



Application Notes for Polycom® RealPresence Trio™ 8800 with Avaya Aura® Session Manager R7.0 and Avaya Aura® Communication Manager R7.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Polycom® RealPresence Trio™ 8800 SIP phone to interoperate with Avaya Aura® Session Manager R7.0 and Avaya Aura® Communication Manager R7.0. The Polycom® RealPresenceTrio™ 8800 is a SIP conferencing phone that can register with Avaya Aura® Session Manager as a SIP endpoint in support of voice communications and conferencing requirements.

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 Polycom® RealPresence Trio™ 8800 phone to interoperate with Avaya Aura® Session Manager and Avaya Aura® Communication Manager. Polycom® RealPresence Trio™ 8800 (Trio 8800) is a SIP conference phone that registers with Avaya Aura® Session Manager as a SIP endpoint combining the functionality of an IP phone and a conferencing station in support of voice communications and conferencing requirements.

Note: Trio 8800 also supports H.264 based video and BFCP based content via the optional Polycom® RealPresence Trio™ Visual+ accessory but in this compliance testing only audio capabilities of the phone were tested.

2. General Test Approach and Test Results

The general test approach was to place calls to and from Trio 8800 and exercise basic telephone operations. The main objectives were to verify the following:

- Registration
- Codecs (G.711, G.722, iLBC and G.729)
- Inbound calls
- Outbound calls
- Hold/Resume
- Call Transfer and Conferencing (Blind and Attended)
- Call termination (origination/destination)
- Avaya Features using Feature Access Code (FAC)
 - Call Park/Unpark
 - Call Pickup
 - Call Forward (Unconditional, Busy/no answer)
 - Find Me
- Voicemail using Communication manager Messaging (CMM)
- Message Waiting Indicator (MWI)
- Serviceability

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.

2.1. Interoperability Compliance Testing

The interoperability compliance test included features and serviceability. The focus of interoperability compliance testing was primarily on verifying call establishment on Trio 8800. The Trio 8800 operations such as inbound calls, outbound calls, hold/resume, transfer, conference, Feature Access Codes, and its interactions with Session Manager, Communication

Manager, and other Avaya SIP, and H.323 phones were verified. The serviceability testing introduced failure scenarios to see if Trio 8800 can recover from failures.

2.2. Test Results

The test objectives were verified. For serviceability testing, Trio 8800 operated properly after recovering from failures such as network disconnects, and resets of Trio 8800.

The features mentioned in **Section 2** worked successfully during compliance testing with the following exceptions, as these features are currently not supported by Trio 8800:

- Blind Conference Call
- Long Hold Recall Timer
- Find Me
- iLBC Codec is supported only between the Trio 8800 endpoints
- At least one hardware-supported codec needs to be listed on Trio 8800 for iLBC or G.722 to work. Additionally, these codecs need to be configured at the top of the list in **Section 6.2**

2.3. Support

For technical support on Polycom® RealPresence Trio™ 8800, please contact via the following:

- Web: <http://support.polycom.com>

3. Reference Configuration

Once Trio 8800 registers as a SIP endpoint with Session Manager, it can place and receive voice calls with various supported features as listed above in **Section 2.1**. The reference configuration used for the compliance test is shown in **Figure 1** below.

