

#### Avaya Solution & Interoperability Test Lab

# Application Notes for VTech NG-S3411W Cordless SIP Hospitality Room Phone with Avaya IP Office 11.1 – Issue 1.0

#### **Abstract**

These Application Notes describe the configuration steps required for VTech NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones v3.2.4.5 to interoperate with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. VTech NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones register 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 NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones to interoperate with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. VTech NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones register to Avaya IP Office Server Edition 11.1 or Avaya IP Office 500 V2 Expansion System 11.1 as a SIP endpoint. Compliance testing used the VTech NG-S3411W Cordless SIP Hotel Room Phone as a representative model. VTech NG-S3411 is a cordless, one line SIP endpoint with optional wireless ethernet connectivity. See **Attachment 1** which provides details of VTech NG-S3411W Cordless SIP Hotel Room Phone equivalency to the VTech NG-S3411 Hotel Phone model.

# 2. General Test Approach and Test Results

The general test approach was to place calls to and from VTech NG-S3411W 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 NG-S3411W 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 VTech NG-S3411W 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 VTech NG-S3411W to IP Office Server Edition and IP Office Expansion System.
- Basic call features: Answer, Hold/Resume, Mute/Un-mute, Drop, Message Waiting Indicator, DTMF, Call Waiting, and Call Forward.
- G.711 and G.729 codec support, codec negotiation, and Direct Media Path.
- Media (shuffling) enabled and disabled.
- TLS transport and SRTP media encryption.
- Hospitality features: Automatic Wakeup Call and Do Not Disturb.
- Serviceability testing to validate recovery from network connectivity loss.

#### 2.2. Test Results

All test cases passed with the following observations:

- VTech NG-S3411W does not support the following features
  - o Call Park/Unpark
  - o Call Pickup
  - Hold Timeout
  - o Transfer
  - Conference
  - VTech NG-S3411W programmable buttons do not support short codes requiring secondary input.
- VTech NG-S3411W 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.
- VTech NG-S3411W does not validate the offered identity certificate for IP Office during TLS handshake. This is a known problem that will also be fixed in a future release of VTech NG-S3411W firmware.
- A separate but related observation is that the web administration user interface setting
   Only accept trusted certificates must also be set for VTech NG-S3411W to validate IP
   Office identity certificate during TLS session setup. Subsequent access to the web
   administration's Trusted Certificates page will not show that it has been set. This will
   be fixed in a future release of VTech NG-S3411W firmware.

# 2.3. Support

Technical support for VTech NG-S3411W SIP Hotel Phones can be obtained at:

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

# 3. Reference Configuration

**Figure 1** illustrates the test configuration diagram for VTech NG-S3411W integrated with Avaya IP Office Server Edition and Avaya IP Office 500 V2 Expansion System.

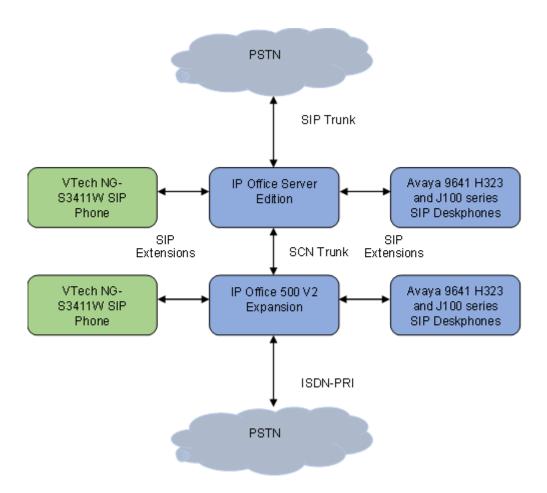


Figure 1:Avaya Interoperability Test Configuration for VTech NG-S3411W Cordless SIP Hotel Room Phones

