



Avaya Solution & Interoperability Test Lab

Application Notes for Zebra Workforce Connect Voice Client with Avaya IP Office Server Edition - Issue 1.0

Abstract

These Application Notes describe the integration of Zebra Workforce Connect Voice Client with Avaya IP Office Server Edition. Zebra Workforce Connect Voice Client runs on Zebra TC51, TC56, and TC57 Android-based Touch Computers. Zebra Workforce Connect Voice Client registers with Avaya IP Office Server Edition as a SIP endpoint through an 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 Zebra Workforce Connect Voice Client with Avaya IP Office Server Edition. Zebra Workforce Connect Voice Client runs on Zebra TC51, TC56, and TC57 Android-based Touch Computers. Zebra Workforce Connect Voice Client registers with Avaya IP Office Server Edition as a SIP endpoint through an enterprise wireless LAN.

Zebra Workforce Connect Voice Client provides the capability to customize its user interface by adding telephony feature buttons. Some features are supported locally by the client or through the use of Avaya IP Office 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	
Attended Transfer	Voicemail Button	

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

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between the Zebra 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 or feature buttons.

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

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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in this DevConnect Application Note included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with this Application Note, the interface between Avaya systems and Zebra Workforce Connect Voice Client did not include use of any specific encryption features as requested by Zebra.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of the Workforce Connect Voice Client with Avaya IP Office Server Edition and Avaya IP Office 500 V2 Expansion System.
- Calls between the Workforce Connect Voice Client and Avaya SIP, H.323, and digital telephones with Direct IP Media (Shuffling) enabled and disabled.
- Calls between the 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 Workforce Connect Voice Client, including the use of IP Office Short Codes.
- Proper system recovery after a restart of the Workforce Connect Voice Client and loss of wireless network 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 feature buttons are hardcoded in the Zebra Workforce Connect Voice Client. The voicemail button is hardcoded to *17 and the call park button is hardcoded to *37*N*. Therefore, ensure that the short codes on Zebra Workforce Connect Voice Client match those on Avaya IP Office Server Edition.

2.3. Support

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

- **Phone:** (800) 653-5350
- **Web:** <https://www.zebra.com/us/en/about-zebra/contact-zebra/contact-tech-support.html>

3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of Zebra Workforce Connect Voice Client running on TC51, TC56, and TC57 Touch Computers with Avaya IP Office Server Edition and Avaya IP Office 500 V2 Expansion System. Workforce Connect Voice Client registered to IP Office Server Edition or IP Office 500 V2 Expansion System via SIP using a wireless access point.

IP Office Server Edition connected to the PSTN via SIP and IP Office 500 V2 Expansion System connected to the PSTN via ISDN-PRI. An embedded voicemail system was used. Avaya 96x1 Series H.323 Deskphones, J100 Series SIP Deskphones, 1120E SIP Deskphones, and digital telephones were used for placing and receiving calls.

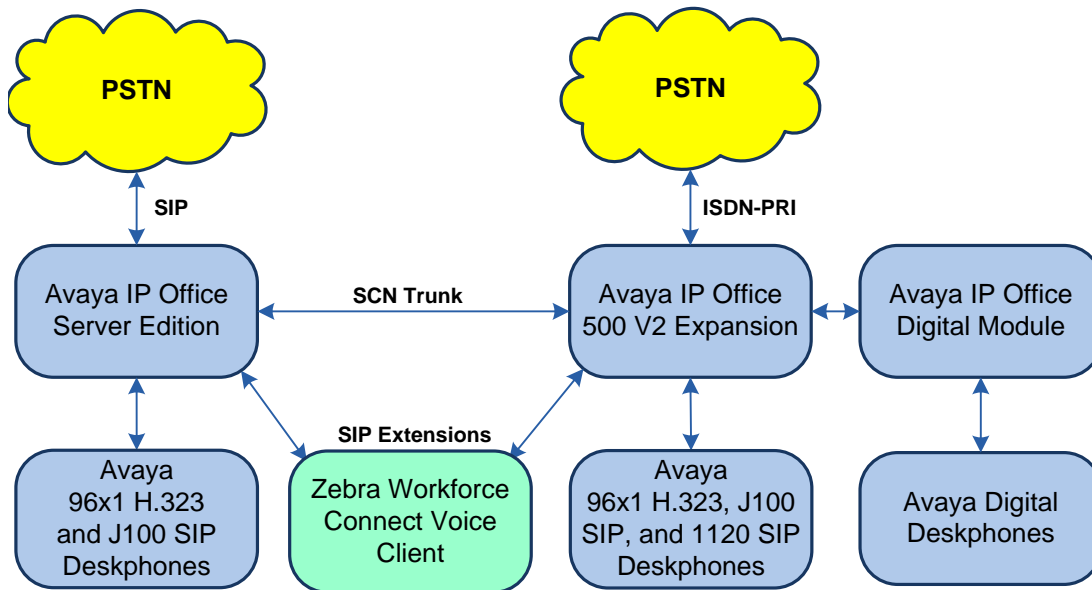


Figure 1: Zebra Workforce Connect Voice Client with Avaya IP Office

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office Server Edition	11.0.4.2.0 build 58
Avaya IP Office 500 V2 Expansion	11.0.4.2.0 build 58
Avaya 96x1 Series IP Deskphone	6.8304 (H.323)
Avaya J100 Series SIP Deskphone	4.0.3.1.4
Avaya 1120E IP Deskphone	04.03.18 (SIP)
Avaya 9500 Series Digital Deskphone	0.60
Zebra Workforce Connect Voice Client running on: <ul style="list-style-type: none">▪ TC51 Touch Computer▪ TC56 Touch Computer▪ TC57 Touch Computer	9.0.19409 Android 7.1.2 Android 8.1.0 Android 9

Note: Compliance Testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 and also when deployed with IP Office Server Edition in all configurations.