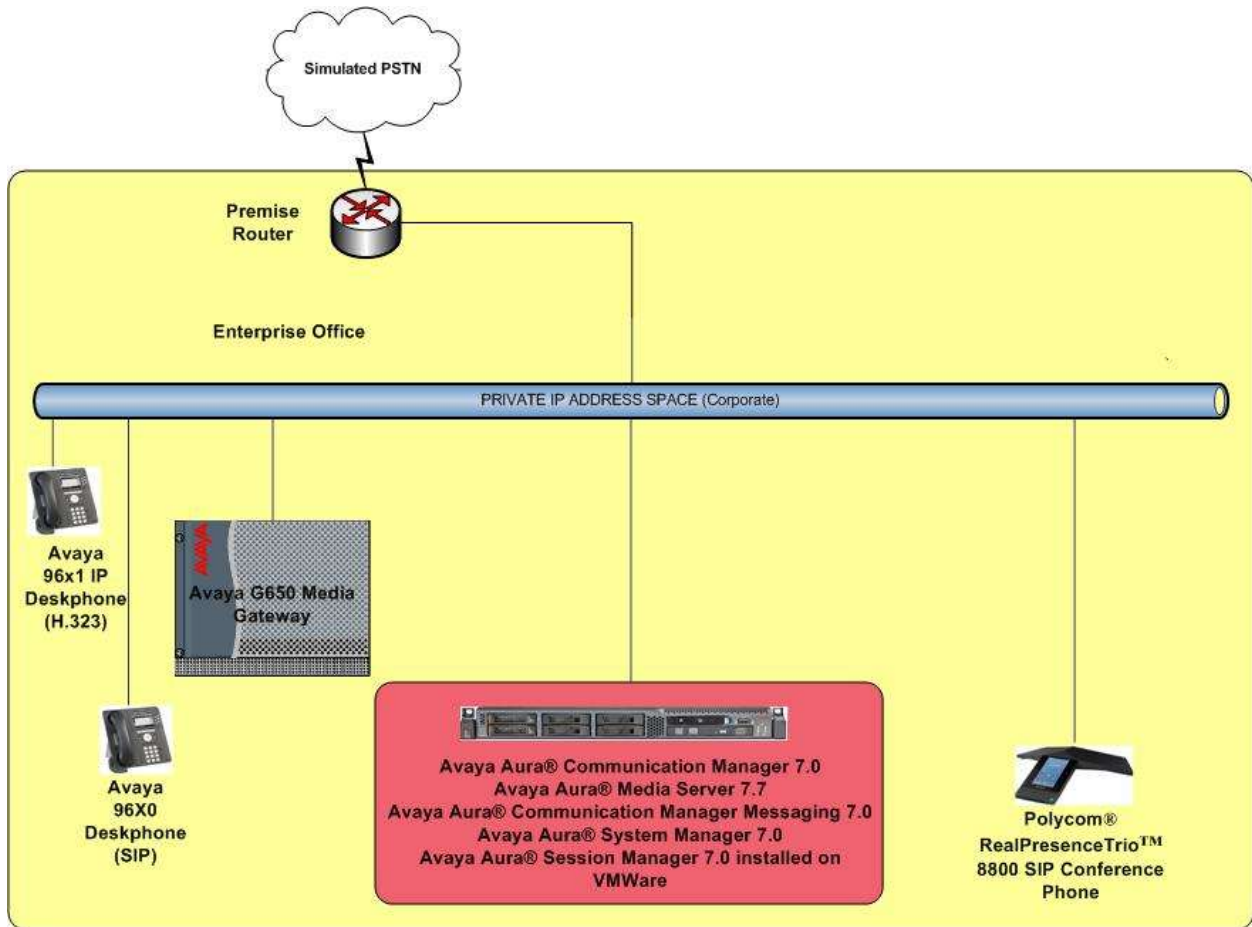


Figure 1: Polycom® RealPresence Trio™ 8800 SIP Conference Phone with Avaya Aura® Session Manager and Avaya Aura® Communication Manager

4. Equipment and Software Validated

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

Equipment	Software
Avaya Aura® System Manager installed on VMWare	R7.0 (7.0.0.0.16266)
Avaya Aura® Session Manager installed on VMWare	R7.0 (7.0.0.0.700007)
Avaya Aura® Communication Manager installed on VMWare	R7.0 (vcm-07.00.0.441.0)
Avaya Aura® Media Server installed on VMWare	R7.7 (v.7.7.0.226)
Avaya Aura® Communication Manager Messaging installed on VMWare	R7.0 (vcmm-07.00.0.441.0)
Avaya 96x1 IP Deskphone (H323)	R6.2.2313
Avaya 96x0 IP Deskphone (SIP)	R2.6.9.1
Polycom® RealPresence Trio™ 8800	UCS 5.4.0.128456

5. Configure Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager. The procedures include adding the following items:

- SIP domain
- Logical/physical Locations that can be occupied by SIP Entities
- SIP Entities and corresponding Entity Links between Session Manager and Communication Manager/Communication Manager Messaging
- Define Communication Manager as Administrable Entity (i.e., Managed Element).
- Application Sequence
- Add SIP Users

Configuration is accomplished by accessing the browser-based GUI of System Manager using the URL “**https://<ip-address>/SMGR**”, where <ip-address> is the IP address of System Manager. Log in with the appropriate credentials.

Note that the fields modified in this section are for this reference configuration only; defaults are used for all other fields.

5.1. Specify SIP Domain

Add the SIP domain for which the communications infrastructure will be authoritative. To add a location, navigate to **Home→Elements→Routing→Domains** and click the **New** (not shown) button on the right.

The following screen will then be shown. Fill in the following:

- **Name:** The authoritative domain name (e.g., *avaya.com*)
- **Type:** Set to *sip* (default)
- **Notes:** Descriptive text (optional)

Click **Commit**.



5.2. Add Locations

Locations can be used to identify logical and/or physical locations where SIP Entities reside for purposes of bandwidth management. To add a location, navigate to **Home→Elements→Routing→Locations** and click on the **New** (not shown) button on the right. The following screen will then be shown. Fill in the following:

Under **General**:

- **Name:** A descriptive name
- **Notes:** Descriptive text (optional)

Under **Location Pattern**:

- **IP Address Pattern:** A pattern used to logically identify the location
- **Notes:** Descriptive text (optional)

The screen below shows addition of the **Location_102** used for Communication Manager and other entities. Similarly a location was defined for Session Manager. Click **Commit** to save the Location definition.

The screenshot displays the Avaya Aura System Manager 7.0 interface. The breadcrumb navigation is Home / Elements / Routing / Locations. The page title is 'Location Details' with 'Commit' and 'Cancel' buttons. The configuration is organized into several sections:

- General:** Name: Location_102; Notes: Entities in Subnet 102.
- Dial Plan Transparency in Survivable Mode:** Enabled: ; Listed Directory Number: []; Associated CM SIP Entity: [].
- Overall Managed Bandwidth:** Managed Bandwidth Units: Kbit/sec; Total Bandwidth: []; Multimedia Bandwidth: []; Audio Calls Can Take Multimedia Bandwidth: .
- Per-Call Bandwidth Parameters:** Maximum Multimedia Bandwidth (Intra-Location): 2000 Kbit/Sec; Maximum Multimedia Bandwidth (Inter-Location): 2000 Kbit/Sec; Minimum Multimedia Bandwidth: 64 Kbit/Sec; Default Audio Bandwidth: 80 Kbit/sec.
- Alarm Threshold:** Overall Alarm Threshold: 80 %; Multimedia Alarm Threshold: 80 %; Latency before Overall Alarm Trigger: 5 Minutes; Latency before Multimedia Alarm Trigger: 5 Minutes.
- Location Pattern:** A table with columns for IP Address Pattern and Notes. It contains one entry: IP Address Pattern: *10.64.102.*.

5.3. Add SIP Entities

In the sample configuration, a SIP Entity is added for Session Manager and Communication Manager. The screens below also show the corresponding Entity Links.

5.3.1. Session Manager Entity

To add a SIP Entity, navigate to **Home**→**Elements**→**Routing**→**SIP Entities**, and click on **New** (not shown) and configure as follows:

Under **General**:

- **Name:** Any descriptive name
- **FQDN or IP Address:** IP address of the signaling interface on Session Manager
- **Type:** Select *Session Manager*
- **Location:** Select one of the locations defined previously
- **Time Zone:** Time zone for this location

Under **Listen Ports**, click **Add**, and then edit the fields in the resulting new row as shown below:

- **Listen Ports:** Port number on which the system listens for SIP requests
- **Protocol:** Transport protocol to be used to send SIP requests
- **Default Domain:** The domain used for the enterprise (e.g. *avaya.com*)

Defaults can be used for the remaining fields. Click **Commit** to save each SIP Entity definition.