# 4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500 V2 Expansion	11.1.2.2
Avaya IP Office Server Edition running on	11.1.2.2
Virtual Machine	
Avaya 9641G IP Deskphones	6.8502 (H.323)
Avaya J129 IP Phone	4.0.7.0.7 (SIP)
VTech NG-S3411W Corded SIP Hotel	3.2.4.5
Phone	

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:

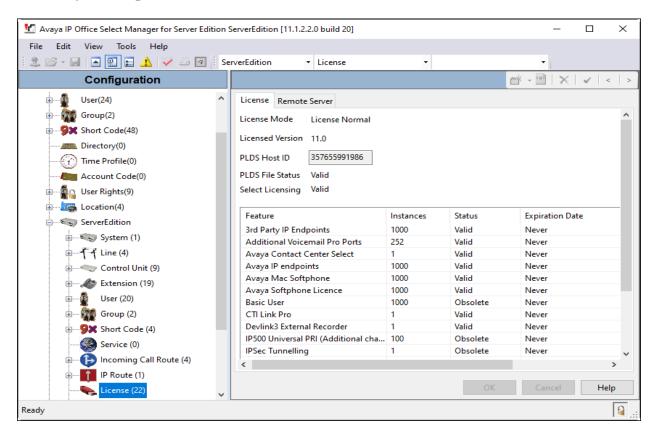
- Verify License
- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extensions
- Administer SIP users

**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

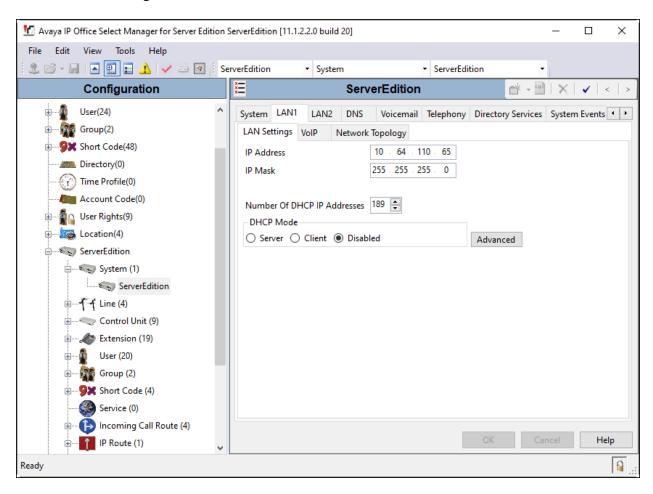
From a PC running the **IP Office Admin** Suite, invoke **IP Office Manager.** Select the proper primary IP Office system, and log in using the appropriate credentials. The Avaya IP Office Manager for Server Edition screen is displayed.

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 are sufficient licenses for **3rd Party IP Endpoints** as shown below.



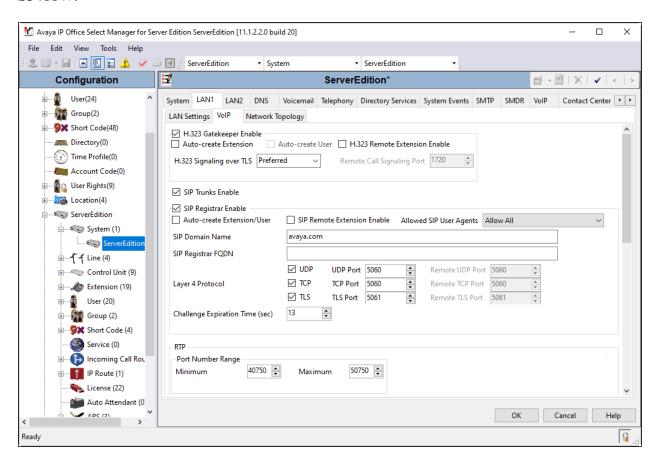
#### 5.2. Obtain LAN IP Address

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** subtab in the right pane. Make a note of the IP Address (*e.g.*, 10.64.110.65), which will be used in **Section 6.3** to configure VTech NG-S3411W.



