



Avaya Solution & Interoperability Test Lab

Application Notes for VTech CTM-S2315 SIP Hotel Phone with Avaya IP Office 11.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for VTech CTM-S2315 SIP Hotel Phone to interoperate with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. The VTech hospitality product line provides a clear cost and feature advantage that is backed by decades of expertise in the corded/cordless telephony industry. VTech CTM-S2315 Hotel Phone registers directly with Avaya IP Office 11.1.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any 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 VTech CTM-S2315 SIP Hotel Phone to interoperate with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. VTech CTM-S2315 SIP Hotel Phone registers to Avaya IP Office Server Edition 11.1 or Avaya IP Office 500 V2 Expansion System 11.1 as a SIP endpoint. VTech CTM-S2315 is a corded 1-line model.

2. General Test Approach and Test Results

The general test approach was to place calls to and from CTM-S2315 S2115 to PSTN, Avaya SIP, and Avaya H.323 endpoints and exercise basic telephone operations.

As the purpose of these phones is for hotel guest rooms, certain functionality considered to be standard on Avaya endpoints is not supported and therefore was not tested. For example, VTech CTM-S2315 does not support transfers or conferences. More details on these limitations are described in the Test Results 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.

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 these Application Notes, the interface between Avaya systems and CTM-S2315 utilized enabled capabilities of TLS/SRTP.

2.1. Interoperability Compliance Testing

The following features and functionality were evaluated in the interoperability compliance test:

- Registration of CTM-S2315 to IP Office.
- Basic call features: Answer, Hold/Resume, Mute/Un-mute, Drop, Message Waiting Indicator, DTMF, Call Pickup, Call Waiting, Call Forward.
- Codec negotiation, Media Shuffling, and Session Refresh Interval.
- Hospitality features: Automatic Wakeup Call and Housekeeping status.
- Serviceability testing to validate recovery from network connectivity loss.

2.2. Test Results

All test cases passed with the following observations:

- CTM-S2315 does not support the following features
 - Call Park/Unpark
 - Transfer
 - Conference
 - VTech programmable buttons do not support short codes requiring secondary input.
- CTM-S2315 uses a flash hook to implement call waiting.
- CTM-S2315 does not support SDP negotiation capabilities per (RFC5939) between SRTP and non-SRTP modes. Media Security for the associated extensions should be set to Enforced.

2.3. Support

Technical support for VTech CTM-S2315 SIP Phone can be obtained at:

- Phone: 1 (888) 907-2007
- <https://vtechhotelphones.com>

3. Reference Configuration

Figure 1 illustrates the test configuration diagram for CTM-S2315 integrated to Avaya IP Office Server Edition and Avaya IP Office 500 V2 Expansion System.

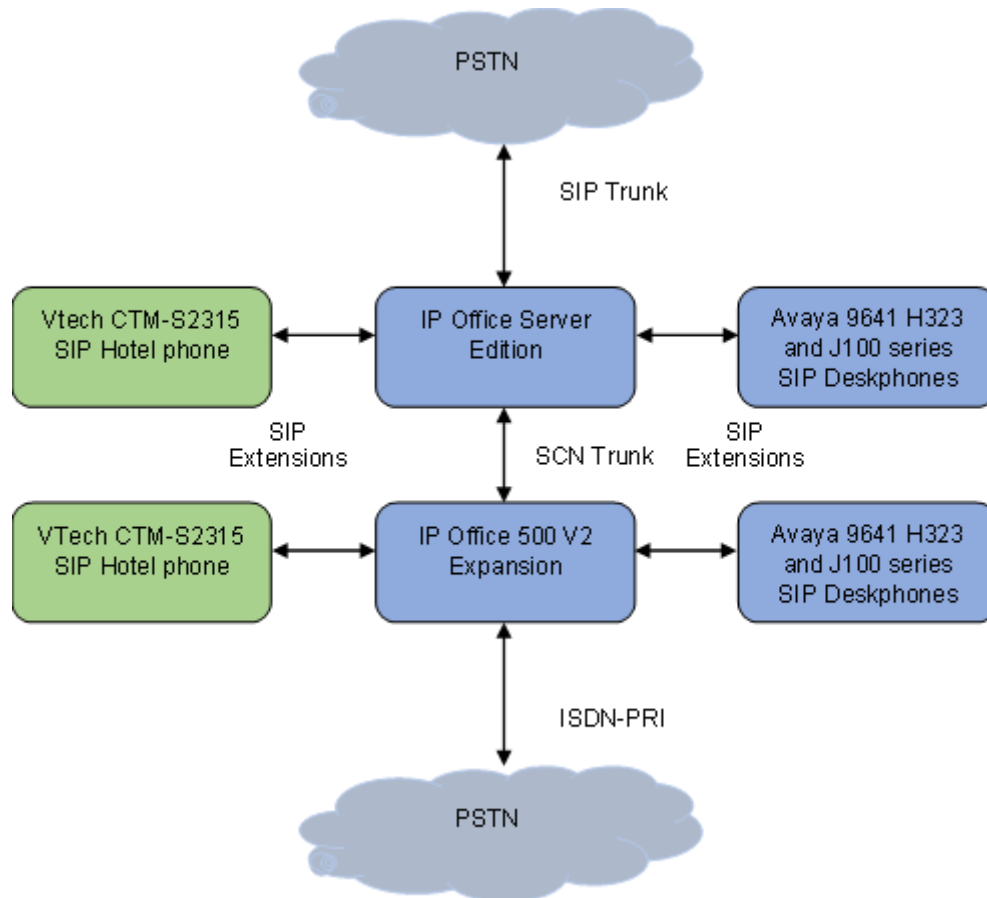


Figure 1:Avaya Interoperability Test Configuration for VTech CTM-S2315

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 Expansion	11.1.2.1.0
Avaya IP Office Server Edition	11.1.2.1.0
Avaya 9641G IP Deskphones	6.8304 (H.323)
Avaya J129 IP Phones	4.0.7.0.7 (SIP)
VTech CTM-S2315 Hotel Phone	2.21.2.0

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:

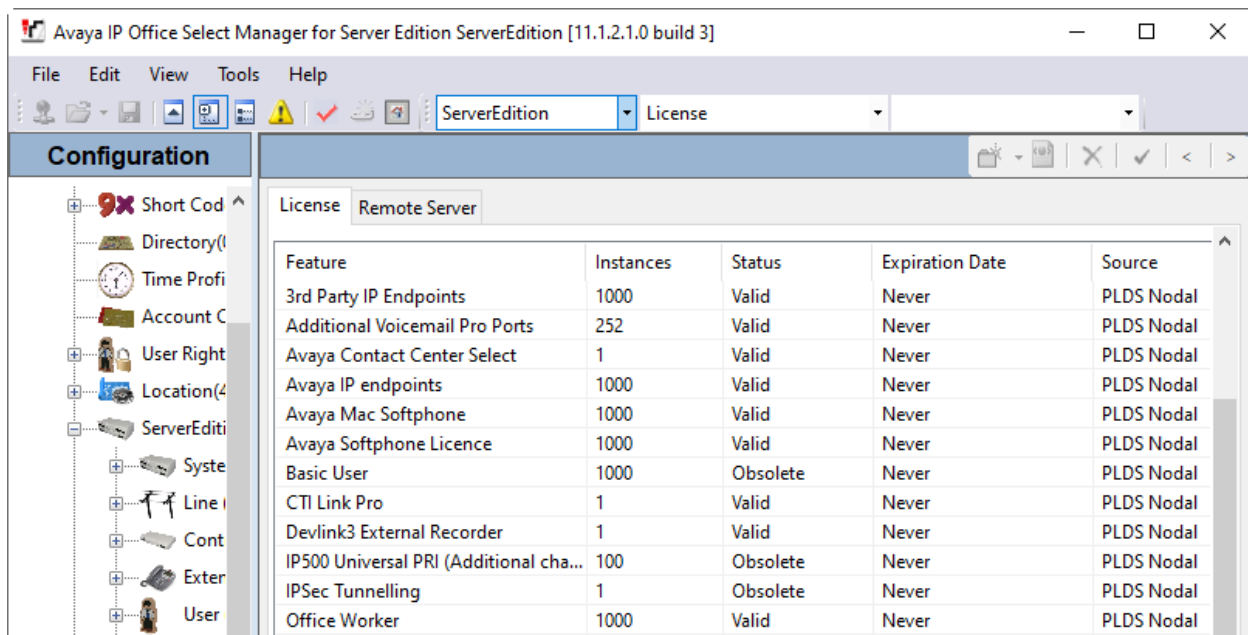
- Verify License
- Obtain LAN IP address
- Administer Codecs
- Administer SIP registrar
- Administer SIP extension for CTM-S2315
- Administer SIP user for CTM-S2315

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. Verify License

From a PC running the From a PC with **IP Office Admin Suite** installed, invoke **IP Office Manager**. Select the proper primary IP Office system, and log in using the appropriate credentials. The Avaya IP Office Manager for Server Edition screen is displayed.

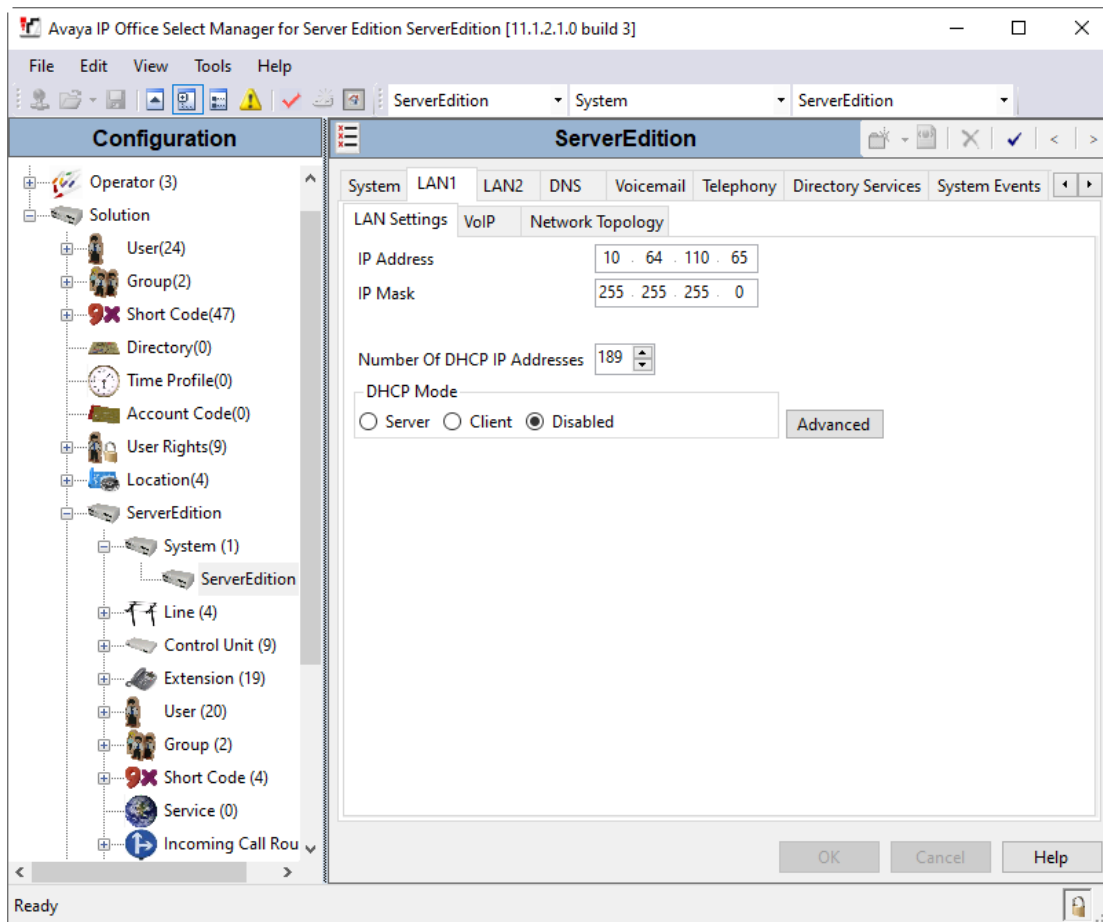
From the configuration tree in the left pane, select **License** under the IP Office system that will be used to display a list of licenses in the right pane. Verify that there is sufficient license for **3rd Party IP Endpoints** as shown below.



Feature	Instances	Status	Expiration Date	Source
3rd Party IP Endpoints	1000	Valid	Never	PLDS Nodal
Additional Voicemail Pro Ports	252	Valid	Never	PLDS Nodal
Avaya Contact Center Select	1	Valid	Never	PLDS Nodal
Avaya IP endpoints	1000	Valid	Never	PLDS Nodal
Avaya Mac Softphone	1000	Valid	Never	PLDS Nodal
Avaya Softphone Licence	1000	Valid	Never	PLDS Nodal
Basic User	1000	Obsolete	Never	PLDS Nodal
CTI Link Pro	1	Valid	Never	PLDS Nodal
Devlink3 External Recorder	1	Valid	Never	PLDS Nodal
IP500 Universal PRI (Additional cha...	100	Obsolete	Never	PLDS Nodal
IPSec Tunnelling	1	Obsolete	Never	PLDS Nodal
Office Worker	1000	Valid	Never	PLDS Nodal