The screenshot shows the Avaya System Manager 7.1 interface for configuring a SIP Entity. The main form is titled "SIP Entity Details" and is under the "General" tab. The fields are as follows:

- Name:** SM30
- FQDN or IP Address:** 10.54.102.157
- Type:** Session Manager
- Notes:** Session Manager Entity
- Location:** Session Manager
- Outbound Proxy:** (empty)
- Time Zone:** America/Denver
- Credential name:** (empty)
- SIP Link Monitoring:** Use Session Manager configuration

Below the main form is the "Entity Links" section, which contains a table with the following data:

Name	SIP Entity	Protocol	Port	SIP Entity	Port	Connection Policy	Reply Area Service
+3870_ON_Message	SM30	TCP	*2606	ON_Message	*1000	Trusted	
+3870_ON_Voice_SIP	SM30	TCP	*2606	ON_Voice	*1000	Trusted	

At the bottom, there is a "Listen Ports" section with a table for adding new ports:

Listen Ports	Protocol	Default Domain	Notes
5060	TCP	avaya.com	Default TCP port

5.3.2. Communication Manager Entity

The following screen displays the Communication Manager entity configured for this reference configuration.

The screenshot shows the Avaya System Manager 7.0 interface. The left sidebar contains a navigation menu with options: Routing, Domains, Locations, Adaptations, SIP Entities (selected), Entity Links, Time Ranges, Routing Policies, Dial Patterns, Regular Expressions, and Defaults. The main content area is titled "SIP Entity Details" and includes "Commit" and "Cancel" buttons. The "General" section contains the following fields: Name (CM70Procr), FQDN or IP Address (10.64.102.150), Type (CH), and Notes (CM 7.0 Proc, Ethernet). The "Adaptation" field is empty, "Location" is Location_102, and "Time Zone" is America/Denver. The "SIP Timer B/F (in seconds)" is 4. The "Credential name" field is empty, and "Securable" is unchecked. "Call Detail Recording" is set to none. The "Loop Detection" section has "Loop Detection Mode" set to On, "Loop Count Threshold" set to 5, and "Loop Detection Interval (in msec)" set to 200. The "SIP Link Monitoring" section has "SIP Link Monitoring" set to Use Session Manager Configuration. Below this, "Supports Call Admission Control" and "Shared Bandwidth Manager" are unchecked. "Primary Session Manager Bandwidth Association" and "Backup Session Manager Bandwidth Association" are both empty. The "Entity Links" section has "Override Port & Transport with DNS SRV" unchecked. At the bottom, there is a table with columns: Name, SIP Entity 1, Protocol, Port, SIP Entity 2, Port, Connection Policy, and Busy Now Service. The table contains one row: *SM70_CH70Procr_50, SM70, TCP, *5050, CM70Procr, *5060, trusted, and an empty checkbox.

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Busy Now Service
*SM70_CH70Procr_50	SM70	TCP	*5050	CM70Procr	*5060	trusted	<input type="checkbox"/>

5.3.3. Communication Manager Messaging Entity

The following screen displays the Communication Manager Messaging entity configured for this reference configuration.

The screenshot displays the Avaya System Manager 7.2 interface for configuring a SIP Entity. The left sidebar shows a navigation menu with options like Routing, Domains, Locations, Adaptations, SIP Entities, Entity Links, Time Ranges, Routing Policies, Mail Patterns, Regular Expressions, and Defaults. The main area is titled 'SIP Entity Details' and contains the following configuration fields:

- General:**
 - Name: OI Messaging
 - FQDN or IP Address: 10.64.102.151
 - Type: Protocol Messaging
 - Notes: OI Messaging
 - Adaptation: (empty)
 - Location: Location_002
 - Time Zone: America/Denver
 - SIP Ticker R/F (in seconds): 5
 - Credential name: (empty)
 - Secure:
 - Call Detail Recording: agree
- Loop Detection:**
 - Loop Detection Mode: On
 - Loop Count Threshold: 5
 - Loop Detection Interval (in msec): 200
- SIP Link Monitoring:**
 - SIP Link Monitoring: Use Session Manager Configuration
- Supports Call Admission Control:**
- Shared Bandwidth Manager:**
- Primary Session Manager Bandwidth Association:** (empty)
- Backup Session Manager Bandwidth Association:** (empty)
- Override Port & Transport with DNS SRV:**

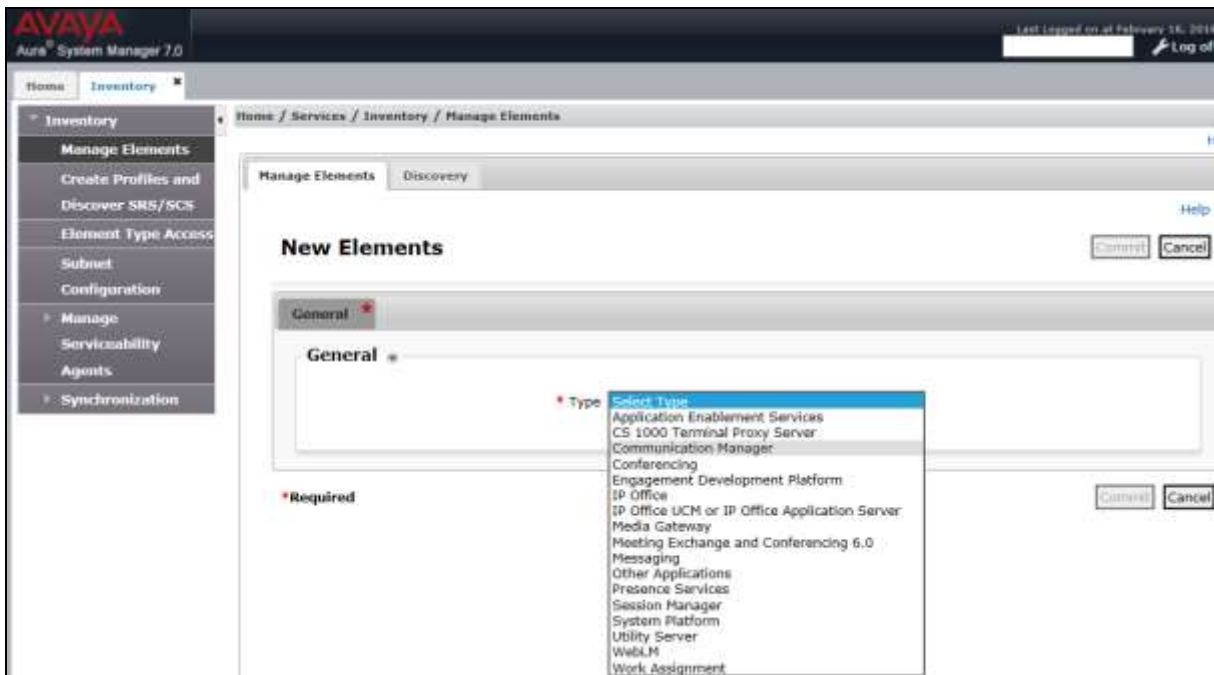
At the bottom, there is a table for 'Entity Links' with columns for Name, SIP Entity, Protocol, Port, SIP Entity, Port, Connection Policy, and Display Name. The table contains one entry: 'OI Messaging' linked to 'SIP' on port '5060'.

