Avaya Solution & Interoperability Test Lab

Application Notes for Symbol Workforce Connect Voice Client from Motorola Solutions with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the integration of the Symbol Workforce Connect Voice Client with Avaya IP Office. The Symbol Workforce Connect Voice Client runs on Symbol's Android based Voice enabled mobile computers. The Symbol Workforce Connect Voice Client registers with Avaya IP Office as a SIP endpoint through the enterprise wireless LAN.

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 integration of the Symbol Workforce Connect Voice Client with Avaya IP Office. The Symbol Workforce Connect Voice Client runs on Symbol's Android based Voice enabled mobile computers. The Symbol Workforce Connect Voice Client registers with Avaya IP Office as a SIP endpoint through the enterprise wireless LAN.

The Symbol Workforce Connect Voice Client provides the capability to customize its user interface by adding telephony feature buttons. There are two types of feature buttons:

- Feature buttons that use Avaya IP Office short codes to initiate, activate or deactivate a telephony feature, such as Call Park or Call Pickup. Through the use of short codes, Avaya IP Office can extend features to the Symbol Workforce Connect Voice Client that are not support locally by the client.

- Feature buttons that are associated with telephony features that are supported locally by Symbol Workforce Connect Voice Client, such as Do Not Disturb, Hold, and Call Transfer.

Some features, such as Do Not Disturb, are supported locally by the client and through the use of short codes. The features supported by this solution are listed below.

Automatic Redial	Attended Conference	Find Me / Follow Me
Call Hold	Call Forward	Message Waiting Indicator
Consultation Hold	Call Park/Unpark	Speed Dial Buttons
Blind Transfer	Call Pickup	Voicemail Button
Attended Transfer	Do Not Disturb	

Note: The configuration of feature buttons on the Symbol Workforce Connect Voice Client is outside the scope of these Application Notes.

2. General Test Approach and Test Results

This section details the general approach to the testing, what was covered, and results of the testing. If the testing was successfully concluded but it was necessary to implement workarounds or certain non-critical features did not work, it should be noted in **Section 2.2**.

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.

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between the Symbol Workforce Connect Voice Client and Avaya SIP, H.323, and digital telephones and exercising basic telephony features, such as hold, mute, transfer, and conference. Additional telephony features, such as call forward, follow me, call park/unpark, and call pickup were also verified using Avaya IP Office Short Codes.

The serviceability testing focused on verifying that the Symbol Workforce Connect Voice Client comes back into service after rebooting it or the wireless LAN device.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of Symbol Workforce Connect Voice Client with Avaya IP Office.
- Calls between Symbol Workforce Connect Voice Client and Avaya SIP, H.323, and digital telephones with Direct IP Media (Shuffling) enabled and disabled.
- Calls between Symbol Workforce Connect Voice Client and PSTN.
- G.711 and G.729 codec support.
- Proper recognition of DTMF tones.
- Basic telephony features, including hold, mute, redial, multiple calls, call display, blind and supervised transfer, and attended conference.
- Extended telephony features using Avaya IP Office Short Codes for wakeup calls, Do Not Disturb, Call Forward, Follow Me, Call Park/Unpark, and Call Pickup.
- Voicemail coverage, MWI support, and logging into voicemail system to retrieve messages.
- Use of programmable buttons on the Symbol Workforce Connect Voice Client, including the use of IP Office Short Codes.
- Proper system recovery after a restart of the Symbol Workforce Connect Voice Client and loss of wireless connectivity.

2.2. Test Results

All test cases passed with the following observations noted:

- The Avaya IP Office short codes for the voicemail and call park buttons are hardcoded in the Symbol Workforce Connect Voice Client. The voicemail button is hardcoded to *95 and the call park button is hardcoded to *37*N*. Therefore, make sure that the short codes on Symbol Workforce Connect Voice Client match those on Avaya IP Office.

- Specifying a number for the transfer button causes the transfer to fail. The workaround is to configure the transfer button without a number in the value field and to manually dial the transfer-to number.

2.3. Support

For technical support on the Workforce Connect Voice Client, contact Symbol support via phone or website.

- **Phone:** (800) 653-5350
- **Web:** http://support.symbol.com

3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of Symbol Workforce Connect Voice Clients with Avaya IP Office. In this configuration, the Symbol Workforce Connect Voice Client runs on the Symbol MC40 mobile computer and connects to the enterprise wireless network. The Symbol Workforce Connect Voice Client registers with Avaya IP Office via SIP.

