



DevConnect Program

Application Notes for Aiphone IX Series 2 Audio Door Stations (IX-BBT) with Avaya IP Office Server Edition - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Aiphone IX Series 2 Audio Door Station (IX-BBT) Version 7.00 with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500V2 Expansion System 11.1. The Aiphone IX-BBT Audio Door Station, which is part of the Aiphone IX Series 2 Audio Door Stations, was used for the compliance test. Aiphone IX-BBT Audio Door Station is a surface mount, weather resistant audio door station. Aiphone IX-BBT Audio Door Station registers with IP Office as a 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 Avaya DevConnect Program.

1. Introduction

These Application Notes describe the configuration steps required to integrate Aiphone IX Series 2 Audio Door Station (IX-BBT) Version 7.00 with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500V2 Expansion System 11.1. The Aiphone IX-BBT Audio Door Station, which is part of the Aiphone IX Series 2 Audio Door Stations, was used for the compliance test. Aiphone IX-BBT Audio Door Station is a surface mount, weather resistant audio door station. Aiphone IX-BBT Audio Door Station (IX-BBT) registers with Avaya IP Office as a SIP endpoint.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing audio calls between Aiphone IX-BBT Audio Door Station, Avaya SIP and H.323 telephones, and the PSTN, and exercising basic telephony features, such as hold/resume, mute/unmute, transfer, conference, call forwarding, and call coverage from an Avaya IP endpoint. Additional telephony features, such as call forward and call coverage, were also verified.

The serviceability testing focused on verifying that the Aiphone IX-BBT Audio Door Station comes back into service after re-connecting the Ethernet cable.

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 Aiphone IX-BBT Audio Door Station did not include use of any specific encryption features as requested by Aiphone.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of IX-BBT with IP Office.
- Audio calls between IX-BBT and Avaya SIP and H.323 deskphones with Direct IP Media (Shuffling) enabled and disabled.
- Audio calls between IX-BBT and the PSTN.
- G.711 codec support.
- UDP transport protocol.
- IX-BBT placing, answering, and terminating calls.
- Basic telephony features, including hold/resume, mute/unmute, transfer, and 3-way conference, initiated from an Avaya IP endpoint.
- Proper system recovery after re-establishing IP connectivity to IX-BBT.

2.2. Test Results

All test cases passed with the following observations:

- IX-BBT auto answers calls placed to them.
- IX-BBT does not support remote door open via DTMF input of Door Release Authorization Authentication Key.
- IX-BBT only supports G.711 codec.

2.3. Support

For technical support of Aiphone IX Series 2 Audio Door Stations, contact Aiphone Technical Support via phone or website.

- Phone: +1 (800) 692-0200
- Web: <https://www.aiphone.com/support/technical-support>

3. Reference Configuration

Figure 1 illustrates a sample configuration with an Avaya SIP-based network. Aiphone IX-BBT Audio Door Station registered to either IP Office Server Edition or IP Office 500 V2 Expansion System (not simultaneously).