5. Configure Avaya IP Office Server Edition

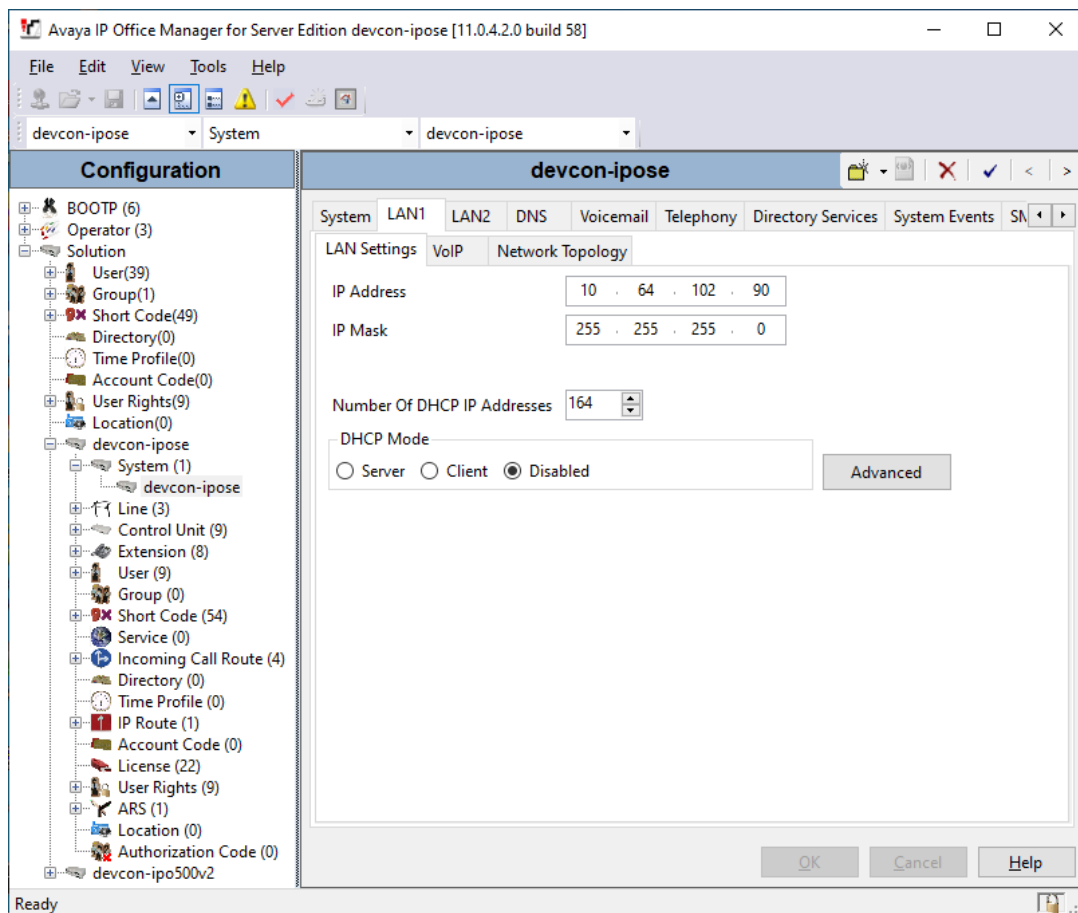
This section provides the procedures for configuring Avaya IP Office Server Edition. The procedures include the following areas:

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

Note: Call routing to the PSTN and Short Code configuration are considered outside the scope of these Application Notes. The following procedure also applies to the Avaya IP Office 500 V2 Expansion System.