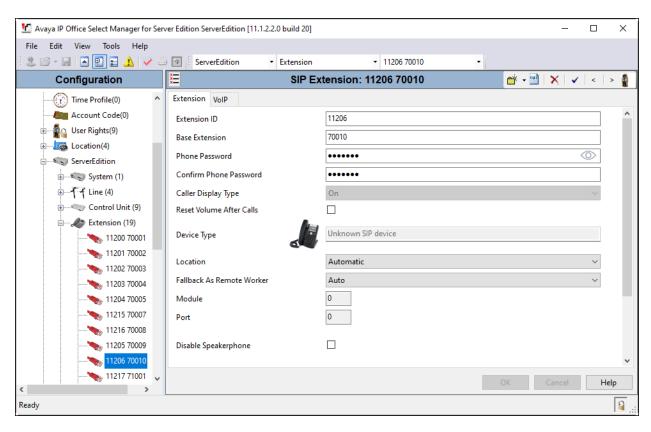
# 5.3. Administer SIP Registrar

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 VTech NG-S3411W.

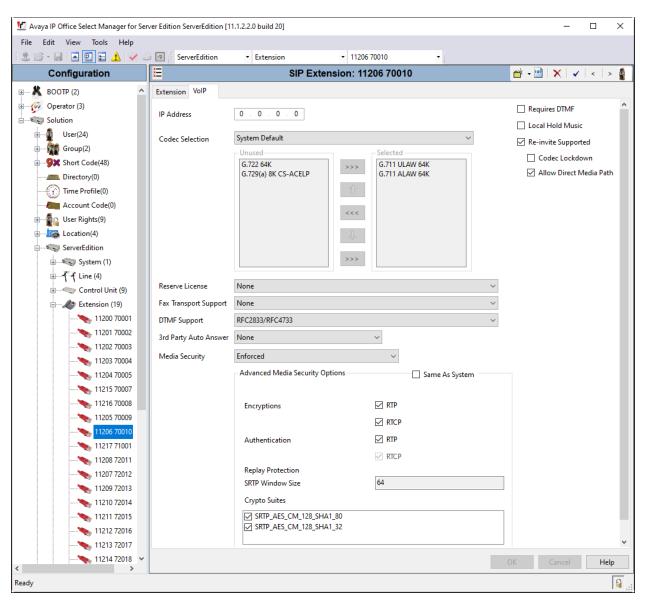


#### 5.4. Administer SIP Extensions

From the configuration tree in the left pane, right-click on **Extension** and select **New** → **SIP Extension** 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, VTech NG-S3411W was assigned extension 70010. This is the extension that VTech NG-S3411W will use to register with IP Office Server Edition. Enter an appropriate password. This will be used by VTech NG-S3411W to register to IP Office Server.

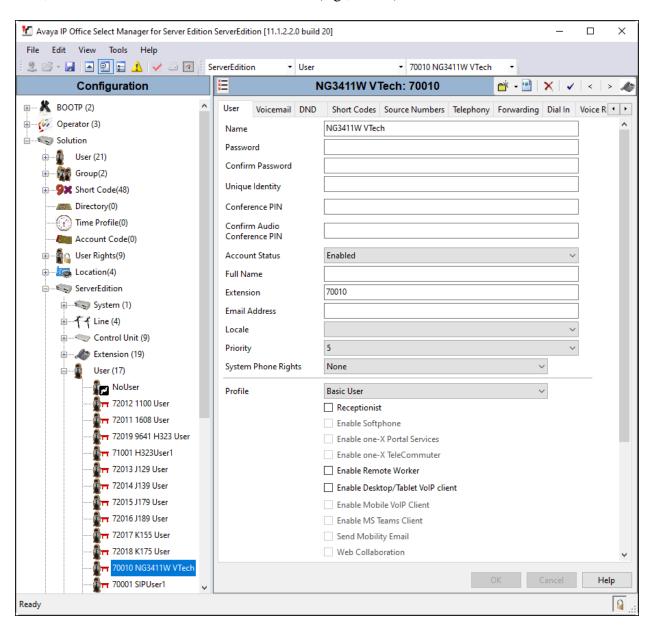


Select the **VoIP** tab. The codec selection shown below is configured with *G.711 ULAW and G.711 ALAW*. Enable **Allow Direct Media Path** so that audio/RTP may flow directly between two SIP endpoints without using media resources in Avaya IP Office Server Edition. Select *Enforced* for **Media Security**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

