Avaya Solution & Interoperability Test Lab

Application Notes for Snom M900 Multicell DECT Phones with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Snom M900 Multicell DECT Phones with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. The Snom M900 DECT base station was connected to the LAN which, in turn, registered M-series DECT phones to Avaya IP Office via SIP. The base station converts IP protocol to DECT protocol and transmits phone calls to and from the M-series DECT phones. For the compliance test, the Snom M65 DECT Handsets were used.

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 to integrate Snom M900 Multicell DECT Phones with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. The Snom M900 DECT base station was connected to the LAN which, in turn, registered M-series DECT phones to Avaya IP Office via SIP. The base station converts IP protocol to DECT protocol and transmits phone calls to and from the M-series DECT phones.

For the compliance test, the Snom M65 DECT Handsets were used. There are other DECT M-Series handsets that share the same firmware version as the Snom M65 DECT Handset, and therefore the testing also applies to them. See Attachment 1 for additional details.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between Snom M65 DECT Handsets and Avaya SIP/H.323 telephones, and exercising basic telephony features, such as hold, mute, and transfer. The M65 handsets gained network access via the M900 DECT base station. 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 Snom M900 Multicell Base Station came back into service after re-connecting the Ethernet or rebooting the Snom M65 DECT Handsets.

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 these DevConnect Application Notes 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 Snom M900 Multicell DECT Phones utilized signaling encryption using TLS, but no media encryption (RTP was used).

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of M65 DECT handsets with IP Office Server Edition and IP Office 500 V2 Expansion System. M900 DECT base station controls the traffic in the air and works as the link between the M65 DECT handsets and IP Office.
- Calls between M65 DECT handsets and Avaya SIP/H.323 deskphones with Direct Media enabled and disabled. Direct Media was verified with M65 DECT handsets and Avaya SIP deskphones only.
- Calls between M65 DECT handsets and the PSTN.
- Calls with TLS enabled.
- TLS using secure PFS cipher of TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256.
- Support of G.711 and G.722 codecs.
- Proper recognition of DTMF tones.
- Basic telephony features, including hold, mute, redial, multiple calls, blind/attended transfer, and long duration calls.
- Voicemail coverage, MWI support, and logging into voicemail system to retrieve messages.
- Extended telephony features using IP Office short codes for Call Forward, Follow Me, Call Park/Unpark, and Call Pickup.
- Proper system recovery after a restart of M900 Multicell base station and M65 DECT handsets.

2.2. Test Results

All test cases passed with the following observations noted:

- Currently, the Snom M900 Multicell Base Station doesn't support TLS authentication with a Subject Alternate Name (SAN) in the certificate. Therefore, the M900 was configured to accept all certificates by disabling the **Use Only Trusted Certificates** option under **Security** in the M900 configuration as described in **Section 6.6**.
- Secure RTP (SRTP) is not supported. When an Avaya H.323 deskphone originates a call to an M65 DECT handset, places the call on hold, and then resumes the call, there's only one-way audio from the Avaya H.323 deskphone to the M65 DECT handset when SRTP is enabled. The workaround is to disable SRTP. Avaya is investigating this issue.

2.3. Support

For technical support on the Snom M900 Multicell DECT Phones, contact Snom Support via phone, email, or website.

- **Phone:** +1 (339) 227-6160 Option 2
- **Web:** https://service.snom.com
- **Email:** supportusa@snom.com

3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of Snom M900 Multicell DECT Phones with Avaya IP Office Server Edition and Avaya IP Office 500 V2 (Expansion System). The Snom M65 DECT Phones registered with Avaya IP Office via SIP through the Snom M900 Multicell Base Station. Avaya Embedded Voicemail served as the voicemail system. Avaya 96x1 Series H.323 Deskphones and an Avaya J100 Series SIP Deskphones were used for placing and receiving calls.

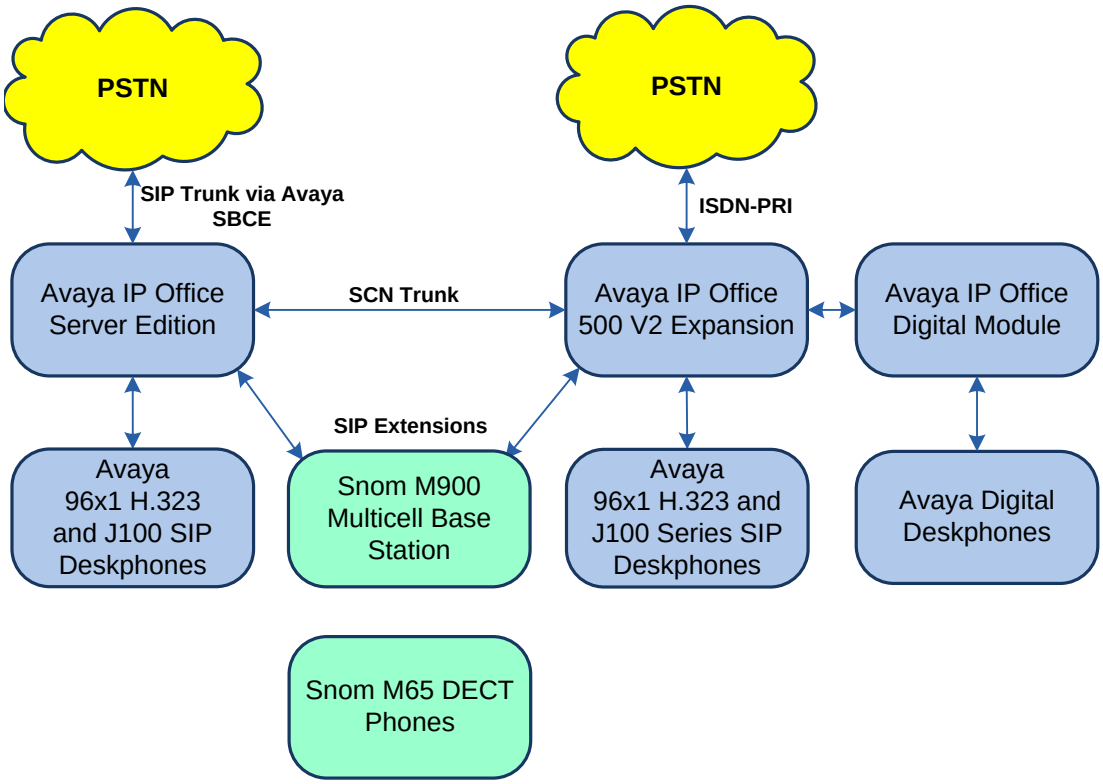


Figure 1: Avaya SIP Network with Snom M900 Multicell DECT Phones

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	11.1.1.0.0 build 209
Avaya IP Office 500 V2 Expansion	11.1.1.0.0 build 209
Avaya 96x1 Series IP Deskphones	6.8304 (H.323)
Avaya J100 Series IP Deskphones	4.0.7.0.7 (SIP)
Snom M900 Multicell Base Station	05.30/B0002
Snom M65 DECT Handsets	05.30/B0002

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

5. Configure Avaya IP Office Server Edition

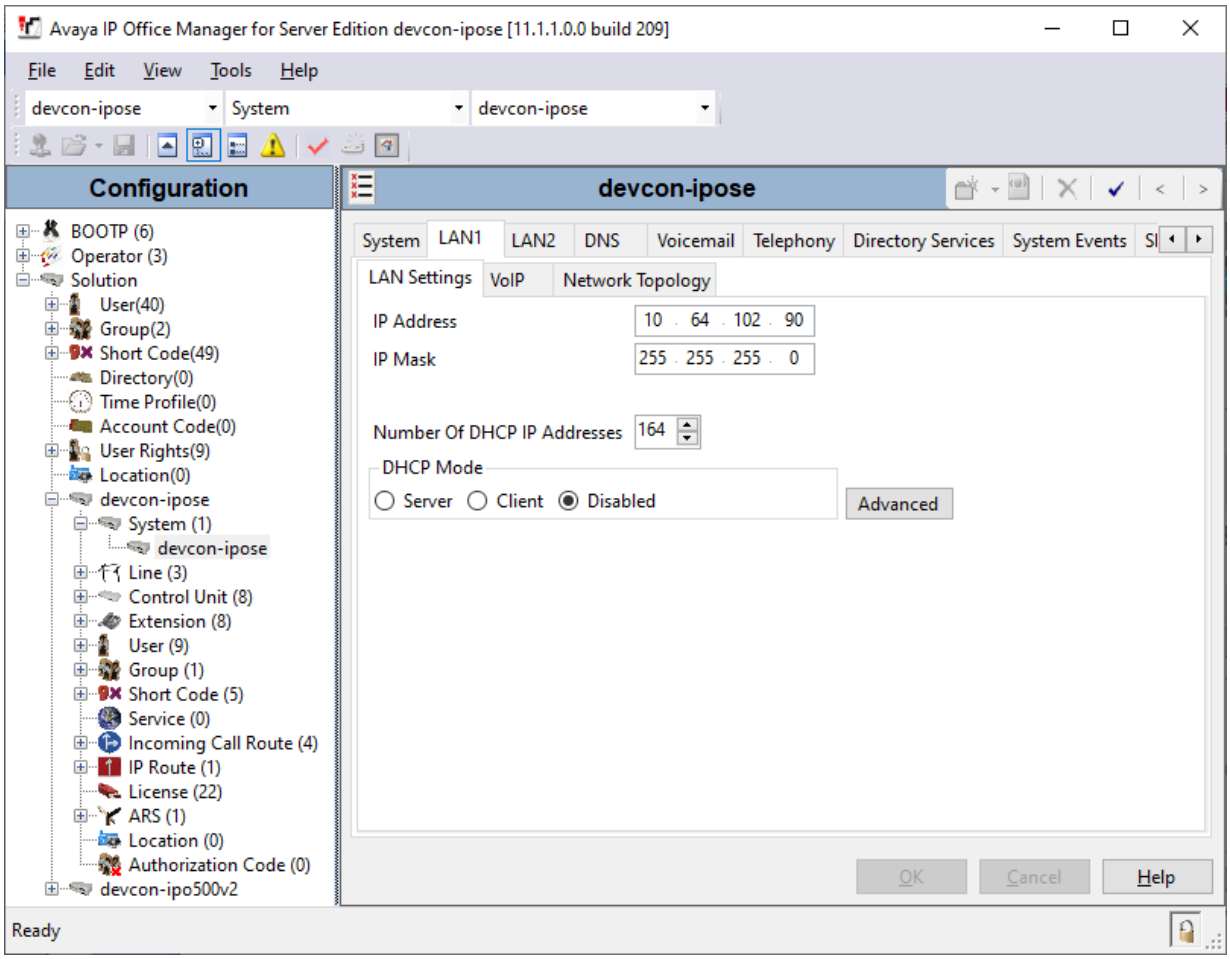
This section provides the procedures for configuring Avaya IP Office Server Edition. The procedures include the following areas:

- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extension for M65 handsets
- Administer SIP user for M65 handsets

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.

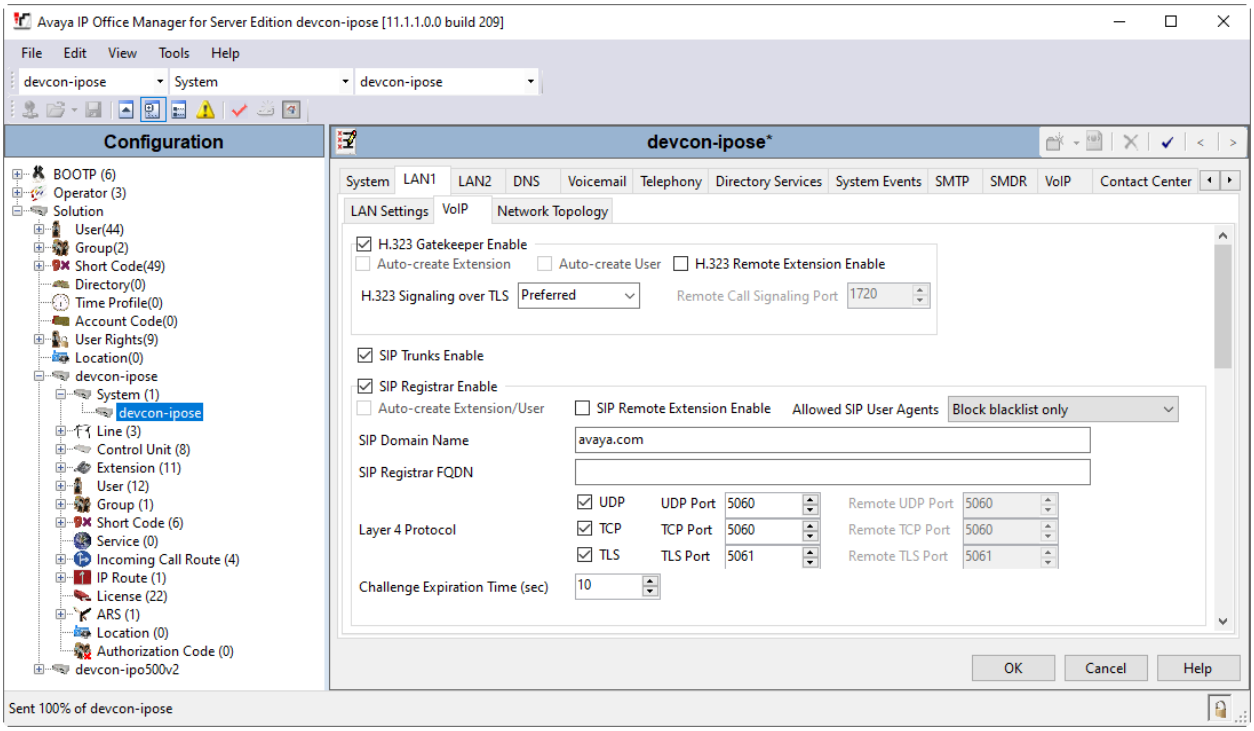
5.1. Obtain LAN IP Address

From 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 M900 Multicell base station.



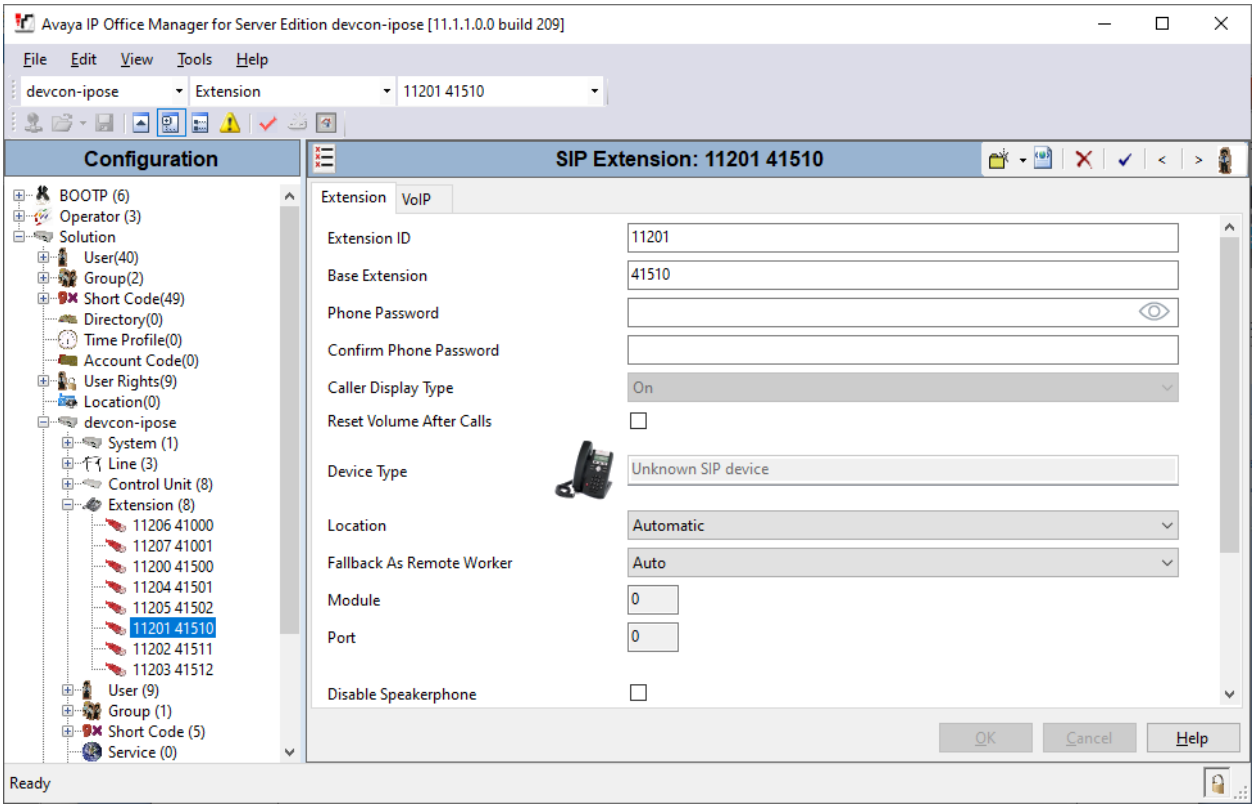
5.2. Administer SIP Registrar

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*. TLS transport protocol was enabled for the **Layer 4 Protocol**, which was also used by the M900 Multicell base station.

