network (PSTN) directly to and from recorded devices. For each recorded station in a call, there is one recording generated. Once a call is completed, the recordings are reviewed for their quality, completeness (number of recordings beginning to end, etc.), and accuracy of tagging information (owner, calling party, called party, etc.).

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The compliance test validated the ability of CRQM to successfully record calls routed to and from SIP IP endpoints as well as SIP IP softphone. Audio codec support was tested for G.711MU, G711A and G729. Common call scenarios including hold/resume, mute/unmute, transfer, and conference were performed at the recorded IPO SIP endpoints.

Additionally, serviceability testing was performed to confirm the ability for CRQM to recover from common outages such as network outages and server reboots.

2.2. Test Results

All the test cases passed successfully with following observations:

- CRQM was only tested for recording of calls from SIP IP endpoints.
- CRQM was not tested for SIP IP endpoints that use secure signalling TLS and secure media.
- One instance of CRQM is required per IP Office system monitored.
- Quality Management features such as live monitoring and screen capturing were not tested during the compliance test.

2.3. Support

Technical support on Calabrio CRQM can be obtained through the following:

- Phone: +1 (763) 592-4680 or +1 (800) 303-1248
- Web: <http://calabrio.com/about-calabrio/services/>
- Email: calabriosupport@calabrio.com

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya system consists of an IP Office 500V2, one H323 IP telephone, one digital 9508 and 3 SIP IP telephones that are monitored by Calabrio server. From the Calabrio CRQM server, one Ethernet is connected to the lab network to communicate with the corresponding Avaya IP Office system, the other Ethernet is connected to the monitor port to capture traffic that comes in and out of the SIP IP endpoints. Simulated PSTN via SIP and PRI trunks were used for the compliance test.

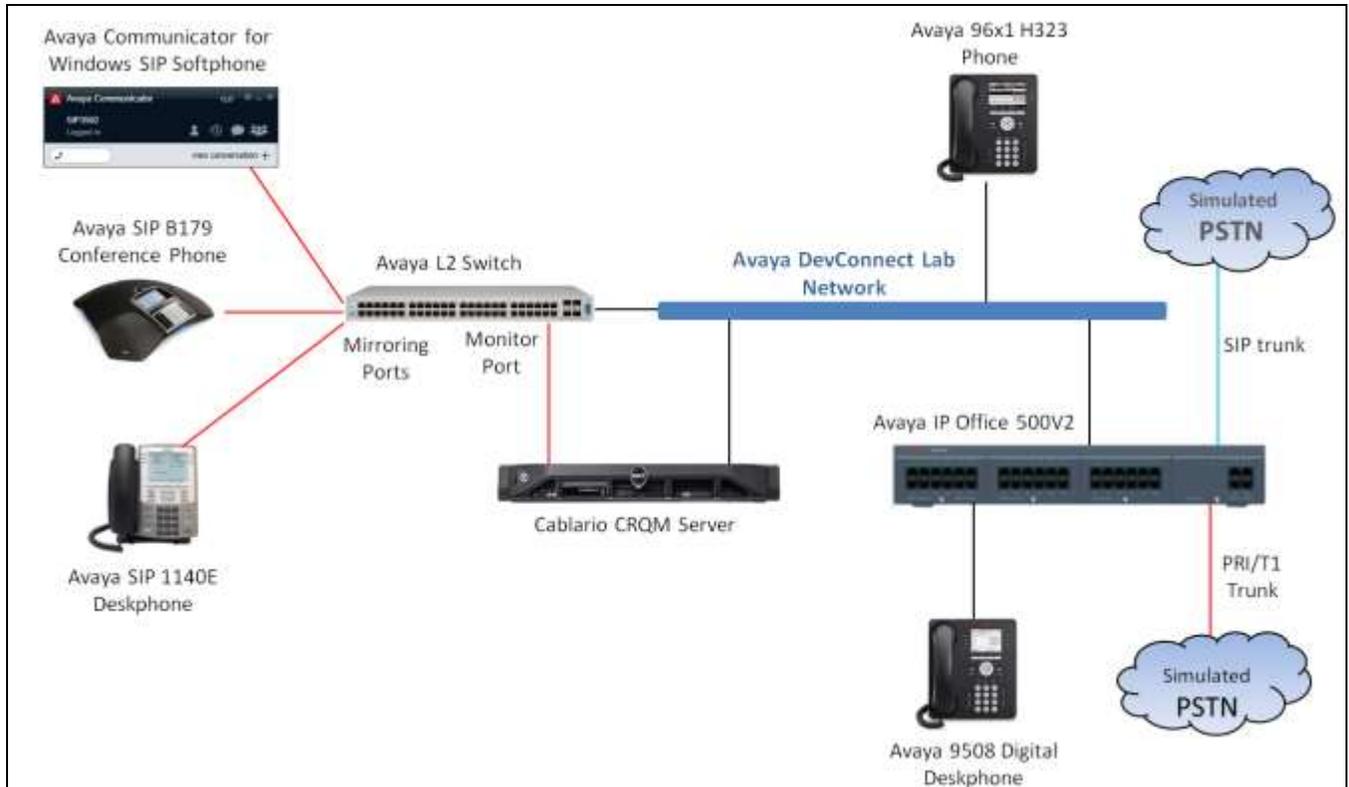


Figure 1: Avaya IP Office and Calabrio Call Recording and Quality Management Reference Configuration

4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment/Software	Release/Version
Avaya IP Office 500 V2	9.1.7.1 build 163
Avaya IP Office Manager	9.1.7.1 build 163
Avaya 96x1 H323 Telephone	6.615
Avaya 1140E SIP Telephone	04.04.18.00
Avaya B179 SIP Conference Phone	2.4.0.27
Avaya Communicator for Windows SIP Softphone	2.0.3.45
Avaya 9508 Digital Telephone	R15
Calabrio Equipment	Software / Firmware Version
Calabrio Call Recording and Quality Management running on Windows Server 2012 R2	Build 9.5.1.391

Note: Testing was performed with IP Office 500 v2, but it also applies to IP Office Server Edition. Note that IP Office Server Edition requires an Expansion IP Office 500 v2 to support analog or digital endpoints or trunks.

5. Avaya IP Office Configuration

The information provided in this section describes the configuration of the Avaya IP Office for this solution. It is implied a working system is already in place and all Users/Extensions are configured. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**. The procedures include the following areas:

- Verify IP Office license
- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extensions
- Administer SIP users

5.1. Verify IP Office License

From a PC running the Avaya IP Office Manager application, select **Start → Programs → IP Office → Manager** to launch the Manager application. Select the proper IP Office system, and log in using the appropriate credentials.