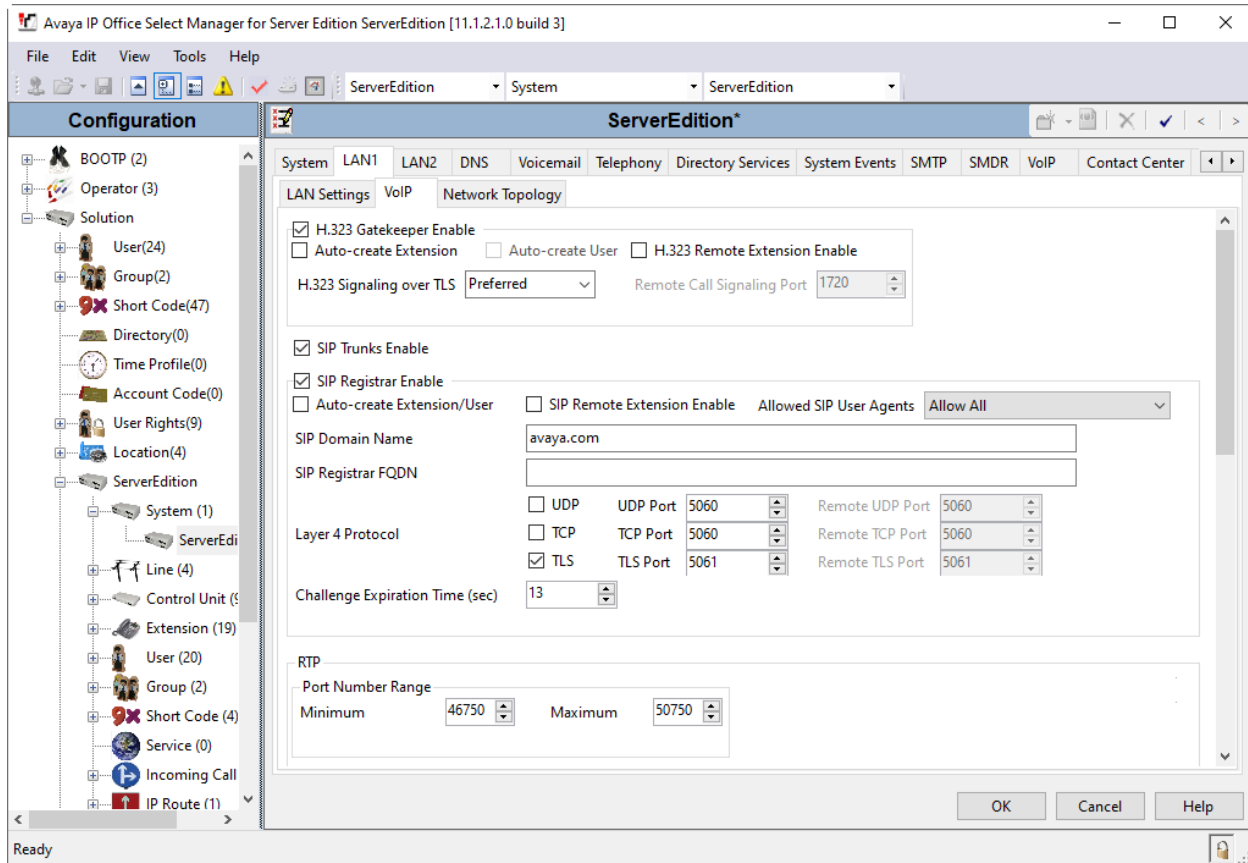
5.2. Obtain LAN IP Address

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 (*e.g.*, 10.64.110.65), which will be used later to configure CTM-S2315.



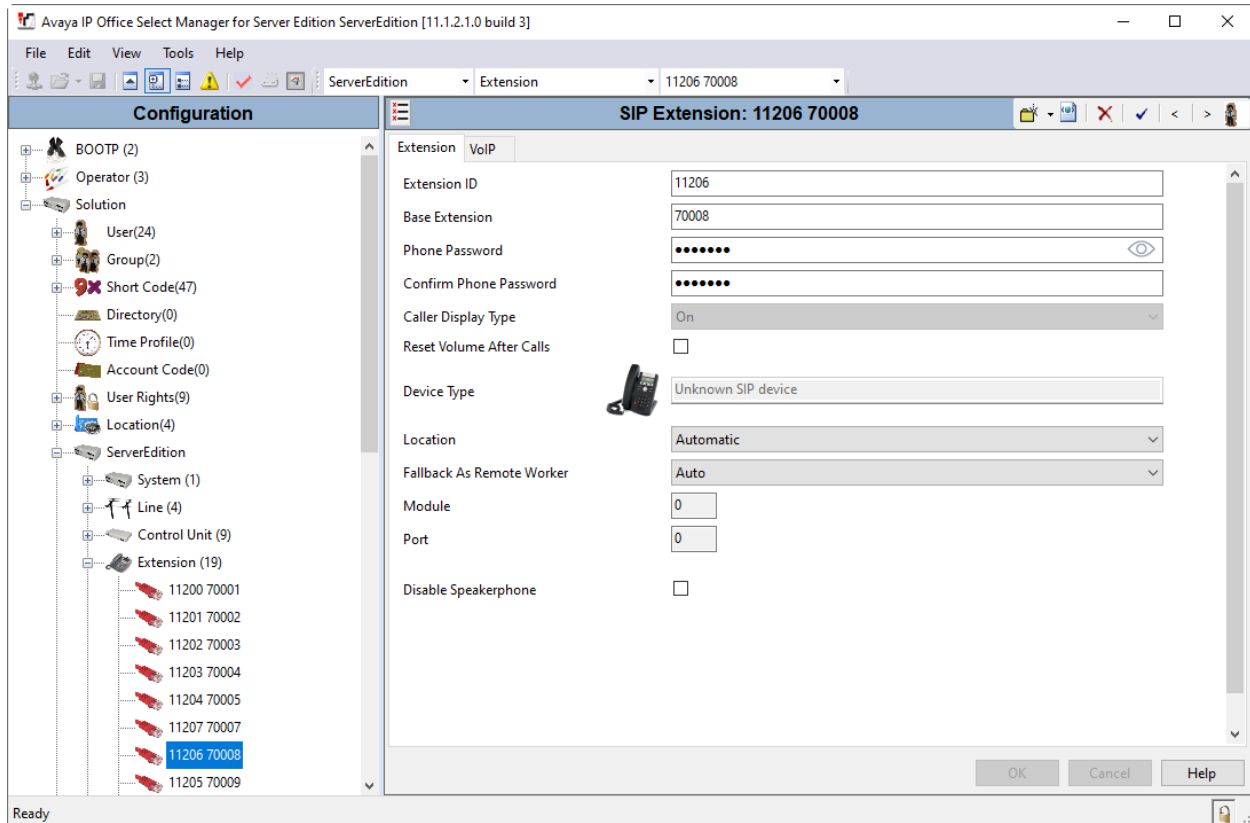
5.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **Domain Name**. In the compliance testing, the **SIP Domain Name** field was set to *avaya.com*. TLS transport protocol was enabled for the **Layer 4 Protocol**, which was also used by CTM-S2315.