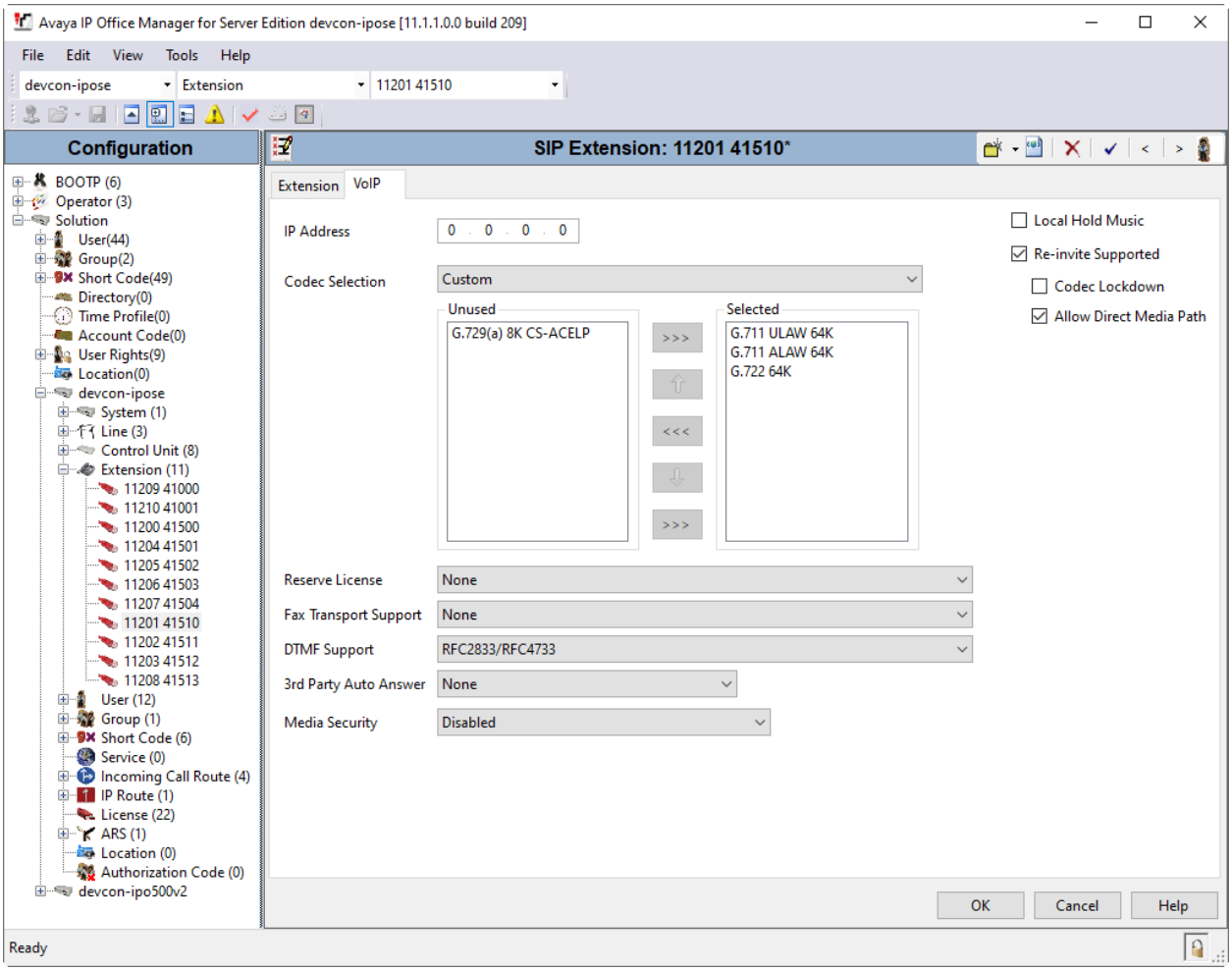


5.3. Administer SIP Extension for M65 DECT Handsets

From the configuration tree in the left pane, right-click on **Extension** and select **New → SIP** from the pop-up list (not shown) to add a new SIP extension. Enter the desired extension for the **Base Extension** field as shown below. In this example, M65 DECT handset was assigned extension *41510*. This is the extension that the M65 DECT handset will use to register the handsets with IP Office Server Edition.

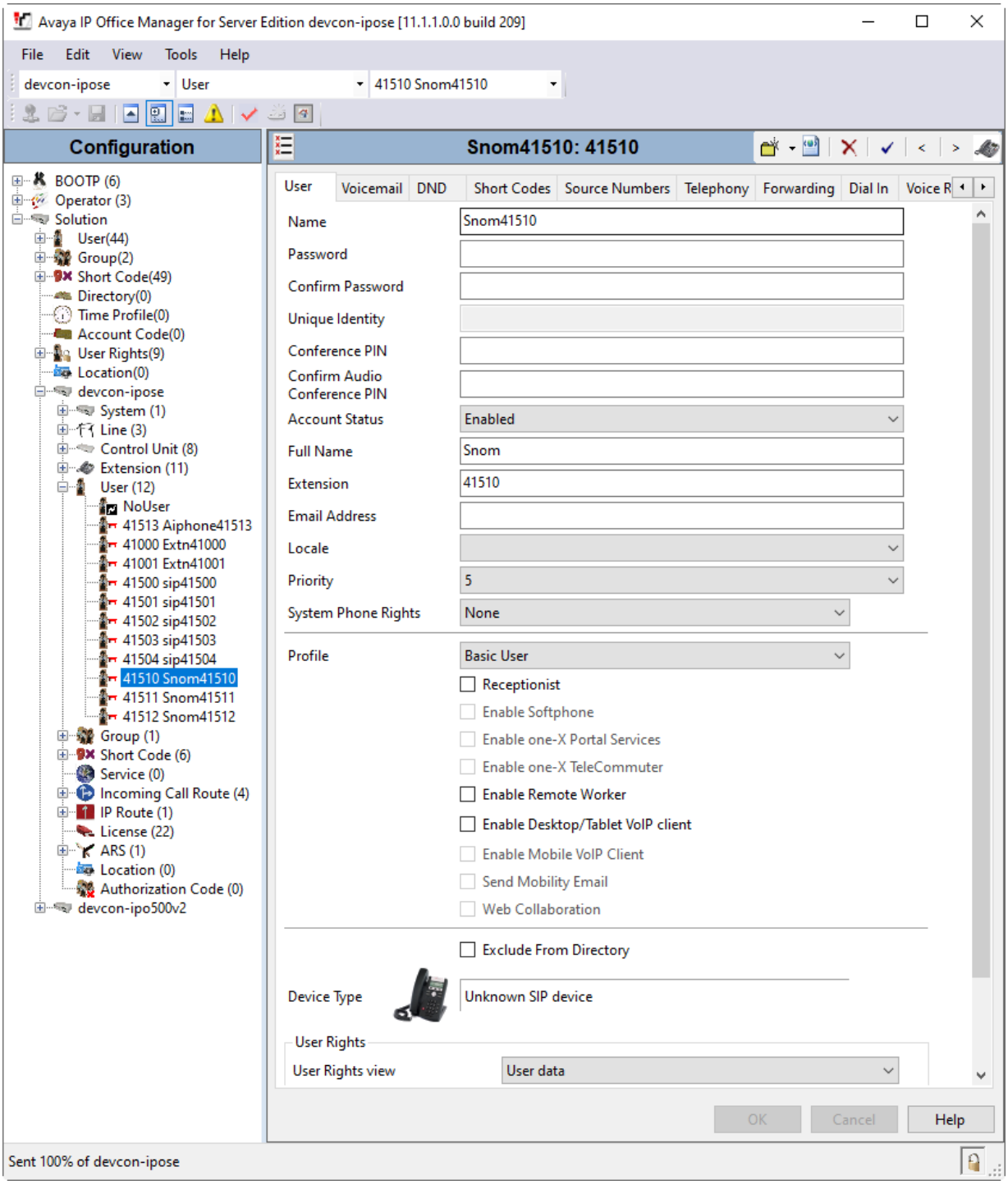


Select the **VoIP** tab. Configure the codec selection as shown below. Enable **Allow Direct Media Path** so that audio/RTP flows directly between two SIP endpoints without using media resources in Avaya IP Office Server Edition. Disable **Media Security**.