Name	SIP Entity	Protocol	Port	SIP Entity	Port	Connection Policy	Display Name
* OI Messaging	SIP	SIP	* 5060	OI Messaging	* 5060	Tracked	

5.4. Define Communication Manager as a Managed Element

Before adding SIP users, Communication Manager must be added to System Manager as a managed element. This action allows System Manager to access Communication Manager over its administration interface. Using this administration interface, System Manager will notify Communication Manager when new SIP users are added.

To define Communication Manager as a managed element, navigate to **Home**→**Services**→**Inventory**→**Manage Elements** on the left and click on the **New** (not shown) button on the right. In the **Type** field that is displayed, select *Communication Manager*.



In the **Add Communication Manager** screen, fill in the following fields as follows:

Under *General Attributes*:

- **Name:** Enter an identifier for Communication Manager
- **Hostname or IP Address:** Enter the IP address of the administration interface for Communication Manager
- **Login:** Enter login used for administration access
Communication Manager instance
- **Authentication Type:** Select the **Password** button
- **Password:** Enter a valid password
- **Confirm Password:** This should match the password entered in the **Password** field above

Click **Commit** to save.

The screenshot displays the 'Add Communication Manager' configuration page in the Avaya Aura System Manager 7.0 interface. The page is divided into two main sections: 'General Attributes (0)' and 'SNMP Attributes (5)'. The 'General Attributes' section includes fields for Name (CM70), Hostname or IP Address (10.64.102.150), Login, Authentication Type (Password selected), Password, Confirm Password, SSH Connection (checked), and RSA SSH Fingerprint (Primary IP and Alternate IP). The 'SNMP Attributes' section includes fields for Description (Communication Manager), Alternate IP Address, Enable Notifications (unchecked), Port (5022), Location, and Add to Communication Manager (checked). Buttons for 'Commit', 'Clear', and 'Cancel' are visible at the top right and bottom right of the form area.

5.5. Add Application Sequence

Navigate to **Home**→**Elements**→**Session Manager**→**Application Configuration**→**Applications** and configure as follows:

- **Name:** Enter any descriptive name
- **SIP Entity:** Select the Communication Manager SIP Entity configured in **Section 5.3.2**
- **CM System for SIP Entity:** Select the system configured in **Section 5.4**

Click **Commit** to save the application configuration.

The screenshot shows the Avaya Aura System Manager 7.0 interface. The left sidebar contains a navigation menu with options like Session Manager, Dashboard, Session Manager Administration, Communication Profile Editor, Network Configuration, and Device and Location Configuration. The main content area is titled "Application Editor" and contains a form for configuring an application. The form fields are: Name (CM70), SIP Entity (CM70Procr), CM System for SIP Entity (CM70), and Description (CM 7.0). There are "Commit" and "Cancel" buttons at the top right of the form area.

Next, define the **Application Sequence** for Communication Manager as shown below.

The screenshot shows the Avaya Aura System Manager 7.0 interface for the "Application Sequence Editor". The left sidebar is similar to the previous screenshot, but the "Application Sequences" option is highlighted. The main content area is titled "Application Sequence Editor" and contains a form for configuring an application sequence. The form fields are: Name (CM70Sequencing) and Description (App. Sequencing with CM 7.0). Below the form, there are two tables: "Applications in this Sequence" and "Available Applications".

Sequence Order (first to last)	Name	SIP Entity	Mandatory	Description
<input type="checkbox"/>	CM70	CM70Procr	<input checked="" type="checkbox"/>	CM 7.0

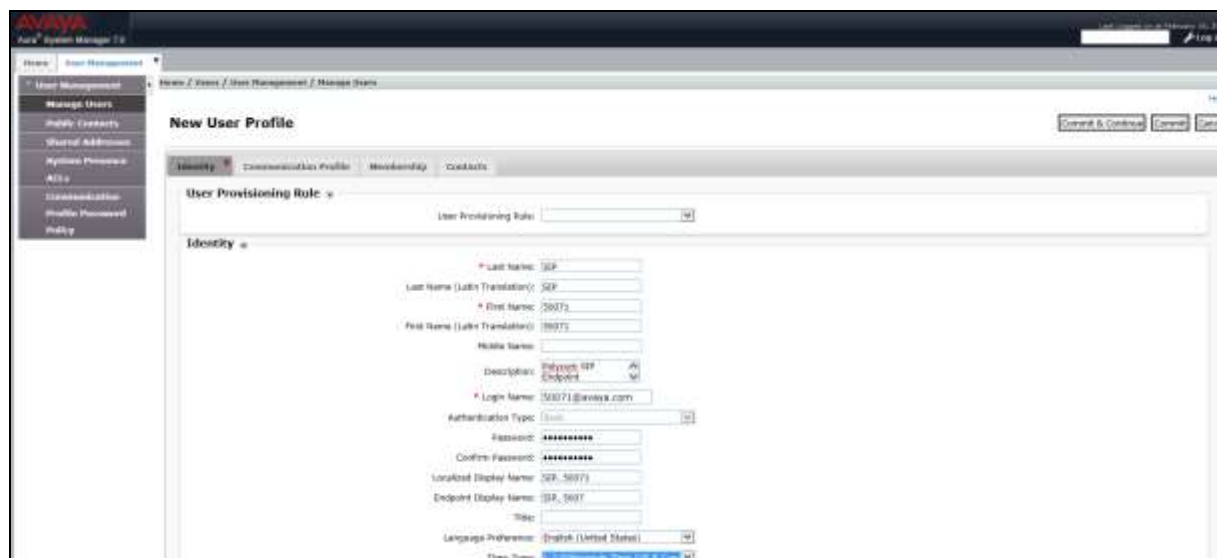
Name	SIP Entity	Description
CM70	CM70Procr	CM 7.0