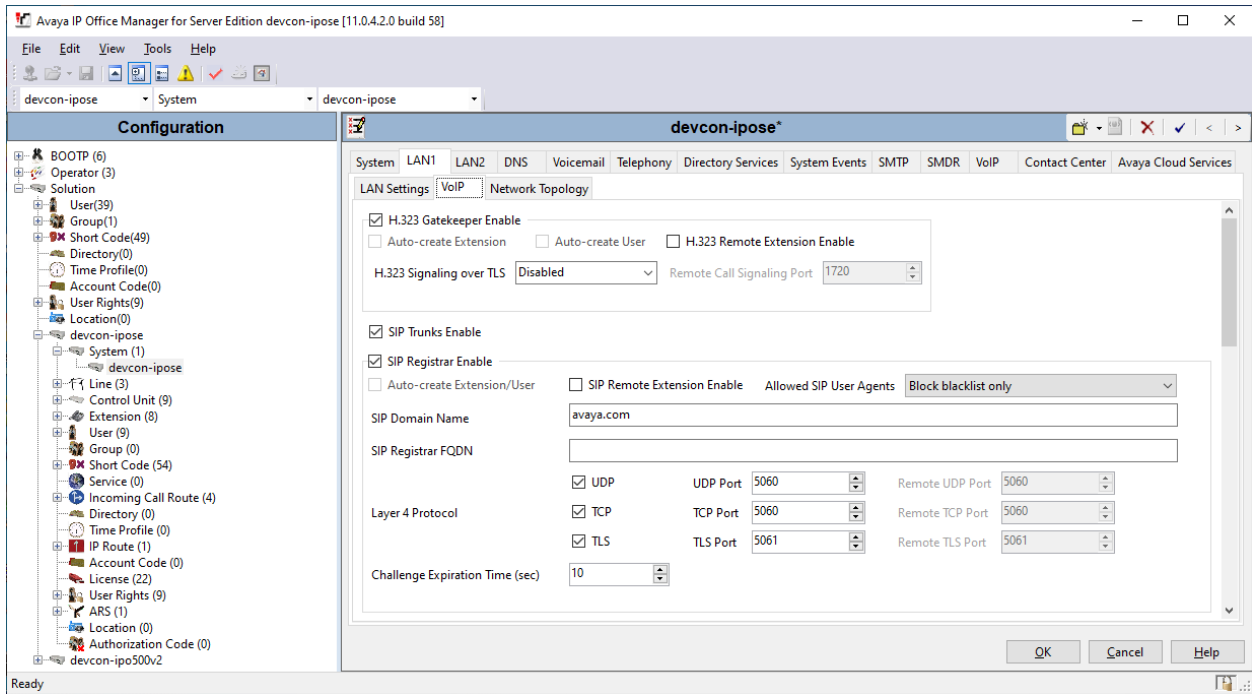
5.1. Obtain LAN IP Address

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



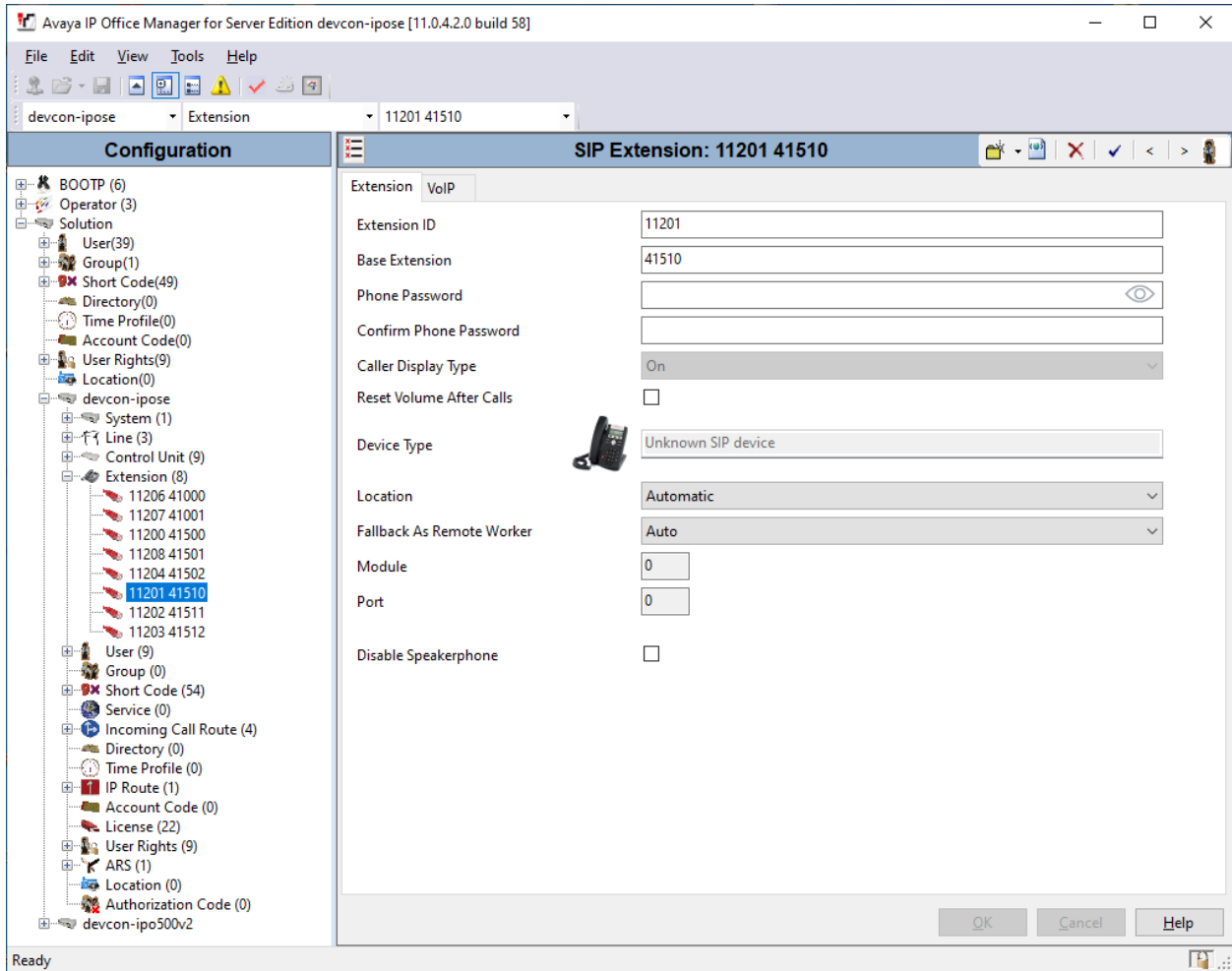
5.2. Administer SIP Registrar

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 set to *avaya.com*. Also, note that TCP is allowed as the SIP transport protocol and port 5060 is used as the TCP port. The Workforce Connect Voice Client will use the same SIP transport and port.

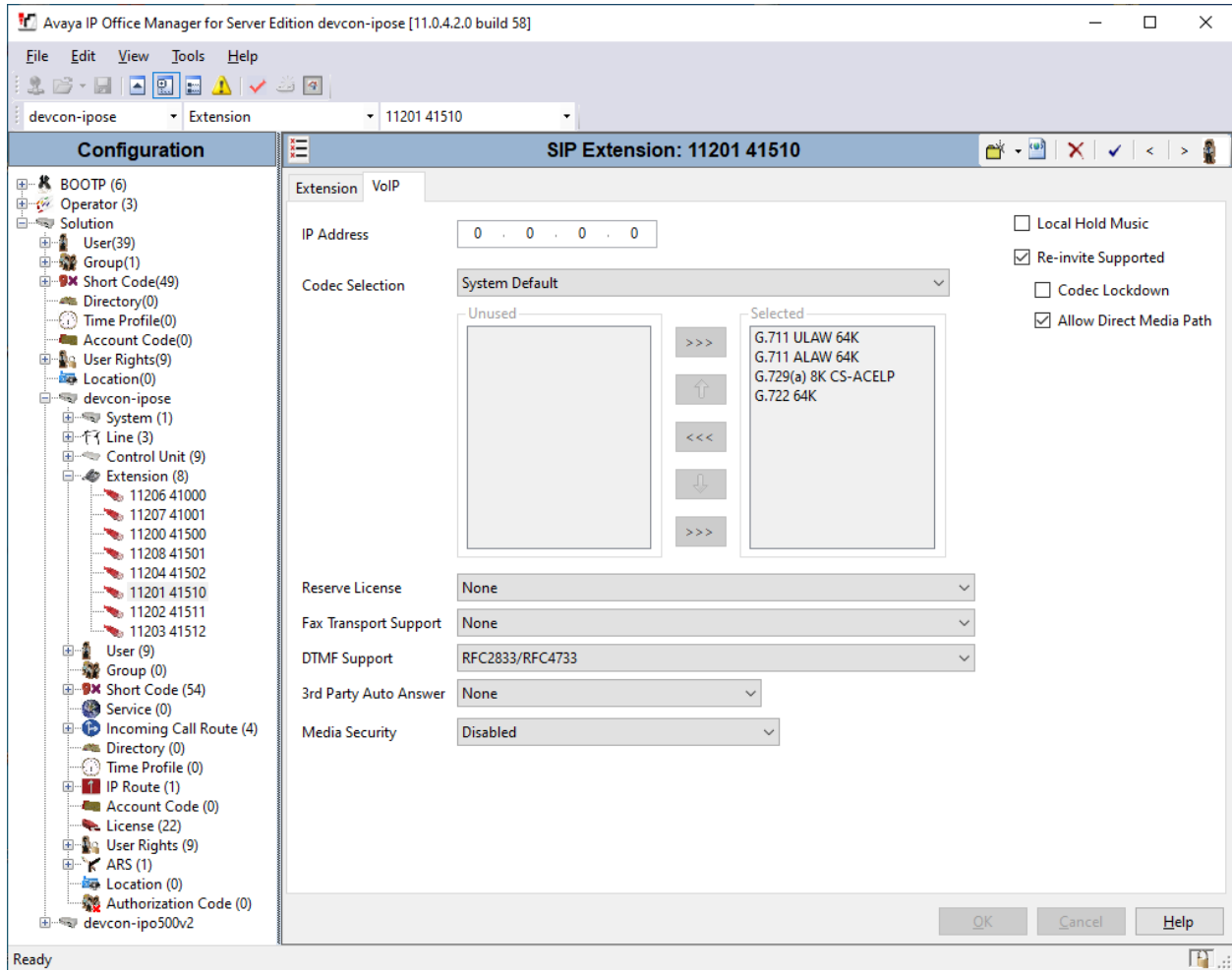


5.3. Administer SIP Extension for Zebra Workforce Connect Voice Client

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 *41510*. This is the extension that the client will use to register with IP Office Server Edition.