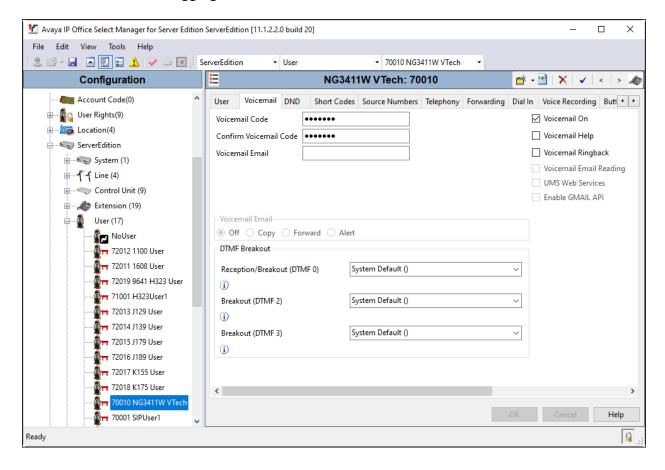


#### 5.5. Administer SIP Users

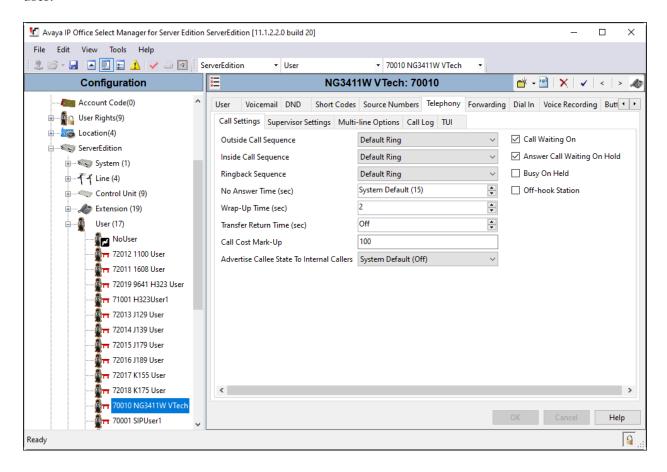
From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list (not shown). Enter a value for the **Name** field (e.g., *NG3411W VTech*). For the **Extension** field, enter the SIP extension from **Section 5.4** (e.g., *70010*).



Select the **Voicemail** tab and select **Voicemail On** to enable voicemail. 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 NG-S3411/NG-3411W Cordless SIP Hotel Room Phones

The steps to configure VTech NG-S3411W 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

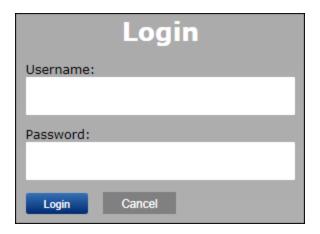
## 6.1. Configure IP Address

VTech NG-S3411W is configured for DHCP as a factory default. The following steps provide network connectivity and determine the phone IP address for use in launching administration detailed in **Section 6.2**:

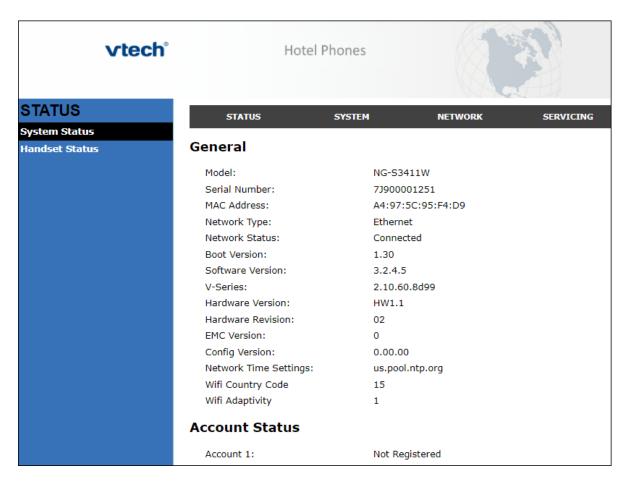
- Connect the NET port of VTech NG-S3411W to a Power over Ethernet (PoE) switch
- Determine the assigned IP address. Use the built-in voice menu which will read out the IP address. The voice menu is accessed by pressing **SPEAKER** \* \* \* \*. For more information, refer to VTech NG-S3411W user manual obtained at <a href="http://vtechhotelphones.com">http://vtechhotelphones.com</a>.

#### 6.2. Launch Web Interface

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



Enter the appropriate **Username** and **Password.** Once logged in, the default settings display. The status for VTech NG-3411W is shown.



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

## **6.3. Configure SIP Account**

To register VTech NG-3411W 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.

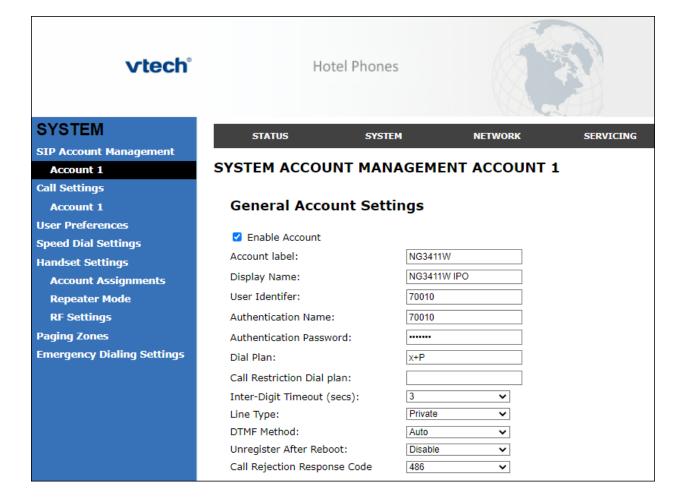
• **Account Label**: Enter a descriptive string (e.g., *NG3411W*).

• **Display Name**: Enter a desired display name (e.g., *NG3411W IPO*).

User Identifier: Enter An appropriate string (e.g., 70010).
Authentication Name: Enter the SIP extension from Section 5.4

(e.g., 70010).

• **Authentication Password**: Enter the password from **Section 5.4**.



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:	10.64.110.65
Port:	5061
Registration	
Server Address:	10.64.110.65
Port:	5061
Expiration (secs):	3600
Registration Freq (secs):	10
Outbound Proxy	
Server Address:	
Port:	5060
Backup Outbound Proxy	
Server Address:	
Port:	5060
Caller Identity	
Source Priority 1:	PAI
Source Priority 2:	RPID 🕶
Source Priority 3:	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: 5061Transport: TLS

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

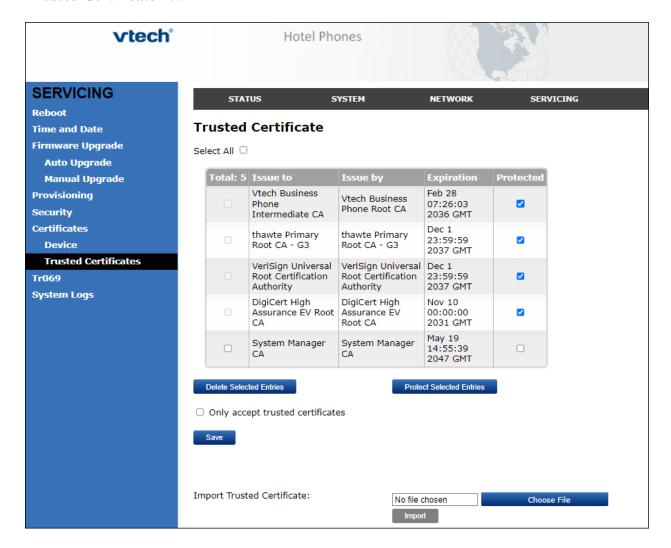
Audio		
Codec Priority 1:	G.711u 🔻	
Codec Priority 2:	G.711a 🔻	
Codec Priority 3:	G.729a/b 🔻	
Codec Priority 4:	G.726	
Codec Priority 5:	G.722 🗸	
Codec priority 6:	None 🗸	
Codec priority 7:	iLBC ✓	
☑ Enable Voice Encryption (SRTP)		
☐ Enable G.729 Annex B		
Preferred Packetization Time (ms):	20 🗸	
DTMF 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		
Enable MWI Subscription		