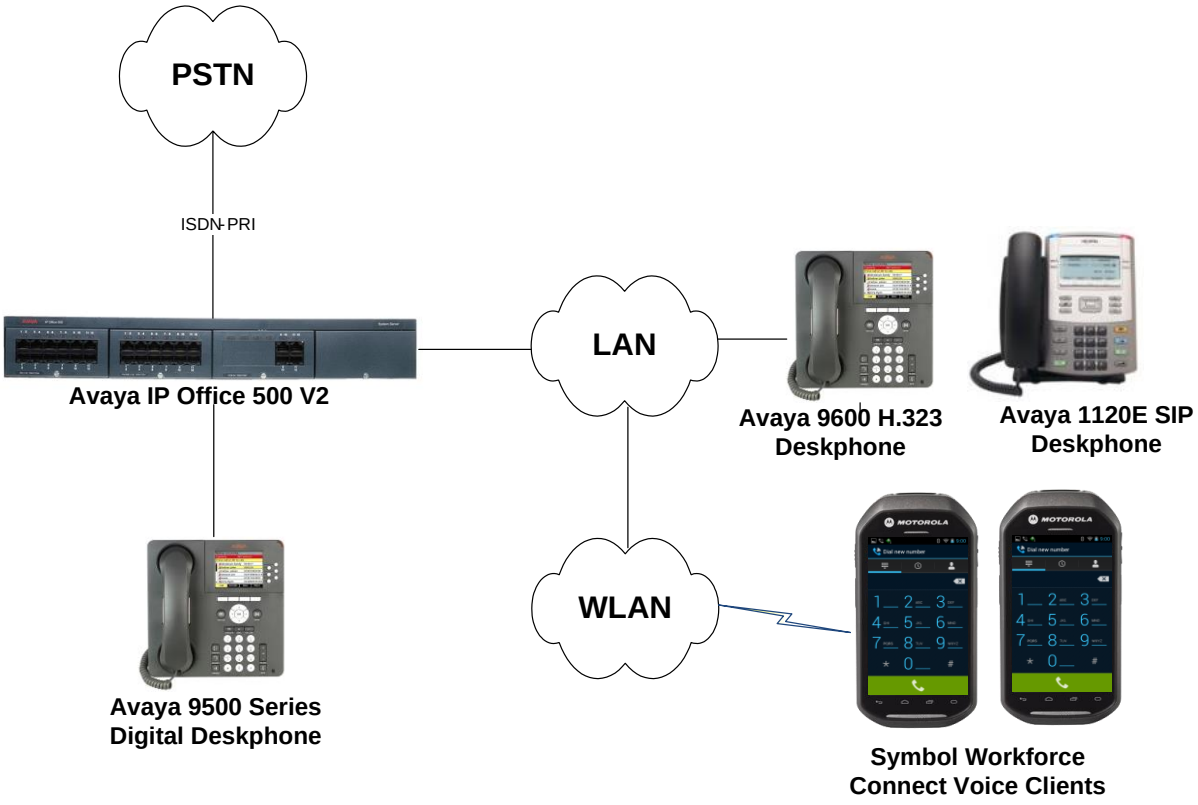


Figure 1: Symbol Workforce Connect Voice Client with Avaya IP Office

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	9.0.3.0 (Build 941)
Avaya 9600 Series IP Deskphone	S3.220A (H.323)
Avaya 96x1 Series IP Deskphone	6.3116 (H.323)
Avaya 1120E IP Deskphone	04.03.18 (SIP)
Avaya 9500 Series Digital Deskphone	0.55
Symbol Workforce Connect Voice Client running on Symbol MC40N0-SCJ3R01 Mobile Computer	5.1.516

Note: Testing was performed with IP Office 500 v2 R9.0, but it also applies to IP Office Server Edition R9.0. Note that IP Office Server Edition requires an Expansion IP Office 500 v2 R9.0 to support analog or digital endpoints or trunks. IP Office Server Edition does not support TAPI Wave or Group Voicemail.

5. Configure Avaya IP Office

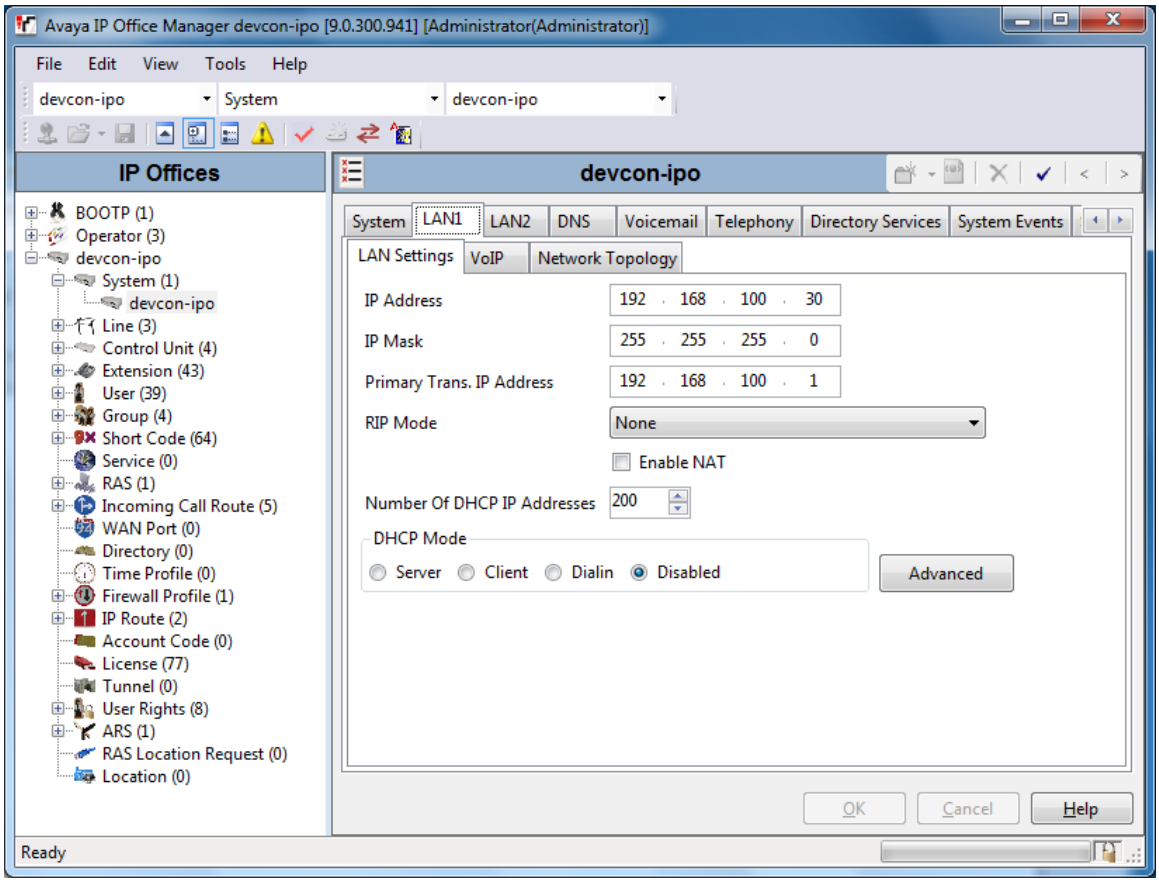
This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extension for Symbol Workforce Connect Voice Client
- Administer SIP user for Symbol Workforce Connect Voice Client

Note: Call routing to the PSTN and Short Code configuration are considered to be outside the scope of these Application Notes.

