Avaya Solution & Interoperability Test Lab

Application Notes for VTech CTM-S2412/CTM-S2415 SIP IP Phones with Avaya Aura® Communication Manager 8.1 and Avaya Aura® Session Manager 8.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for VTech CTM-S2415 SIP Hotel Phone to interoperate with Avaya Aura® Communication Manager 8.1 and Avaya Aura® Session Manager 8.1. VTech CTM-S2415 SIP Hotel Phone registers with Avaya Aura® Session Manager as a SIP endpoint in support of voice communications.

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.

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1. Introduction

These Application Notes describe the configuration steps required for the VTech CTM-S2415 SIP Hotel Phone to interoperate with Avaya Aura® Communication Manager and Avaya Aura® Session Manager. VTech CTM-S2412 and CTM-S2415 are cordless 1-line models. Testing used the CTM-S2415 as a representative model. See **Attachment 1**, which provides details of CTM-S2412 equivalency to the CTM-S2415 model for which this testing applies.

2. General Test Approach and Test Results

The general test approach was to place calls to and from VTech CTM-S2415 and exercise basic telephone operations. The main objectives were to verify the following:

- SIP registration
- Codecs (G.711, G.722, G.726, and G.729)
- Inbound calls and outbound calls
- Call termination (origination/destination)
- Avaya telephony features using FAC (Call Pickup, Call Forward, and Find Me)
- Message Waiting Indicator (MWI)
- Voicemail Coverage
- Serviceability

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-S2415 does not support multiple line appearances. 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.

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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 the VTech phones enabled capabilities of TLS/SRTP.

2.1. Interoperability Compliance Testing

VTech CTM-S2415 registers with Session Manager and thus is able to use Communication Manager telephony features in a similar manner to Avaya SIP endpoints. The following areas were evaluated in the compliance test:

- Registration of VTech CTM-S2415 to Session Manager.
- 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 were executed. The following observations were made during the testing:

- CTM-S2415 does not support the following features
    - Call Park/unpark
    - Transfer
    - Conference
    - Programmable buttons do not support feature access codes with data input
- The VTech G.726 codec payload type of 2 is not supported by Communication Manager. This is acceptable to VTech.
- CTM-S2415 phones use a flash hook to implement call waiting.
- CTM-S2415 phones do not support SDP negotiation capabilities per (RFC5939) between SRTP and non-SRTP modes so codec sets for the phones must not offer both modes. Employing a separate codec set for the phones' encryption capabilities is a possible alternative to support endpoints that use SDP negotiation in a mixed environment.

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2.3. Support

Technical support for VTech CTM-S2415 SIP Phones can be obtained at:

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

3. Reference Configuration

Figure 1 illustrates the test configuration diagram for VTech CTM-S2415 integrated to Avaya Aura Communication Manager and Avaya Aura System Manager. VTech CTM-S2415 register to Session Manager via SIP and uses the telephony features from Communication Manager.

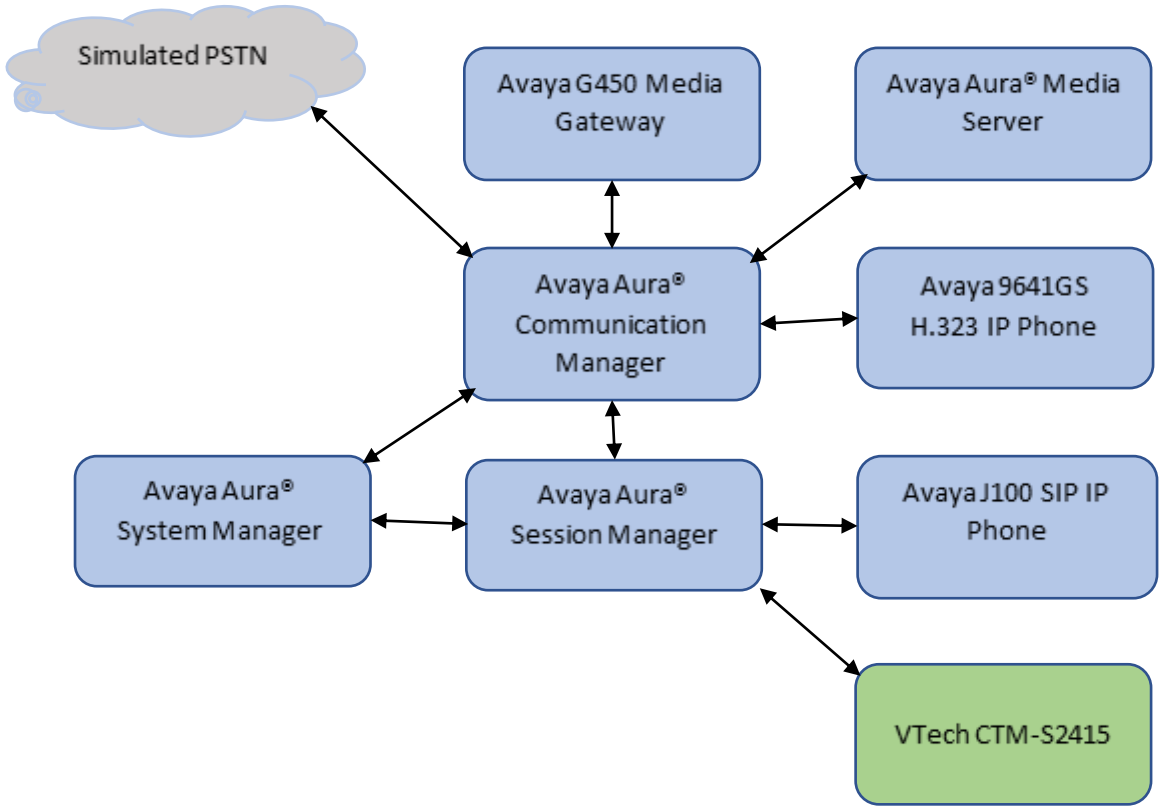

Figure 1: Avaya Test Configuration for VTech CTM-S2415

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4. Equipment and Software Validated

The following equipment and software were used for the compliance test provided:

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on a virtual server	8.1.3.0.1.890.26685
Avaya Aura® System Manager running on virtual Machine	8.1.3.0.813014
Avaya Aura® Session Manager running on a virtual server	8.1.3.0.813014
Avaya G450 Media Gateway	41.34.1
Avaya 9641GS IP Phone (H.323)	R6_8_5_11-050321
Avaya J100 IP Phone (SIP)	R4_0_9_0-040821
VTech CTM-S2415 IP Phone	2.19.0.0
VTech CTM-4402 Cordless Handset included with CTM-S2415	1.1.26-0

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5. Configure Avaya Aura® Communication Manager

This section describes the steps for configuring Communication Manager. The procedures include the following areas:

- Verify the Communication Manager OPS Licensed Capacity
- Administer IP Network Region
- Administer IP Codec Set

Use the System Access Terminal (SAT) to configure Communication Manager and log in with the appropriate credentials. The configuration steps illustrate field values changed for this reference configuration. Default values were used for all other fields.