The **Avaya IP Office Manager** screen is displayed. From the configuration tree in the left pane, select **License**, the list of license displayed in the right panel. Verify that the **3rd Party IP Endpoints** status is “Valid”.

The screenshot shows the Avaya IP Office Manager interface. On the left is a 'Configuration' tree with various system components. The main area is titled 'License Remote Server' and contains the following information:

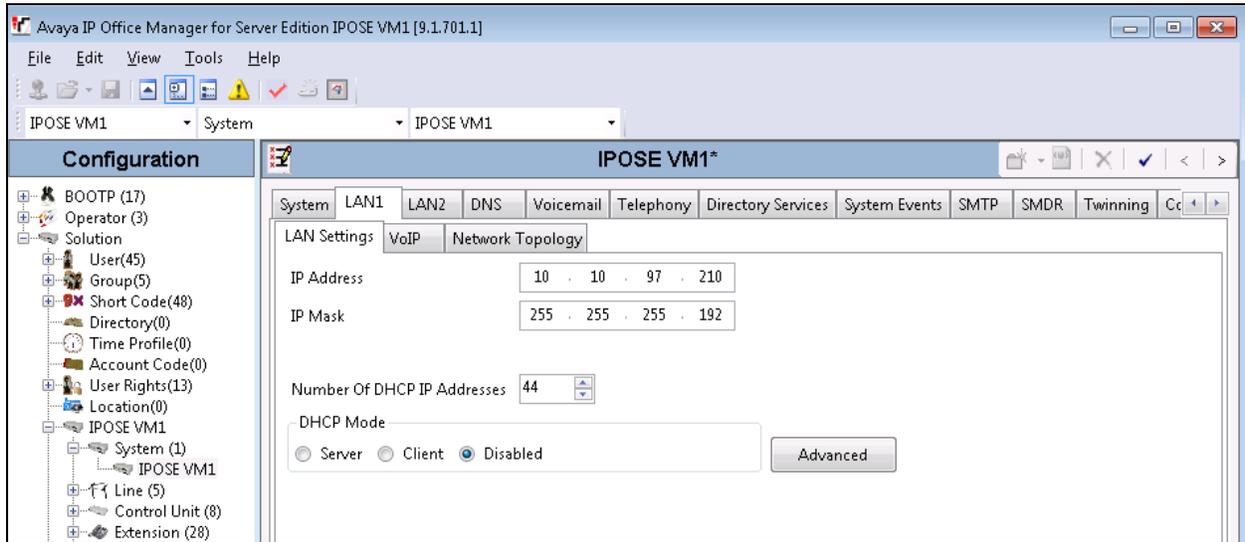
- License Mode: License Normal
- Licensed Version: 5.1
- System ID (ADD): f9643e6a3711a282e1b2d6de45c79477b8228770
- PLDS Host ID: f63812273556
- PLDS File Status: Not Present / Invalid

Below this information is a table of licenses:

Feature	License Key	Instances	Status
VMPro Networked Messaging		255	Obsolete
VMPro TTS (Scansoft)		255	Obsolete
VMPro TTS (Generic)		255	Obsolete
Software Upgrade 255		1	Obsolete
Avaya Softphone License		255	Obsolete
CTI Link Pro		255	Valid
Wave User		255	Valid
Receptionist		255	Valid
Preferred Edition Additional Voice...		255	Valid
3rd Party IP Endpoints		255	Valid
VMPro Networked Messaging		255	Obsolete
VMPro Recordings Administrators		255	Valid
VMPro TTS (Scansoft)		255	Obsolete
VMPro TTS (Generic)		255	Obsolete
SIP Trunk Channels		255	Valid
Avaya IP endpoints		255	Valid

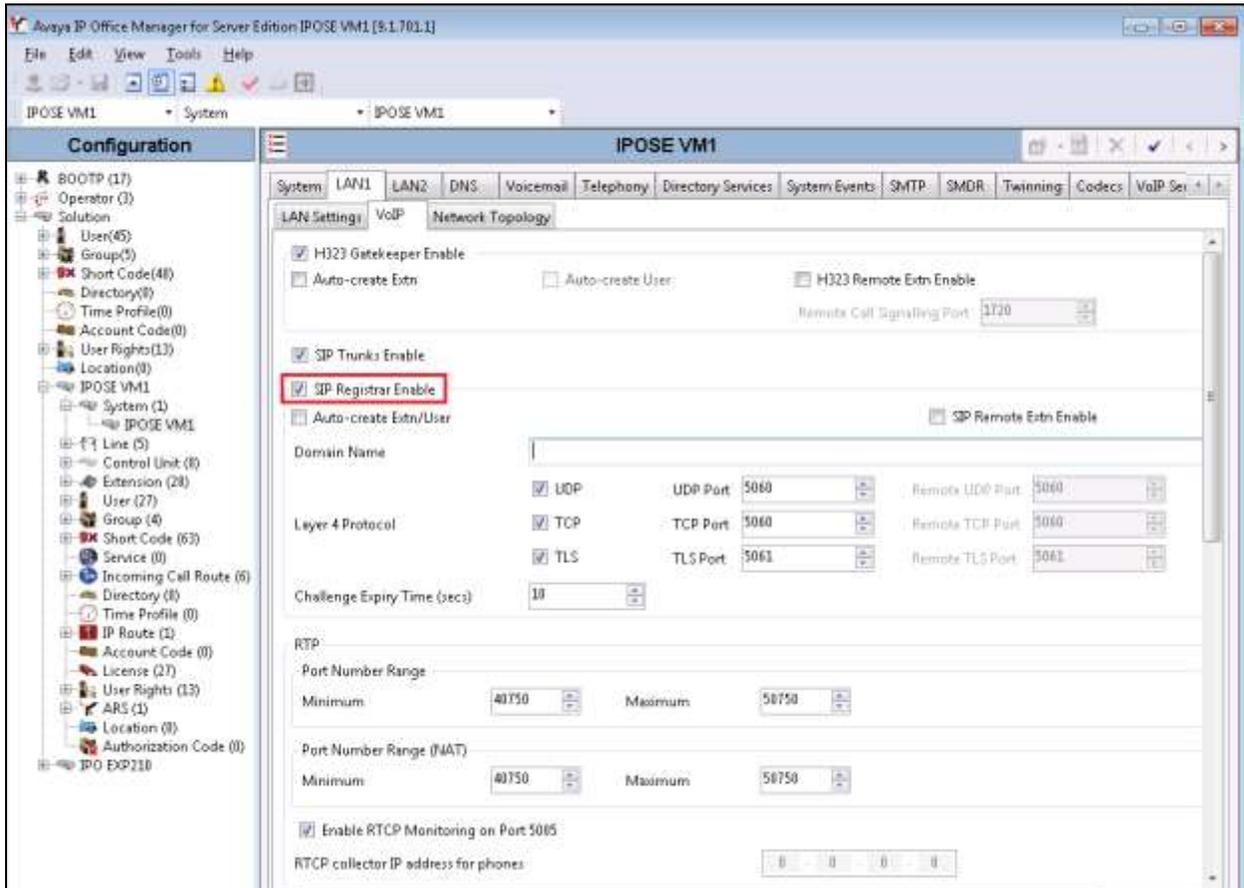
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select System to display the **IPOSE VM1** screen in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the IP Address, which will be used later to configure Calabrio CRQM. Note that IP Office can support SIP extensions on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.