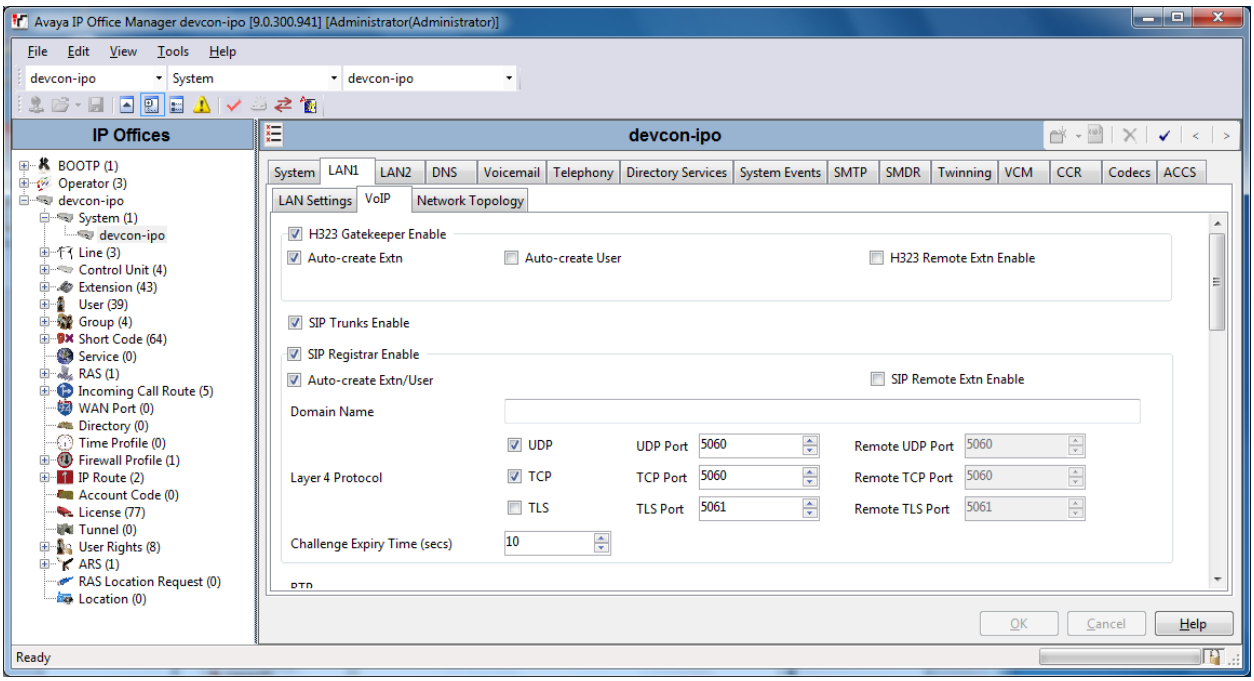
5.1. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **System** screen for the IP Office 500 V2 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 the Symbol Workforce Connect Voice Client.



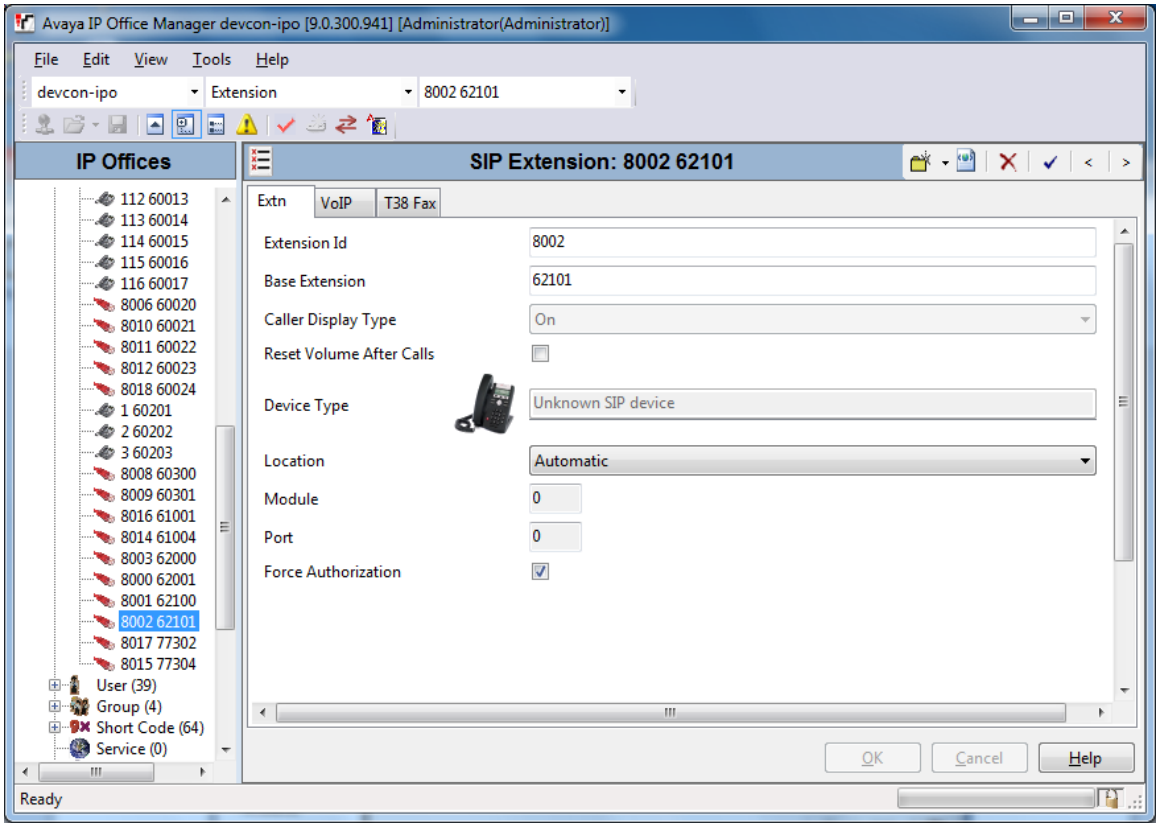
5.2. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **Domain Name**. In the compliance testing, the **Domain Name** field was left blank so the LAN IP address was used. Also, note that TCP is allowed as the SIP transport protocol and port 5060 is used as the TCP port. The Symbol Workforce Connect Voice Client will use the same SIP transport and port.