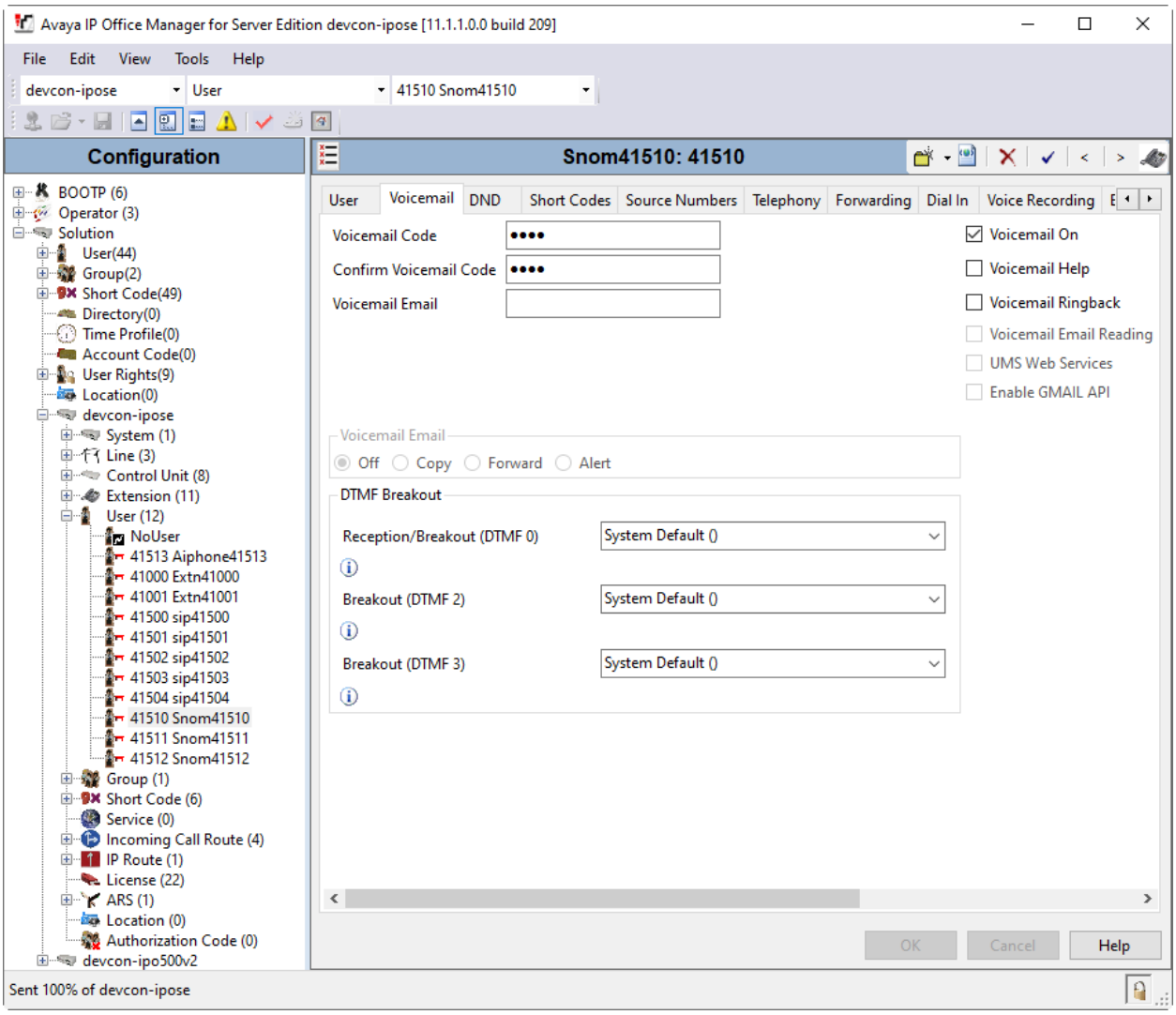


5.4. Administer SIP User for M65 DECT Handsets

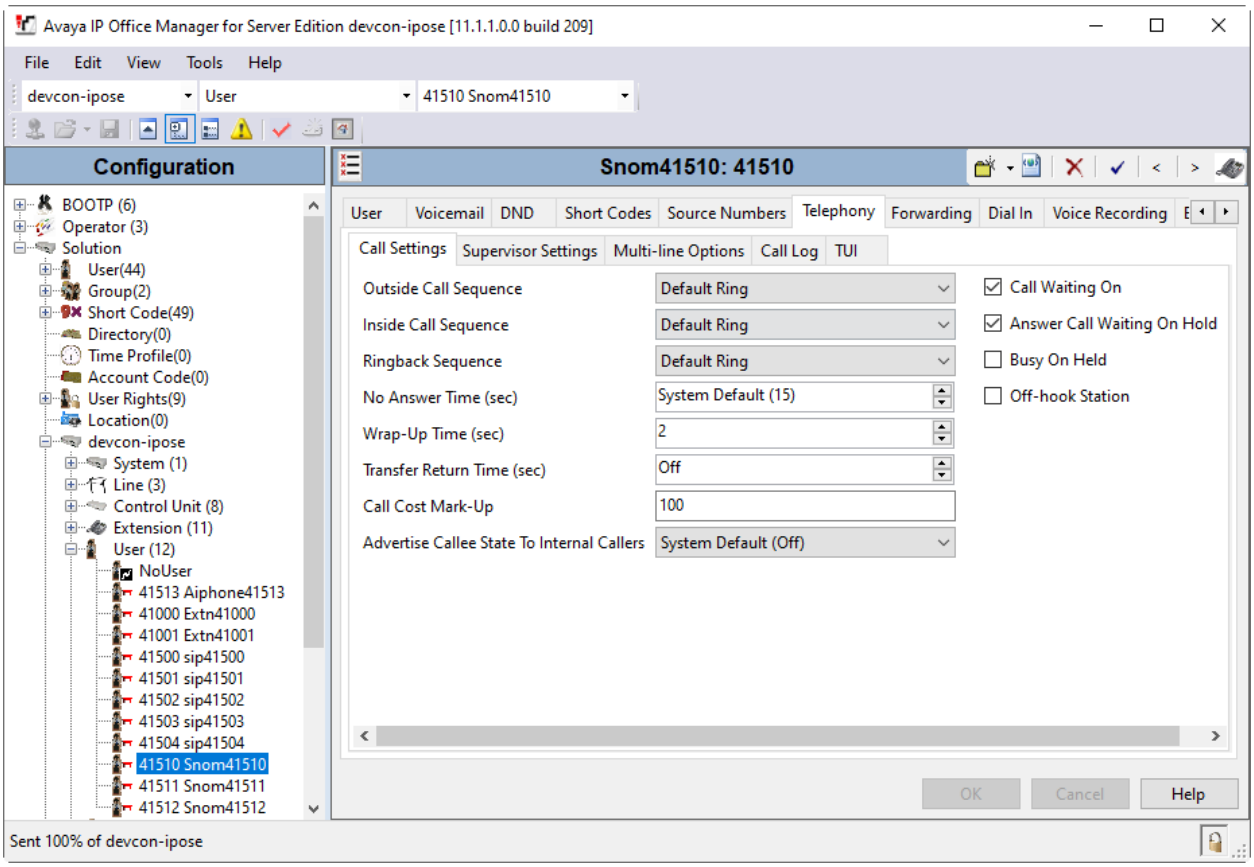
From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list (not shown). Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension created above.



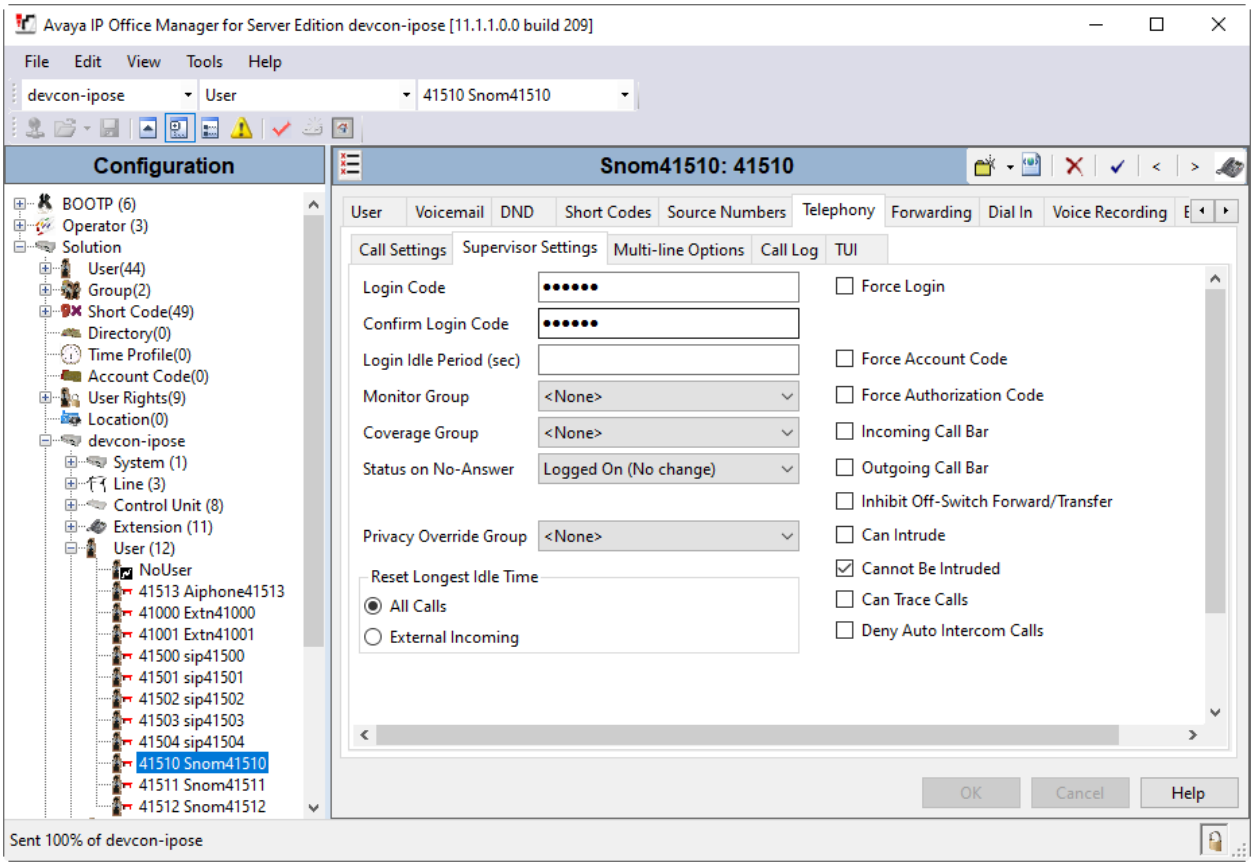
Select the **Voicemail** tab and select **Voicemail On** to enable voicemail for the M65 DECT handset. Specify a **Voicemail Code** to be used when logging into voicemail.



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 the M65 DECT handset to register the SIP extension with IP Office Server Edition.