5.6. Add SIP Users

Trio 8800 was entered as a SIP user on Session Manager using the following steps. Navigate to **Home**→**Users**→**User Management**→**Manage Users** and configure as follows. This configuration is automatically synchronized with Communication Manger, as verified in **Section 6.3**.

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

- **Last Name:** Enter the last name of the user
- **First Name:** Enter the first name of the user
- **Login Name:** Enter <extension>@<sip domain> of the user (e.g., **50071@avaya.com**)
- **Password:** Enter the password used to register with System Manager
- **Confirm Password:** Re-enter the password from above



The screenshot shows the 'New User Profile' form in the Avaya System Manager interface. The form is titled 'New User Profile' and has tabs for 'Identity', 'Communication Profile', 'Membership', and 'Contacts'. The 'Identity' tab is active. The form contains the following fields and values:

- User Provisioning Rule:** A dropdown menu.
- Identity:**
 - Last Name:** SIP
 - Last Name (Latin Translation):** SIP
 - First Name:** 50071
 - First Name (Latin Translation):** 50071
 - Mobile Name:** (empty)
 - Description:** Polycom SIP Endpoint
 - Login Name:** 50071@avaya.com
 - Authentication Type:** (empty)
 - Password:** (masked with asterisks)
 - Confirm Password:** (masked with asterisks)
 - Localized Display Name:** SIP_50071
 - Endpoint Display Name:** SIP_50071
 - Title:** (empty)
 - Language Preference:** English (United States)
 - Time Zone:** (empty)

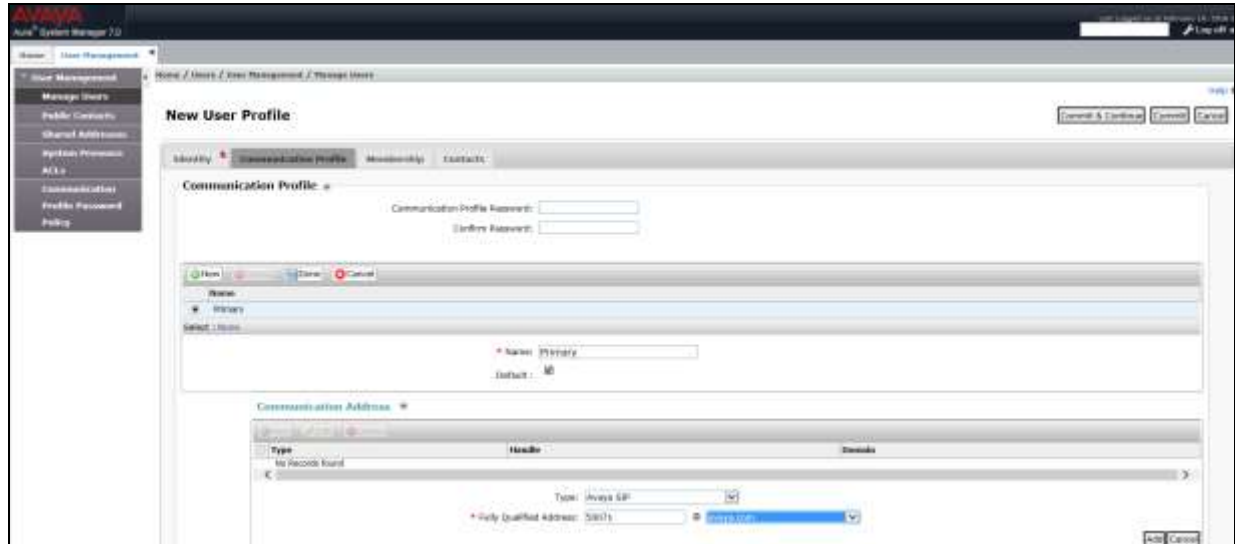
Click the **Communication Profile** tab and enter values for the following required fields:

- **Communication Profile Password:** Enter a valid password.
- **Confirm Password:** Make sure that it matches the password entered above

Click **New** to define a **Communication Address** for the new SIP user. Enter values for the following required fields:

- **Type:** Select *Avaya SIP* (default)
- **Fully Qualified Address:** Enter extension number and SIP domain

The screen below shows the information when adding a new SIP user to the sample configuration. Click **Add**.



In the **Session Manager Profile** section, specify the Session Manager entity configured in **Section 5.3.1** and assign the **Application Sequence** defined in **Section 5.5** to both the **Originating Sequence** and **Termination Sequence** fields. Additionally, set **Home Location** field to *Session Manager* configured in **Section 5.2**.

Session Manager Profile ▾

SIP Registration

* Primary Session Manager

Primary	Secondary	Maximum
12	0	12

Secondary Session Manager

Survivability Server

Max. Simultaneous Devices ▾

Block New Registration When Maximum Registrations Active?

Application Sequences

Origination Sequence ▾

Termination Sequence ▾

Call Routing Settings

* Home Location ▾

Conference Factory Set ▾

Call History Settings

Enable Centralized Call History?