Note: It is assumed that basic configuration of the Communication Manager has already been completed, such as the SIP trunk to Session Manager. The SIP station configuration for VTech CTM-S2415 is configured through System Manager in **Section 6.2.**

5.1. Verify Communication Manager OPS Licensed Capacity

Using the SAT, verify that the Off-PBX Stations (OPS) and SIP Trunks features are enabled on the **system-parameters customer-options** form. The license file installed on the system controls these options. If a required feature is not enabled, contact an authorized Avaya sales representative.

On **Page 1**, verify that the number of OPS stations allowed in the system is sufficient for the number of SIP endpoints that will be deployed.

```
display system-parameters customer-options                    Page   1 of  12
                              OPTIONAL FEATURES

     G3 Version: V18                              Software Package: Enterprise
       Location: 2                                 System ID (SID): 1
       Platform: 28                                Module ID (MID): 1

                                                          USED
                                Platform Maximum Ports: 48000    111
                                     Maximum Stations: 36000     86
                                Maximum XMOBILE Stations: 36000      0
                    Maximum Off-PBX Telephones - EC500: 41000      0
                    Maximum Off-PBX Telephones -   OPS: 41000     51
                    Maximum Off-PBX Telephones - PBFMC: 41000      0
                    Maximum Off-PBX Telephones - PVFMC: 41000      0
                    Maximum Off-PBX Telephones - SCCAN:     0      0
                         Maximum Survivable Processors: 313   0

        (NOTE: You must logoff & login to effect the permission changes.)
```


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5.2. Administer IP Network Region

This IP network region is for the signaling group associated with the SIP trunk between Session Manager and Communication Manager. This form also specifies the **IP Codec Set** to be used for calls routed over the SIP trunk to Session Manager. Verify the following values:

- **Authoritative Domain**: The applicable domain (e.g., **avaya.com**)
- **Codec Set**: The codec set number from **Section 5.3**

By default, **IP-IP Direct Audio** (shuffling) is enabled to allow audio traffic to be sent directly between IP endpoints without using media resources in the G450 Media Gateway or Media Server.

```
change ip-network-region 1                                    Page   1 of  20
                             IP NETWORK REGION
  Region: 1
Location: 1       Authoritative Domain: avaya.com
    Name: Main
MEDIA PARAMETERS                 Intra-region IP-IP Direct Audio: yes
      Codec Set: 1               Inter-region IP-IP Direct Audio: yes
   UDP Port Min: 2048                        IP Audio Hairpinning? n
   UDP Port Max: 3329
DIFFSERV/TOS PARAMETERS
 Call Control PHB Value: 46
        Audio PHB Value: 46
        Video PHB Value: 26
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 6
        Audio 802.1p Priority: 6
        Video 802.1p Priority: 5      AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                       RSVP Enabled? n
  H.323 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
   Keep-Alive Interval (sec): 5
            Keep-Alive Count: 5
```


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5.3. Administer IP Codec Set

In the **IP Codec Set** form, select the audio codec type supported for calls routed over the SIP trunk to VTech CTM-S2415. The form is accessed via the **change ip-codec-set 1** command. Note that IP codec set **1** is specified in **IP Network Region 1** from **Section 5.2**. The form shows the list of codecs tested. Enter values for the following:

- **Audio Codec**: The audio codecs tested
- **Media Encryption**: Do not include **none**

Note: Avaya endpoints supporting both RTP/SRTP may be administered in a separate codec set.

```
display ip-codec-set 1                                          Page   1 of   2

                         IP MEDIA PARAMETERS
    Codec Set: 1

    Audio         Silence      Frames   Packet
    Codec         Suppression  Per Pkt  Size(ms)
 1: G.711MU            n         2        20
 2: G.711A             n         2        20
 3: G.729              n         2        20
 4: G.722-64K                    2        20
 5:
 6
 7:
Media Encryption                  Encrypted SRTCP: best-effort
 1:1-srtp-aescm128-hmac80
 2:2-srtp-aescm128-hmac32
 3:
 4:
 5:
```


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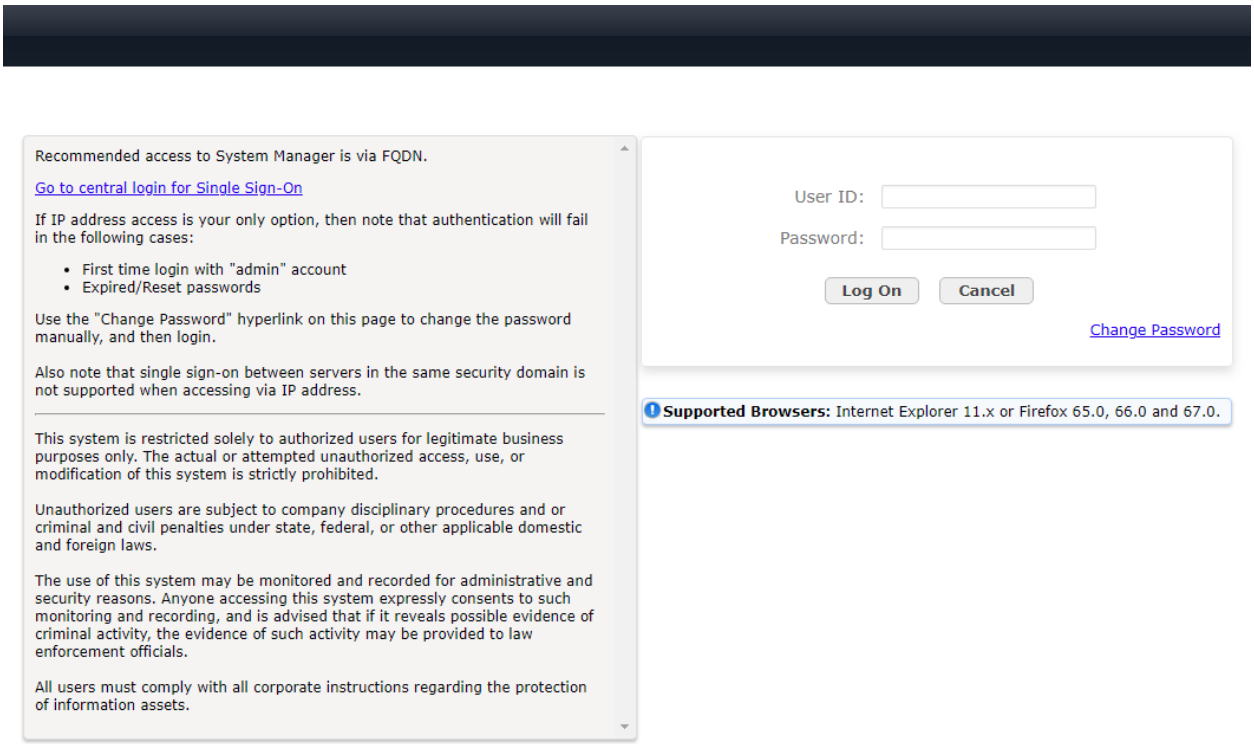
6. Configure Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager. The steps include the following areas.