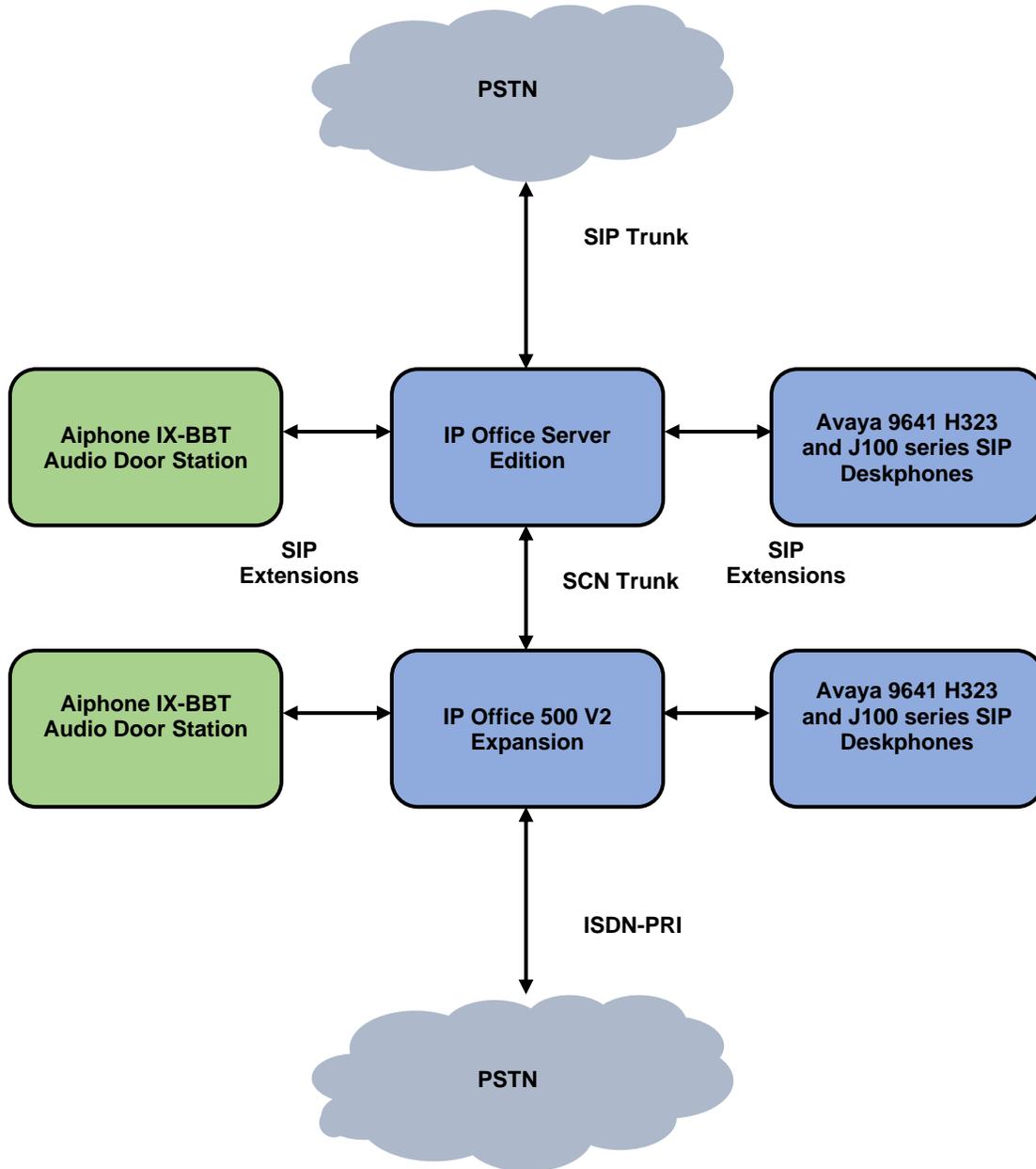


Figure 1: Avaya SIP Telephony Network with Aiphone IX-BBT Audio Door Station

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	11.1.2.4.0 build 18 (FP2 SP4)
Avaya IP Office 500V2 Expansion System	11.1.2.4.0 build 18 (FP2 SP4)
Avaya 96x1 Series IP Deskphones	6.8.5.2.3 (H.323)
Avaya J100 Series IP Phones	4.0.10.3.2 (SIP)
Aiphone IX-BBT Audio Door Station	7.00

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

5. Configure Avaya IP Office Server Edition

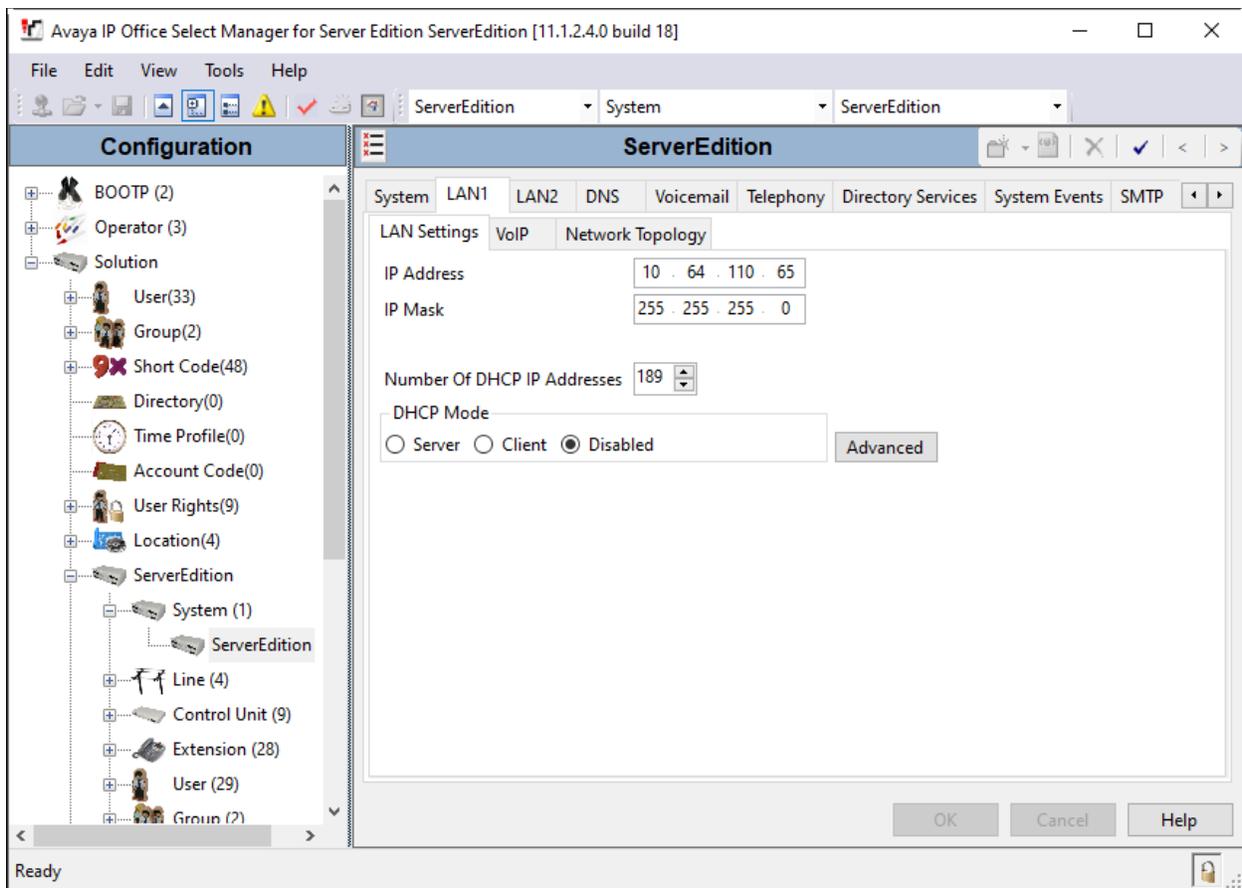
This section provides the procedures for configuring Avaya IP Office Server Edition. The procedures include the following areas:

- Obtain LAN IP Address
- Administer SIP Registrar
- Administer SIP Extension for IX-BBT
- Administer SIP User for IX-BBT

Note: This section covers the configuration of Avaya IP Office Server Edition, but the configuration is the same for Avaya IP Office 500 V2 Expansion System.