#### 6.4. Install CA Certificate

**Note:** VTech NG-S3411W currently does not validate the server certificate during TLS handshake as noted in **Section 2.2**. This will be fixed in a future firmware release. As such, CA Certificate installation is not needed but is documented here.

**Note:** The CA certificate file should be installed in the VTech NG-S3411W Trusted Certificate store for validation of the IP Office identity certificate offered during the TLS handshake.

Note: After Only accept trusted certificates has been set and saved, subsequent access to the Trusted Certificates page will not reflect that it has been set. The setting can be verified by exporting the phone configuration to a text file in Provisioning → Export Configuration. Review the file and verify the entry provisioning.check\_trusted\_certificate = 1 exists. 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.



# 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 ordered by priority. The default selections are 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 ✓	
Enable Voice Encryption (SRTP)		
☐ Enable G.729 Annex B		
Preferred Packetization Time (ms):	20 🗸	
DTMF Payload Type:	101	

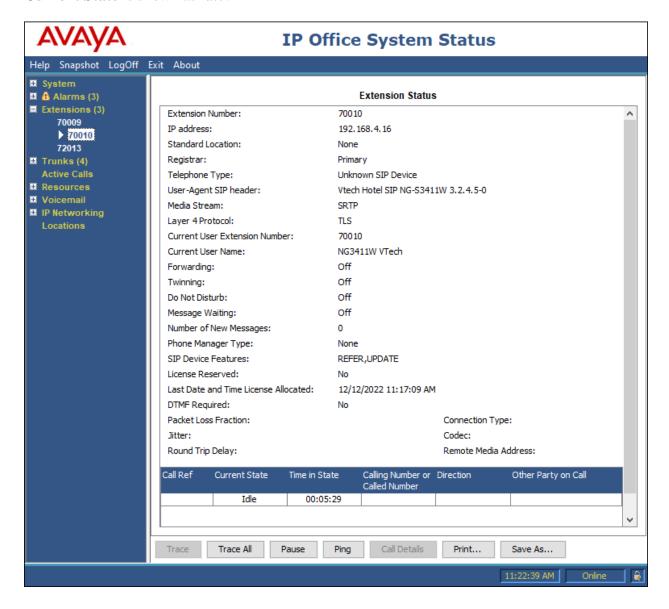
Click Save.

# 7. Verification Steps

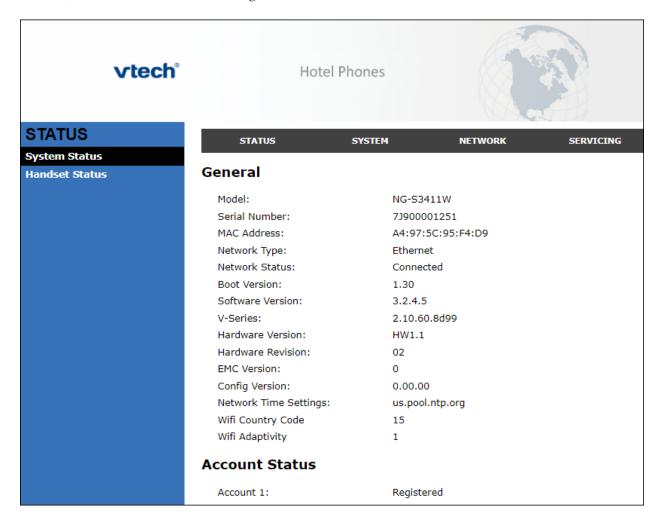
This section provides the tests that can be performed to verify proper configuration of IP Office and VTech NG-S3411W.