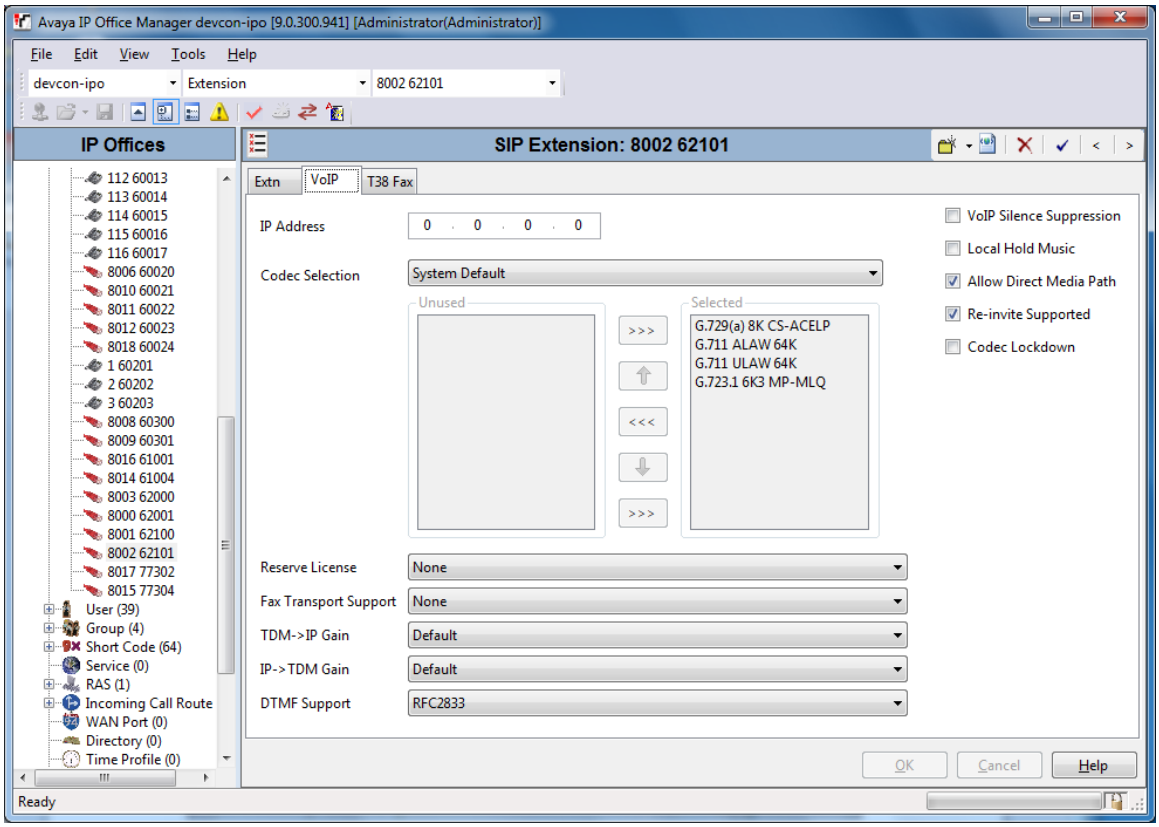


5.3. Administer SIP Extension for Symbol Workforce Connect Voice Client

From the configuration tree in the left pane, right-click on **Extension** and select **New → SIP** from the pop-up list to add a new SIP extension (not shown). Enter the desired extension for the **Base Extension** field as shown below. In this example, the Workforce Connect Voice Client was assigned extension *62101*. This is the extension that the client will use to register with IP Office.