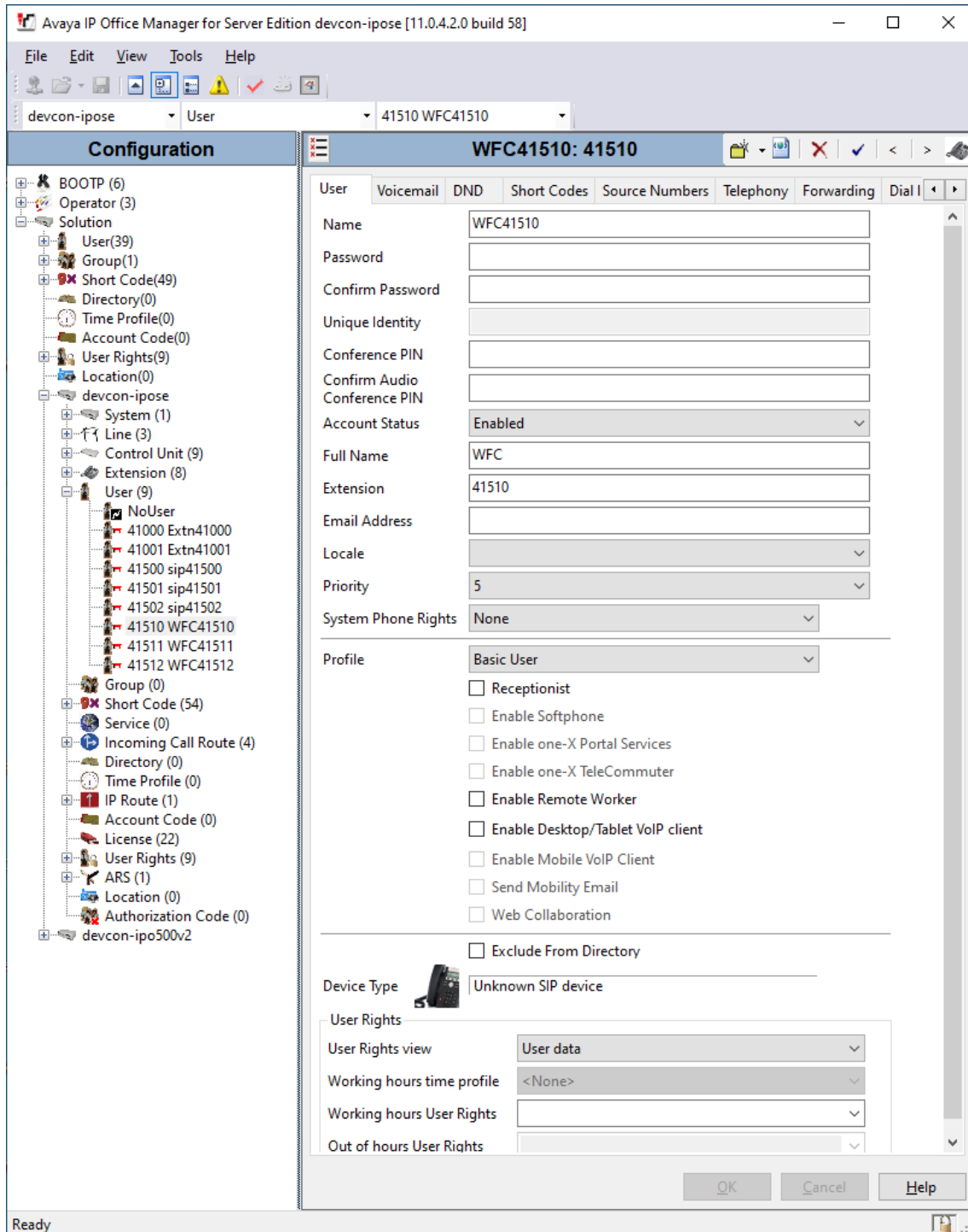
Select the **VoIP** tab and retain the default values in the all fields. During the compliance test, Workforce Connect Voice Client was tested using G.711 and G.729 codecs. Enable **Allow Direct Media Path** so that audio/RTP flows directly between two SIP endpoints without using media resources in Avaya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



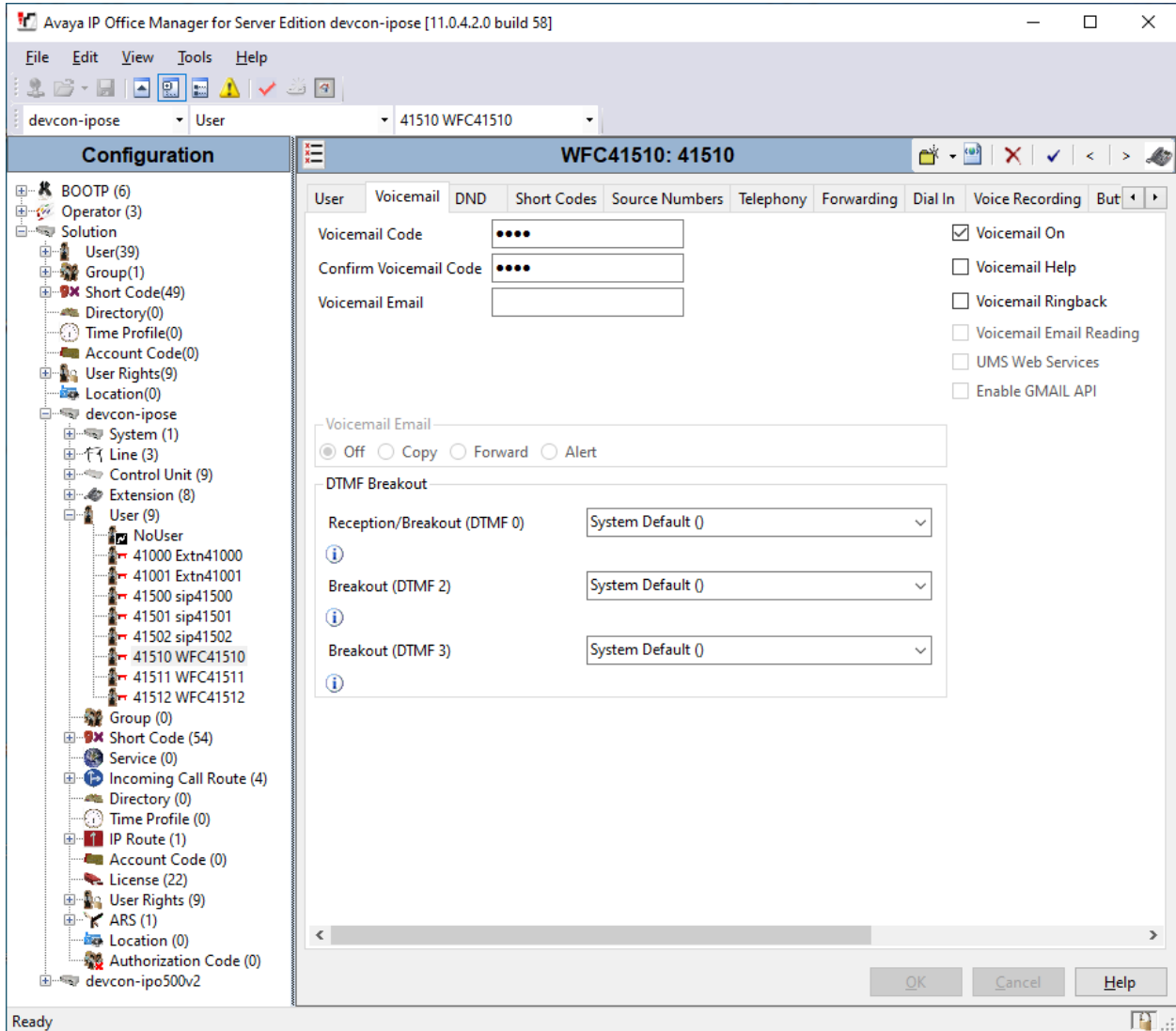
Repeat these steps for each extension required. During the compliance test, extensions 41510 to 41512 were used for Workforce Connect Voice Clients.