- Launch System Manager
- Administer SIP Users

6.1. Launch System Manager

Access Session Manager Administration web interface by entering **http://<ip-address>/SMGR** in a web browser, where **<ip-address>** is the IP address of System Manager. Log in using the appropriate credentials.



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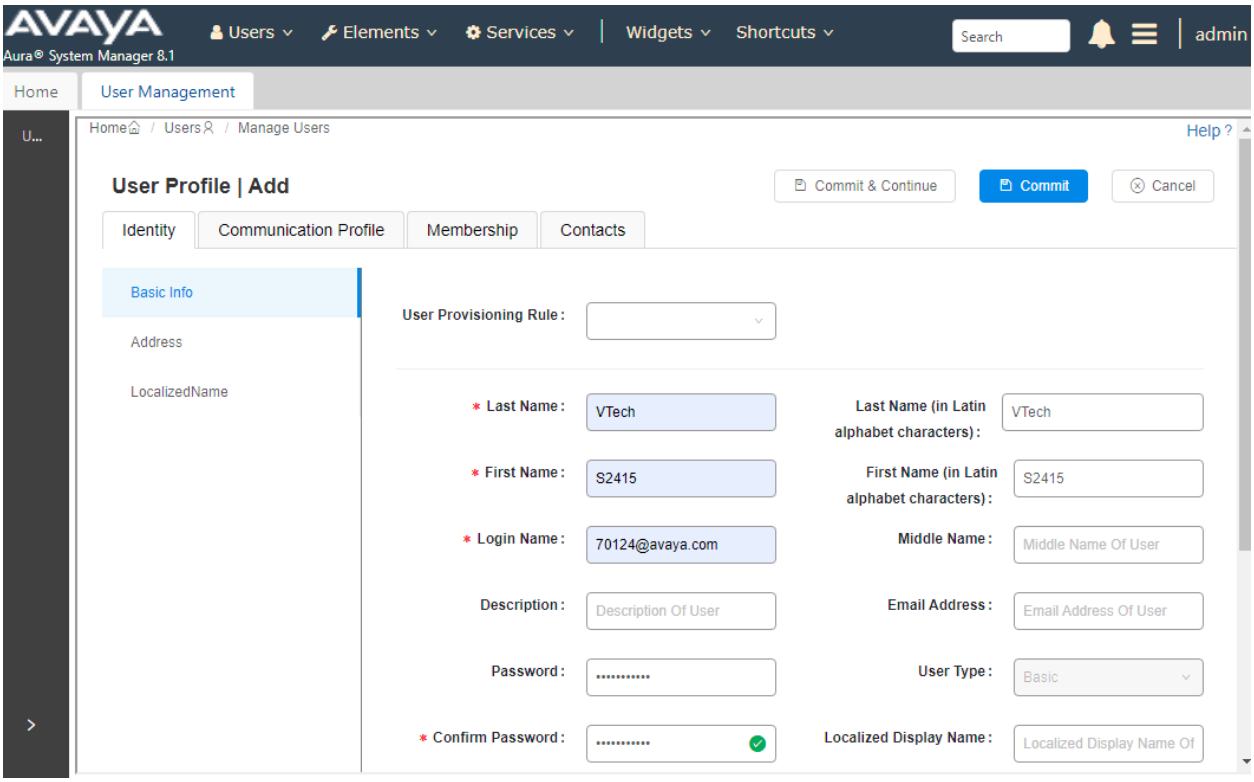
6.2. Administer SIP Users

VTech CTM-S2415 is administered as a SIP user on Session Manager by the following steps. This configuration is automatically synchronized with Communication Manager. In Session Manager, select **Users →User Management →Manage Users** to display the **User Management** screen (not shown). Click **+ New** to add a user.

6.2.1. Identity

Enter values for the following required attributes for a new SIP user in the **New User Profile** screen:

- **Last Name**: Enter the last name of the user, e.g., **VTech**
- **First Name**: Enter the first name of the user, e.g., **S2415**
- **Login Name**: Enter <extension>@<sip domain> of the user (e.g., **70124@avaya.com**)



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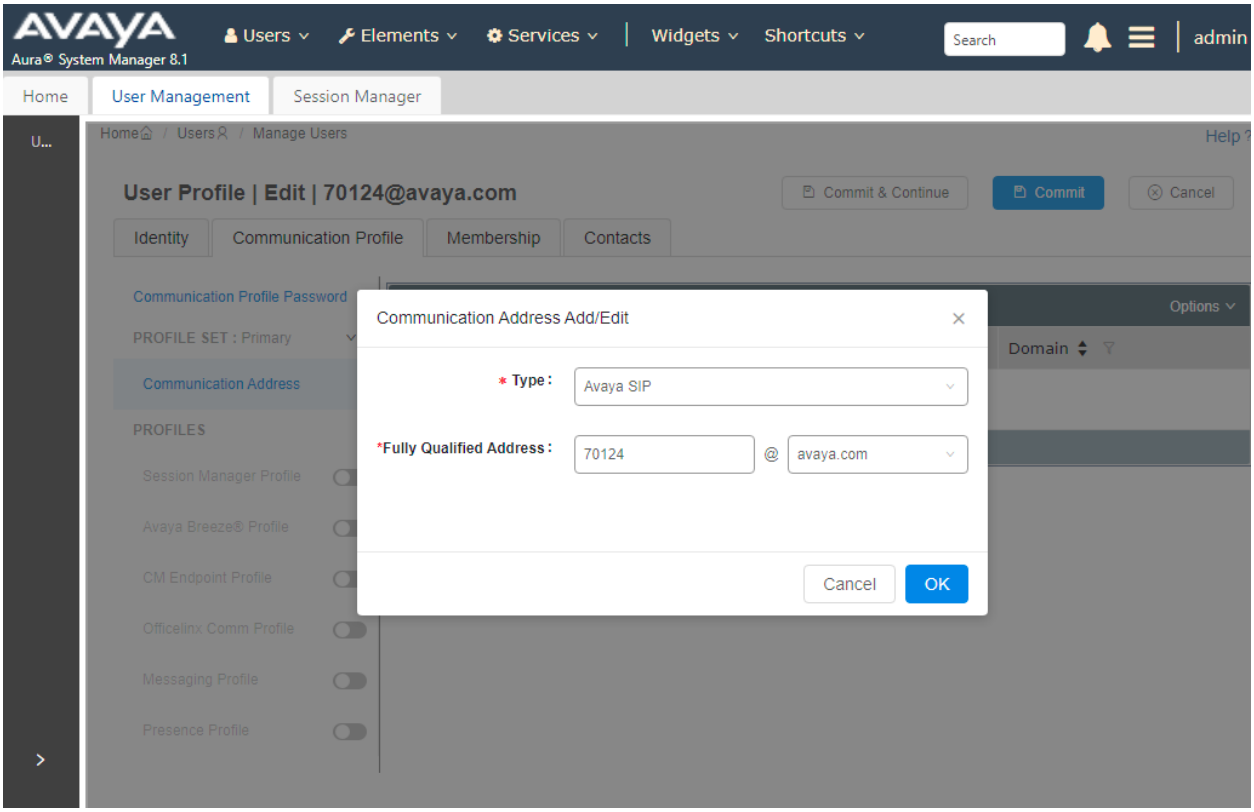
6.2.2. Communication Address