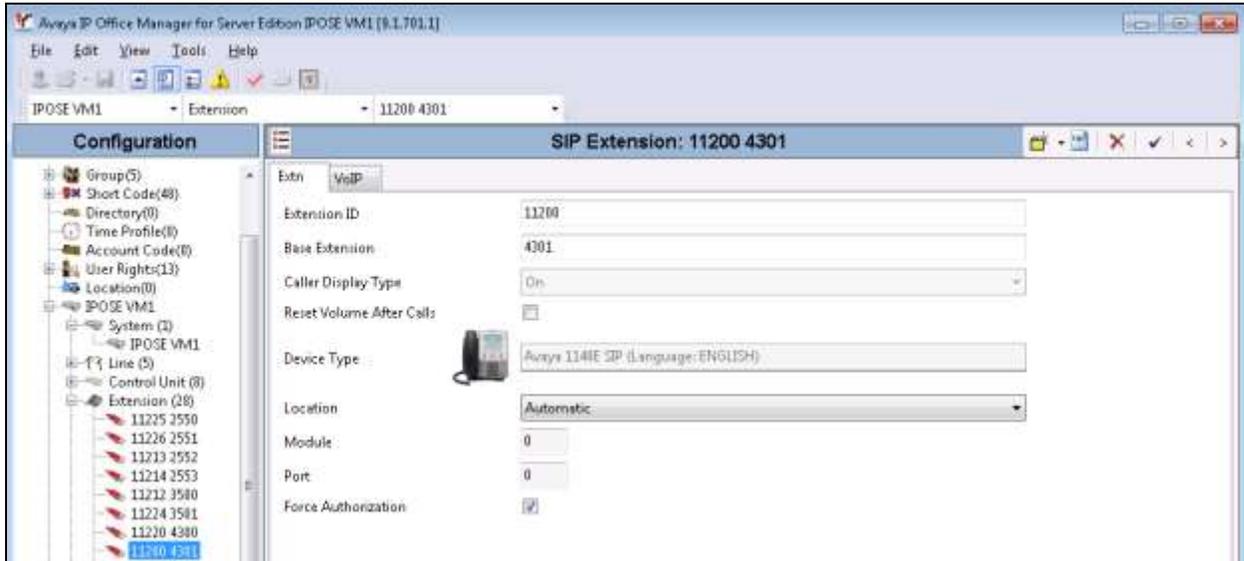
5.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below. Enter a valid **Domain Name** for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** was left blank, so the SIP endpoints used the LAN IP address for registration.

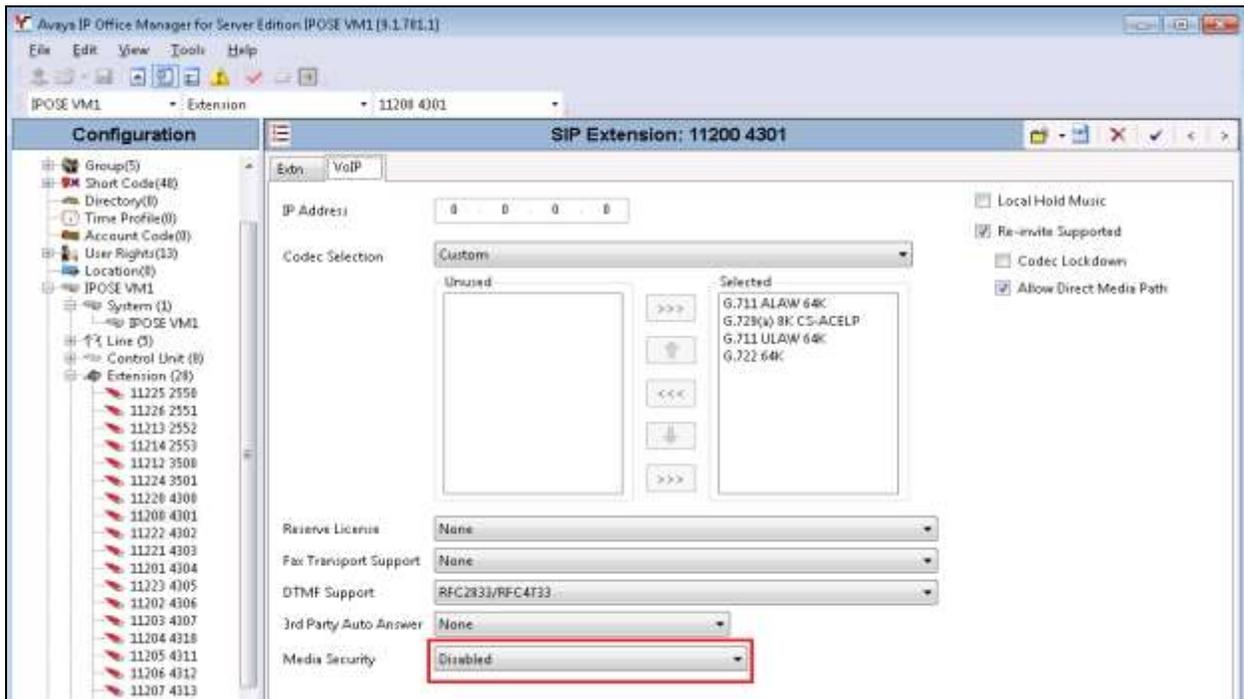


5.4. Administer SIP Extension

From the configuration tree in the left pane, do a right-click on **Extension**, and select **New** → **SIP Extension** from the pop-up list to add a new SIP extension. For **Base Extension**, enter SIP extension, e.g. “4301”. Retain default values in the remaining fields