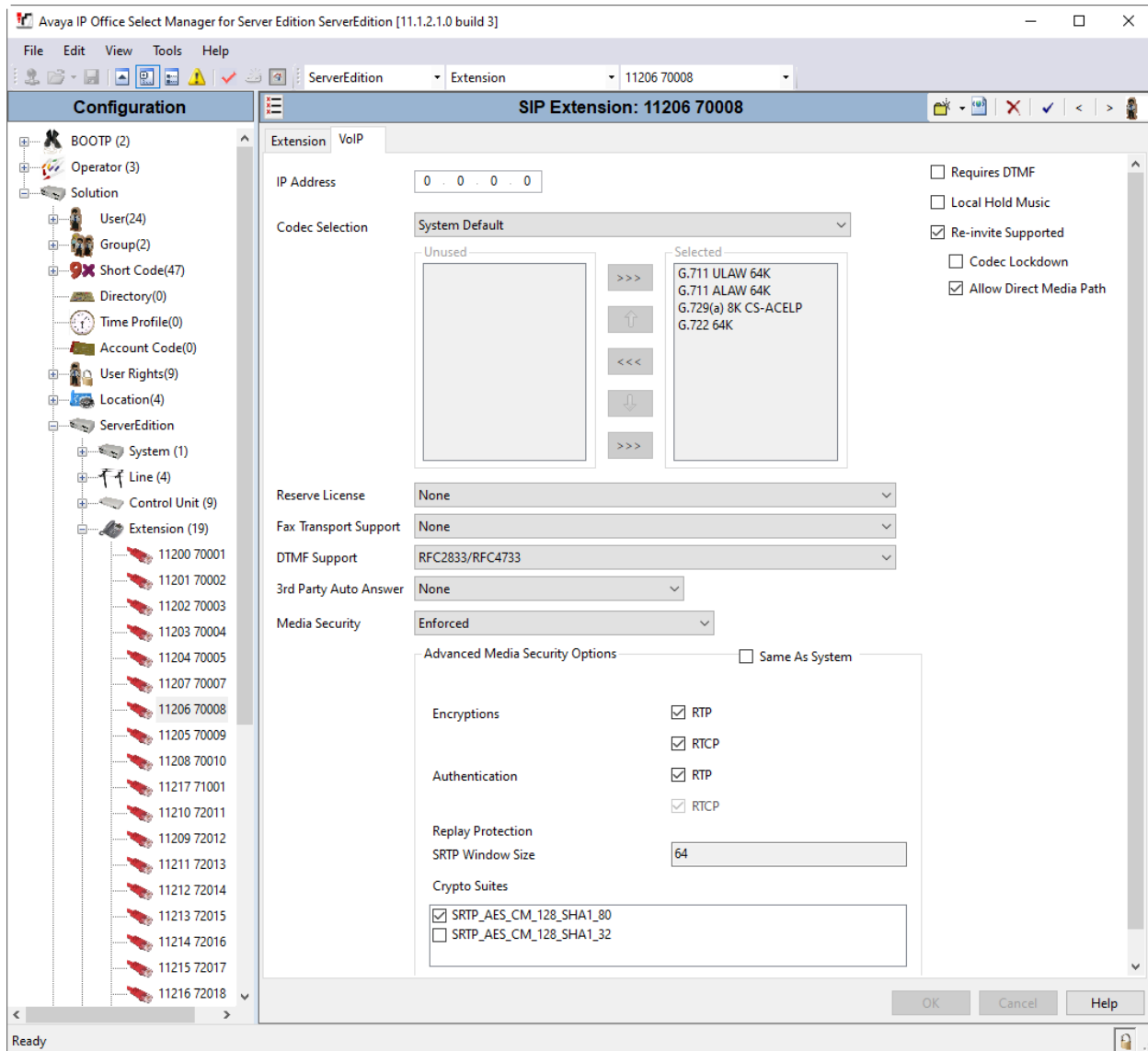


5.4. Administer SIP Extensions

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, CTM-S2315 was assigned extension **70008**. This is the extension that CTM-S2315 will use to register with IP Office Server Edition. Enter an appropriate password. This will be used by CTM-S2115 to register to IP Office Server.



Select the **VoIP** tab. The codec selection shown below is configured with *G.711 ULAW*, *G.711 ALAW*, *G.729(a)-8K CS-ACELP*, and *G.722 64K*. Enable **Allow Direct Media Path** so that audio/RTP may flow directly between two SIP endpoints without using media resources in Avaya IP Office Server Edition. Select *Enforced* for **Media Security** with **Advanced Media Security Options** as seen below.



5.5. Administer SIP Users

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list (not shown). Enter a value for the **Name** field (e.g., *VTech S2315*). For the **Extension** field, enter the SIP extension from **Section 5.4** (e.g., *70008*).

The screenshot displays the Avaya IP Office Select Manager for Server Edition [11.1.2.1.0 build 3] window. The left pane shows the Configuration tree with the following structure:

- Directory(0)
- Time Profile(0)
- Account Code(0)
- User Rights(9)
- Location(4)
- ServerEdition
 - System (1)
 - Line (4)
 - Control Unit (9)
 - Extension (19)
 - User (19)
 - NoUser
 - 72012 1100 User
 - 72011 1608 User
 - 72019 9641 H323 User
 - 71001 H323User1
 - 72013 J129 User
 - 72014 J139 User
 - 72015 J179 User
 - 72016 J189 User
 - 72017 K155 User
 - 72018 K175 User
 - 70001 SIPUser1
 - 70002 SIPUser2
 - 70003 SIPUser3
 - 70004 SIPUser4
 - 70005 SIPUser5
 - 70007 VTech S2115
 - 70008 VTech S2315
 - 70010 VTech S2415

The right pane shows the configuration for the selected user, **VTech S2315: 70008***. The tabs include User, Voicemail, DND, Short Codes, Source Numbers, Telephony, Forwarding, Dial In, and Voice Recording. The **User** tab is active, showing the following fields:

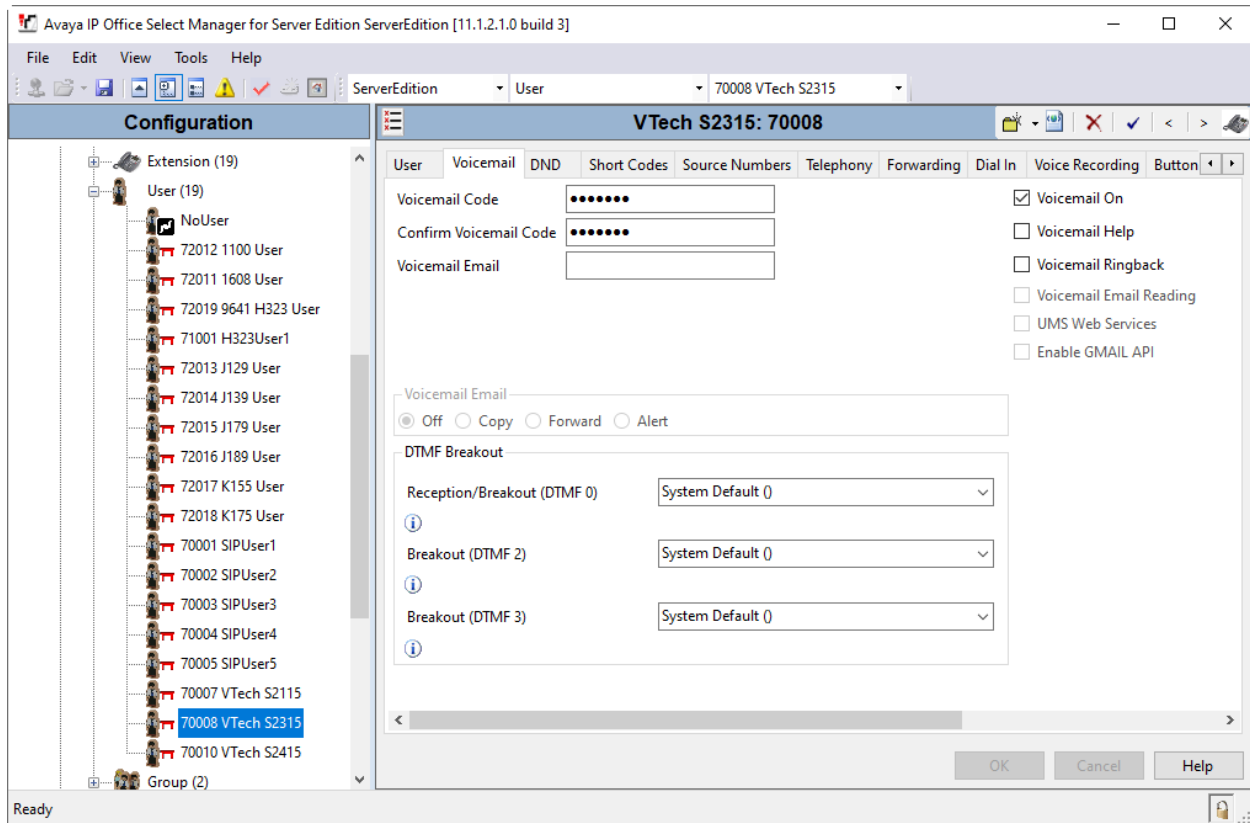
- Name: VTech S2315
- Password: [Empty]
- Confirm Password: [Empty]
- Unique Identity: [Empty]
- Conference PIN: [Empty]
- Confirm Audio Conference PIN: [Empty]
- Account Status: Enabled (Dropdown)
- Full Name: [Empty]
- Extension: 70008
- Email Address: [Empty]
- Locale: [Empty]
- Priority: 5 (Dropdown)
- System Phone Rights: None (Dropdown)
- Profile: Basic User (Dropdown)