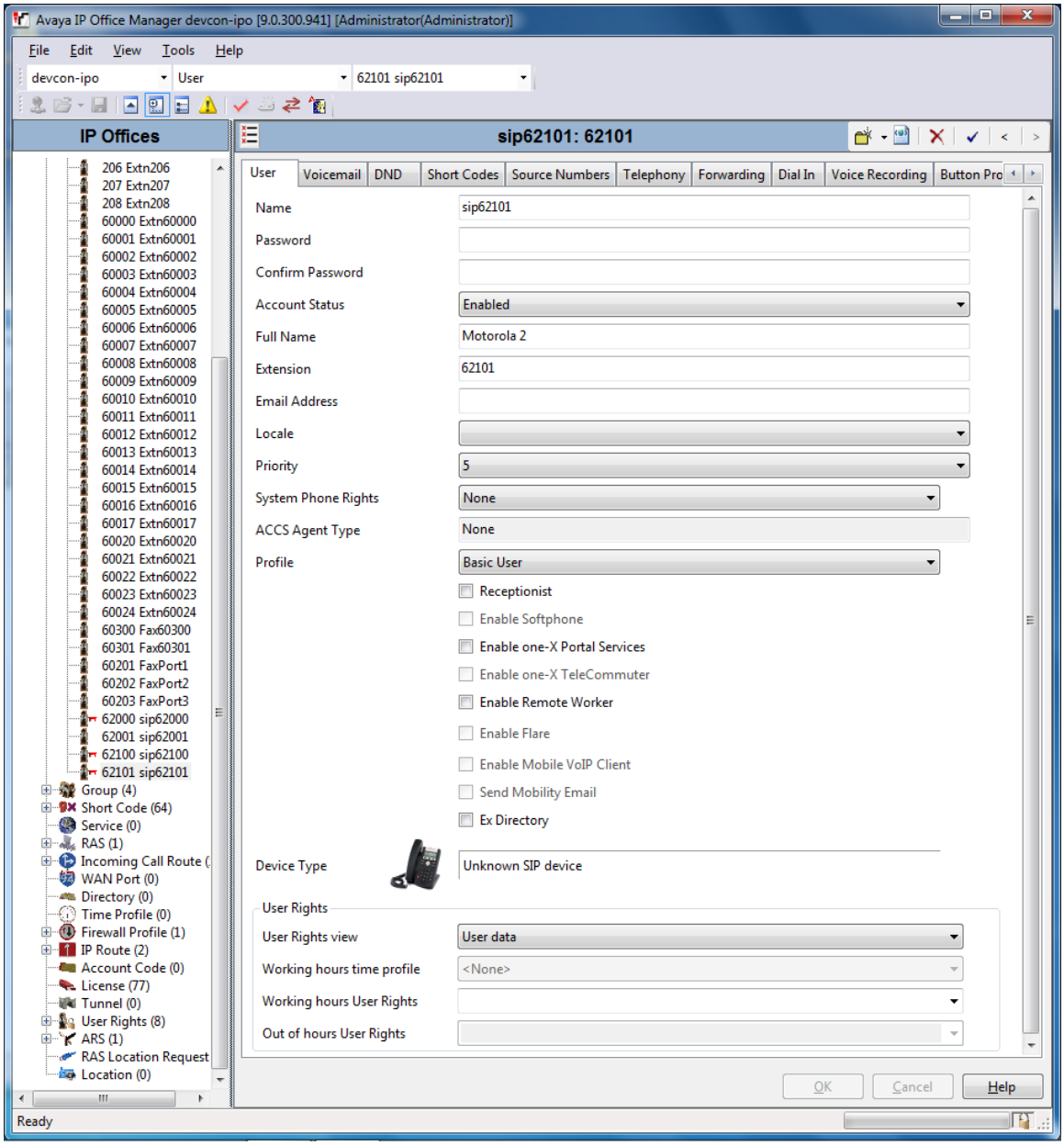
Select the **VoIP** tab and retain the default values in the all fields. During the compliance test, Symbol Workforce Connect Voice Client was tested using G.711 and G.729 codecs. Enable **Allow Direct Media Path** so that audio/RTP flows directly between two SIP endpoints without using media resources in Avaya IP Office.



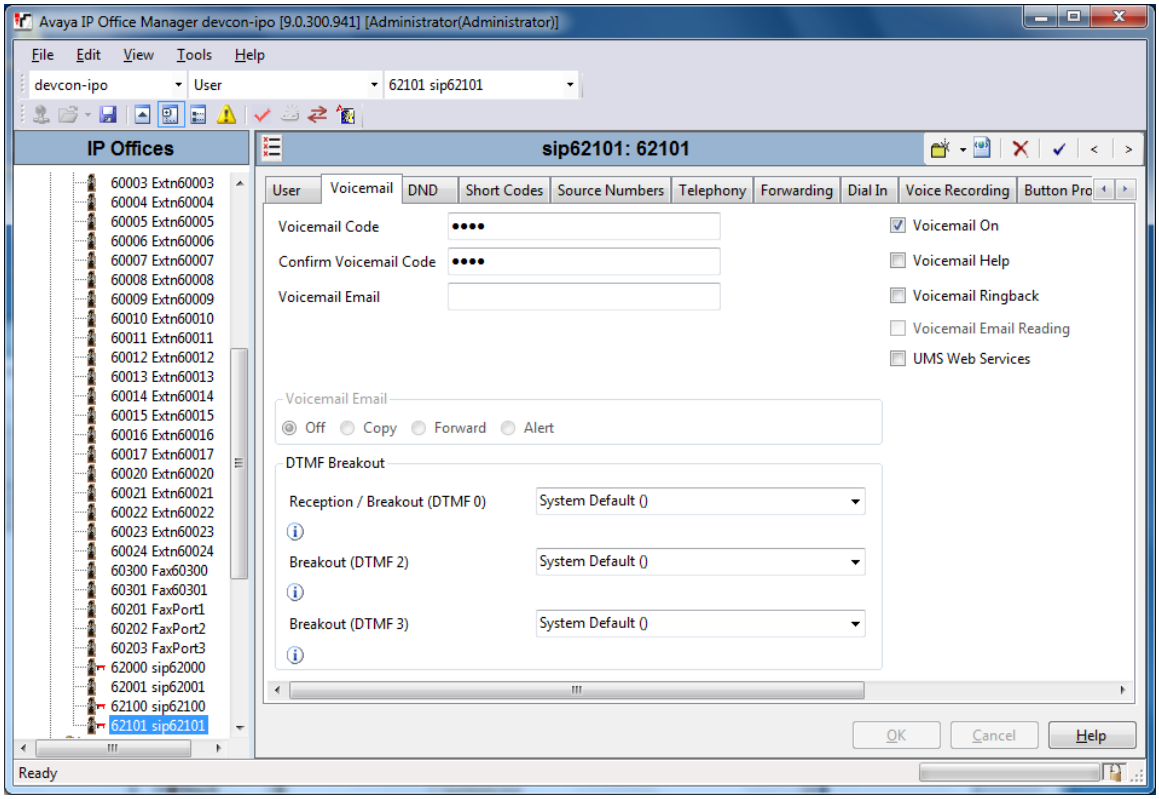
Repeat these steps for each extension required. During the compliance test, extensions 62100 and 62101 were used for Symbol Workforce Connect Voice Clients.