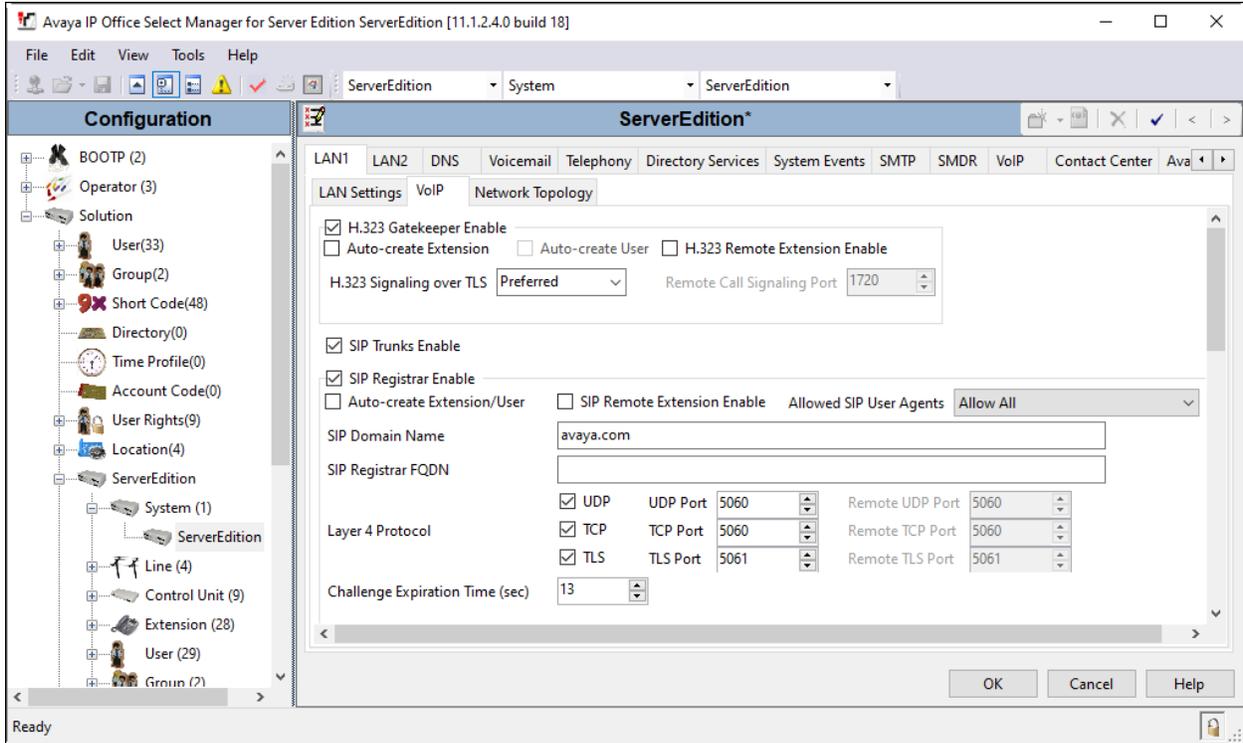
5.1. Obtain LAN IP Address

From a PC running the IP Office Manager application, on 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 IX-BBT.



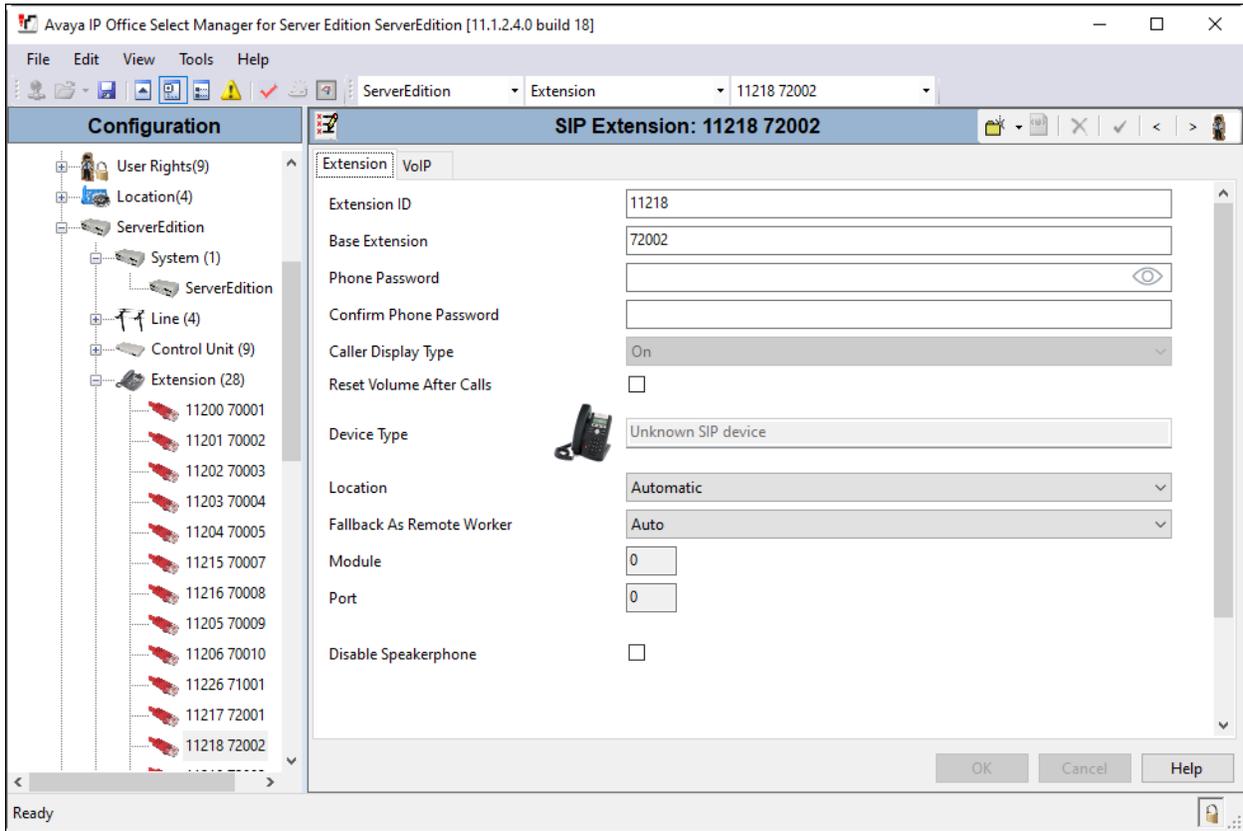
5.2. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **SIP Domain Name**. In the compliance testing, the **SIP Domain Name** field was set to *avaya.com*. UDP transport protocol was enabled for the **Layer 4 Protocol**, which was used by IX-BBT.