Below the Profile dropdown, there are several checkboxes for enabling various features:

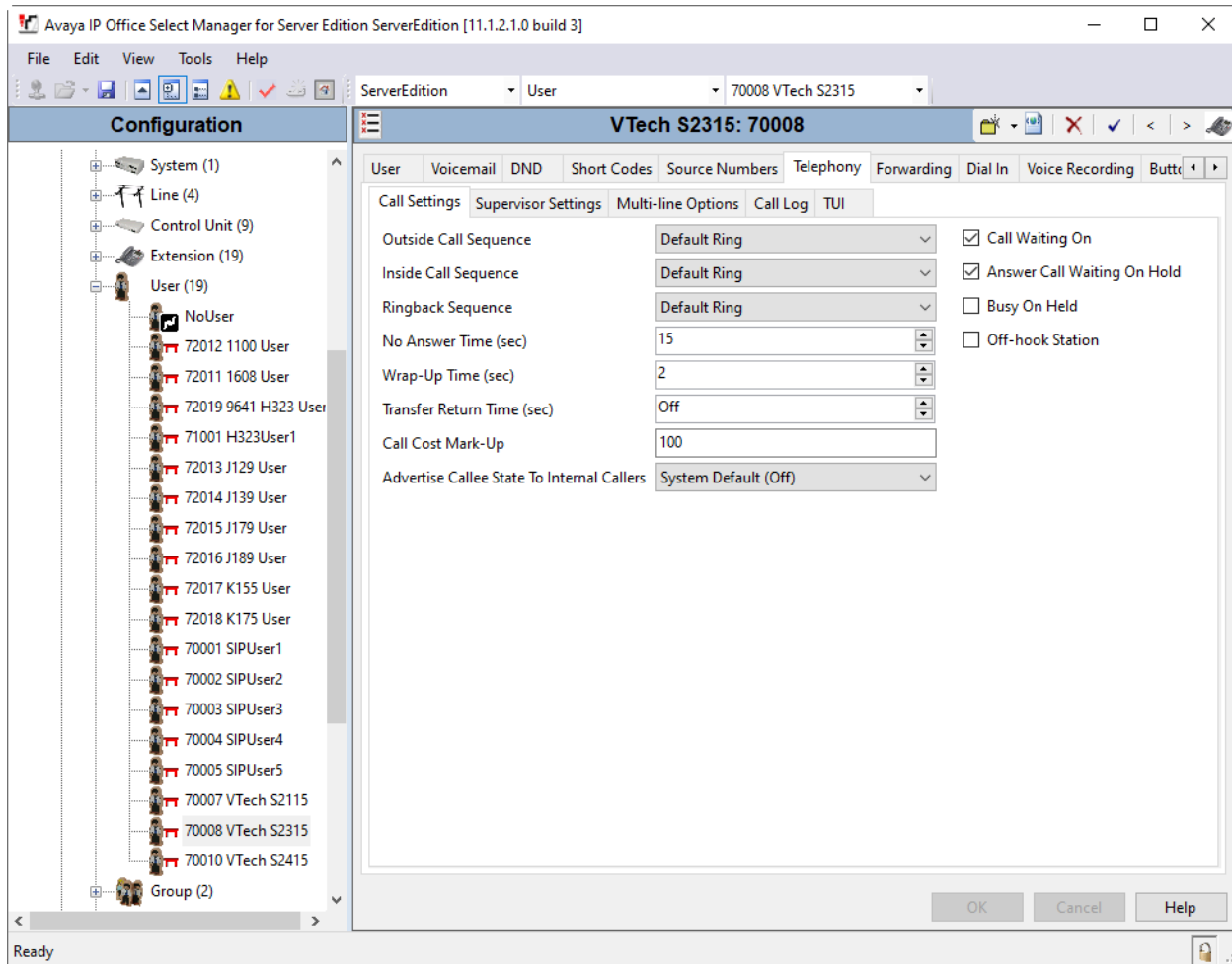
- ☐ Receptionist
- ☐ Enable Softphone
- ☐ Enable one-X Portal Services
- ☐ Enable one-X TeleCommuter
- ☐ Enable Remote Worker
- ☐ Enable Desktop/Tablet VoIP client
- ☐ Enable Mobile VoIP Client
- ☐ Enable MS Teams Client
- ☐ Send Mobility Email
- ☐ Web Collaboration

At the bottom right, there are buttons for OK, Cancel, and Help. The status bar at the bottom left shows "Ready".

Select the **Voicemail** tab and select **Voicemail On** to enable voicemail for the CTM-S2315 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.