5.4. Administer SIP User for Symbol Workforce Connect Voice Client

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list (not shown). Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension created above.

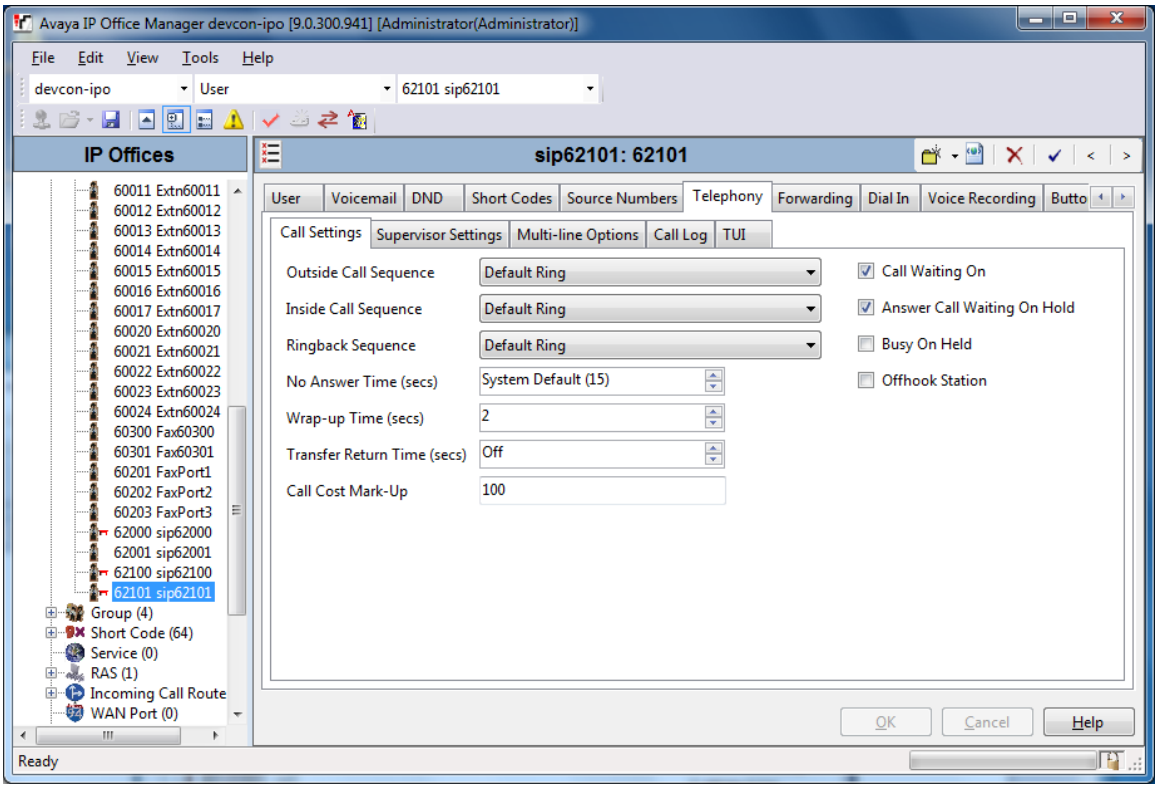


Select the **Voicemail** tab and select **Voicemail On** to enable voicemail for the Symbol Workforce Voice Client. A **Voicemail Code** was also assigned for logging into IP Office voicemail.

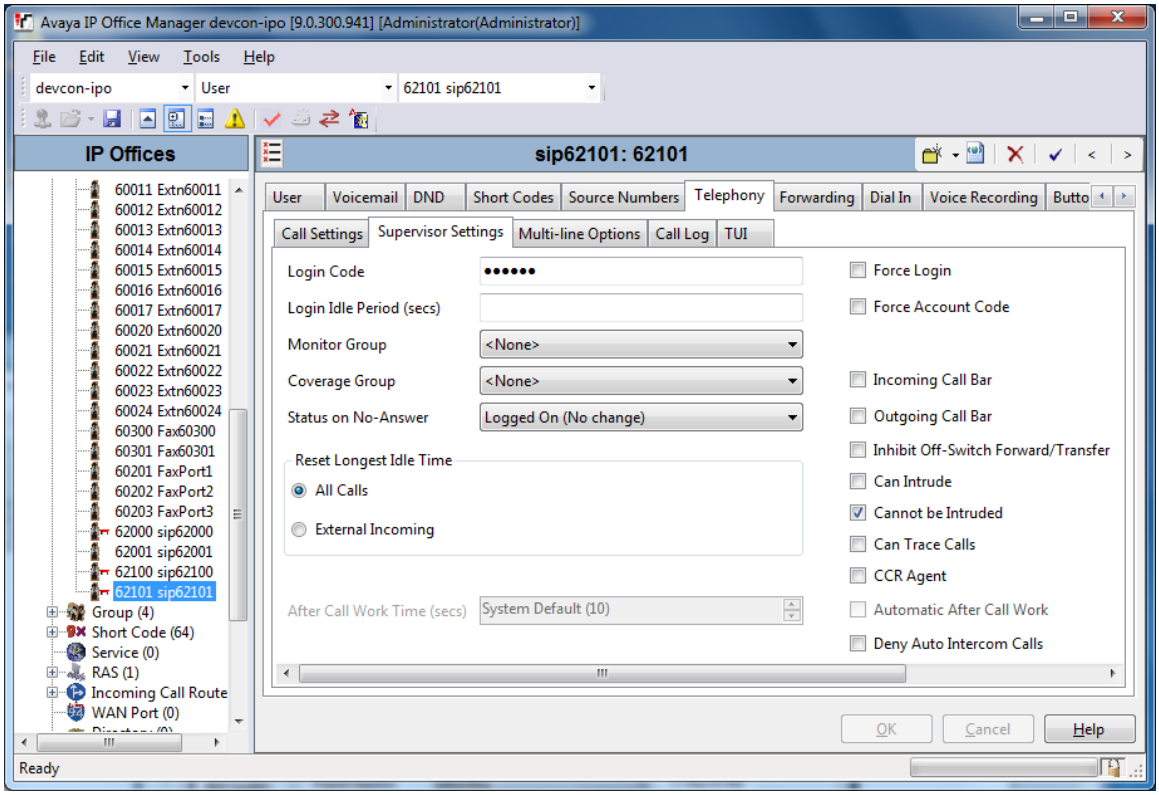


Select the **Telephony** tab followed by the **Call Settings** sub-tab. Note the settings below for the user.