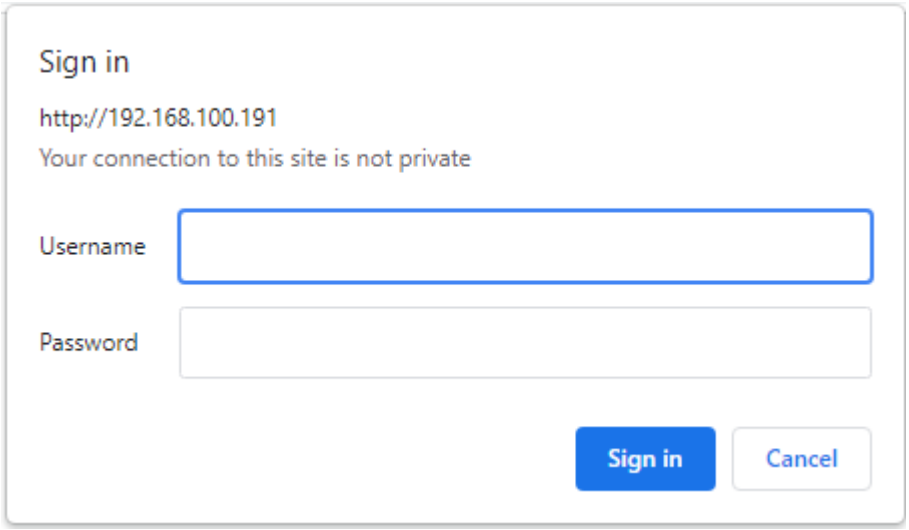
6. Configure Snom M900 Multicell DECT Phones

This section provides the procedure for configuring the M900. The procedure covers the following areas:

- Open Web User Interface
- Administer Network Settings
- Administer Country/Time Settings
- Administer Servers
- Administer Extensions
- Administer Security

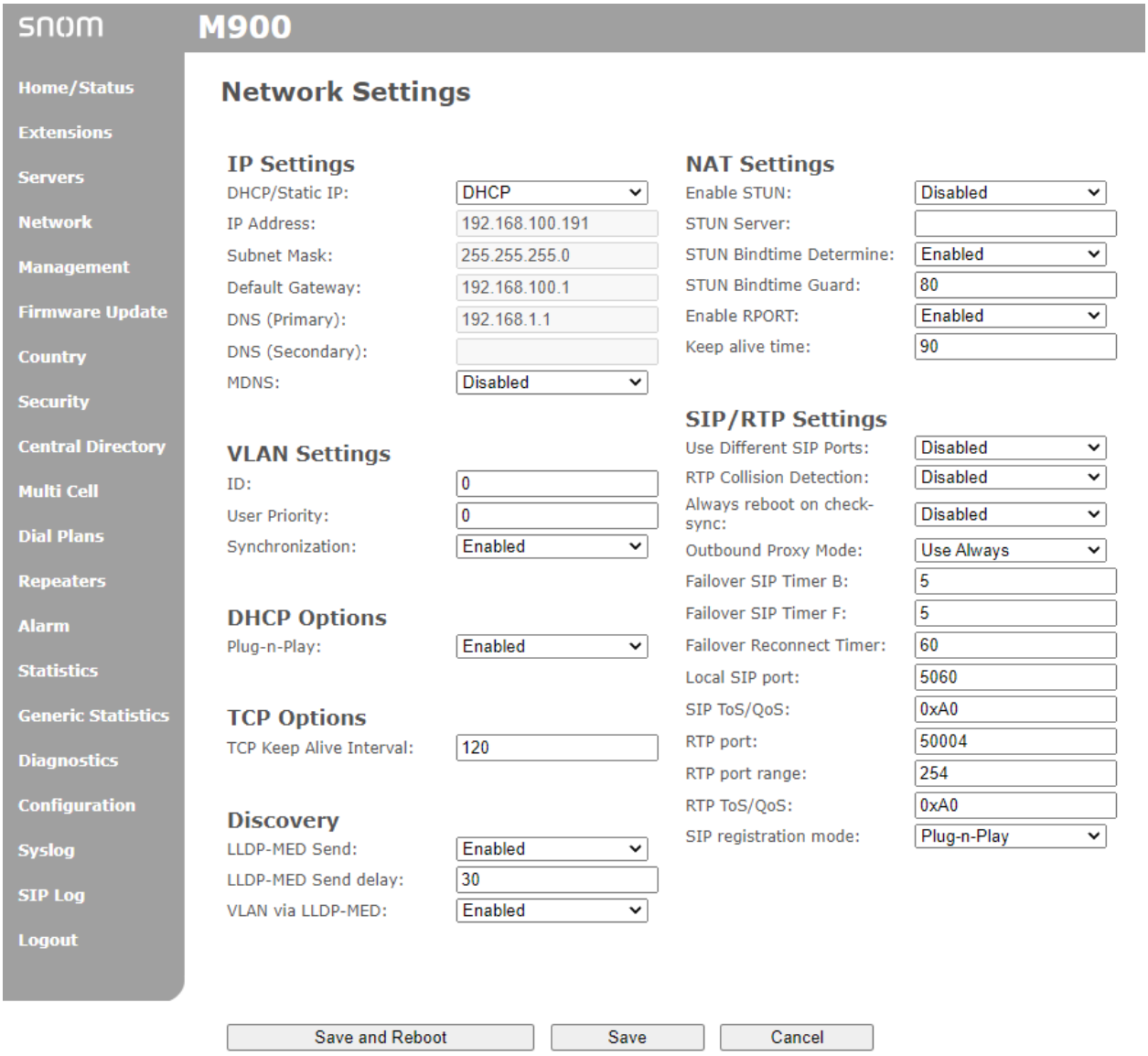
6.1. Open Web User Interface

The Snom M900 Multicell Base Station was configured through the web user interface by using the URL "http://ip-address" in an Internet browser window, where "ip-address" is the IP address of the base station. Log in using the appropriate credentials and then click **OK**.



6.2. Administer Network Settings

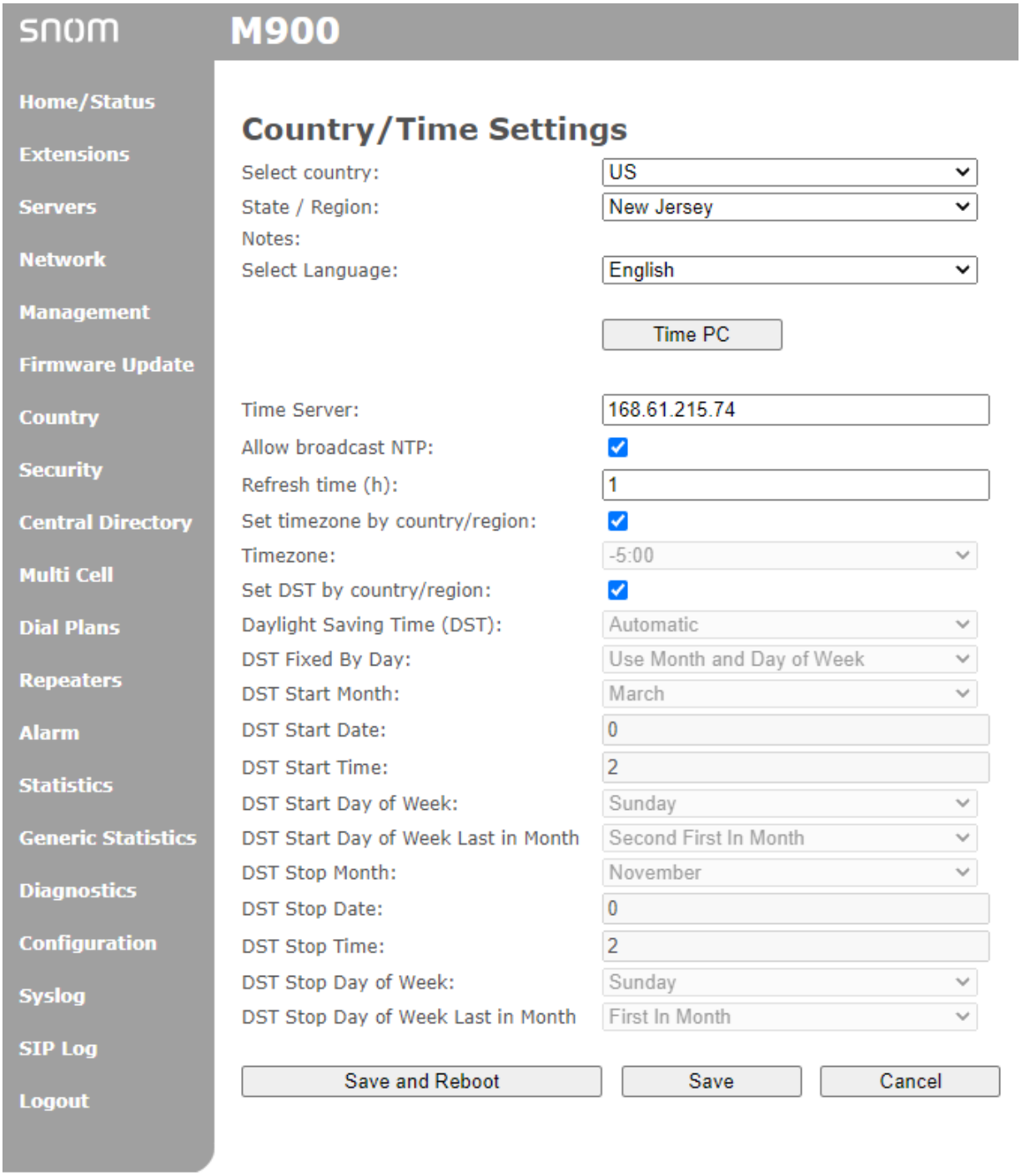
To configure network settings, click **Network** in the left pane. The M900 is pre-configured to use DHCP, but a static IP address may be used. For the compliance test, DHCP was used as shown below.



6.3. Administer Country/Time Settings

Navigate to **Country** in the left pane to configure the Time Server and set the correct time.

Note: It is important to use correct date and time of the system when using trusted certificates. In case of undefined time/date, the certificate validation can fail.