6. Configure VTech CTM-S2315 Hotel Phone

The steps to configure CTM-S2315 to integrate with IP Office Server Edition are as follows:

- Configure IP Address
- Launch Web Interface
- Configure SIP Account
- Install CA Certificate
- Modify Codec Settings as required

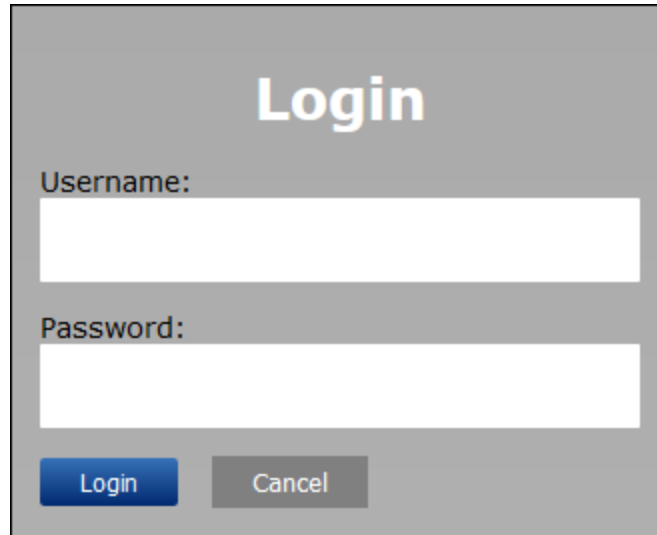
6.1. Configure IP Address

CTM-S2315 is configured for DHCP as a factory default. The following steps provide network connectivity and determine the phone's IP address for use in launching administration detailed in **Section 6.2**:

- Connect the WAN port of CTM-S2315 to a Power over Ethernet (PoE) switch
- Determine the assigned IP address. Use the built-in voice menu which will read out the IP address. The voice menu is accessed by pressing **SPEAKER * * * ***. For more information, refer to CTM-S2315 user manual obtained at <http://vtechhotelphones.com>.

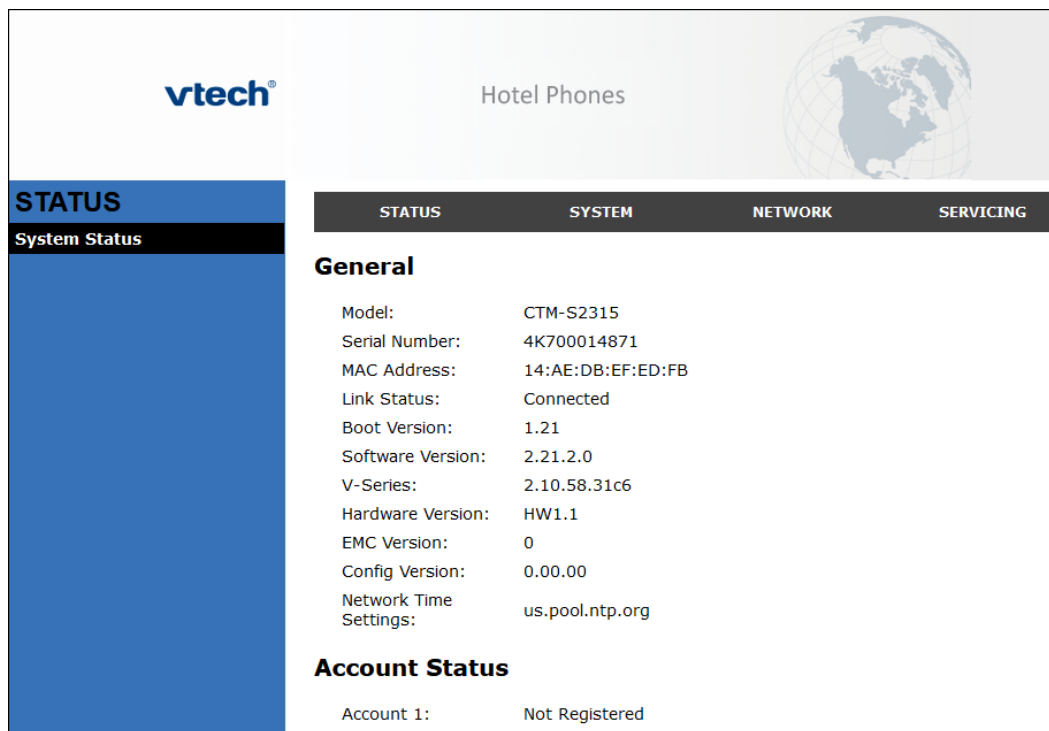
6.2. Launch Web Interface

The phone administration is done through a web interface. To access web administration, invoke the web login page using the **IP address** from **Section 6.1** using the URL **https://<IP address>**. The login prompt is displayed.



A login form with a gray background. At the top, the word "Login" is displayed in a large, bold, white font. Below it, there are two input fields: "Username:" and "Password:". Each field has a white rectangular input area. At the bottom of the form, there are two buttons: a blue "Login" button and a gray "Cancel" button.

Enter the appropriate **Username** and **Password**. Once logged in, the default settings are displayed:



The default settings page for the web interface. It features a header with the "vtech" logo, the text "Hotel Phones", and a globe icon. Below the header, there is a navigation menu with four tabs: "STATUS", "SYSTEM", "NETWORK", and "SERVICING". The "STATUS" tab is selected, and its sub-menu "System Status" is active. The main content area displays the "General" section, which includes fields for Model, Serial Number, MAC Address, Link Status, Boot Version, Software Version, V-Series, Hardware Version, EMC Version, Config Version, Network Time Settings, and Account Status. The "Account Status" section shows "Account 1: Not Registered".

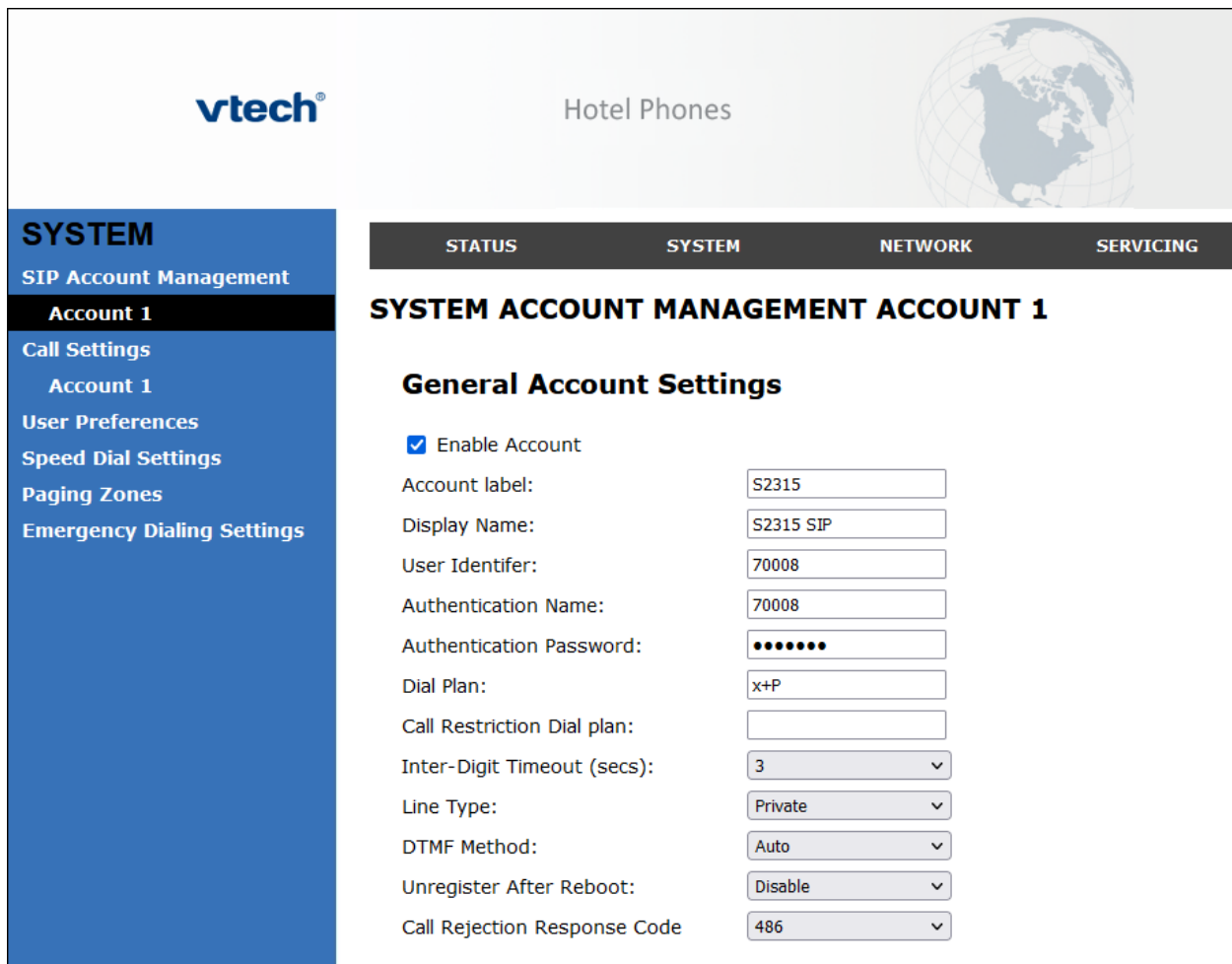
STATUS	SYSTEM	NETWORK	SERVICING
General			
Model:		CTM-S2315	
Serial Number:		4K700014871	
MAC Address:		14:AE:DB:EF:ED:FB	
Link Status:		Connected	
Boot Version:		1.21	
Software Version:		2.21.2.0	
V-Series:		2.10.58.31c6	
Hardware Version:		HW1.1	
EMC Version:		0	
Config Version:		0.00.00	
Network Time Settings:		us.pool.ntp.org	
Account Status			
Account 1:		Not Registered	