Note: Call Waiting is required to allow a secondary incoming call to the Symbol Workforce Connect Voice Client; otherwise, the call second incoming call will be denied.



Select the **Supervisor Settings** tab and enter a desired **Login Code**. The **Login Code** is the password that will be used by the Symbol Workforce Connect Voice Client to register with IP Office.



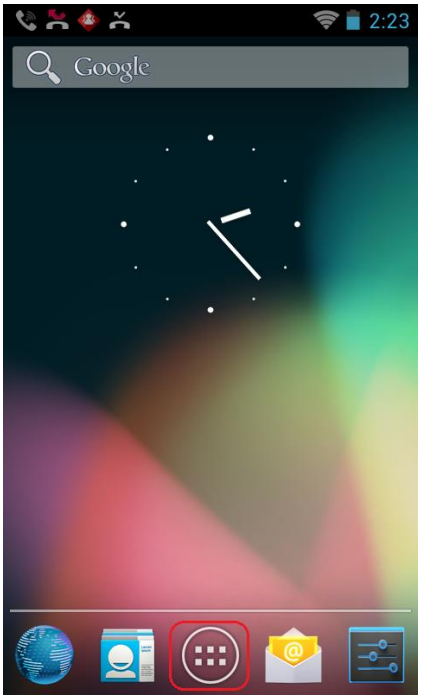
Repeat these steps for each user required. During the compliance test, users 62100 and 62101 were used for the Symbol Workforce Connect Voice Clients.

6. Configure Symbol Workforce Connect Voice Client

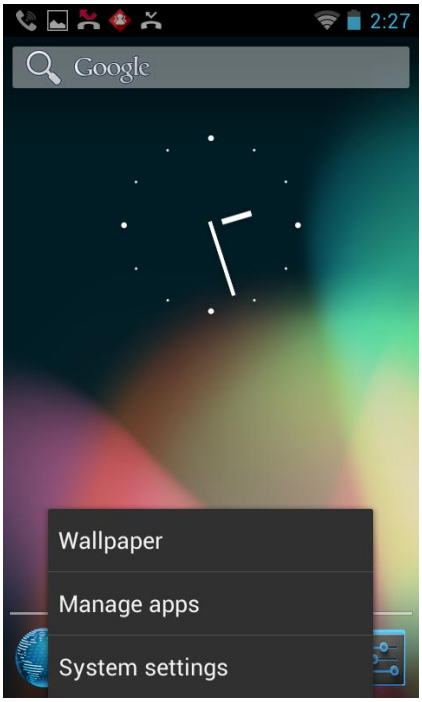
This section provides the procedures for configuring the Symbol Workforce Connect Voice Client for SIP connectivity to Avaya IP Office.

Note: Connecting the Symbol Android-based voice-enabled mobile computer to the wireless network and configuring feature buttons on the Symbol Workforce Connect Voice Client are outside the scope of these Application Notes.

Power on the Symbol Workforce Connect Voice Client and unlock the Symbol Android-based voice-enabled mobile computer. The following screen is displayed. Tap on the button, 3rd button highlighted below.



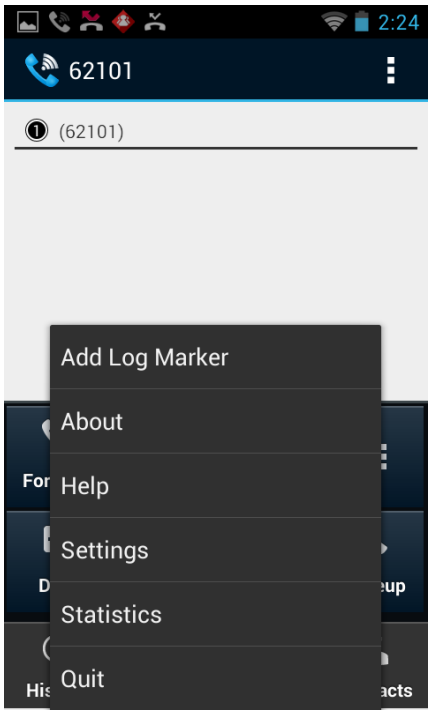
Select the System settings option from the pop-up menu shown below.



Scroll through the applications until the **WF Connect** application is found. Select **WF Connect** 

.

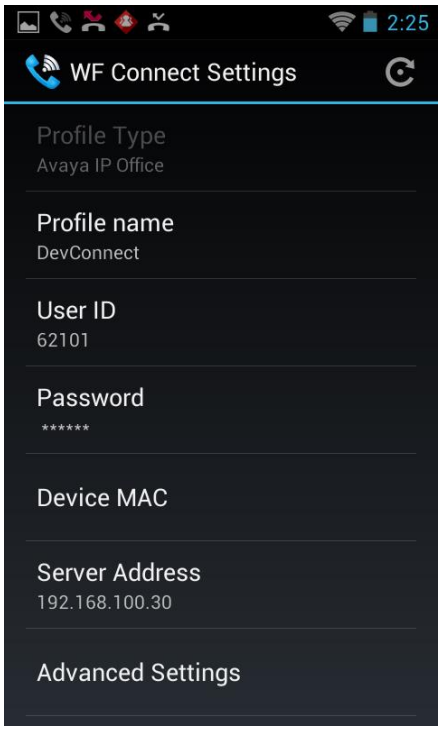
From the **WF Connect** shown below, touch on the Symbol Android-based voice-enabled mobile computer to display the menu below. From the menu, select **Settings**.