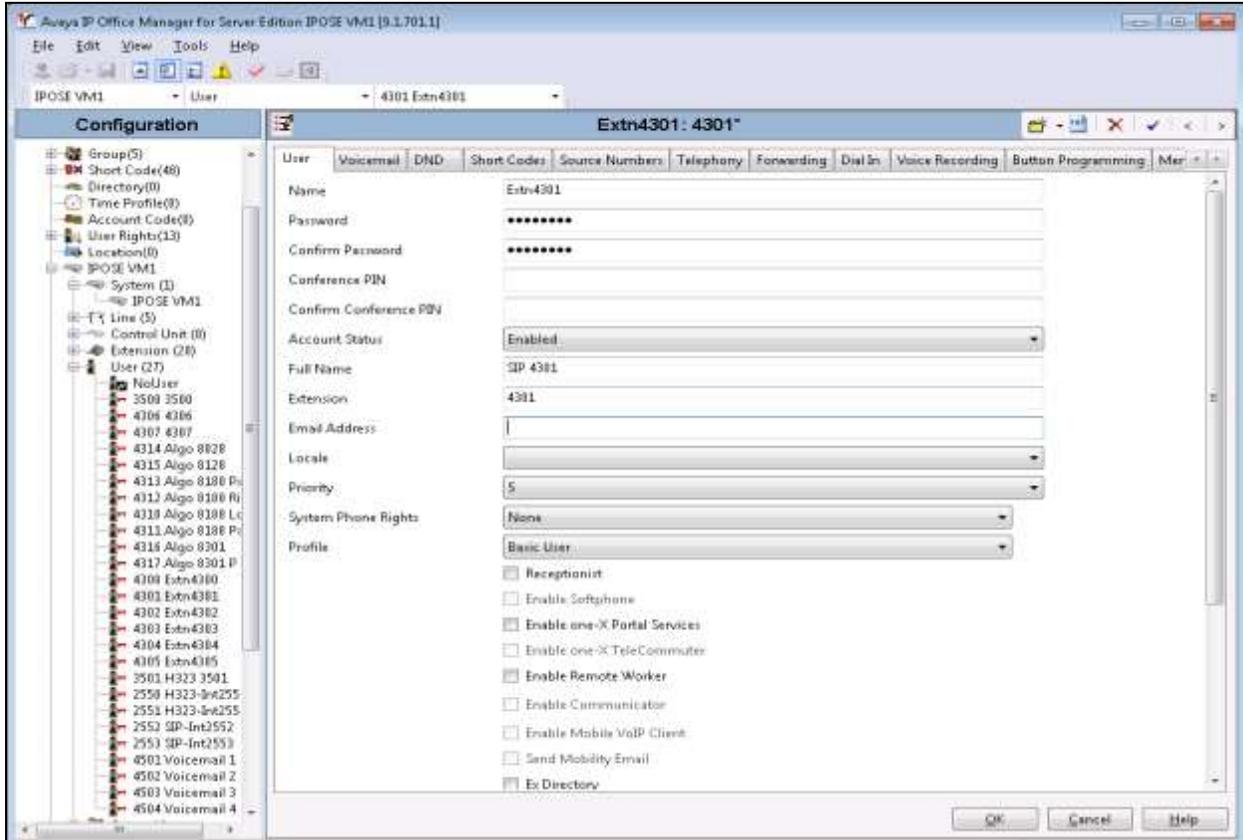


Select the **VoIP** tab, select **Disabled** in the **Media Security** dropdown menu and retain default values in all other fields. Note that Media Security for all SIP extensions needs to be set as “Disabled” so that the CRQM is able to record the call audio.



5.5. Administer SIP users

In the left navigation pane, do a right-click on **User**, and select **New** (not shown) from the pop-up list. Enter desired values for **Name** and **Full Name**. For **Extension**, enter the SIP base extension **4301** from **Section 5.4**.



Select the **Telephony** tab, followed by the **Supervisor Settings** sub-tab, and enter a desired **Login Code**.



6. Configure Calabrio Call Recording and Quality Management

The initial configuration of the CRQM server is typically performed by Calabrio engineer or authorized installers. These Application Notes will only cover the steps necessary to configure the CRQM solution to interoperate with Avaya IP Office. A similar configuration needs to be done for each IP Office system being monitored, and for reference, only one is shown here.

The steps include:

- Configure IP Office Interface
- Configure Users
- Configure Devices

The configuration of the CRQM server is performed using the Calabrio Monitoring and Recording Administrator application, which can be launched by clicking Calabrio Monitoring and Recording Administrator application in the list of applications. Enter proper credentials to log in.

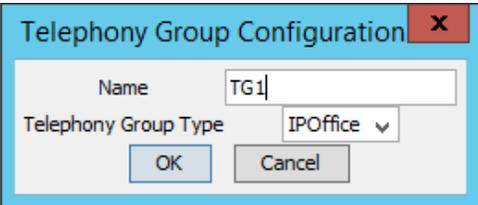
6.1. Configure IP Office Interface

Configure the System Database tab with the SQL Server connection information:



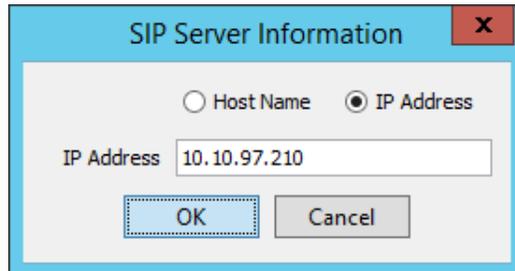
The screenshot shows a 'Database Information' dialog box. It has two radio buttons at the top: 'Host Name' (unselected) and 'IP Address' (selected). Below these are four text input fields: 'IP Address' containing '135.10.97.27', 'SQL Instance Name' (empty), 'Username' containing 'sa', and 'Password' containing ten dots. At the bottom, there is a note: 'Note: This information is only editable on the Base Server.'

From the left pane, navigate to **Enterprise** → **System Configuration** → **Telephony Groups**. The **Telephony Groups** screen is displayed. Click the **Add** button. In the **Telephony Group Configuration** window that pops up, enter a Name and select IPOffice as the **Telephony Group Type**. Click **OK**.