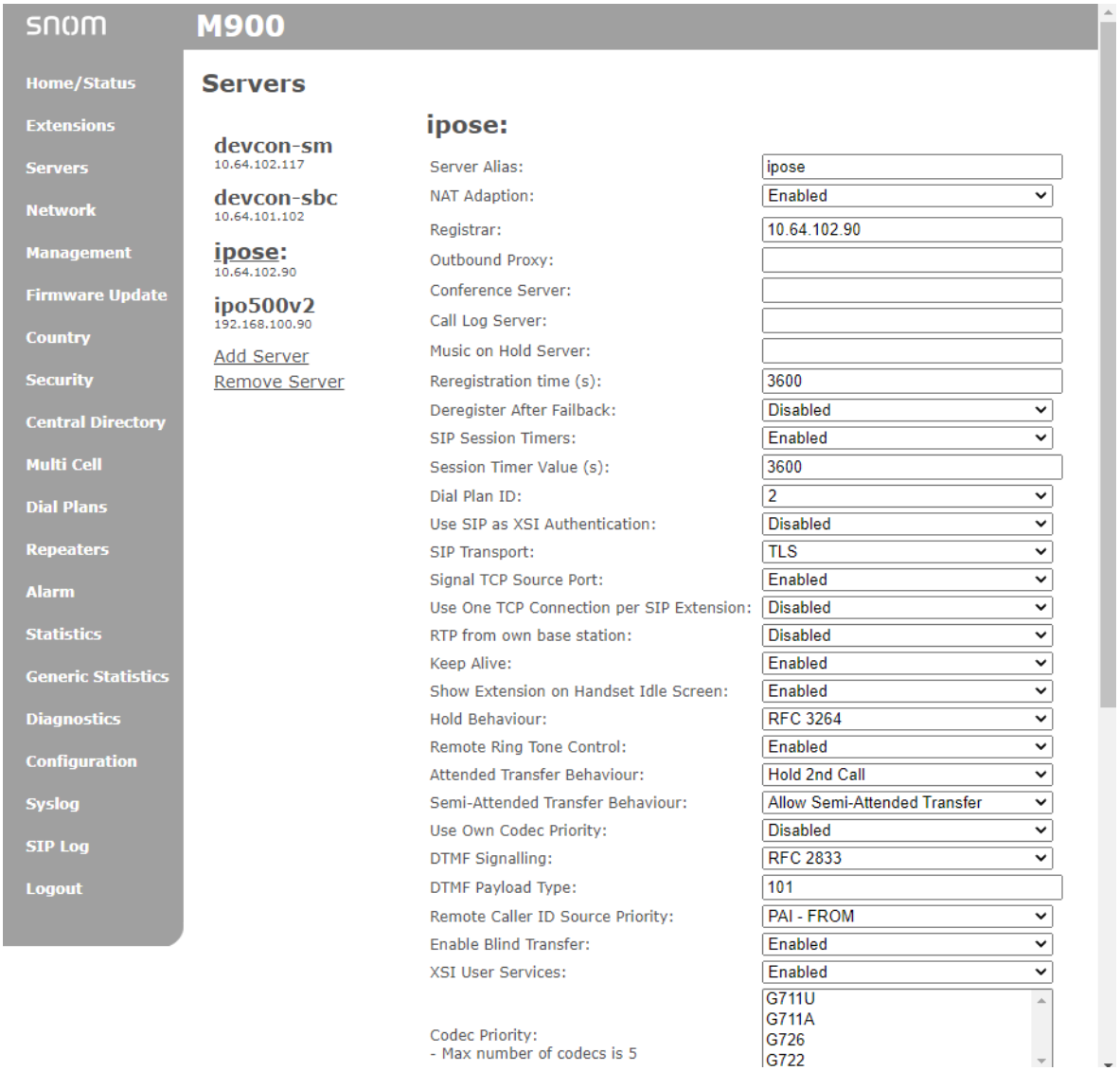


6.4. Administer Servers

To configure SIP server, click **Servers** in the left pane, and then click **Add Server** (not shown). Configure the following fields:

- **Server Alias:** Specify a server alias (e.g., *ipose*).
- **Registrar:** Specify the SIP server proxy IP address (e.g., *10.64.102.90*). Specifying the port number is optional.
- **SIP Transport:** Set to *TLS*.
- **Codec Priority:** Specify the codec priority. For the compliance test, G.711 and G.722 were verified.

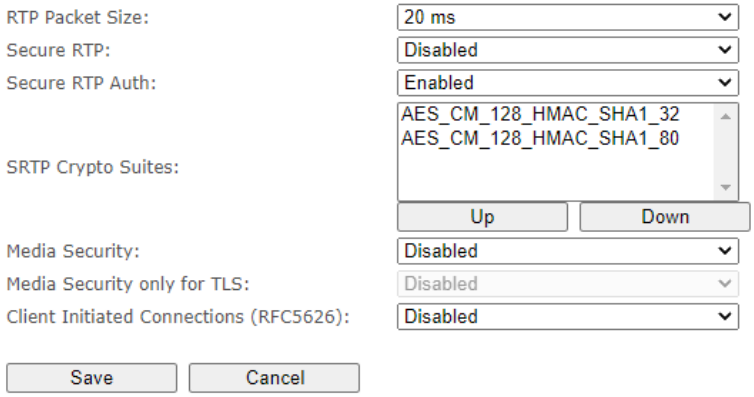
Note: With the configuration specified above, the M900 will send the IP address in the SIP URI and From/To headers of SIP Invite message. To send the domain instead, configure the domain (e.g., *avaya.com*) in **Registrar** and the SIP server proxy IP address in **Outbound Proxy**.



Scroll down to configure the following fields:

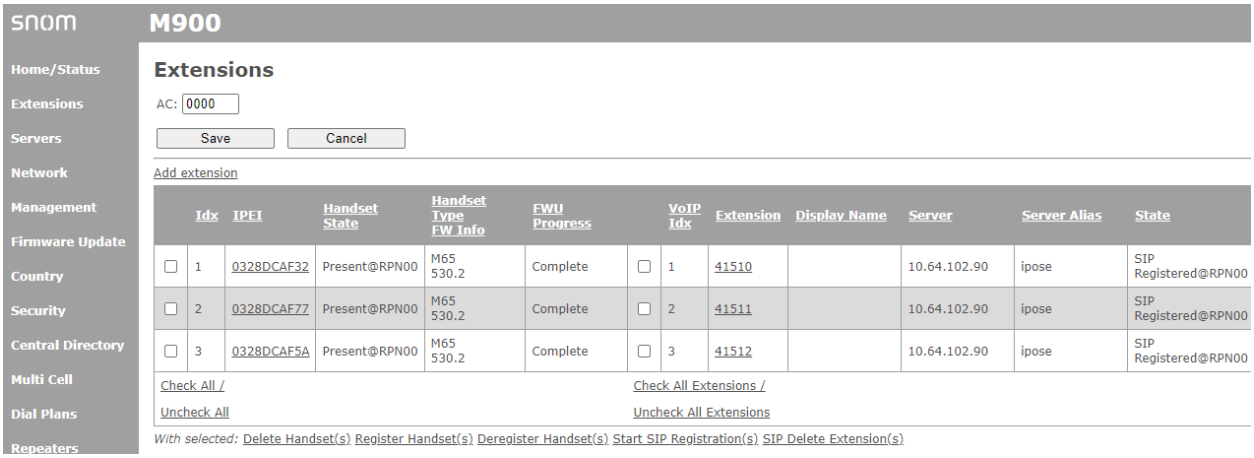
- **Secure RTP:** Set to *Disabled*.

Accept the default values for the remaining fields. Restart the M900 after saving the changes to Servers.