#### 7.1. Registration Status

Verify that VTech NG-S3411W has successfully registered with IP Office. From a PC with IP Office Admin Suite installed, invoke IP Office System Status. Navigate to the VTech NG-S3411W extension and verify Media Stream is set to SRTP, Layer 4 Protocol is set to TLS, and Current State is shown as *Idle*.

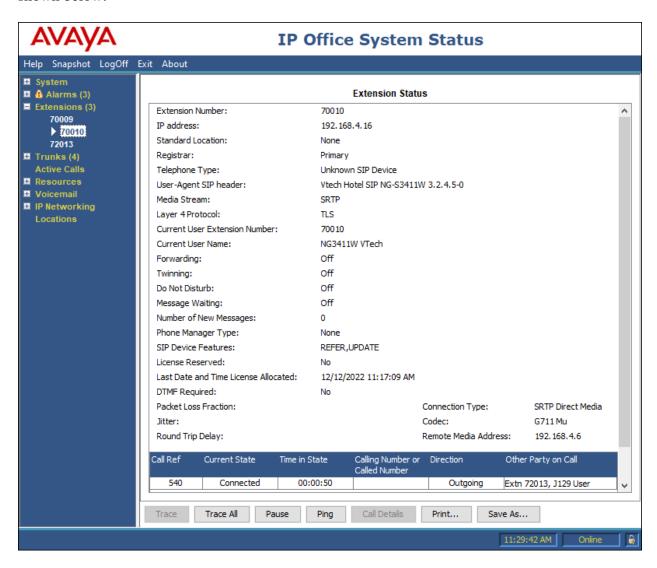


Registration status can also be seen from the VTech NG-S3411W web interface. Select **SYSTEM** from the toolbar, then **System Status** from the left-hand side list. Under **Account Status**, the account should show *Registered*.



#### 7.2. Basic Calls

Establish a call between VTech NG-S3411W and a local Avaya SIP desk phone. In **IP Office System Status**, navigate to the SIP extension and verify the **Current State** is *Connected* as shown below.



#### 8. Conclusion

These Application Notes describe the configuration steps required to integrate VTech NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones with Avaya IP Office Server Edition 11.1 and Avaya IP Office 500 V2 Expansion System 11.1. The VTech NG-S3411/NG-S3411W Cordless SIP Hotel Room Phones register 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. 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.

Avaya product documentation is available at <a href="https://support.avaya.com">https://support.avaya.com</a>. [1] *Administering Avaya IP Office using Manager*, Release 11.1, available at <a href="http://support.avaya.com">http://support.avaya.com</a> as an HTML document.

VTech NG-S3411/NG-S3411W SIP Hotel Phones product documentation is available at https://vtechhotelphones.com.

[4] VTech SIP Next Gen Series NG3411 User's Guide, October 24,2022.

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### **ATTACHMENT 1**



# VTech Technologies Canada Ltd.

Date: October 12, 2022

# **Declaration of Conformance**

We, VTech Technologies Canada LTD., declare under sole responsibility that product series NG-S3411 and NGS3411W all share the same hardware circuitry, software, SIP stack, and firmware version. Therefore the products are expected to behave in the same manner. Furthermore, these products are a functional superset of the other products in the NG series. The differences between the different models in the series are detailed in the table below.

<b>Product Name</b>	Model	Description
NG-S3411	NG-S3411	Next Gen Cordless SIP Hospitality Room Phone
NG-S3411W	NG-S3411W	Next Gen Cordless Wi- Fi Enabled SIP Hospitality Room Phone

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

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