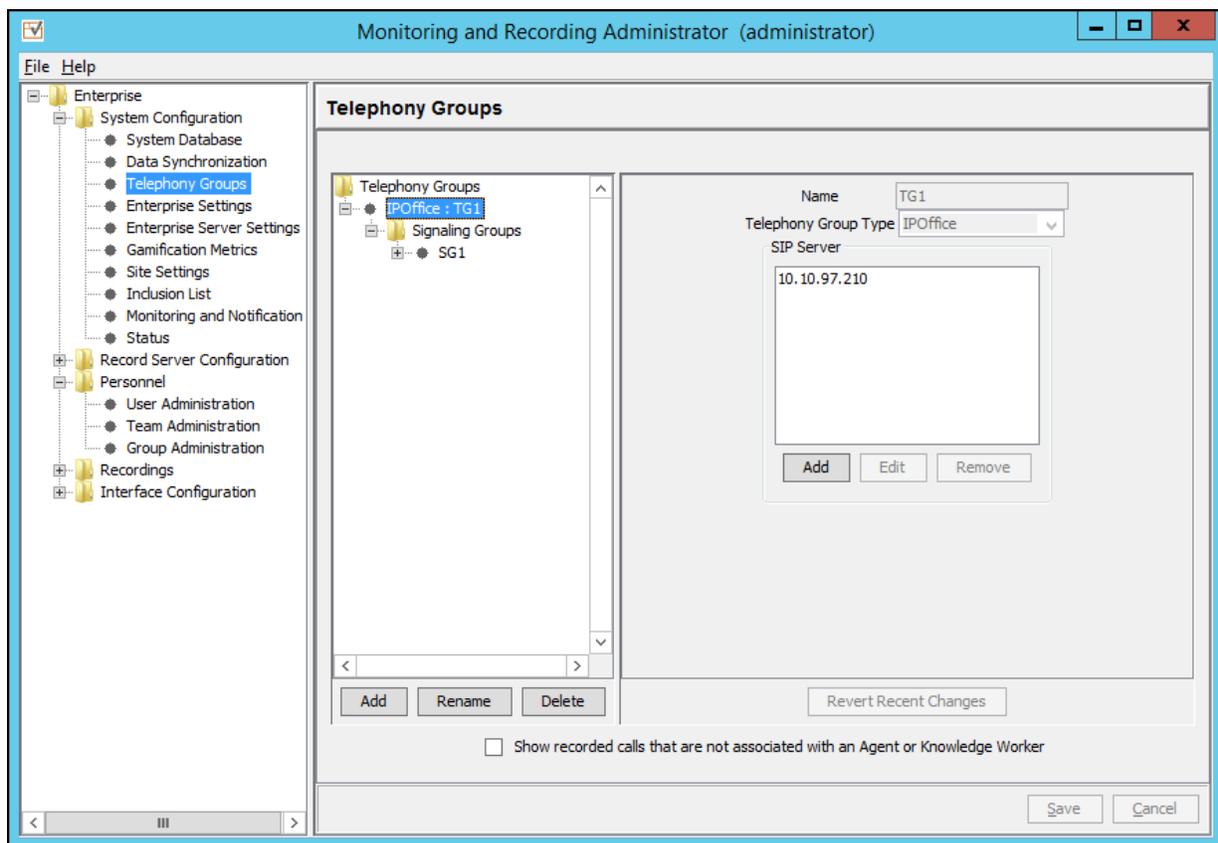


The screenshot shows a 'Telephony Group Configuration' dialog box. It has a title bar with a close button (X). Inside, there are two fields: 'Name' with the value 'TG1' and 'Telephony Group Type' with a dropdown menu showing 'IPOffice'. At the bottom, there are 'OK' and 'Cancel' buttons.

In the SIP Server section of the Telephony Group, click Add button to add the IP address of the Avaya IP Office system, in this case it is the IP address of the primary IP Office. Click **OK**.



The Telephony groups with the newly added IP Office instance is shown in the picture below.



Configure the Signaling Group Details tab:

The screenshot shows the configuration page for a Signaling Group (SG1). It features two main sections: 'Signaling Details' and 'Associated Media Monitor Servers'. In the 'Signaling Details' section, there is a label 'IP Office Subscription Service:' followed by two radio buttons: 'Host Name' (unselected) and 'IP Address' (selected). Below this is a text input field labeled 'IP Address' containing the value '135.10.97.24'. The 'Associated Media Monitor Servers' section contains a larger text input field also containing '135.10.97.24'. At the bottom of this section are two buttons: a plus sign (+) and a minus sign (-).

Enter the IP Address/Host Name of the server hosting the CTI Signaling Service.
Enter the IP Address of the server hosting the Media Monitor Service.

Configure the Recording Cluster tab. Select the server from the Add list. This is the server that hosts the Network Recording Service.

The screenshot shows the configuration page for a Recording Cluster (RC1). It is divided into two columns: 'Primary Record Servers' and 'Secondary Record Servers'. The 'Primary Record Servers' column contains a text input field with the value '135.10.97.24'. Between the two columns is a vertical stack of two buttons: a right-pointing arrow (>) and a left-pointing arrow (<). At the bottom of the page are two buttons: 'Add' and 'Remove'.

6.2. Configure Users

Navigate to **Enterprise** → **Personnel** → **User Administration** page to configure users. In the Team tab, create a new Team.

The screenshot shows the 'Team' configuration page. At the top, there is a dropdown menu for 'Team' set to 'Team1', and buttons for 'New', 'Delete', and 'Rename'. Below this is a 'Group: Group1' label. The main area contains three sections:

- Assigned Knowledge Workers:** A table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It lists 14 rows of agents (asp1-asp7 and agent1-agent7) with their respective IDs and extensions.
- Assigned ACD Supervisors:** An empty table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It has 'Add' and 'Remove' buttons below it.
- Assigned QM Supervisors:** An empty table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It has 'Add' and 'Remove' buttons below it.

At the bottom of the 'Assigned Knowledge Workers' table, there are 'Add' and 'Remove' buttons.