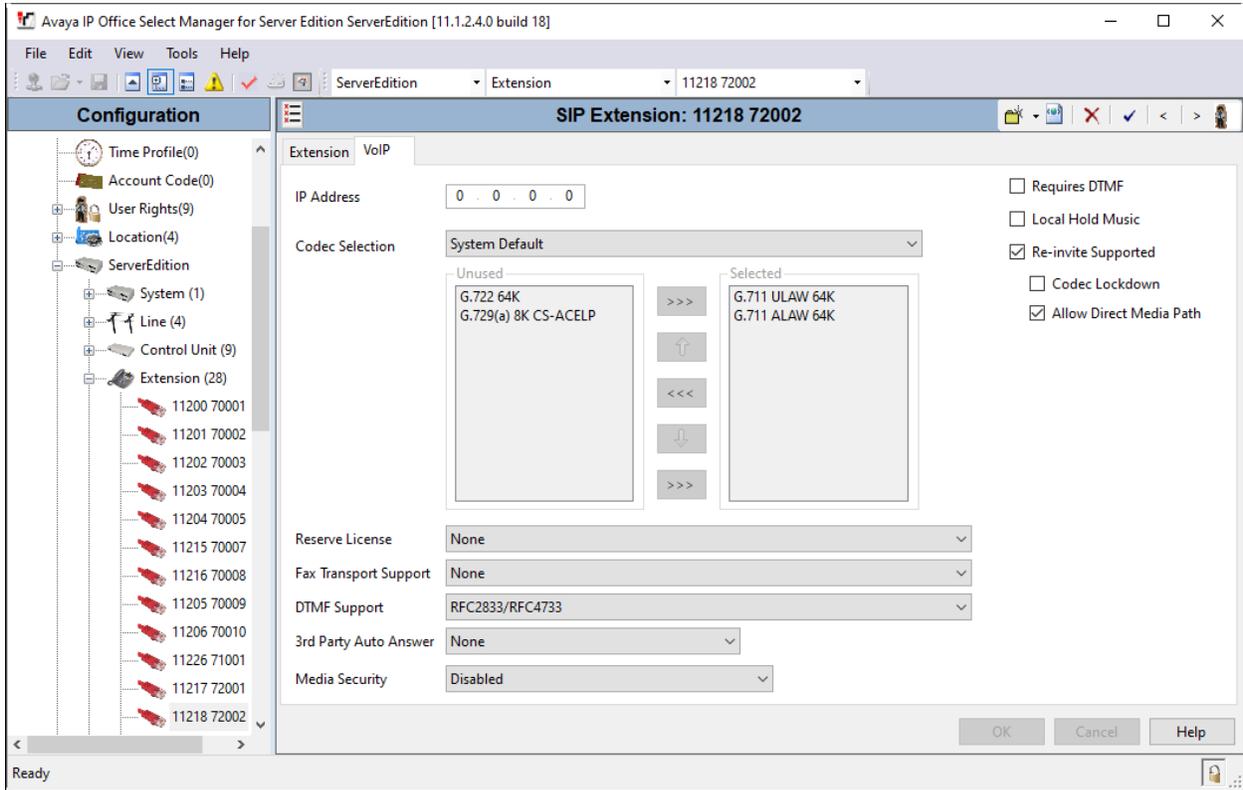


5.3. Administer SIP Extension for IX-BBT

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. Enter the desired extension for the **Base Extension** field as shown below. In this example, IX-BBT was assigned extension 72002. This is the extension that IX-BBT will use to register with IP Office Server Edition.