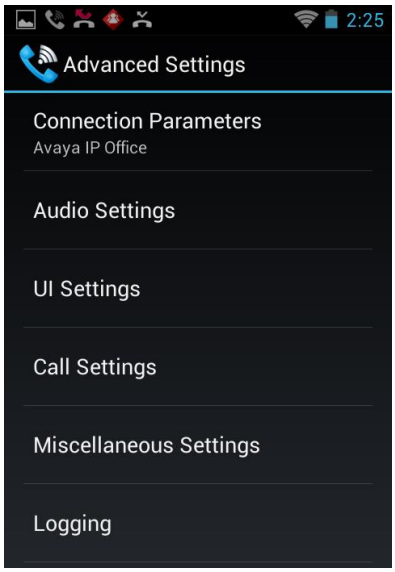
The **WF Connect Settings** screen is displayed. Tap on the following fields and configure them as follows.

Field Name	Description
Profile Name	Provide a descriptive profile name (e.g., *DevConnect*).
User ID	Specify the SIP extension configured on IP Office in **Section 5.3**. In this example, the SIP extension was *62101*. This is the SIP extension that WF Connect will use to register with IP Office.
Password	Specify the SIP password configured on IP Office in **Section 5.4**. WF Connect will use this password to register with IP Office.
Server Address	This is the IP address of IP Office configured in **Section 5.1**. In this example, the LAN1 IP address of IP Office is *192.168.100.30*.

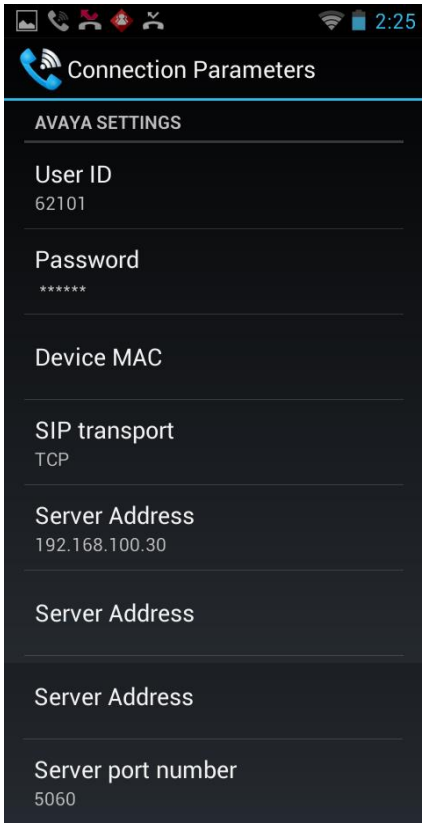
The following WF Connect screen shows these fields configured appropriately for the test configuration. These field values should be modified to correspond to the customer's network. Next, select **Advanced Settings** to review other SIP parameters.



From the **Advanced Settings** screen, select **Connection Parameters Avaya IP Office** to display the **Connection Parameters**.



The **Connect Parameters** screen shows that *TCP* was used as the **SIP transport** and *5060* was used as the **Server port number**. These default values were used for the compliance test and configured on IP Office in **Section 5.2**.

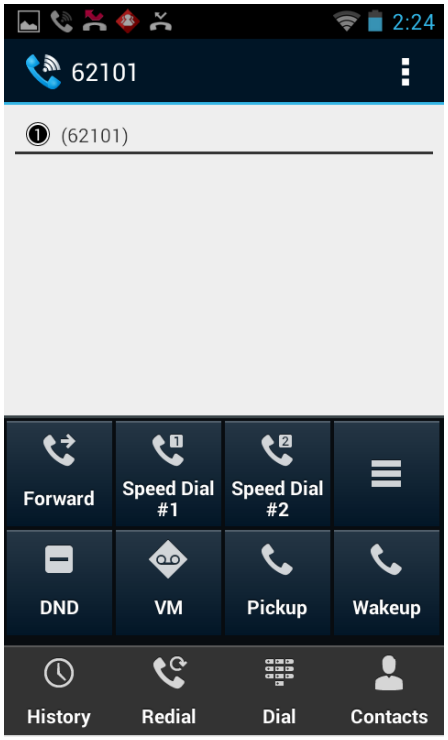


7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and the Symbol Workforce Connect Voice Client.

1. Launch **Avaya IP Office System Status** and log in using the appropriate credentials. The **IP Office System Status** screen is displayed. Expand **Extensions** in the left pane and select the SIP extension of the Workforce Connect Voice Client. Verify that the **Current State** is set to *Idle* as shown below.

2. Launch **WF Connect** and verify that the SIP extension has been registered. When **WF Connect** is registered with IP Office, it would display the SIP extension has shown below without any other status information, such as *Initializing*.



3. Verify basic telephony features by establishing calls with the Symbol Workforce Connect Voice Client.

8. Conclusion

These Application Notes describe the integration of the Symbol Workforce Connect Voice Client with Avaya IP Office. The Symbol Workforce Connect Voice Client registered successfully with Avaya IP Office as a SIP endpoint through the enterprise wireless LAN.
Incoming and outgoing calls were placed to/from the Symbol Workforce Connect Voice Clients and telephony features were exercised. All test cases passed with observations noted in **Section 2.2**.

9. References

This section references the Avaya documentation relevant to these Application Notes. The Avaya product documentation is available at http://support.avaya.com.

[1] *Avaya IP Office Manager*, Release 9.0, Issue 9.01, September 2013, Document Number 15-601011.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.