- **Note:** If firmware upgrades are needed, consult the configuration guide for instructions. Refer to <http://vtechhotelphones.com>.

6.3. Configure SIP Account


To register VTech to IP Office, Select **SYSTEM** from the toolbar, then **Account 1** from the left-hand side list. Under the **General Account Settings** heading, input the following:

- **Enable Account:** Click the corresponding checkbox.
- **Account Label:** Enter a descriptive string (e.g., *S2315*).
- **Display Name:** Enter a desired display name (e.g., *S2315 SIP*).
- **User Identifier:** Enter An appropriate string (e.g., *70008*).
- **Authentication Name:** Enter the SIP extension from **Section 5.4** (e.g., *70008*).
- **Authentication Password:** Enter the password from **Section 5.4**.





Hotel Phones



SYSTEM

SIP Account Management

Account 1

Call Settings

Account 1

User Preferences

Speed Dial Settings

Paging Zones

Emergency Dialing Settings

STATUS

SYSTEM

NETWORK

SERVICING

SYSTEM ACCOUNT MANAGEMENT ACCOUNT 1

General Account Settings

☒ Enable Account

Account label:

Display Name:

User Identifier:

Authentication Name:

Authentication Password:

Dial Plan:

Call Restriction Dial plan:

Inter-Digit Timeout (secs):

Line Type:

DTMF Method:

Unregister After Reboot:

Call Rejection Response Code:

Continuing on the same page, Under the **SIP Server** heading, enter the following:

- **Server Address:** IP Office Server Edition IP address (e.g., *10.64.110.65*).
- **Port:** *5061*

Under the **Registration** heading, enter the following:

- **Server Address:** IP Office Server Edition IP address (e.g., *10.64.110.65*).
- **Port:** *5061*

SIP Server	
Server Address:	<input type="text" value="10.64.110.65"/>
Port:	<input type="text" value="5061"/>
Registration	
Server Address:	<input type="text" value="10.64.110.65"/>
Port:	<input type="text" value="5061"/>
Expiration (secs):	<input type="text" value="3600"/>
Registration Freq (secs):	<input type="text" value="10"/>
Outbound Proxy	
Server Address:	<input type="text"/>
Port:	<input type="text" value="5060"/>
Backup Outbound Proxy	
Server Address:	<input type="text"/>
Port:	<input type="text" value="5060"/>
Caller Identity	
Source Priority 1:	<input type="text" value="PAI"/>
Source Priority 2:	<input type="text" value="RPID"/>
Source Priority 3:	<input type="text" value="From"/>

Continuing on the same page, Under the **Audio** heading, select **Enable Voice Encryption (SRTP)**. Under the **Signaling Settings** heading, input the following:

- **Local SIP Port:** *5061*
- **Transport:** *TLS*

Under the **Voicemail Settings** header, select **Enable MWI Subscription**. Click **Save** (not shown).

Audio	
Codec Priority 1:	G.711u
Codec Priority 2:	G.711a
Codec Priority 3:	G.729a/b
Codec Priority 4:	G.726
Codec Priority 5:	G.722
Codec priority 6:	None
Codec priority 7:	iLBC
<input checked="" type="checkbox"/> Enable Voice Encryption (SRTP)	
<input type="checkbox"/> Enable G.729 Annex B	
Preferred Packetization Time (ms):	20
DTMF Payload Type:	101
Quality of Service	
DSCP (voice):	46
DSCP (signaling):	26
Signaling Settings	
Local SIP Port:	5061
Transport:	TLS
Voice	
Min Local RTP Port:	18000
Max Local RTP Port:	19000
Voicemail Settings	
<input checked="" type="checkbox"/> Enable MWI Subscription	

6.4. Install CA Certificate

Note: The CA certificate file is needed for this step.

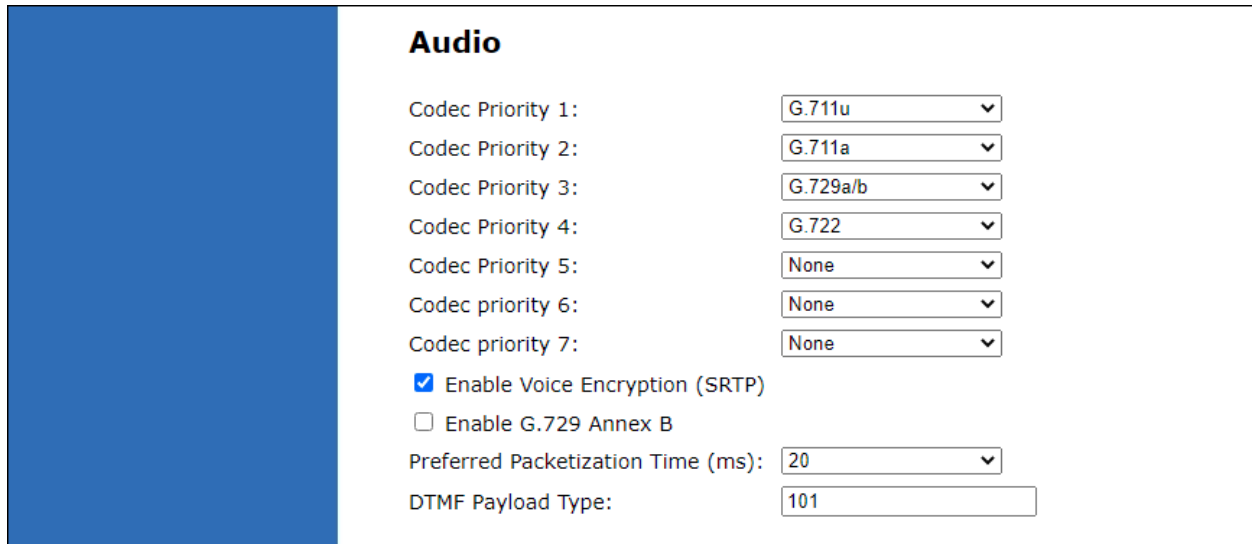
To install the CA certificate select **SERVICING** from the toolbar, then **Trusted Certificates** from the left-hand side list. Click on **Choose File** and select the CA certificate. Select **Only accept trusted certificates** (not shown). Click **Import** (not shown). The CA should appear in the **Trusted Certificate** list.