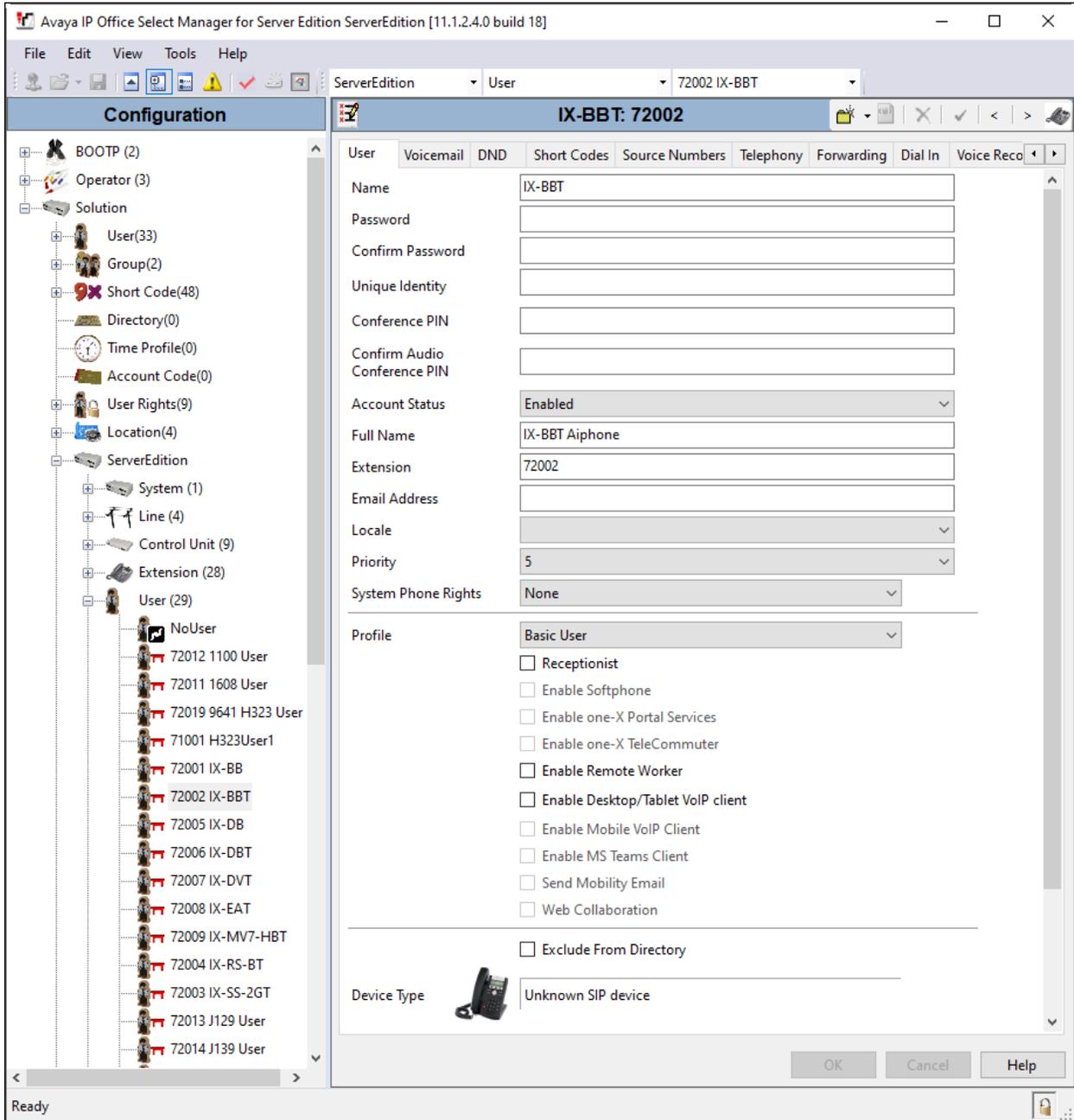


Select the **VoIP** tab and retain the default values. During the compliance test, IX BBT was tested with *G.711 ULaw* codec. Enable **Allow Direct Media Path** so that audio/RTP flows directly between two SIP endpoints without using media resources in Avaya IP Office Server Edition. **Media Security** was *disabled* for IX-BBT.