Select **Communication Address** in the left list and click **+ New** (not shown).
Enter the following attributes for the **Communication Address**:

- **Type:** Select **Avaya SIP** from the drop-down list
- **Fully Qualified Address:** Enter the extension number (e.g.,**70124)**
- **Domain:** Enter the domain (e.g., **avaya.com**)



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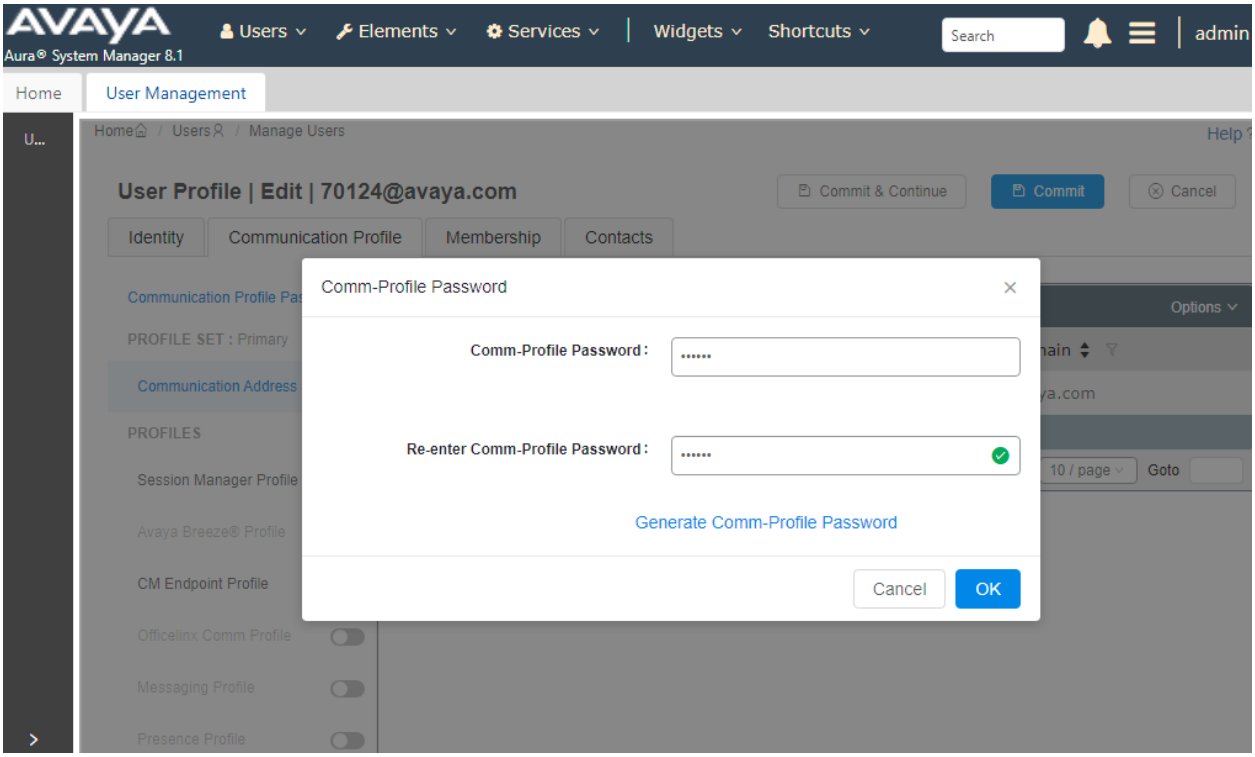
6.2.3. Communication Profile Password

Click the **Communication Profile Password** tab and in the **Comm-Profile Password** and **Re-enter Comm-Profile Password** fields, enter a numeric password. This will be used to register the device. Click **OK**.



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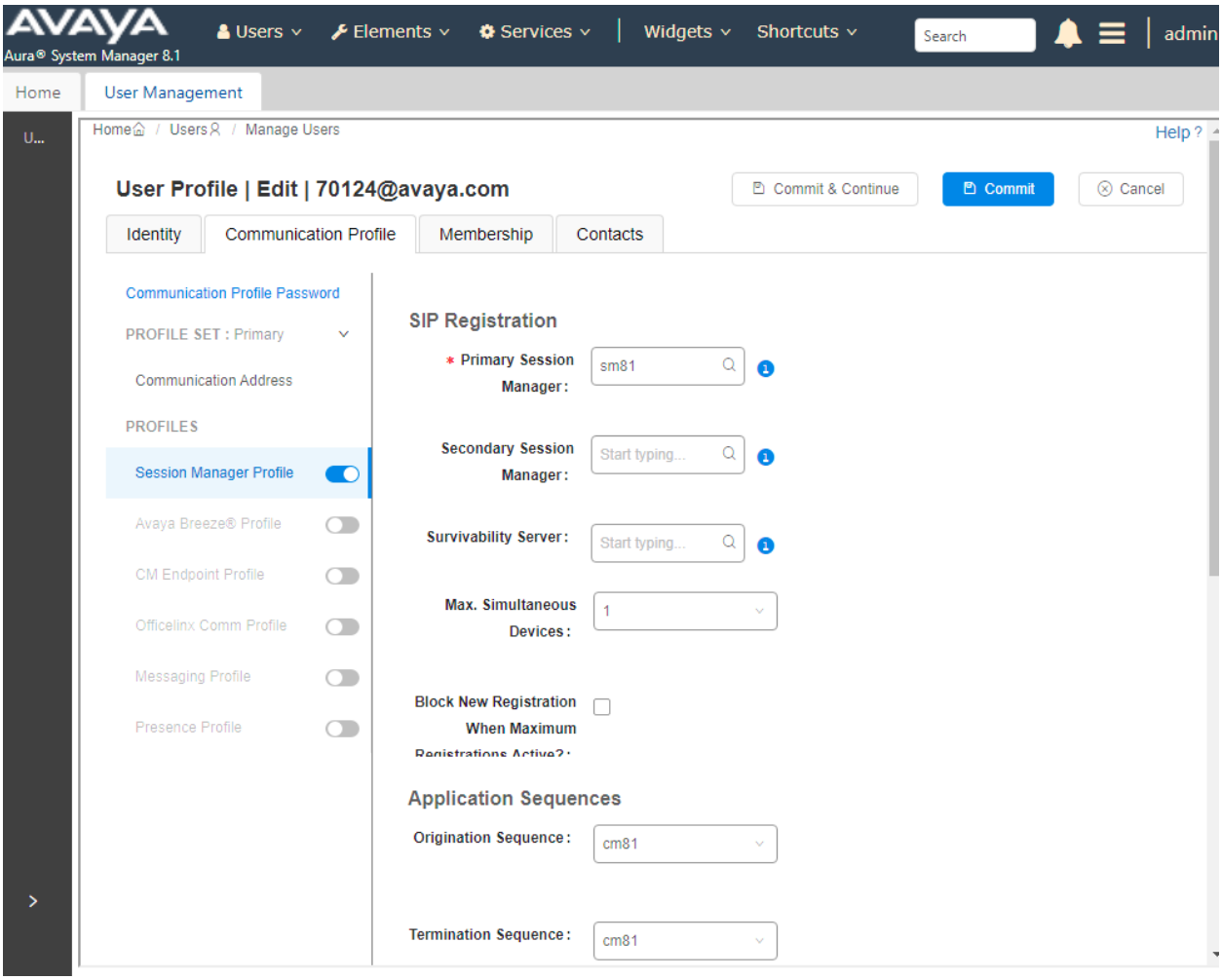
6.2.4. Session Manager Profile

Click on the **Session Manager Profile** slide button. For **Primary Session Manager**, **Origination Sequence**, **Termination Sequence**, and **Home Location** (not shown), select the values corresponding to the applicable Session Manager and Communication Manager. Retain the default values in the remaining fields.