In the **CM Endpoint Profile** section, fill in the following fields:

- **System:** Select the managed element corresponding to Communication Manager in **Section 5.4**
- **Profile Type:** Select **Endpoint**
- **Use Existing Stations:** If field is not selected, the station will automatically be added in Communication Manager
- **Extension:** Enter extension number of the SIP user
- **Template:** Select template for type of SIP phone which is set to

9621SIP_DEFAULT_CM_7_0 for Trio 8800

Click **Commit** (not shown).

CM Endpoint Profile ▼

* System ▼

* Profile Type ▼

Use Existing Endpoints

* Extension Endpoint Editor

* Template ▼

Set Type

Security Code

Port

Voice Mail Number

Preferred Handle ▼

Calculate Route Pattern

Sip Trunk

Enhanced Callr-Info display for 1-line phones

Delete Endpoint on Unassign of Endpoint from User or on Delete User

Override Endpoint Name and Localized Name

Allow H.323 and SIP Endpoint Dual Registration

6. Configure Avaya Aura® Communication Manager

This section describes the steps for configuring Trio 8800 as an Off-PBX Station (OPS) and configuring a SIP trunk between Communication Manager and Session Manager. Use the System Access Terminal (SAT) to configure Communication Manager and log in with the appropriate credentials. Note that the fields modified in this section are for this reference configuration only; defaults are used for all other fields.

6.1. Verify OPS and SIP Trunk Capacity

Using the SAT, verify that the Off-PBX Telephones (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 11
                                OPTIONAL FEATURES

G3 Version: V16                                     Software Package: Enterprise
Location: 2                                         System ID (SID): 1
Platform: 28                                       Module ID (MID): 1

                                USED
Platform Maximum Ports: 6400 25
Maximum Stations: 2400 10
Maximum XMOBILE Stations: 2400 0
Maximum Off-PBX Telephones - EC500: 9600 0
Maximum Off-PBX Telephones - OPS: 9600 5
Maximum Off-PBX Telephones - PBFMC: 9600 0
Maximum Off-PBX Telephones - PVFMC: 9600 0
Maximum Off-PBX Telephones - SCCAN: 0 0
Maximum Survivable Processors: 313 0

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

On **Page 2** of the **system-parameters customer-options** form, verify that the number of SIP trunks supported by the system is sufficient.

```

display system-parameters customer-options
OPTIONAL FEATURES
Page 2 of 11
IP PORT CAPACITIES
Maximum Administered H.323 Trunks: 4000 0
Maximum Concurrently Registered IP Stations: 2400 2
Maximum Administered Remote Office Trunks: 4000 0
Maximum Concurrently Registered Remote Office Stations: 2400 0
Maximum Concurrently Registered IP eCons: 68 0
Max Concur Registered Unauthenticated H.323 Stations: 100 0
Maximum Video Capable Stations: 2400 0
Maximum Video Capable IP Softphones: 2400 0
Maximum Administered SIP Trunks: 4000 160
Maximum Administered Ad-hoc Video Conferencing Ports: 4000 0
Maximum Number of DS1 Boards with Echo Cancellation: 80 0
Maximum TN2501 VAL Boards: 10 0
Maximum Media Gateway VAL Sources: 50 0
Maximum TN2602 Boards with 80 VoIP Channels: 128 0
Maximum TN2602 Boards with 320 VoIP Channels: 128 0
Maximum Number of Expanded Meet-me Conference Ports: 300 0

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

```

6.2. Configure SIP Trunk

In the **IP Node Names** form, assign an IP address and host name for Session Manager (**ASM70**), Communication Manager Messaging (**CMM70**) and Media Server (**AMS70**). The host names will be used throughout the other configuration screens of Communication Manager.

```

change node-names ip
IP NODE NAMES
Page 1 of 2
Name IP Address
default 0.0.0.0
ASM70 10.64.102.157
CMM70 10.64.102.151
AMS70 10.64.102.158
procr 10.64.102.150
procr6 ::

```

In the **IP Network Region** form, the **Authoritative Domain** field is configured to match the domain name configured on Session Manager. In this configuration, the domain name is **avaya.com**. 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 Media Gateway or Media Server. The **IP Network Region** form also specifies the **Codec Set** to be used for calls routed over the SIP trunk to Session Manager. This codec set is used when its corresponding network region (i.e., IP Network Region 2) is specified in the SIP signaling group.

```

change ip-network-region 2                                     Page 1 of 20

                                IP NETWORK REGION

Region: 2
Location: 1           Authoritative Domain: avaya.com
Name: Main Network Region
MEDIA PARAMETERS           Intra-region IP-IP Direct Audio: yes
Codec Set: 2             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

```

In the **IP Codec Set** form, select the audio codec type supported for calls routed over the SIP trunk to Trio 8800. The form is accessed via the **change ip-codec-set 2** command. Note that IP codec set 2 was specified in IP Network Region 2 shown above. The following form shows the list of codecs tested. The order of these codecs was changed to support the some of the codecs for reasons listed in **Section 2.2**.

```

change ip-codec-set 2                                     Page 1 of 2

                                IP Codec Set

Codec Set: 2

Audio      Silence      Frames      Packet
Codec      Suppression  Per Pkt    Size (ms)
1: G.711MU      n              2          20
2: G.711A       n              2          20
3: G.722-64K   2              2          20
4: iLBC        1              1          20-30
5:
6:
7:

```

Prior to configuring a SIP trunk group for communication with Session Manager, a SIP signaling group must be configured. Configure the Signaling Group form as follows:

- **Group Type:** Set to *sip*
- **Transport Method:** Set to *tcp*
- **Near-end Node Name:** Set to *procr* node configured in this section
- **Far-end Node Name:** Set to *ASM70* node configured in this section
- **Far-end Network Region:** Set to network region configured in this section
- **Far-end Domain:** Set to *avaya.com* to match the Session Manager domain configured in **Section 5.1**
- Verify **Direct IP-IP Audio Connections** field is set to *y* for shuffling
- Verify **DTMF over IP** field is set to the default value of *rtp-payload* indicating DTMF transmission using RFC 2833

```

add signaling-group 2                                     Page 1 of 1
                                     SIGNALING GROUP

Group Number: 2                                     Group Type: sip
  IMS Enabled? n                                     Transport Method: tcp
    Q-SIP? n
    IP Video? n                                     Enforce SIPS URI for SRTP? y
  Peer Detection Enabled? y Peer Server: SM

  Near-end Node Name: procr                           Far-end Node Name: ASM70
  Near-end Listen Port: 5060                         Far-end Listen Port: 5060
                                                    Far-end Network Region: 2
                                                    Far-end Secondary Node Name:

Far-end Domain: avaya.com

                                     Bypass If IP Threshold Exceeded? n
Incoming Dialog Loopbacks: eliminate                 RFC 3389 Comfort Noise? n
  DTMF over IP: rtp-payload                         Direct IP-IP Audio Connections? y
Session Establishment Timer(min): 3                  IP Audio Hairpinning? n
  Enable Layer 3 Test? y                             Initial IP-IP Direct Media? n
H.323 Station Outgoing Direct Media? n              Alternate Route Timer(sec): 6

```

Configure the **Trunk Group** form as shown below. This trunk group is used for calls to the SIP Phones. Set the **Group Type** field to *sip*, set the **Service Type** field to *tie*, specify the signaling group associated with this trunk group in the **Signaling Group** field, and specify the **Number of Members** supported by this SIP trunk group. Configure the other fields in bold and accept the default values for the remaining fields.

```

add trunk-group 2                                     Page 1 of 21
                                     TRUNK GROUP

Group Number: 2                                     Group Type: sip           CDR Reports: y
  Group Name: SIP Endpoints/CM Messaging COR: 1     TN: 1                   TAC: 102
  Direction: two-way                               Outgoing Display? n
  Dial Access? n                                   Night Service:
  Queue Length: 0
  Service Type: tie                                Auth Code? n
                                               Member Assignment Method: auto
                                               Signaling Group: 2
                                               Number of Members: 15
  
```

On **Page 3** of the **Trunk Group** form, set the **Numbering Format** field to *private*. This field specifies the format of the calling party number sent to the far-end.

```

add trunk-group 2                                     Page 3 of 21
TRUNK FEATURES
  ACA Assignment? n                               Measured: none
                                               Maintenance Tests? y

  Numbering Format: private
                                               UUI Treatment: service-provider
                                               Replace Restricted Numbers? n
                                               Replace Unavailable Numbers? n

                                               Modify Tandem Calling Number: no
  Show ANSWERED BY on Display? y
  DSN Term? n
  
```

Configure the **Private Numbering Format** form to send the calling party number to the far-end. Add an entry so that local stations with a 5-digit extension beginning with **5** and whose calls are routed over any trunk group, including SIP trunk group **2**, have the number sent to the far-end for display purposes.

```

change private-numbering 0                           Page 1 of 2
                                     NUMBERING - PRIVATE FORMAT

Ext  Ext      Trk      Private      Total
Len  Code     Grp(s)   Prefix      Len
  5   33       10      5           5   Total Administered: 4
  5   58       10      5           5   Maximum Entries: 540
  5   5        2       5           5
  5   600     10      5           5
  
```

6.3. Configure Signaling Group For Avaya Aura® Media Server

Another signaling group was created between Communication Manager and Media Server to provide media resources for IP telephony in parallel with Media Gateway G650 resource. Following signaling group was created for this reference configuration:

- **Group Type:** Set to *sip*
- **Transport Method:** Set to *tcp*
- **Peer Detection Enable:** Set to *n*
- **Peer Server:** Set to *AMS*
- **Near-end Node Name:** Set to *procr* node shown in **Section 6.2**
- **Far-end Node Name:** Set to *AMS70* node configured in **Section 6.2**
- **Far-end Network Region:** Set to network region configured in **Section 6.2**

```
add signaling-group 3                                     Page 1 of 1
                                                         SIGNALING GROUP
Group Number: 3           Group Type: sip
                          Transport Method: tcp
Peer Detection Enabled? n Peer Server: AMS
Near-end Node Name: procr           Far-end Node Name: AMS70
Near-end Listen Port: 5060         Far-end Listen Port: 5060
                          Far-end Network Region: 2
Far-end Domain: 10.64.102.158
```

6.4. Verify SIP Stations

Use the **display station** command to view each Trio 8800 SIP endpoint configured in **Section 5.6**.

```
display station 50071                                     Page 1 of 6
                                                         STATION
Extension: 50071           Lock Messages? n           BCC: 0
Type: 9621SIP             Security Code:           TN: 1
Port: S00003              Coverage Path 1: 1       COR: 1
Name: 50071 SIP           Coverage Path 2:         COS: 1
                          Hunt-to Station:
STATION OPTIONS
                          Time of Day Lock Table:
Loss Group: 19            Message Lamp Ext: 40012
Display Language: english
Survivable COR: internal
Survivable Trunk Dest? y   IP SoftPhone? n
                          IP Video? n
```


Use the **display off-pbx-telephone station-mapping** to verify proper entry of Trio 8800 SIP station in Communication Manager.

```
display off-pbx-telephone station-mapping 50071 Page 1 of 3
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION
```

Station Extension	Application	Dial Prefix	CC	Phone Number	Trunk Selection	Config Set	Dual Mode
50071	OPS	-		50071	aar	1	

On **Page 2**, verify that the **Call Limit** matches the number of *call-appr* entries in the station form.

```
display off-pbx-telephone station-mapping 50071 Page 2 of 3
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION
```

Station Extension	Appl Name	Call Limit	Mapping Mode	Calls Allowed	Bridged Calls	Location
50071	OPS	3	both	all	none	

7. Configure Polycom® RealPresence Trio™ 8800

This section describes how to set up the Trio 8800 network and SIP interface along with authentication information to register with Session Manager. Note that the fields modified in this section are for this reference configuration only; defaults are used for all other fields.

7.1. Set the IP address used by Trio 8800

This section shows how to set the network IP address Trio 8800.