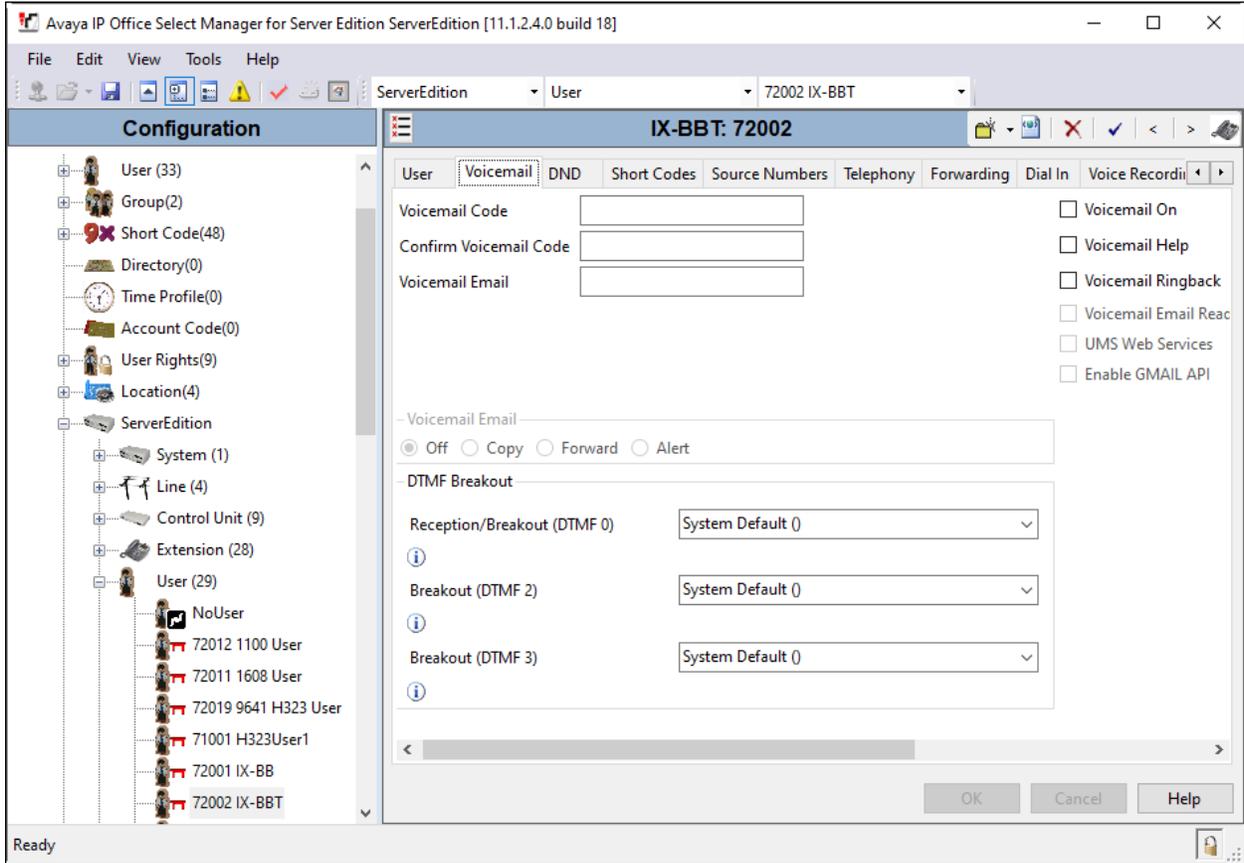


5.4. Administer SIP User for IX-BBT

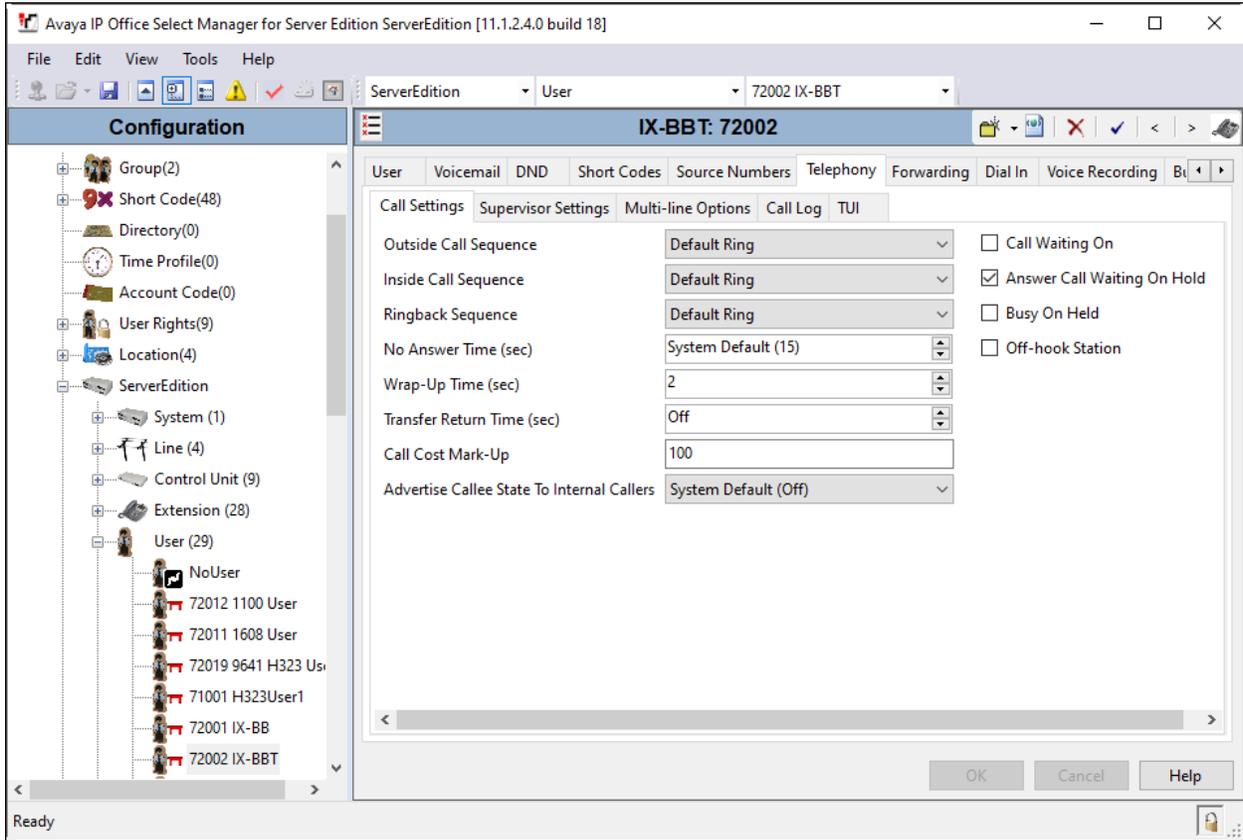
From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list. Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension from **Section 5.3** (e.g., 72002).



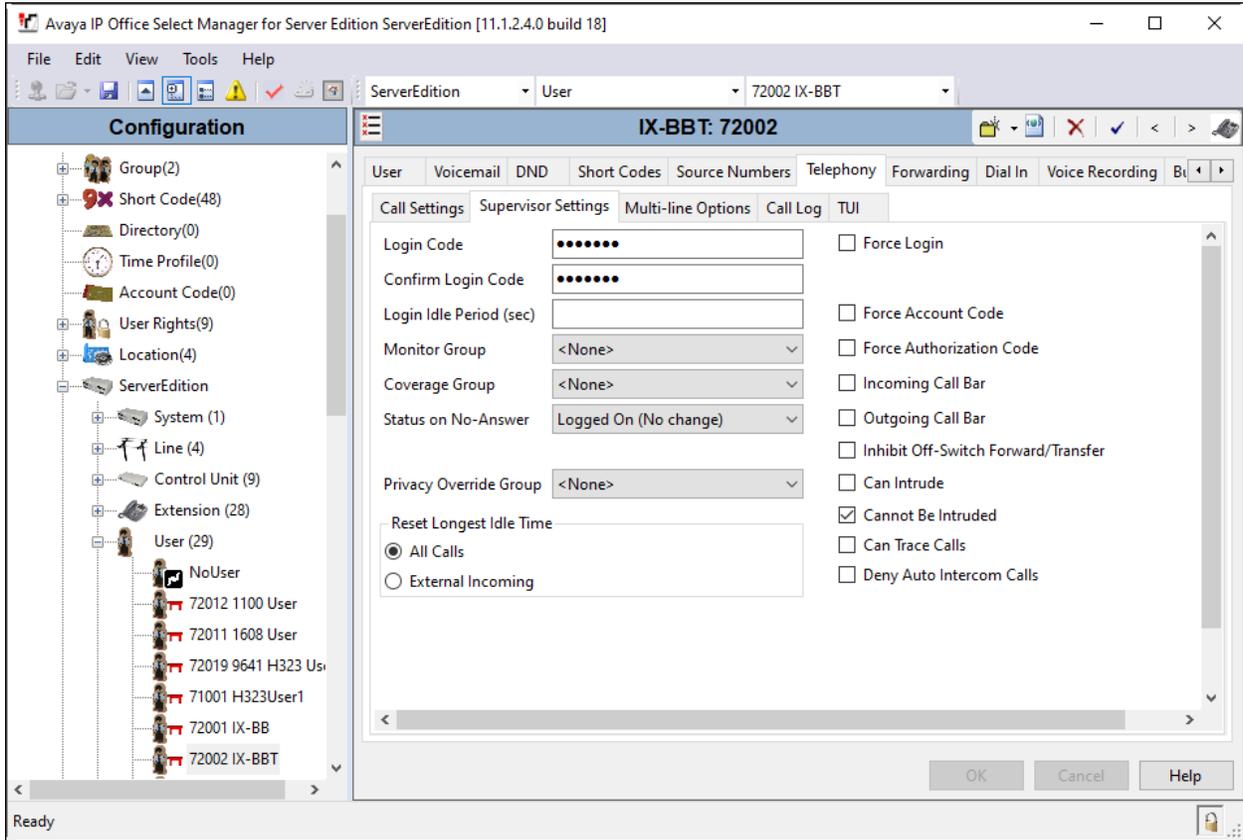
Select the **Voicemail** tab and disable voicemail for IX-BBT



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



Select the **Supervisor Settings** sub-tab and enter a desired **Login Code**. The **Login Code** is the password that will be used by IX-BBT to register with IP Office Server Edition.