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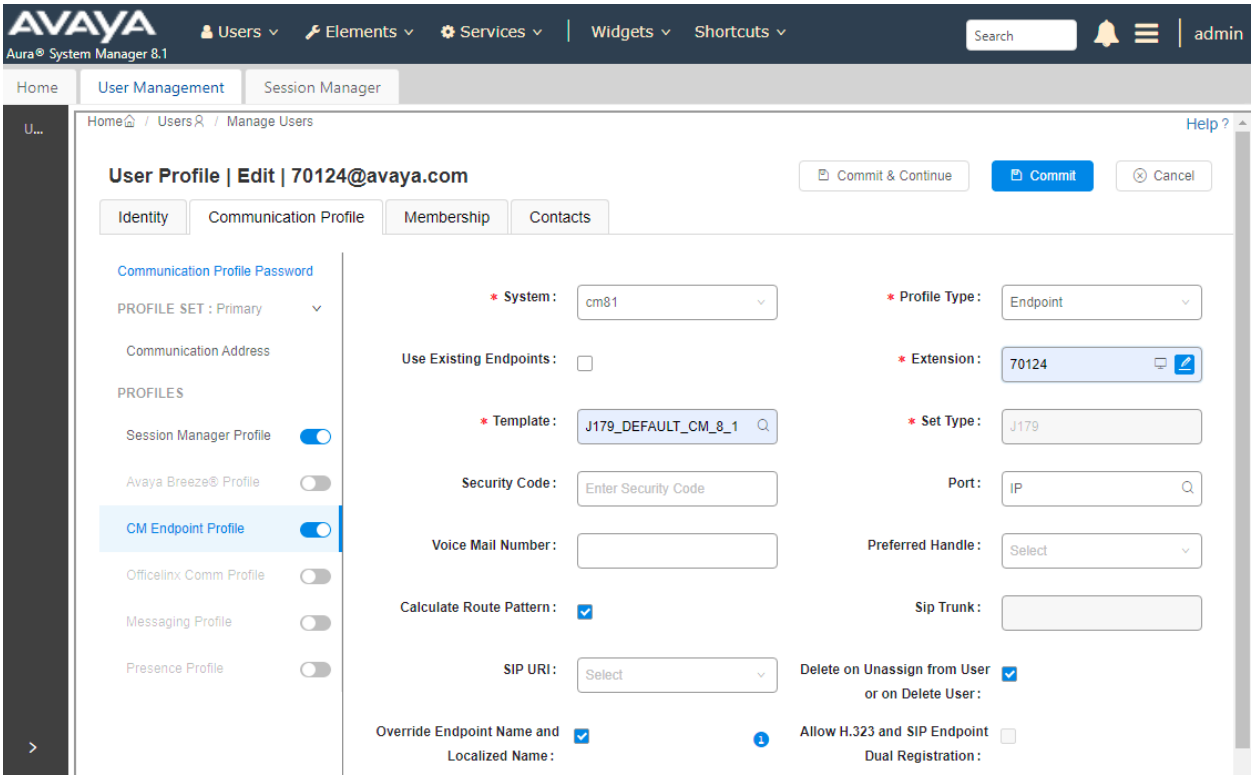
6.2.5. CM Endpoint Profile

Click on the **CM Endpoint Profile** slide button. Fill in the following fields:

- **System**: Select the relevant Communication Manager SIP Entity (e.g., **cm81**)
- **Profile Type**: Select **Endpoint**
- **Template**: Select **J179_DEFAULT_CM_8_1**
- **Extension**: Enter the extension number (e.g., **70124**)

Click on **Endpoint Editor** in the Extension field to edit Communication Manager settings. Input the appropriate **Coverage Path 1** number (not shown) to route unanswered calls to voicemail. Click **Done** to close the Endpoint Editor. Click **Commit**.



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7. Configure VTech CTM-2415

The steps to configure VTech CTM-S2415 to integrate with Communication manager are as follows:

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

7.1. Configure IP Address

VTech CTM-S2415 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 7.2**:

- Connect the WAN port of VTech CTM-S2415 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 **TALK * * * ***. For more information, refer to VTech CTM-S2415 user manual obtained at http://vtechhotelphones.com.

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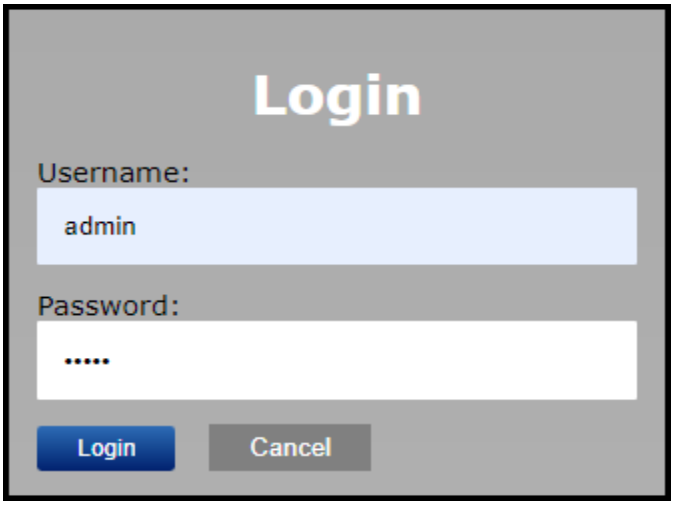
7.2. Launch Web Interface

The phone administration is done though a web interface. To access web administration, follow these steps:

- Invoke the web login page using the **IP address** from **Section 7.1** using the URL **https://<IP address>.**
- Enter **admin** for **Username** and the appropriate password for **Password**



Once logged in, the default settings are displayed: The image below is for the CTM-S2415.