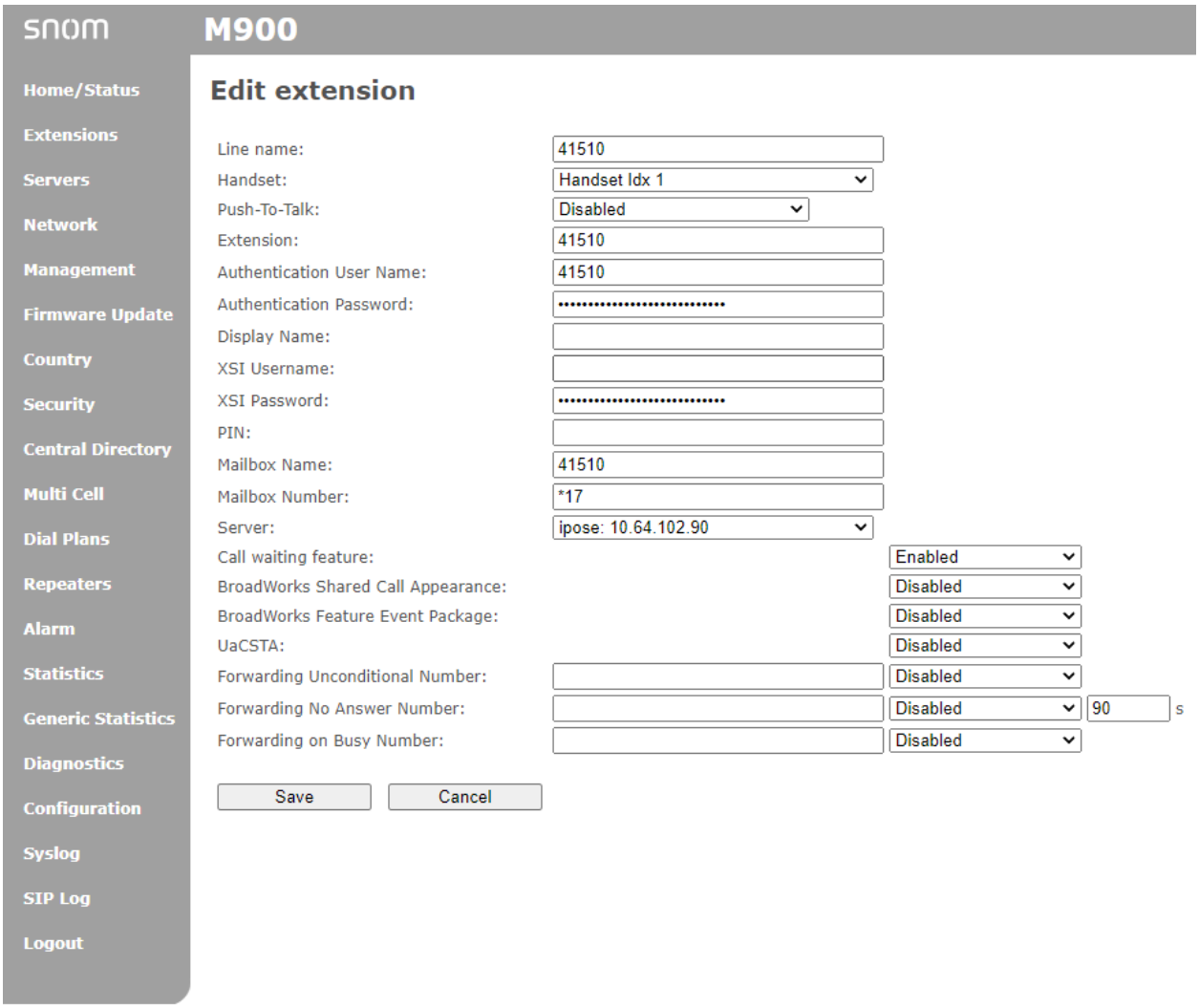
6.5. Administer Extensions

To create an extension for an M65 handset, click **Extensions** in the left pane to display the **Extensions** page below. Click **Add extension.**



In the **Add Extension** page, configure the following fields:

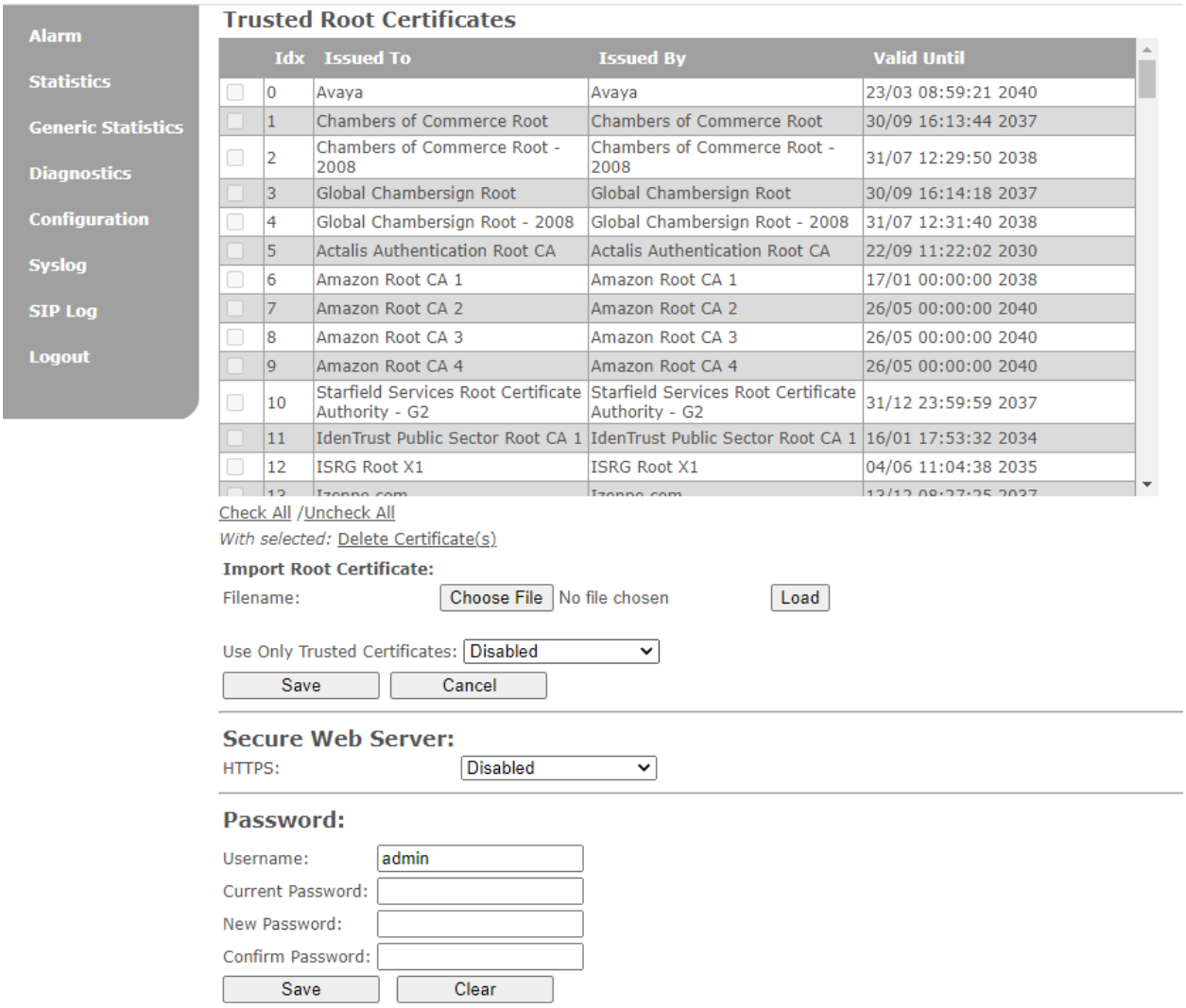
- **Line name:** Specify a line name for extension (e.g., *41510*).
- **Extension:** Enter SIP extension (e.g., *41510*).
- **Authentication User Name:** Specify the user name (e.g., *41510*) used to register with Session Manager.
- **Authentication Password:** Specify the password used to register with Session Manager.
- **Mailbox Name:** Specify the mailbox number for the SIP user (e.g., *41510*).
- **Mailbox Number:** Specify the voicemail number (e.g., **17*).
- **Server:** Specify the SIP server proxy configured in **Section 6.4**.



6.6. Administer Security

Navigate to Security in the left pane to disable **Use Only Trusted Certificates** as shown below. This will allow all certificates received from Session Manager to be accepted. This setting must be disabled, because the M900 currently doesn't support a SAN in the certificate as mentioned in **Section** Error! Reference source not found. Since the **Use Only Trusted Certificates** option is disabled, there's no need to download TLS certificates to the M900.

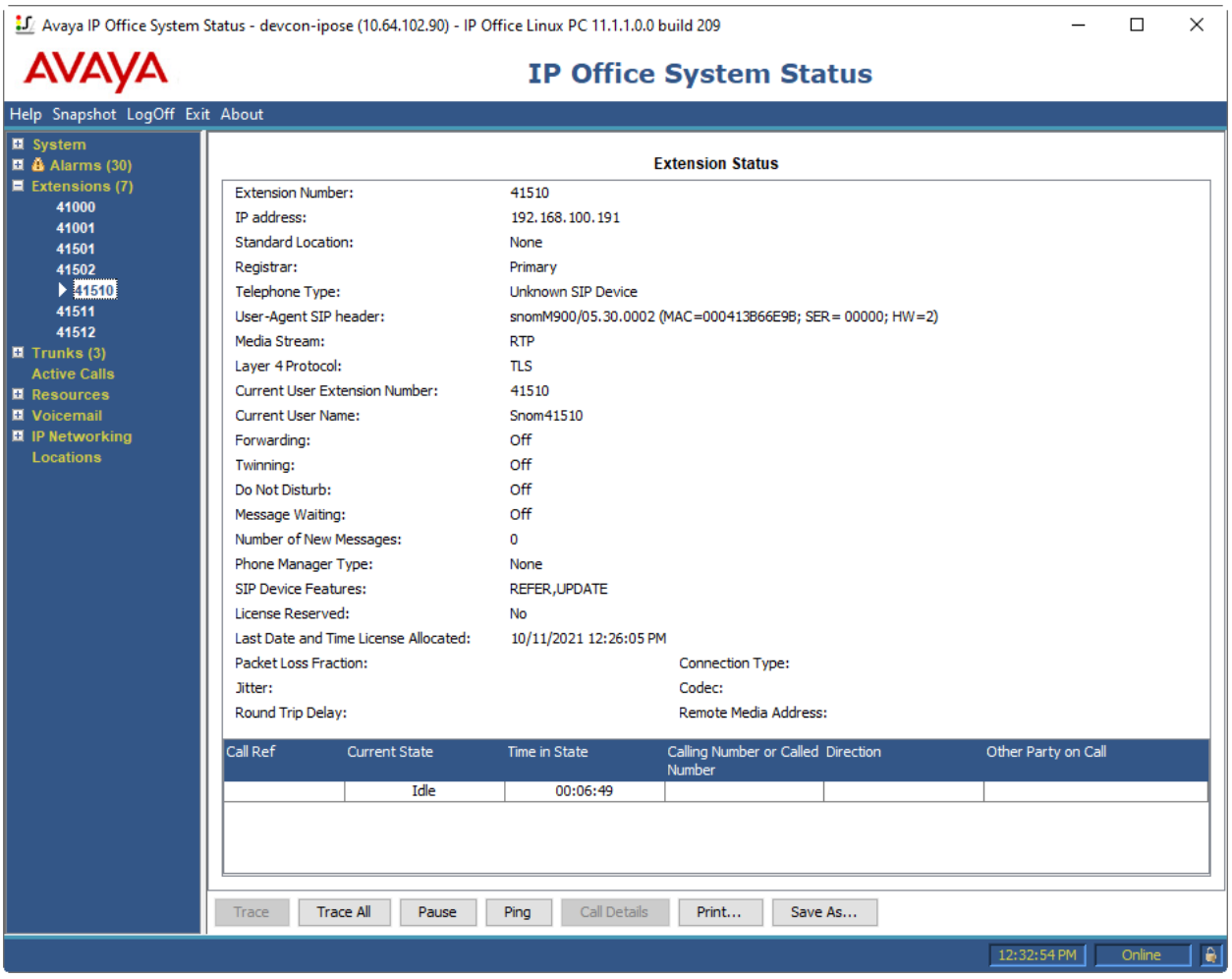
Note: It is important to use correct date and time of the system when using trusted certificates. In case of undefined time/date, the certificate validation can fail.