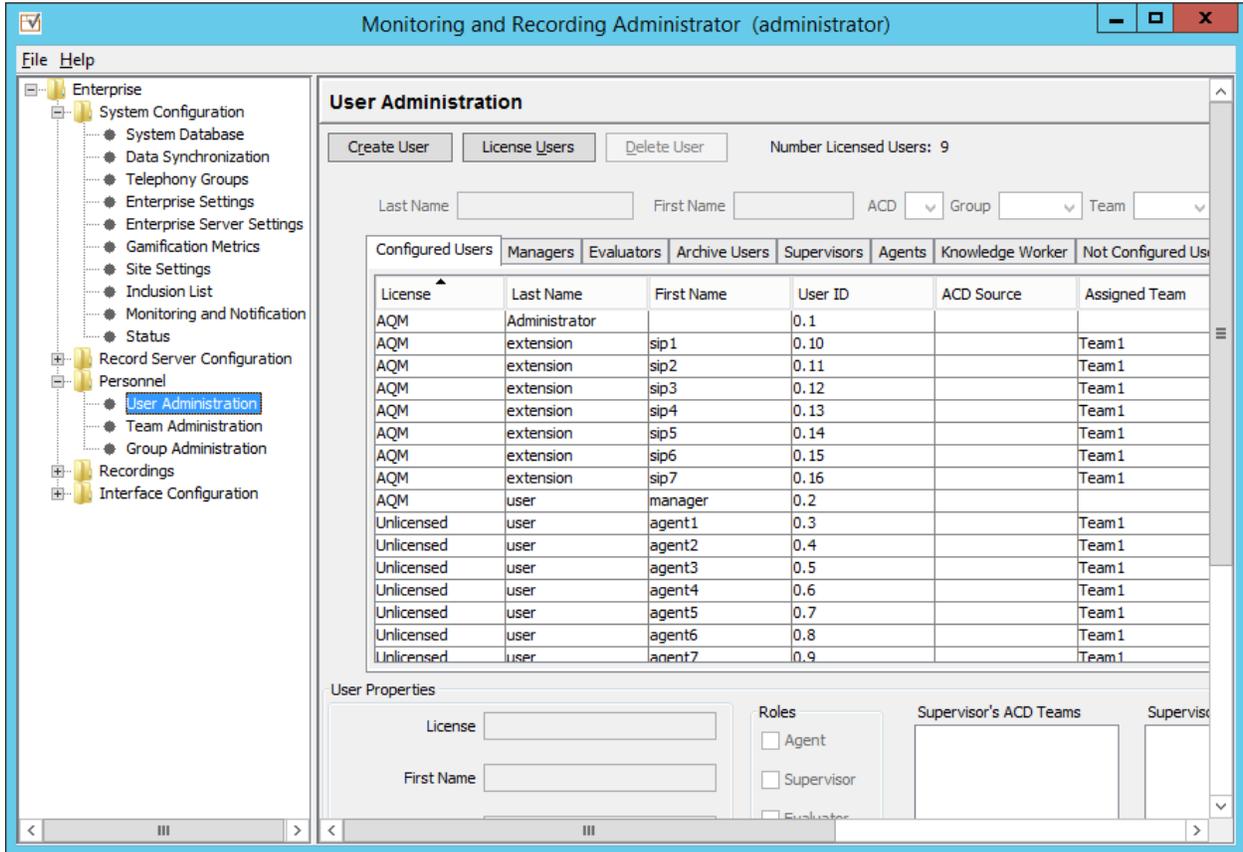
In the Group tab, create a new Group, and then assign the Team that was previously created to this new group.

The screenshot shows the 'Group' configuration page. At the top, there is a dropdown menu for 'Team' set to 'Team1', and buttons for 'New', 'Delete', and 'Rename'. Below this is a 'Group: Group1' label. The main area contains three sections:

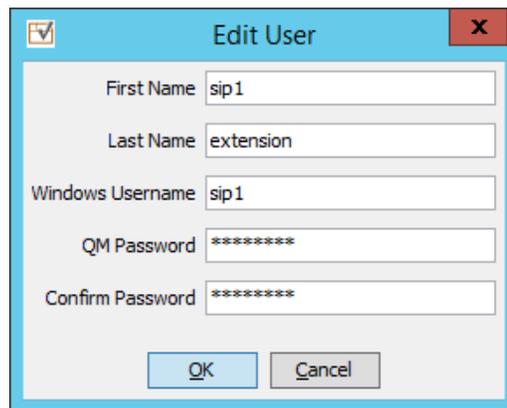
- Assigned Knowledge Workers:** A table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It lists 14 rows of agents (asp1-asp7 and agent1-agent7) with their respective IDs and extensions.
- Assigned ACD Supervisors:** An empty table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It has 'Add' and 'Remove' buttons below it.
- Assigned QM Supervisors:** An empty table with columns: Last Name, First Name, ACD, ID, Windows Us..., and Extension. It has 'Add' and 'Remove' buttons below it.

At the bottom of the 'Assigned Knowledge Workers' table, there are 'Add' and 'Remove' buttons.

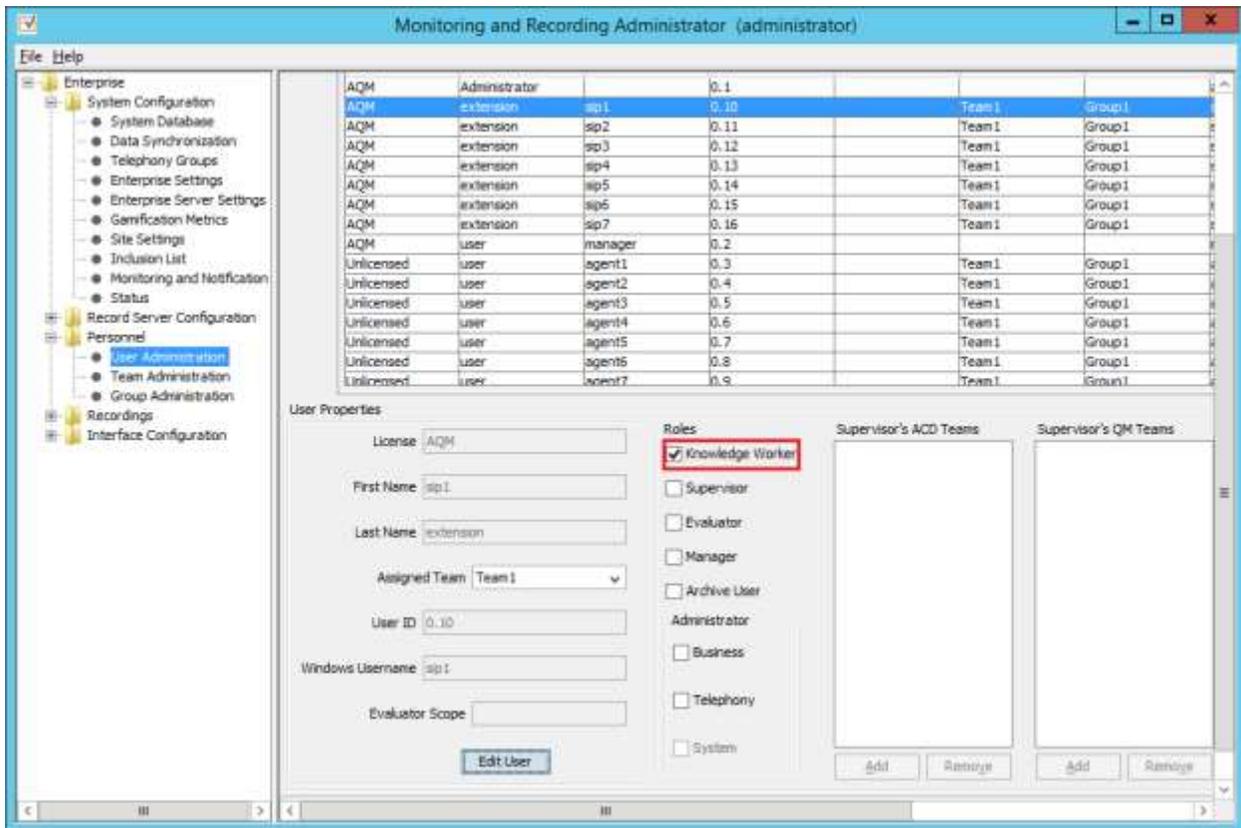
Once created, users can be statically assigned to a VoIP Device as demonstrated in the step above.