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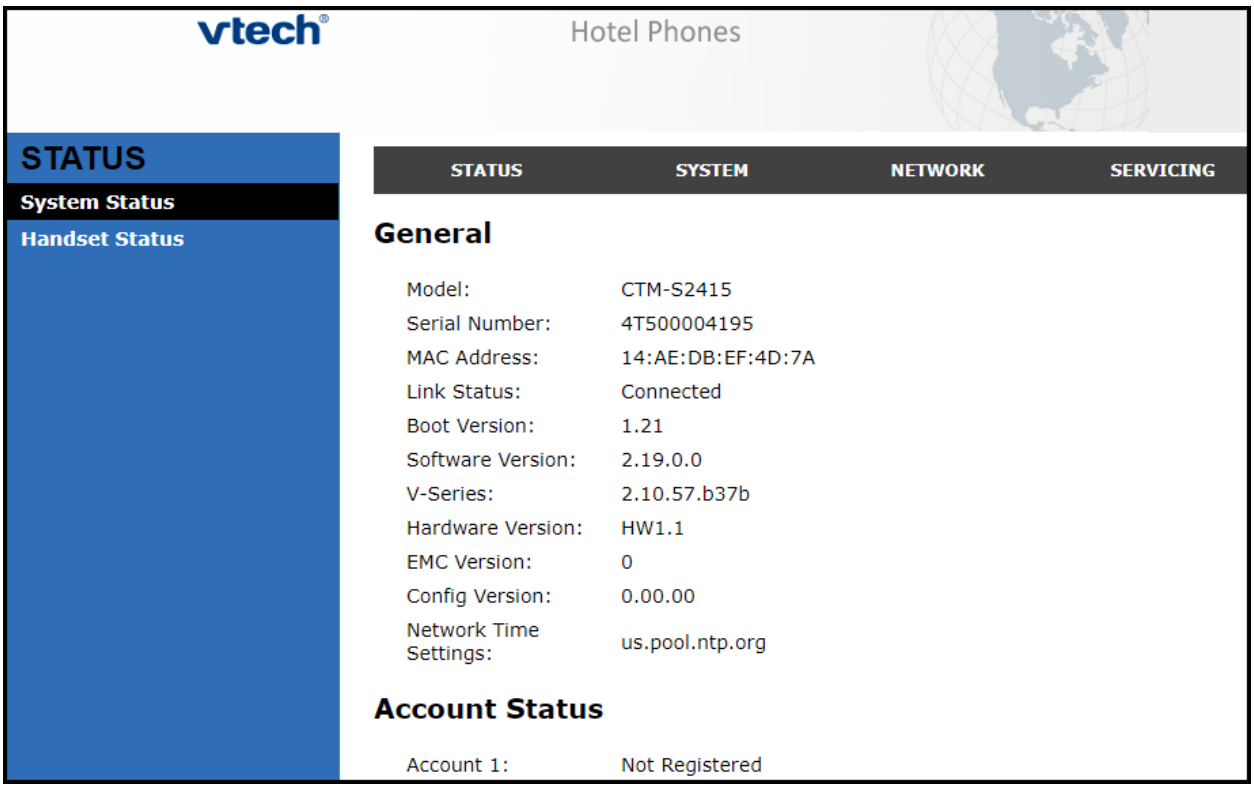

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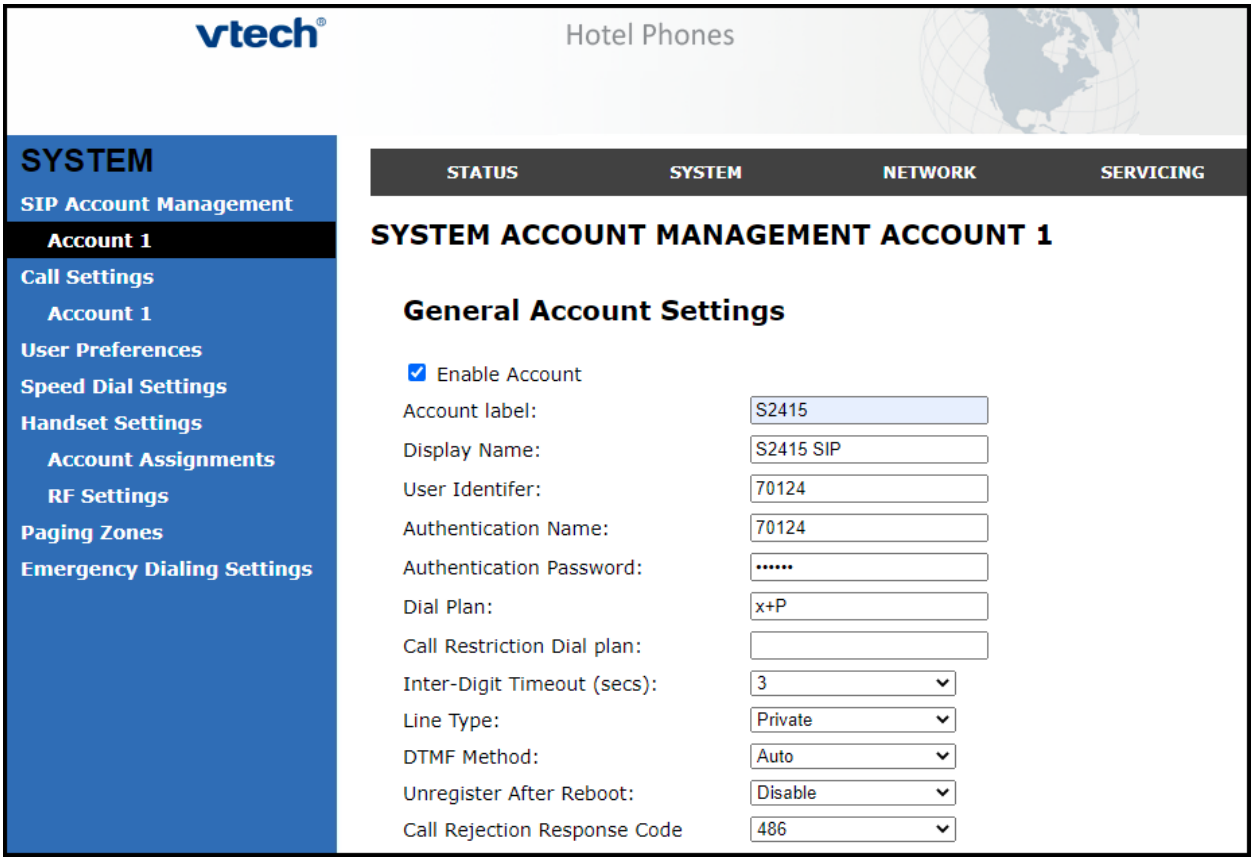
- **Note:** Cordless handset synchronization instructions for the **CTM-S2412** and **CTM-S2415** are listed in the user guide for the respective phone models**.** If firmware upgrades are needed, consult the analogous configuration guide for instructions. Refer to VTech CTM-S2415 user manual obtained at [http://vtechhotelphones.com.](http://vtechhotelphones.com)

7.3. Configure SIP Account

To register VTech CTM-S2415 to Session Manager, 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**: A descriptive string (e.g., **S2415**)
- **Display Name**: The desired display name (e.g., **S2415 SIP**)
- **User Identifier**: An appropriate string (e.g., **70124**)
- **Authentication Name**: Enter the extension number (e.g., **70124**)
- **Authentication Password**: Enter the password