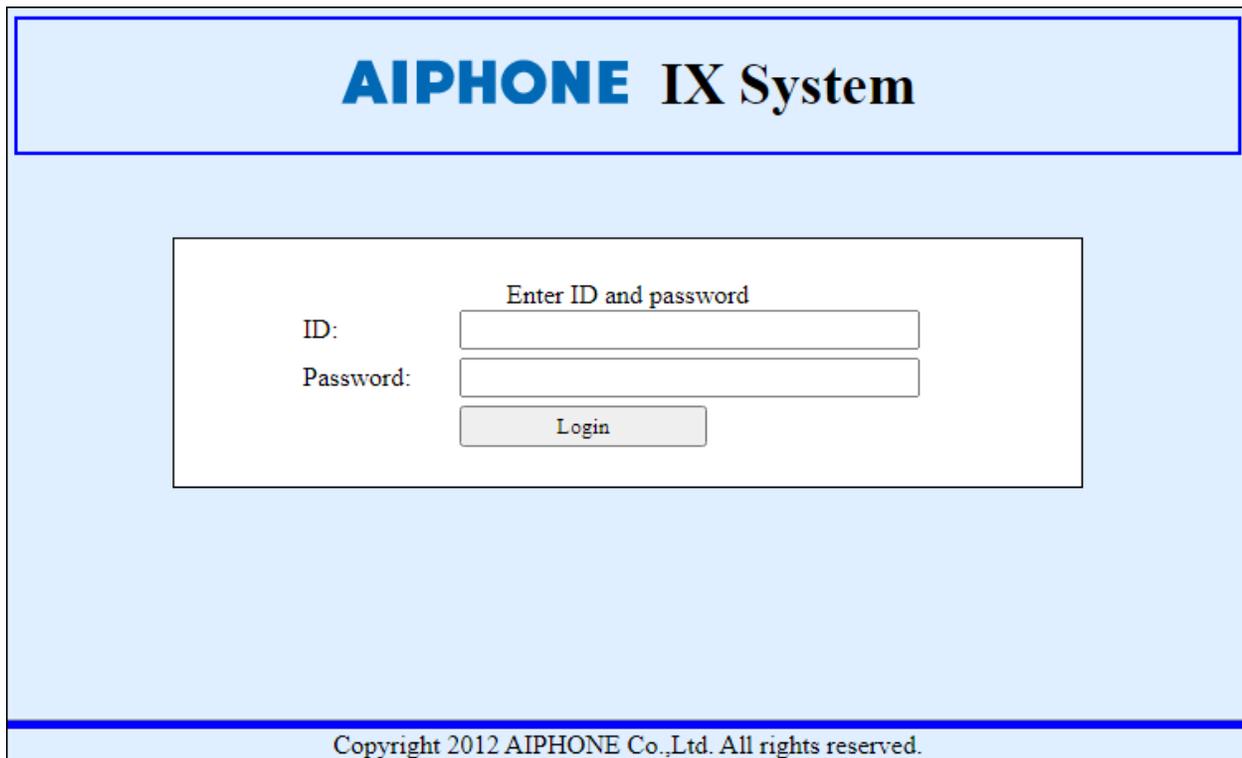
6. Configure Aiphone IX-BBT Audio Door Station

This section provides the procedure for configuring IX-BBT to provide SIP connectivity to IP Office. Configuration of IX-BBT is performed via Aiphone IX System web interface.

- Log into Aiphone IX System Web Interface
- Administer Station Information
- Administer SIP Parameters
- Administer Audio Settings
- Administer Call Settings

6.1. Log into Aiphone IX System Web Interface

Access the Aiphone IX System Web Interface by using the URL <https://<ip-address>/webset.cgi?login> in an Internet browser, where <ip-address> is the IX-BBT IP address. Select language (not shown) and log in using the appropriate credentials.



AIPHONE IX System

Enter ID and password

ID:

Password:

Login

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6.2. Administer Station Information

Navigate to **Station Information** → **Identification** and set the **Number** to the IX-BBT SIP extension (e.g., 72002). Input an appropriate **Name**.

The screenshot shows the 'AIPHONE IX System Setting' web interface. At the top, it displays 'Station Type: Audio Only Door Station' and an 'Update' button. The main content area is titled 'Station Information' and contains a section for 'Identification'. The 'Identification' section has three fields: 'Number' (with a red asterisk), 'Name', and 'Location'. The 'Number' field contains '72002' and has a red note '3-5 digits'. The 'Name' field contains 'IX-BBT' and has a red note '1-24 alphanumeric characters'. The 'Location' field is empty and has a red note '1-24 alphanumeric characters'. A red note 'Required Settings' is visible in the top right corner of the main content area. On the left side, there is a navigation menu with links for 'Station Information', 'Identification', 'ID and Password', 'Language', 'Time', 'Network Settings', 'IP Address', 'DNS', 'SIP', 'Audio', 'Packet Priority', and 'NTP'.

Field	Value	Validation
Number	72002	3-5 digits
Name	IX-BBT	1-24 alphanumeric characters
Location		1-24 alphanumeric characters

6.3. Administer SIP Parameters

Navigate to **Network Settings** → **SIP** from the left pane and configure the following parameters:

- **SIP Signaling Port:** Set to *5060*.
- **User Agent:** Enter desired value (e.g., *IX-BBT*).
- **ID:** Set to SIP extension (e.g., *72002*) from **Section 5.3**.
- **Password:** Enter SIP password from **Section 5.4**.
- **IPv4 Address:** Set to signaling IP address of IP Office (e.g., *10.64.110.65*).
- **Port:** Set to *5060*.

Click **Update** to save changes.

The screenshot displays the 'AIPHONE IX System Setting' interface. At the top, there is a navigation bar with 'Station Type: Audio Only Door Station' and an 'Update' button. The main content area is titled 'Network Settings' and contains a 'SIP' section. The 'SIP Connections' section includes fields for 'SIP Signaling Port' (set to 5060) and 'User Agent' (set to IX-BBT). The 'SIP Server' section includes a dropdown for 'SIP Compatibility Mode' (set to Standard Mode) and a 'Primary Server' section with fields for 'ID' (72002), 'Password' (masked), 'IPv4 Address' (10.64.110.65), 'IPv6 Address' (empty), and 'Port' (5060). A sidebar on the left lists various settings categories: Station Information, Network Settings, Contact / Audio Output Settings, Call Settings, and Function Settings.