5.4. Administer SIP User for Zebra 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.

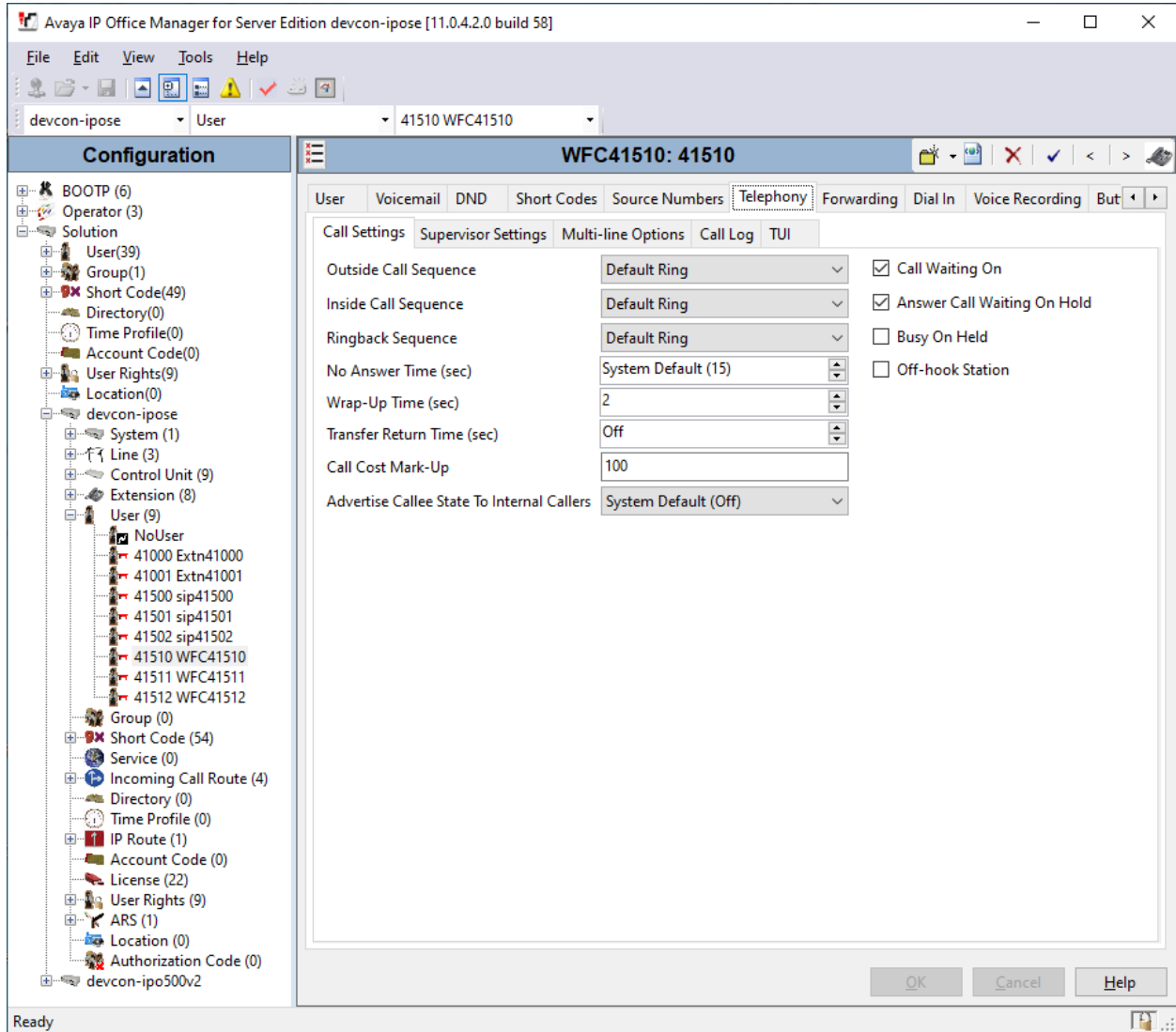


Select the **Voicemail** tab and select **Voicemail On** to enable voicemail for the Workforce Voice Client. A **Voicemail Code** was also assigned for logging into IP Office voicemail.