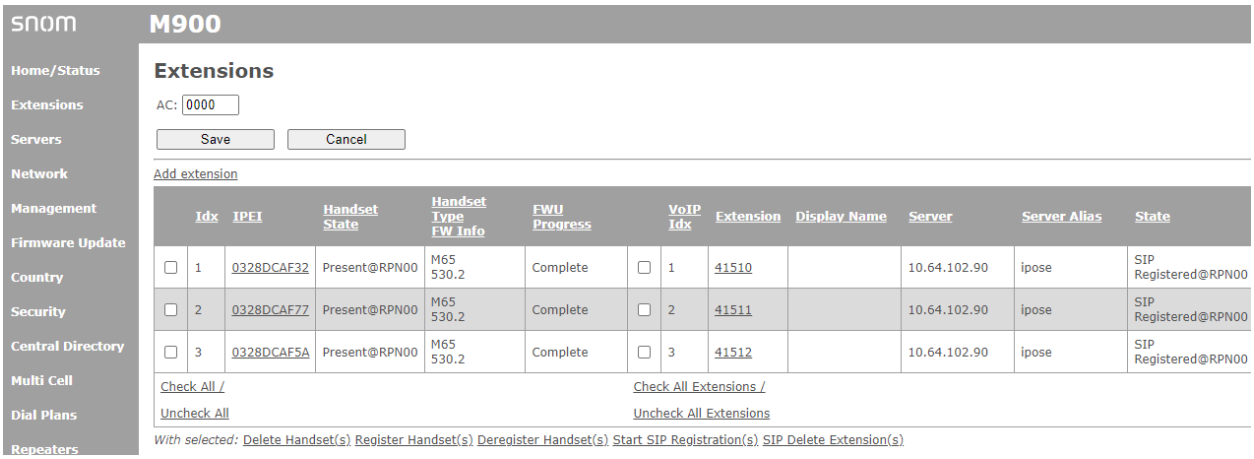
7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and Snom M900 Multicell DECT Phones.

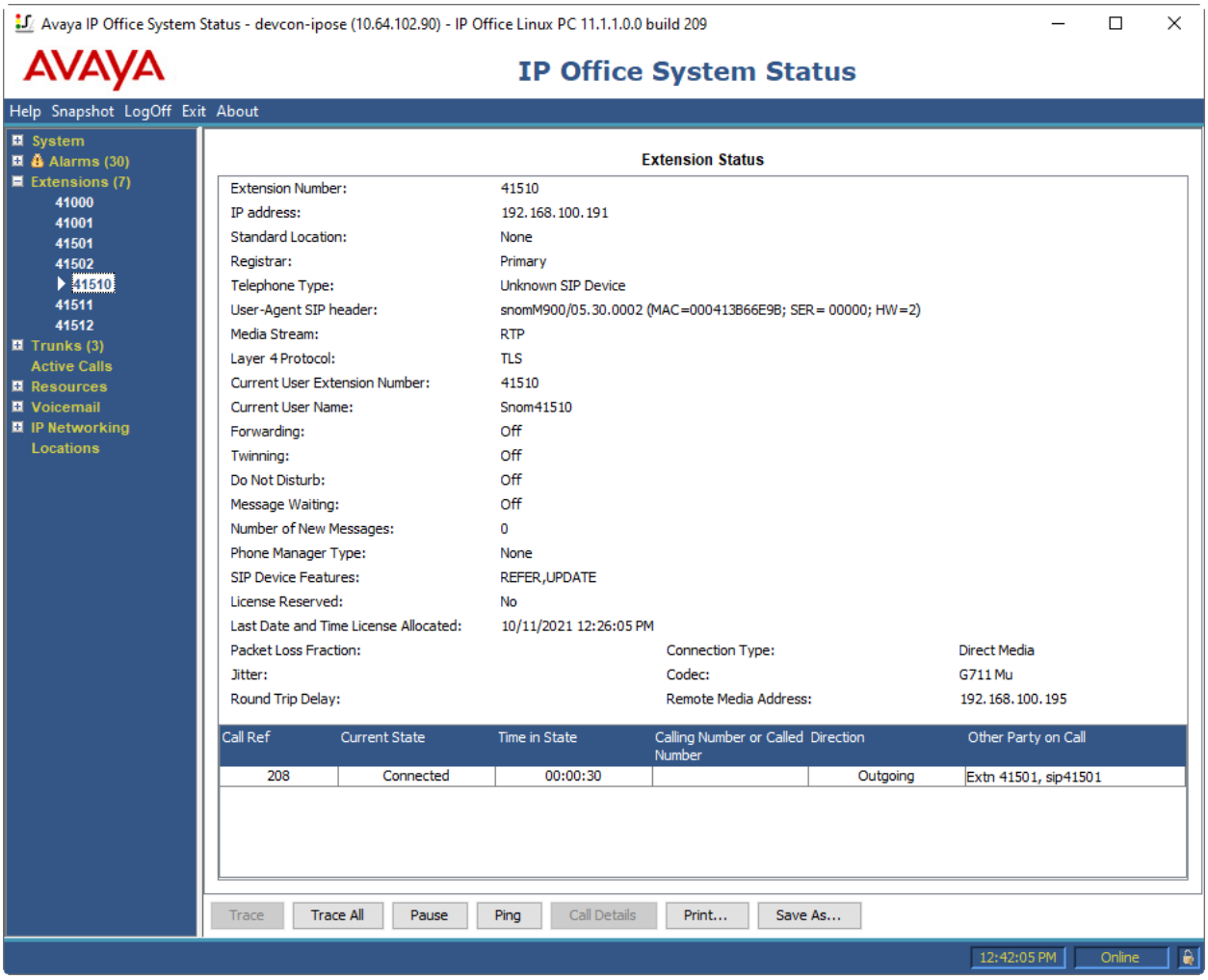
1. Verify that M65 handsets have successfully registered with IP Office. In **IP Office System Status**, navigate to the SIP extension and verify **Media Stream** is set to *RTP*, **Layer 4 Protocol** is set to *TLS*, and **Current State** is shown as *Idle*.



2. Alternatively, the SIP registration status may be verified by navigating to **Extensions** in the M900 web user interface.



3. Establish a call between M65 handset and a local Avaya SIP deskphone. In **IP Office System Status**, navigate to the SIP extension and verify that the **Connection Type** is *Direct Media* as shown below, if SRTP is disabled on the Avaya SIP deskphone. If SRTP is enabled on the Avaya SIP deskphone, the **Connection Type** would be set to *VCM (SRTP).*



4. While the call is active, basic telephony features can be exercised to verify proper operation.

8. Conclusion

These Application Notes describe the configuration steps required to integrate Snom M900 Multicell DECT Phones with Avaya IP Office. The Snom M900 Multicell DECT Phones registered to Avaya IP Office Server Edition or Avaya IP Office 500 V2 Expansion System. Calls were then established to H.323 / SIP deskphones and the PSTN with TLS. In addition, basic telephony features were verified. All feature and serviceability test cases were completed successfully 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 and the Snom product documentation is available at https://service.snom.com/display/wiki/M900.

[1] *Administering Avaya IP Office Platform with Manager*, Release 11.1.1, Issue 28.1.1, June 2021.

[2] *Snom M900 and M900 Outdoor Base Station Admin and Installation Guide v1.03.*

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.

VTech Technologies Canada Ltd.

Date: November 15, 2021

Declaration of Conformance

We, VTech Technologies Canada LTD., declare under sole responsibility that product series DECT M-Series handsets all share the same firmware version. Therefore; the products are expected to behave in the same manner. The differences between the different models in the series are detailed in the table below.

Model	Description
M25	DECT Office Handset, color display, and 3.5 mm headset jack
M65	DECT Professional Handset, Wideband speakerphone
M70	DECT Ruggedized Office Handset, HD Audio, Color LCD, Bluetooth, Alarm
M80	DECT M80 Ruggedized Handset, IP65 Rating, Bluetooth, Alarm
M85	DECT Industrial Handset, IP65 Rating, Bluetooth, Alarm
M90	Antibacterial DECT Handset, JIS-Z 2801 tested, MIL-STD-810g 516.6 tested, IP65 Rating, Bluetooth, Alarm

Please do not hesitate to contact should you require further information.

Thank you,

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