6.4. Administer Audio Settings

Navigate to **Network Settings** → **Audio** in the left pane and set **Audio Codec** to select *G.711 (u-law)*.

The screenshot displays the 'AIPHONE IX System Setting' web interface. The top navigation bar includes a keypad and an 'Update' button. The left sidebar contains a menu with categories: Station Information, Network Settings, Contact / Audio Output Settings, Call Settings, and Function Settings. The main content area is titled 'Network Settings' and features a sub-section for 'Audio'. This section includes several configuration fields: 'Audio CODEC' (radio buttons for G.711(u-law) and G.711(A-law)), 'Audio RTP Transmission Interval [msec]' (a dropdown menu set to 20), and 'RTP Idle Detection Time [sec]' (a text input set to 10). Below these are sections for 'SIP Channel' and 'ONVIF Transmit Channel', each with 'RTP Start Port' and 'RTP End Port' fields. The 'Audio Buffer' section at the bottom contains 'Packets Buffered at Audio Start' (a dropdown set to 1) and 'Maximum Packets Buffered' (a dropdown set to 3). Red text provides warnings about RTP port ranges and buffer size requirements.

Section	Field	Value	Notes
Audio	Audio CODEC	<input checked="" type="radio"/> G.711(u-law) <input type="radio"/> G.711(A-law)	
	Audio RTP Transmission Interval [msec]	20	This setting is ignored when transmitting to multiple stations (paging, etc.)
SIP Channel	RTP Start Port	20000	1-65534
	RTP End Port	21000	1-65535
ONVIF Transmit Channel	RTP Start Port	22000	1-65534
	RTP End Port	23000	1-65535
Audio Buffer	Packets Buffered at Audio Start	1	
	Maximum Packets Buffered	3	Maximum Packet Buffer must be larger than Audio Start Buffer.

6.5. Administer Call Settings

Navigate to **Call Settings** in the left pane. In the **Called Stations** section, add an entry that specifies the number that should be dialed when the call button is pressed. Set the **Number** to the called number (e.g., 72015) and set the **IPv4 Address** to the signaling IP address of IP Office (e.g., 10.64.110.65).

The screenshot shows the AIPHONE IX System Setting interface. The top navigation bar includes the AIPHONE IX logo, a station type indicator 'Station Type: Audio Only Door Station', and an 'Update' button. The left sidebar contains a navigation menu with sections for Station Information, Network Settings, Contact / Audio Output Settings, and Call Settings. The main content area is titled 'Call Settings' and features a 'Called Stations' section with a 'Call Button Assignment' table.

	Number 3-32 digits	IPv4 Address 1.0.0.0-223.255.255.255	IPv6 Address 2000::0- 3FFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF or FD00::0- FDFE:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF
1	72015	10 . 64 . 110 . 65	
2			
3			
4			
5			
6			
7			
8			
9			

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of IP Office and Aiphone IX-BBT Audio Door Station.

1. Verify that IX-BBT has successfully registered with with IP Office. Launch **IP Office System Status** and navigate to **Extensions** → **<SIP Extension>**, where **<SIP Extension>** is the IX-BBT extension. Verify that the **Current State** is *Idle* as shown below.

The screenshot shows the Avaya IP Office System Status application window. The title bar reads "Avaya IP Office System Status - ServerEdition (10.64.110.65) - IP Office Linux PC 11.1.2.4.0 build 18". The main window has the Avaya logo and the title "IP Office System Status". A menu bar includes "Help", "Snapshot", "LogOff", "Exit", and "About". A left-hand navigation pane shows a tree view with categories: System, Alarms (2), Extensions (7), Trunks (4), Active Calls, Resources, Voicemail, IP Networking, and Locations. Under "Extensions (7)", extension 72002 is selected. The main area displays the "Extension Status" for 72002. Below this is a table showing call details.

Extension Number:	72002
IP address:	10.64.10.76
Standard Location:	None
Registrar:	Primary
Telephone Type:	Unknown SIP Device
User-Agent SIP header:	IX-BBT
Media Stream:	RTP
Layer 4 Protocol:	UDP
Current User Extension Number:	72002
Current User Name:	IX-BBT
Forwarding:	Off
Twinning:	Off
Do Not Disturb:	Off
Message Waiting:	Off
Phone Manager Type:	None
SIP Device Features:	REFER,UPDATE
License Reserved:	No
Last Date and Time License Allocated:	4/27/2023 1:06:55 PM
DTMF Required:	No
Packet Loss Fraction:	
Jitter:	
Round Trip Delay:	
Connection Type:	
Codec:	
Remote Media Address:	

Call Ref	Current State	Time in State	Calling Number or Called Number	Direction	Other Party on Call
	Idle	00:01:26			

At the bottom of the window, there are buttons for "Trace", "Trace All", "Pause", "Ping", "Call Details", "Print...", and "Save As...". The status bar at the bottom right shows the time "2:30:09 PM" and the status "Online".

2. Establish inbound and outbound calls to IX-BBT with Avaya SIP and/or Avaya H.323 endpoints and verify two-way audio.

8. Conclusion

These Application Notes describe the administration steps required to integrate Aiphone IX Series 2 Audio Door Stations (IX-BBT) with Avaya IP Office Server Edition. The Aiphone IX-BBT Audio Door Station successfully registered with IP Office as a SIP endpoint and audio calls were verified. All test cases passed with observations noted in **Section 2.2**.

9. References

This section references the Avaya and Aiphone documentation relevant to these Application Notes.

Avaya product documentation is available at <https://support.avaya.com>.

[1] *Administering Avaya IP Office using Manager*, Release 11.1, available at <http://support.avaya.com> as an HTML document.

Aiphone product documentation is available at <https://www.aiphone.com>.

[2] *Aiphone IX Door Stations Web Setting Manual*, Software version 6.00 or later, available from Aiphone.

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