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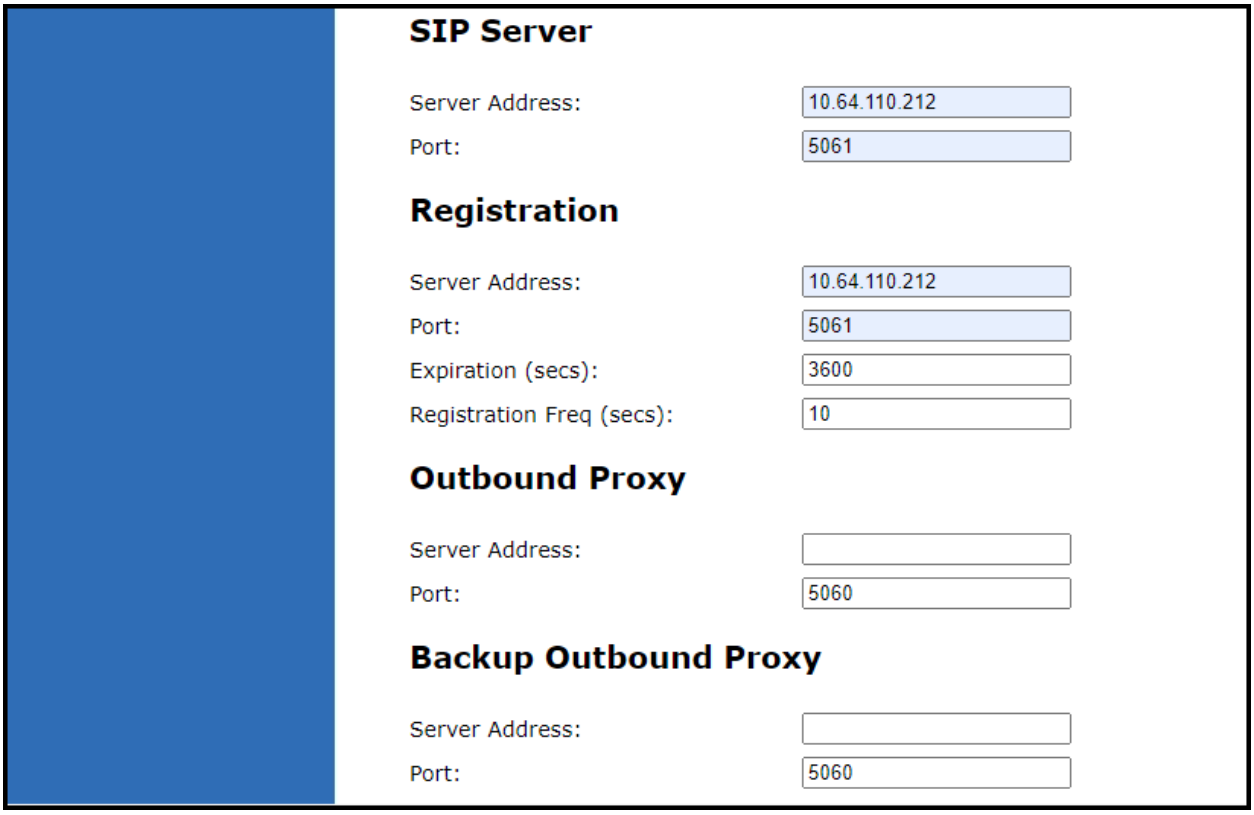
Under the **SIP Server** heading, enter the following:

- **Server Address**: Session Manager IP address (e.g., **10.64.110.212**)
- **Port**: **5061**

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

- **Server Address**: Session Manager IP address (e.g., **10.64.110.212**)
- **Port**: **5061**



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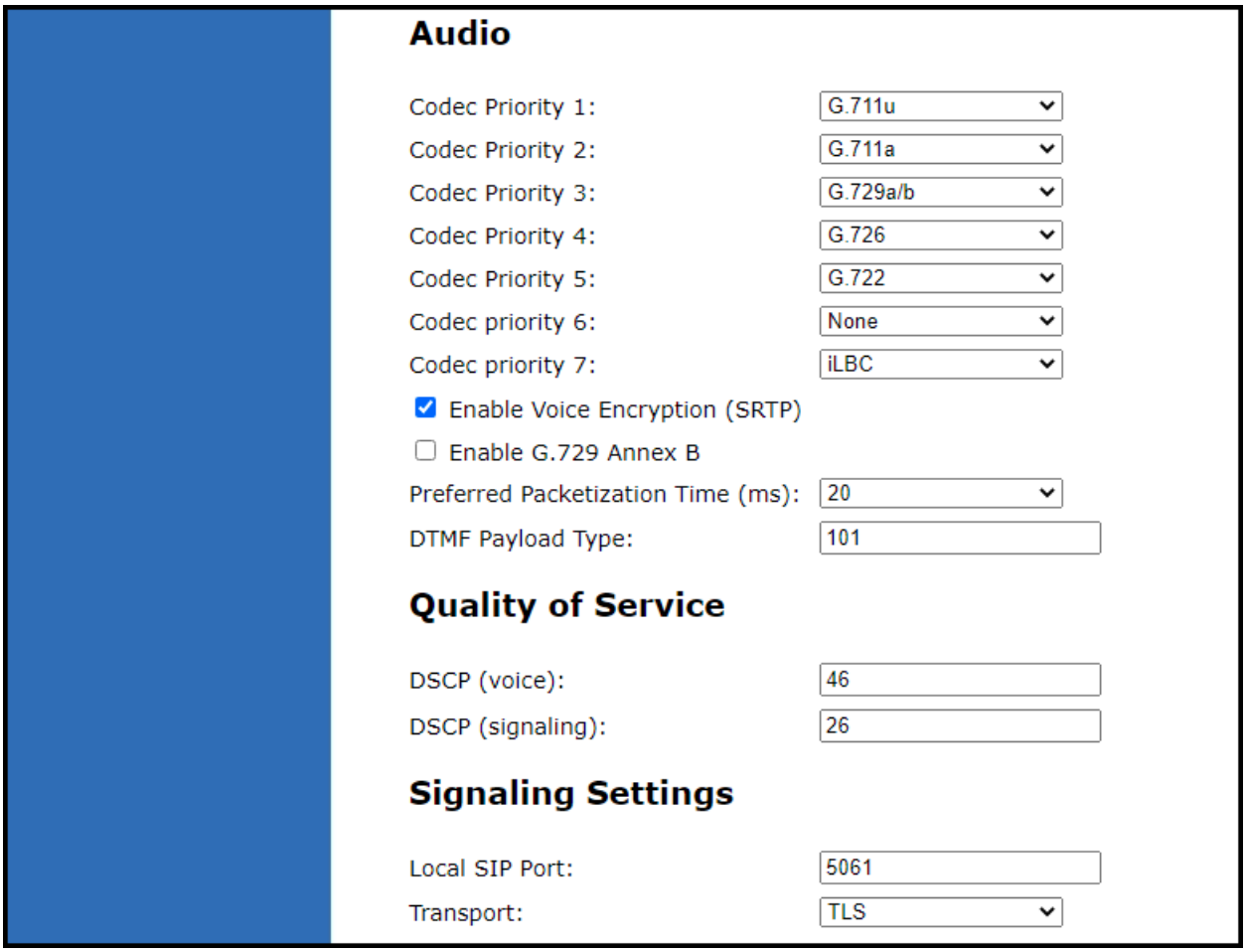
Under the **Audio** heading, select the following:

- **Enable Voice Encryption (SRTP)**

Under the **Signaling Settings** heading, input the following:

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



Under the **Voicemail Settings** header, select the following (not shown):

- **Enable MWI Subscription**

Click **Save.**

Reboot the phone. Select **Servicing** on the toolbar and **Reboot** on the left hand side selections. Click the **Reboot** button.