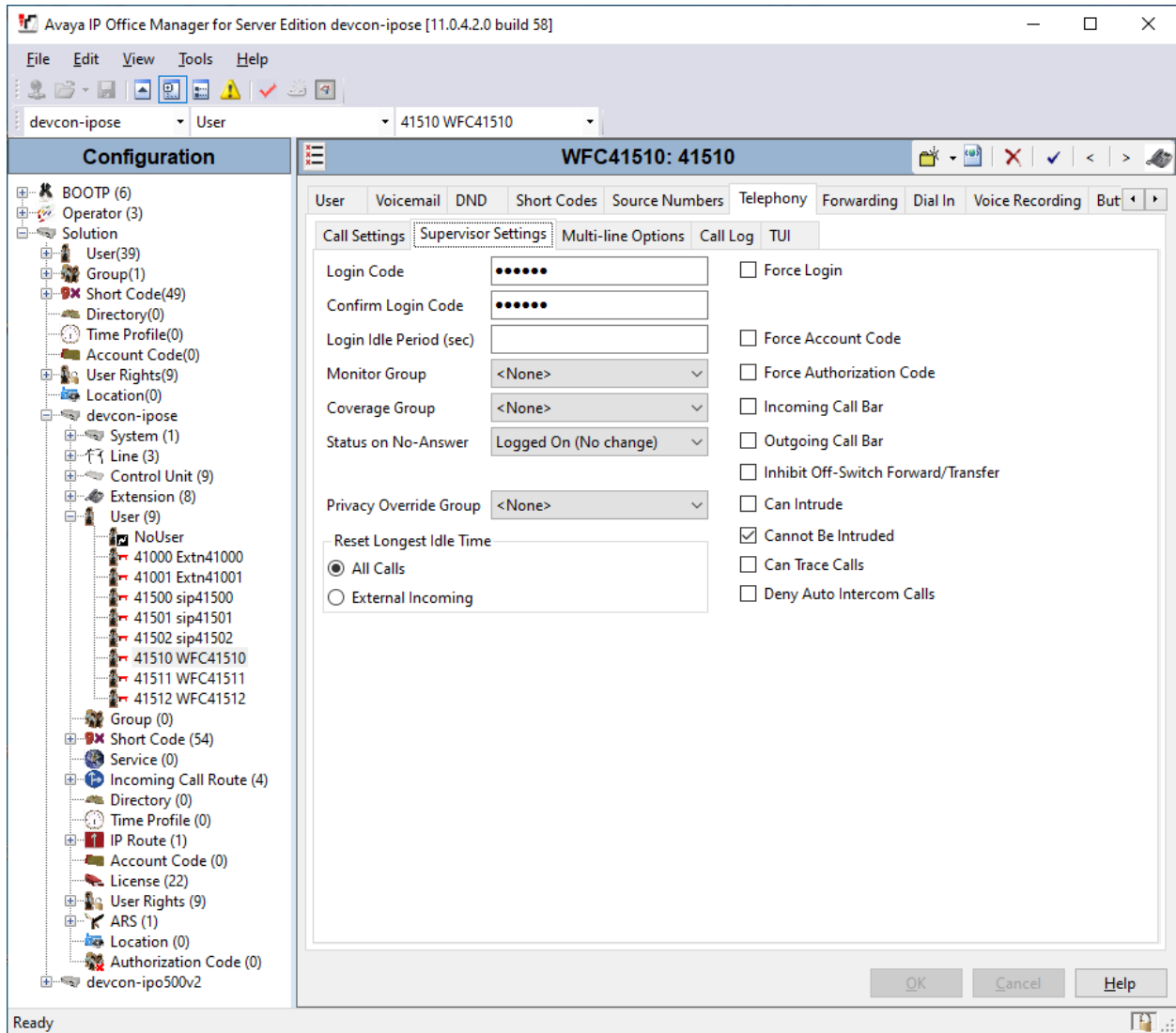


Select the **Telephony** tab followed by the **Call Settings** sub-tab. Note the settings below for the user.

Note: Call Waiting is required to allow a secondary incoming call to the 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 Workforce Connect Voice Client to register with IP Office Server Edition.



Repeat these steps for each user required. During the compliance test, users 41510 to 41512 were used for the Workforce Connect Voice Clients.

6. Configure Zebra Workforce Connect Voice Client

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


Note: Connecting the Zebra TC51, TC56, and TC57 Touch Computers to the wireless network and configuring feature buttons on the Workforce Connect Voice Client are outside the scope of these Application Notes.

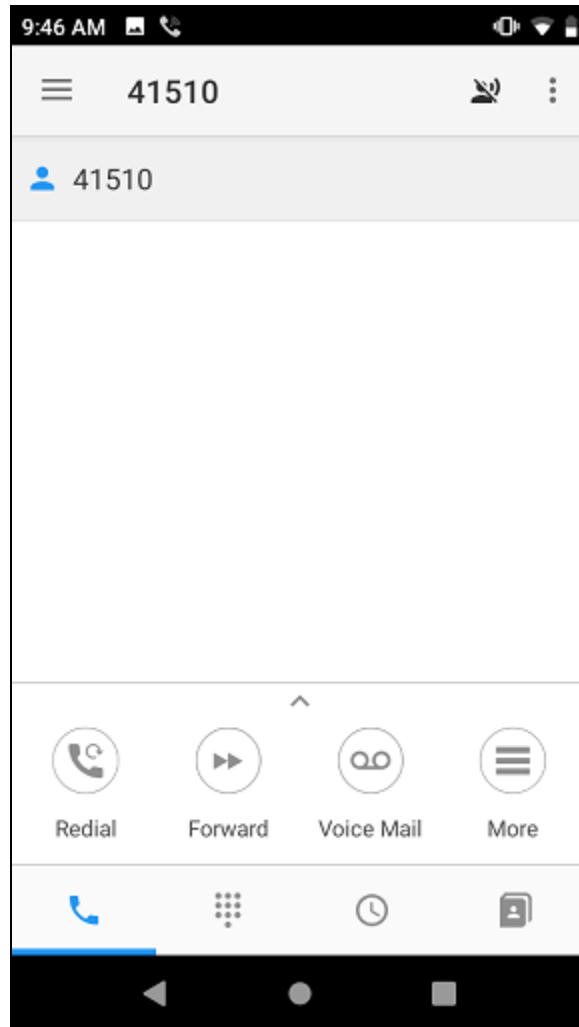
Power on the Workforce Connect Voice Client and unlock the Zebra touch computer. A similar



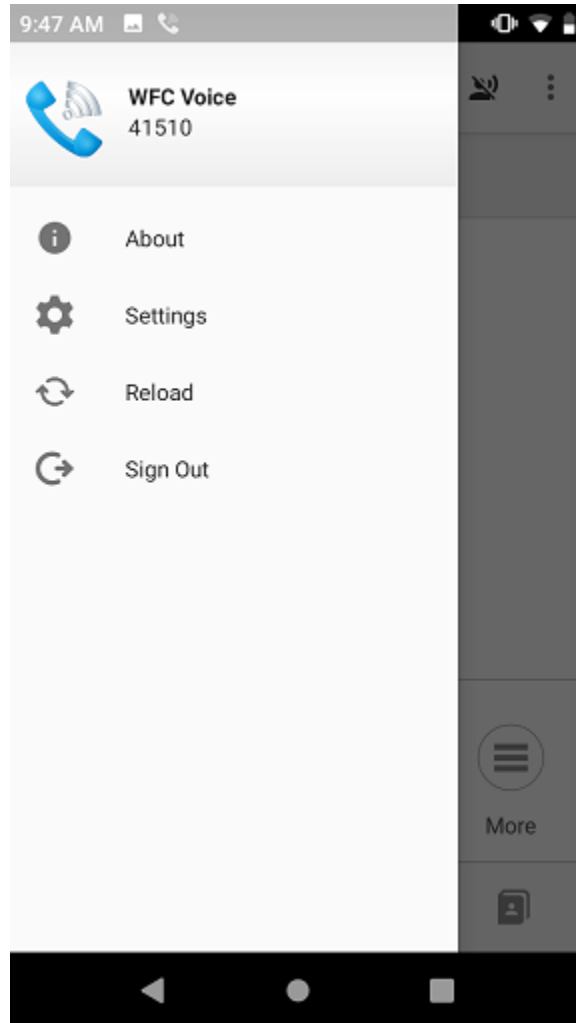
screen to the one below is displayed. Tap on the WFC Voice icon.