Click **Create User** to create a new user. A Create User window pops up. Enter the **First Name**, **Last Name**, **Windows Username**, and **QM Password**. Click **OK**.

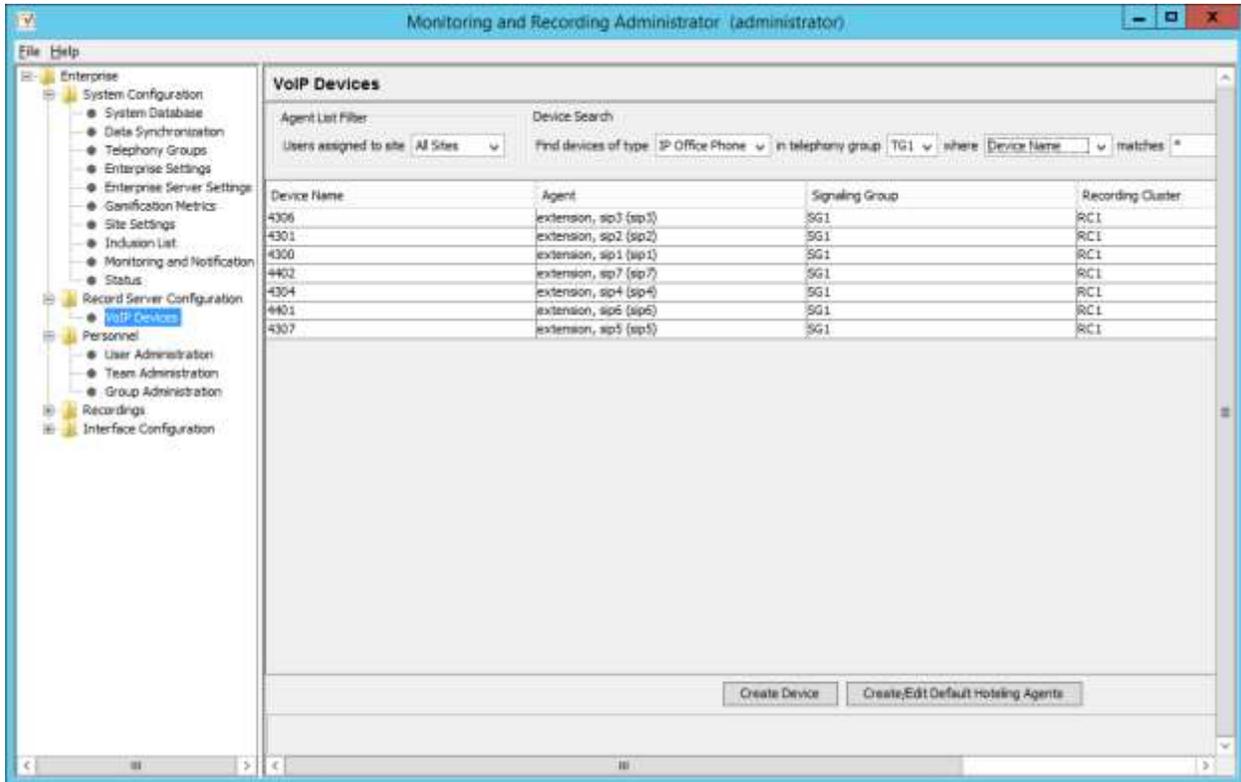


The user appears in the list. Check one of the checkboxes (e.g. Knowledge Worker) under the **Roles** section and select a pre-configured team from the dropdown list of the **Assigned Team** field. Note: Be sure to assign each user to the new Team created earlier.