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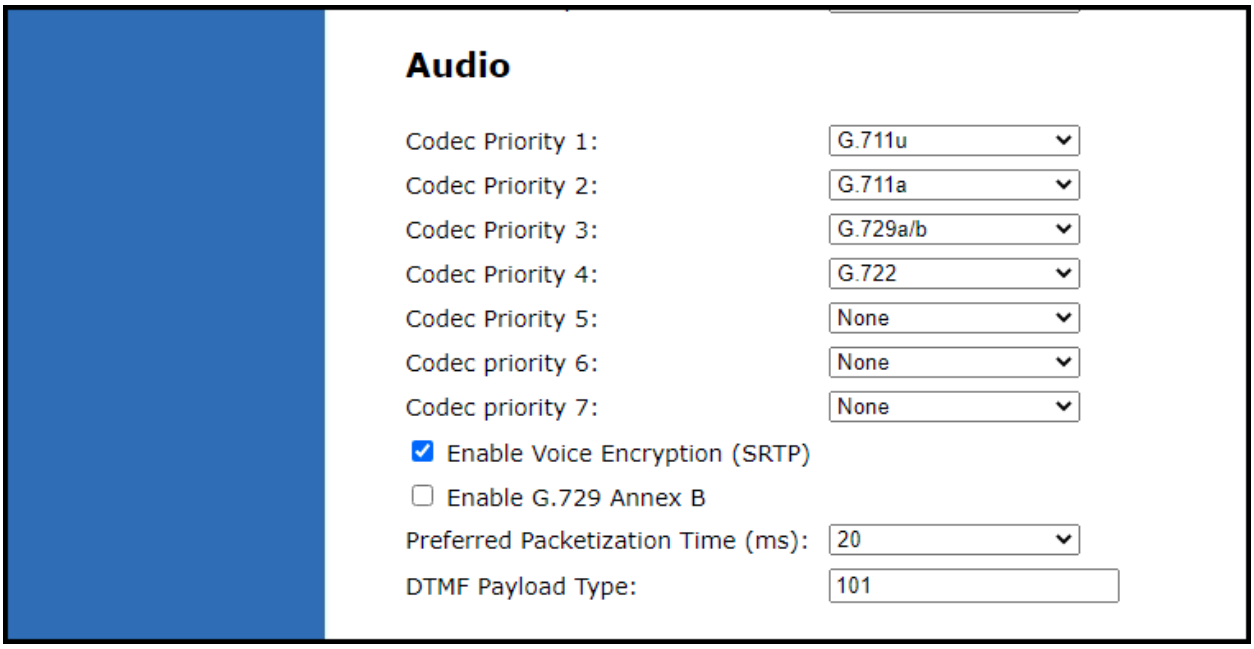
7.4. Modify Codec Settings as Required

Modify the codec settings by selecting **System** in the toolbar and **Account 1** in the left hand side selections. Under the **Audio** heading, select the desired codecs in priority:



Click **Save**.

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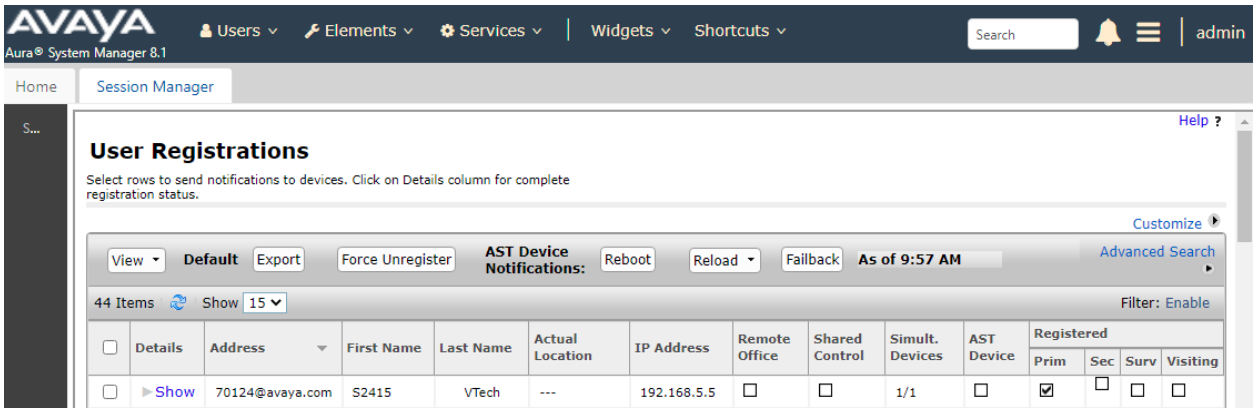
8. Verification Steps

The proper configuration of VTech CTM-S2415 with Avaya Session Manager and Avaya Communication Manager is verified by the following steps.

8.1. View Session Manager Status

Verify VTech CTM-S2415 has successfully registered with Session Manager. In System Manager, Navigate to **Elements →Session Manager →System Status →User Registrations. C**heck the registration status by the following:

- Verify VTech CTM-S2415 (here **70124**) is registered with Session Manager by noting the registered users include **70124.**



8.2. Call Verification

Verify that basic calls can be made from and to VTech CTM-S2415 and another telephone registered to Session Manager.

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9. Conclusion

These Application Notes describe the configuration steps required for VTech CTM-2S415 to successfully interoperate with the Avaya Aura® Communication Manager and Avaya Aura® Session Manager as described in these notes. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

10. Additional References

Product documentation for Avaya products may be found at http://support.avaya.com.

[1] *Administering Avaya Aura® Communication Manager*, Issue 10, Release 8.1.x, March 2021.
[2] *Administering Avaya Aura® Session Manager*, Issue 8, Release 8.1.x, February 2021.
[3] *Administering Avaya Aura® System Manager*, Issue 11, Release 8.1.x, April 2021.

Product information for VTech SIP Hotel Phones may be found at http://vtechhotelphones.com.

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Attachment 1

vtech

VTech Technologies Canada Ltd.

Date: April 30, 2021

Declaration of Conformance

We, VTech Technologies Canada LTD., declare under sole responsibility that product series CTM-S2415 and CTM-S2412 all share the same hardware circuitry, software, SIP stack, and firmware version. Therefore the products are expected to behave in the same manner. Furthermore, product CTM-S2415 is a functional superset of the other products in the CTM series below. The differences between the different models in the series are detailed in the table below.

Product Name	Model	Description
CTM-S2415	CTM-S2415	SIP 1-Line Cordless Phone with standard (desktop) base
CTM-S2412	CTM-S2412	SIP 1-Line Cordless Phone with base

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

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