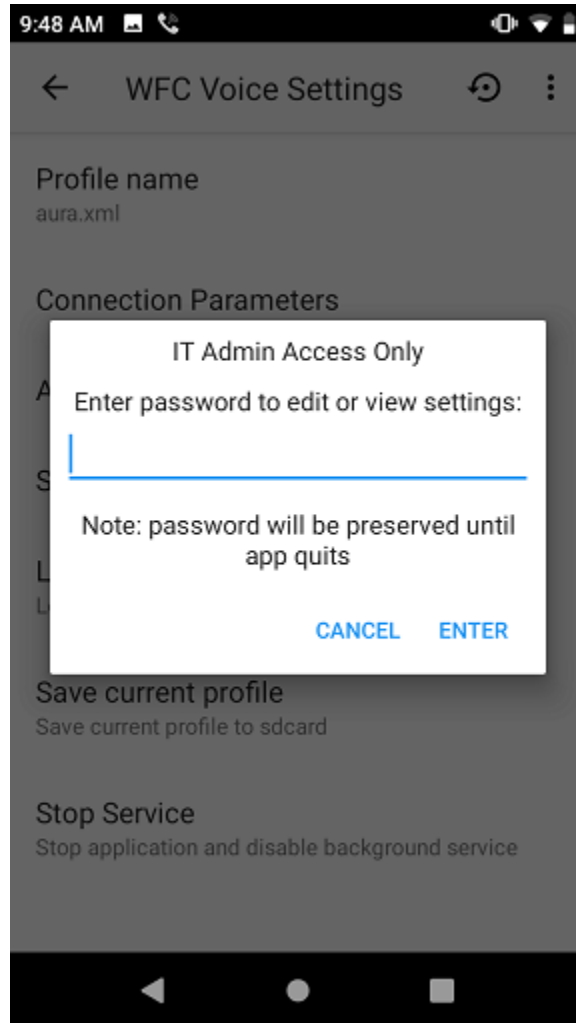
Tap on the **Menu**  in the following screen.



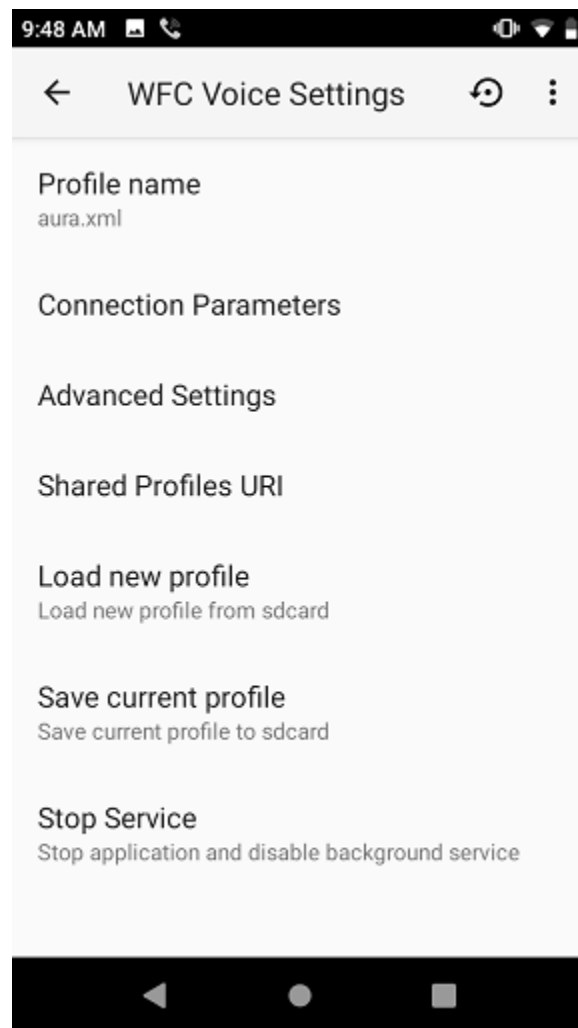
Select the **Settings** option from the pop-up menu shown below.



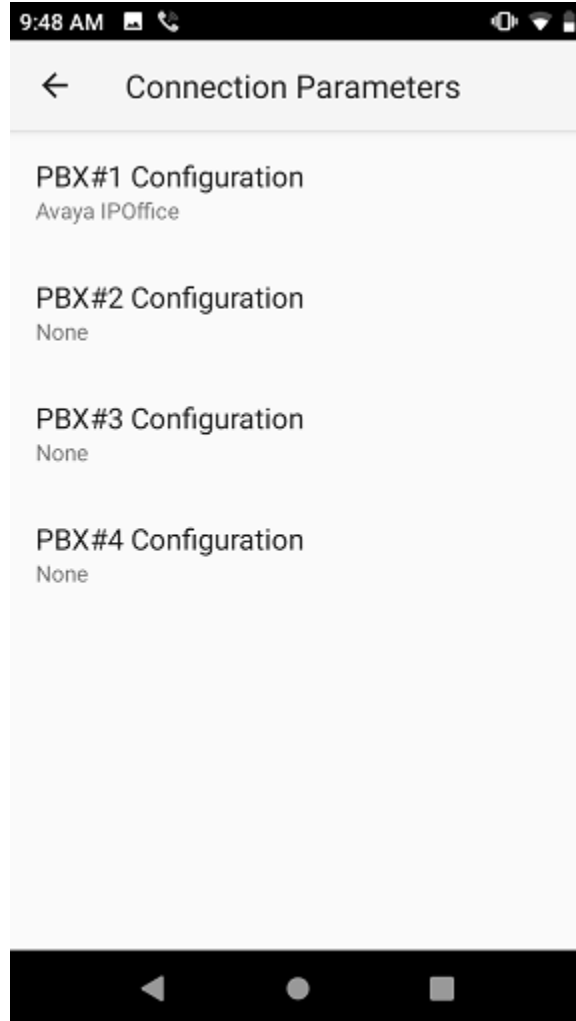
Log in with the appropriate credentials when prompted to access the **WFC Voice Settings**.



In the **WFC Voice Settings** shown below, **select Connection Parameters**. Note that **Profile name** specifies an .xml file that contains additional settings related to audio settings and feature buttons that can be customized further than described in these Application Notes.

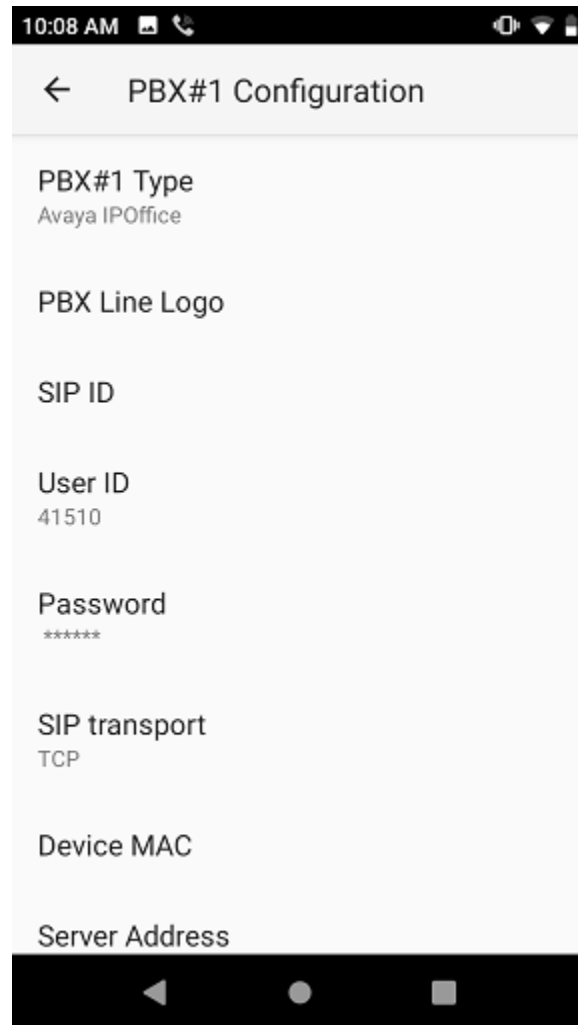


In the **Connection Parameters** shown below, select **PBX#1 Configuration**.