The screenshot shows the 'Trusted Certificate' management page. On the left is a blue sidebar with a menu containing: Reboot, Time and Date, Firmware Upgrade (with sub-items Auto Upgrade and Manual Upgrade), Provisioning, Security, Certificates (with sub-item Device), **Trusted Certificates** (highlighted), Tr069, and System Logs. The main content area has a top navigation bar with STATUS, SYSTEM, NETWORK, and SERVICING (selected). Below this is the 'Trusted Certificate' title and a 'Select All' checkbox. A table lists 5 certificates with columns: Total, Issue to, Issue by, Expiration, and Protected. The first four certificates are protected (checkbox checked), while the last one, 'System Manager CA', is not. Below the table are buttons for 'Delete Selected Entries' and 'Protect Selected Entries'. There is a checkbox for 'Only accept trusted certificates' and a 'Save' button. At the bottom, the 'Import Trusted Certificate:' section includes a 'No file chosen' text box, a 'Choose File' button, and an 'Import' button.

Total: 5	Issue to	Issue by	Expiration	Protected
<input type="checkbox"/>	Vtech Business Phone Intermediate CA	Vtech Business Phone Root CA	Feb 28 07:26:03 2036 GMT	<input checked="" type="checkbox"/>
<input type="checkbox"/>	thawte Primary Root CA - G3	thawte Primary Root CA - G3	Dec 1 23:59:59 2037 GMT	<input checked="" type="checkbox"/>
<input type="checkbox"/>	VeriSign Universal Root Certification Authority	VeriSign Universal Root Certification Authority	Dec 1 23:59:59 2037 GMT	<input checked="" type="checkbox"/>
<input type="checkbox"/>	DigiCert High Assurance EV Root CA	DigiCert High Assurance EV Root CA	Nov 10 00:00:00 2031 GMT	<input checked="" type="checkbox"/>
<input type="checkbox"/>	System Manager CA	System Manager CA	Jul 15 19:03:53 2029 GMT	<input type="checkbox"/>

6.5. Modify Codec Settings

Modify the codec settings by selecting **SYSTEM** (not shown) in the toolbar and **Account 1** (not shown) in the left hand side selections. Under the **Audio** heading, select the desired codecs in priority:



Audio	
Codec Priority 1:	G.711u
Codec Priority 2:	G.711a
Codec Priority 3:	G.729a/b
Codec Priority 4:	G.722
Codec Priority 5:	None
Codec priority 6:	None
Codec priority 7:	None
<input checked="" type="checkbox"/> Enable Voice Encryption (SRTP)	
<input type="checkbox"/> Enable G.729 Annex B	
Preferred Packetization Time (ms):	20
DTMF Payload Type:	101

Click **Save**.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of IP Office and CTM-S2315.

7.1. Registration Status



Verify that CTM-S2315 has successfully registered with IP Office. From a PC with **IP Office Admin** Suite installed, invoke **IP Office System Status**, navigate to the CTM-S2315 SIP extension and verify **Media Stream** is set to **SRTP**, **Layer 4 Protocol** is set to **TLS**, and **Current State** is shown as *Idle*.

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 11.1.2.1.0 build 3". The main window has a blue header with the Avaya logo and the title "IP Office System Status". Below the header is a menu bar with "Help", "Snapshot", "LogOff", "Exit", and "About". On the left is a navigation pane with a tree view containing "System", "Alarms (4)", "Extensions (3)", "Trunks (4)", "Active Calls", "Resources", "Voicemail", "IP Networking", and "Locations". The "Extensions (3)" folder is expanded, showing extensions 70007, 70008 (selected), and 70010. The main content area displays the "Extension Status" for extension 70008. The status is shown as "Idle".

Call Ref	Current State	Time in State	Calling Number or Direction Called Number	Other Party on Call
	Idle	00:40:00		

At the bottom of the window, there is a status bar showing the time "8:20:49 AM" and the status "Online".

Registration status can also be seen from the CTM-S2315 web interface. Select **SYSTEM** from the toolbar, then **System Status** from the left-hand side list. Under **Account Status**, the account should show **Registered**.

Hotel Phones

STATUS
System Status

STATUS	SYSTEM	NETWORK	SERVICING
General			
Model:	CTM-S2315		
Serial Number:	4K700014871		
MAC Address:	14:AE:DB:EF:ED:FB		
Link Status:	Connected		
Boot Version:	1.21		
Software Version:	2.21.2.0		
V-Series:	2.10.58.31c6		
Hardware Version:	HW1.1		
EMC Version:	0		
Config Version:	0.00.00		
Network Time Settings:	us.pool.ntp.org		
Account Status			
Account 1:	Registered		
IPv4			
IP Mode:	dhcp		

7.2. Basic Calls

Establish a call between CTM-S2315 and a local Avaya SIP desk phone. In **IP Office System Status**, navigate to the SIP extension, and verify that the **Current State** is *Connected* as shown below.

The screenshot shows the Avaya IP Office System Status application window. The title bar indicates the server edition (10.64.110.65) and the client version (11.1.2.1.0 build 3). The Avaya logo and "IP Office System Status" title are prominently displayed. A navigation pane on the left lists various system components, with "Extensions (4)" selected and extension 70008 highlighted. The main pane displays the "Extension Status" for 70008, showing details such as IP address (192.168.4.8), location (None), registrar (Primary), and current user (Vtech S2315). A table at the bottom shows a single call record (Call Ref 11) in a "Connected" state for 00:00:48, initiated by J129 User. The interface includes standard window controls, a menu bar, and a status bar at the bottom showing the time (8:51:21 AM) and online status.

Call Ref	Current State	Time in State	Calling Number or Called Number	Direction	Other Party on Call
11	Connected	00:00:48	J129 User	Incoming	Extn 72013, J129 User

8. Conclusion

These Application Notes describe the configuration steps required to integrate VTech CTM-S2315 Hotel Phone with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. The CTM-S2315 registered to Avaya IP Office Server Edition or Avaya IP Office 500 V2 Expansion System. Calls were then established with Avaya H.323 / SIP desk phones 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 <https://support.avaya.com> and VTech CTM-S2315 product documentation is available at <https://vtechhotelphones.com>.

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

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