6.3. Configure Devices

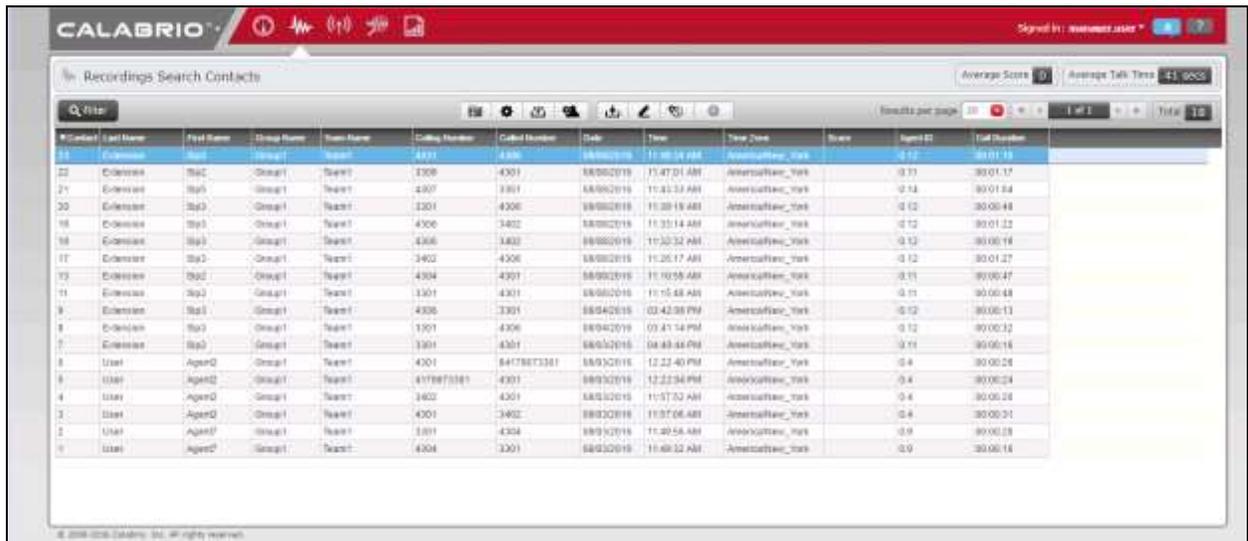
Navigate to **Enterprise** → **Record Server Configuration** → **VoIP Devices** to configure devices. When the Telephony Group query completes, all SIP stations from the IP Office are listed on the VoIP Devices page. A device is designated to be recorded by assigning a preconfigured Recording Cluster (e.g. RC1) on the VoIP Devices page, and then assigning an Agent to that device using dropdown lists in each column. The agent dropdown list includes the users configured on the **User Administration** page in **Section 6.2** that have the AQM license assigned. Click **Save** (not shown) to complete this step.



7. Verification Steps

This section provides the basic tests that can be performed to verify correct configuration of the IP Office and Calabrio CRQM solution.

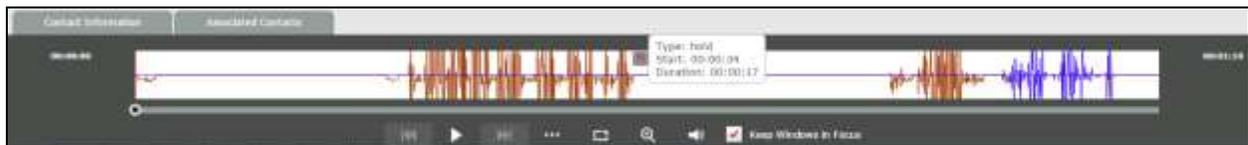
1. Make some calls from and to SIP IP phones in Avaya IP Office system that is currently monitored by the CRQM application.
2. To check recorded calls, open a browser and enter the IP address of Calabrio CRQM system in the following format <http://<ipaddress of CRQM>/cwfo>. Enter proper credentials to log in and click on the Recording menu.



The screenshot shows the Calabrio Recordings Search Contacts interface. The table displays the following data:

# Contact	Contact Name	Ext Name	Group Name	Team Name	Calling Number	Called Number	Date	Time	Time Zone	Score	Agent ID	Call Duration
22	Colson	840	Group1	Team1	4300	4301	08/06/2016	11:00:14 AM	America/Los_Angeles	0.71		00:01:17
21	Colson	840	Group1	Team1	4307	4301	08/06/2016	11:41:53 AM	America/Los_Angeles	0.54		00:01:54
20	Colson	840	Group1	Team1	4301	4300	08/06/2016	11:39:19 AM	America/Los_Angeles	0.12		00:00:48
18	Colson	840	Group1	Team1	4306	4302	08/06/2016	11:35:14 AM	America/Los_Angeles	0.12		00:01:22
16	Colson	840	Group1	Team1	4306	4302	08/06/2016	11:30:32 AM	America/Los_Angeles	0.53		00:00:14
17	Colson	840	Group1	Team1	4302	4300	08/06/2016	11:26:17 AM	America/Los_Angeles	0.12		00:01:27
13	Colson	840	Group1	Team1	4304	4301	08/06/2016	11:19:58 AM	America/Los_Angeles	0.71		00:00:47
11	Colson	840	Group1	Team1	4301	4301	08/06/2016	11:15:48 AM	America/Los_Angeles	0.71		00:00:48
9	Colson	840	Group1	Team1	4306	4301	08/04/2016	03:42:59 PM	America/Los_Angeles	0.72		00:00:11
8	Colson	840	Group1	Team1	4301	4300	08/04/2016	01:41:14 PM	America/Los_Angeles	0.12		00:00:32
7	Colson	840	Group1	Team1	4301	4301	08/03/2016	04:49:44 PM	America/Los_Angeles	0.71		00:00:16
6	User1	Agent0	Group1	Team1	4301	84178873381	08/03/2016	12:22:40 PM	America/Los_Angeles	0.4		00:00:28
5	User1	Agent0	Group1	Team1	4178873381	4301	08/03/2016	12:22:34 PM	America/Los_Angeles	0.4		00:00:24
4	User1	Agent0	Group1	Team1	4302	4301	08/03/2016	11:57:52 AM	America/Los_Angeles	0.4		00:00:28
3	User1	Agent0	Group1	Team1	4301	4302	08/03/2016	11:57:06 AM	America/Los_Angeles	0.4		00:00:31
2	User1	Agent0	Group1	Team1	4301	4304	08/03/2016	11:40:54 AM	America/Los_Angeles	0.9		00:00:28
1	User1	Agent0	Group1	Team1	4304	4301	08/03/2016	11:40:12 AM	America/Los_Angeles	0.9		00:00:16

3. To play back a recorded call, double click on that recorded call, the play back window is displayed in the bottom of the page and click on the Play icon to start playing audio.



8. Conclusion

These Application Notes describe the configuration steps required for Calabrio Call Recording and Quality Management to successfully interoperate with Avaya IP Office Release 9.1. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

9. Additional References

This section references product documentation relevant to these Application Notes.

Documentation for Avaya products can be found at <http://support.avaya.com>.

- [1] IP Office 9.1 Administering Avaya IP Office Platform with Manager, Release 9.1, Issue 10.03, February 2015.
- [2] Avaya IP Office™ Platform Documentation Catalog Release 9.1, Document number 16-604278 Issue 2, December 2014
- [3] Avaya IP Office™ Platform 9.1. Deploying Avaya IP Office™ Platform IP500 V2, Document number 15-601042 Issue 30g, 27 January 2015
- [4] Avaya IP Office™ Platform Embedded Voicemail User Guide (IP Office Mode), Document number 15-604067 Issue 15a, 16 January 2015

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