Under **PBX#1 Configuration**, configure the following parameters:

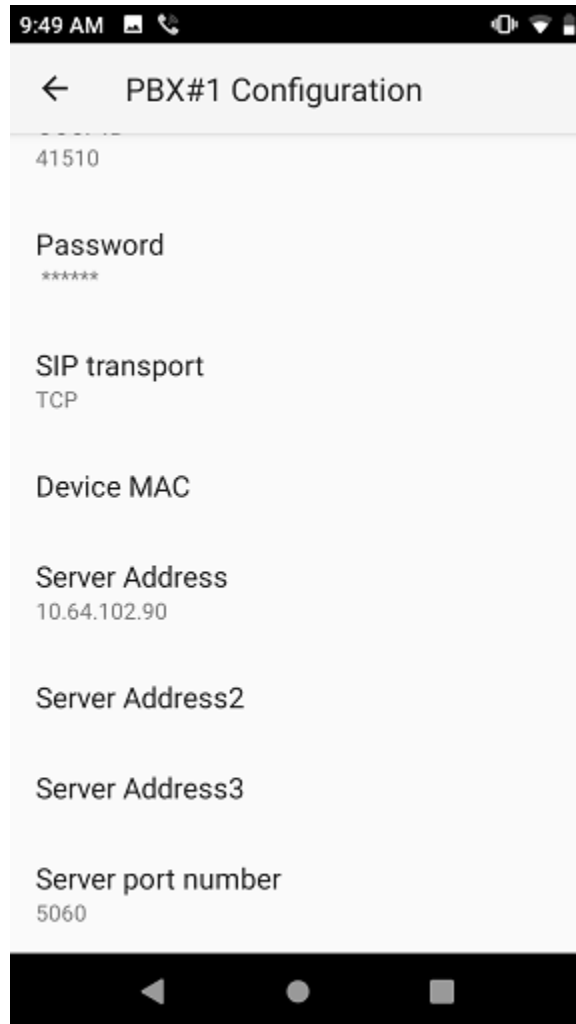
- **PBX#1 Type:** Set to *Avaya IPOffice*.
- **User ID:** Set to SIP extension (e.g., *41510*).
- **SIP Transport:** Set to *TCP* transport.



Scroll down and set the following parameters:

- **Server Address:** Set to the IP Office Server Edition LAN1 IP address (e.g., *10.64.102.90*).
- **Server port number:** Set to SIP port *5060*.

Return to the Workforce Connect Voice Client main screen to register client with IP Office Server Edition.



7. Verification Steps

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

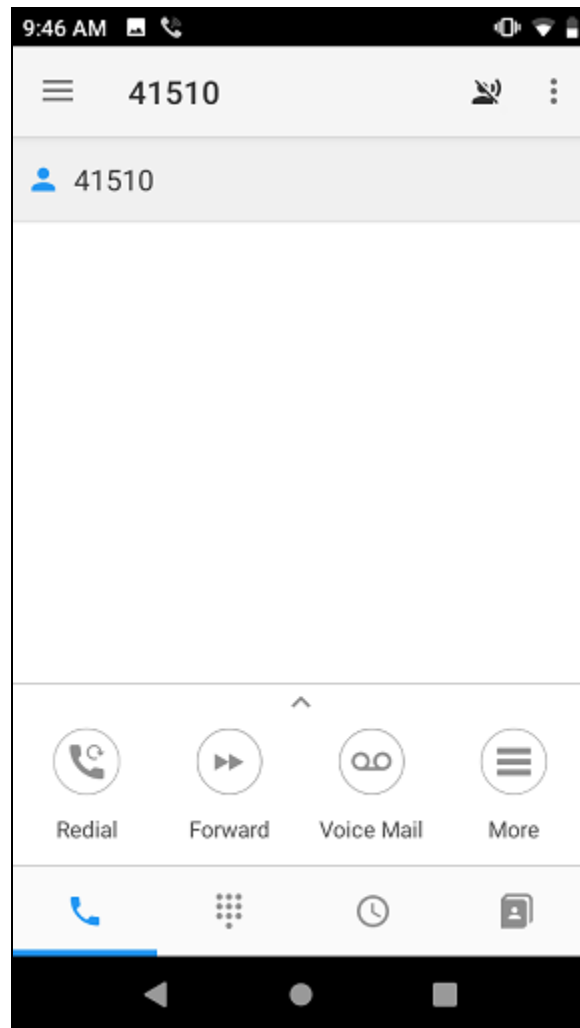
1. Launch **Avaya IP Office System Status** and log in using the appropriate credentials. The **IP Office System Status** screen is displayed. Expand **Extensions** in the left pane and select the SIP extension of the Workforce Connect Voice Client. Verify that the **Current State** is set to *Idle*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

The screenshot shows the Avaya IP Office System Status application window. The title bar reads "Avaya IP Office System Status - devcon-ipose (10.64.102.90) - IP Office Linux PC 11.0.4.2.0 build 58". The main window has a menu bar with "Help", "Snapshot", "LogOff", "Exit", and "About". A left-hand navigation pane contains a tree view with categories: System, Alarms (20), Extensions (6), Trunks (3), Active Calls, Resources, Voicemail, IP Networking, and Locations. The "Extensions (6)" category is expanded, and the extension "41510" is selected. The main content area displays the "Extension Status" for 41510. Below this, a table shows the current state of the extension.

Call Ref	Current State	Time in State	Calling Number or Called Number	Direction	Other Party on Call
	Idle	01:41:51			

At the bottom of the window, there is a status bar showing the time "12:03:00 PM" and the status "Online". A row of buttons is located above the status bar: Trace, Trace All, Pause, Ping, Call Details, Print..., and Save As...

2. Launch Workforce Connect Voice Client and verify that the SIP extension has been registered. When registered with IP Office Server Edition, it should display the SIP extension as shown below



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

8. Conclusion

These Application Notes describe the integration of the Zebra Workforce Connect Voice Client with Avaya IP Office Server Edition. The Zebra Workforce Connect Voice Client registered successfully with Avaya IP Office Server Edition as a SIP endpoint through an enterprise wireless LAN. Incoming and outgoing calls were placed to/from the Zebra 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] *Administering Avaya IP Office Platform with Web Manager*, Release 11.0, February 2019.

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