On Trio 8800, push the **Settings** button and navigate to **Advanced**→**Administration Settings**→**Network Configuration**→**Network Interfaces**→**Ethernet Menu** and configure as follows:

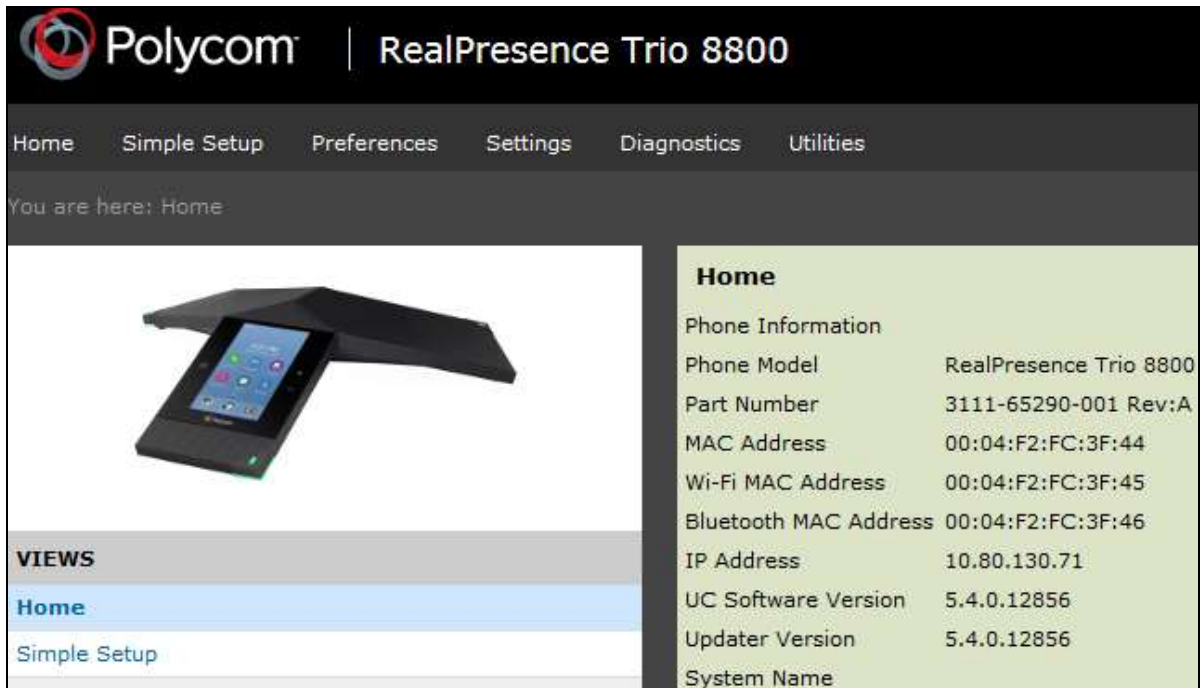
- **DHCP:** *Disabled*
- **IP Address:** *010.080.130.071*
- **Subnet Mask:** *255.255.255.000*
- **IP Gateway:** *010.080.130.001*

7.2. Launch Web interface for Trio 8800

Open the web browser, and in the address field enter the Trio 8800 IP address as format ***http://10.80.130.71*** and the login page will appear as shown below. Select ***Admin***, enter the default password and click **Submit**.



The following home page is displayed.

The image shows the home page of the Polycom RealPresence Trio 8800 web interface. At the top left is the Polycom logo and the text "RealPresence Trio 8800". Below this is a navigation menu with links: "Home", "Simple Setup", "Preferences", "Settings", "Diagnostics", and "Utilities". Under the navigation menu, it says "You are here: Home". The main content area is split into two columns. The left column features a large image of the Trio 8800 device and a "VIEWS" section with "Home" (highlighted) and "Simple Setup" links. The right column is titled "Home" and contains a "Phone Information" table.

Phone Information	
Phone Model	RealPresence Trio 8800
Part Number	3111-65290-001 Rev:A
MAC Address	00:04:F2:FC:3F:44
Wi-Fi MAC Address	00:04:F2:FC:3F:45
Bluetooth MAC Address	00:04:F2:FC:3F:46
IP Address	10.80.130.71
UC Software Version	5.4.0.12856
Updater Version	5.4.0.12856
System Name	

7.3. Configure the Lines for Trio 8800

Navigate to **Settings**→**Lines** and configure as follows:

Under **Identification** section:

- **Display Name:** Set to any valid string
- **Address:** Set to the **Login Name** in **Section 5.6**
- **Label:** Set to any valid string

Under **Authentication** section:

- **Domain:** Set to the domain configured in **Section 5.1**
- **User ID:** Set to Extension of **Login Name** in **Section 5.6**
- **Password:** Set to **Communication Profile Password** field value configured in **Section 5.6**

Click **Save** (not shown)

The screenshot displays the Polycom RealPresence Trio 8800 web interface. The top navigation bar includes links for Home, Simple Setup, Preferences, Settings, Diagnostics, and Utilities. The breadcrumb trail indicates the current location: Settings > Lines > Line 1. On the left, there is a 'VIEWS' section with 'Line 1' selected. The main content area shows the configuration for 'Line 1', divided into two sections: Identification and Authentication.

Line 1	
Identification	
Display Name	50071
Address	50071@avaya.com
Label	50071-SIP
Type	<input checked="" type="radio"/> Private <input type="radio"/> Shared
Third Party Name	
Number of Line Keys	1
Calls Per Line	24
Enable SRTP	<input checked="" type="radio"/> Yes <input type="radio"/> No
Offer SRTP	<input type="radio"/> Yes <input checked="" type="radio"/> No
Server Auto Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Authentication	
Use Login Credentials	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Domain	avaya.com
User ID	50071
Password	••••

7.4. SIP Settings

Navigate to **Settings**→**SIP** and configure as follows:

Under **Local Settings** section,

- Set **Digitmap Impossible Match** field to **2** to disable the automatic dial if the digits match in **Digitmap** field. This was done to enable Feature Access Codes to work properly

Under **Server1** section

- **Address:** Set to the IP address of Session Manager signaling interface
- **Port:** Set to **5060** for TCP
- **Transport:** Set to **TCPpreferred**

Click **Save** (not shown)

Note: The default local Digitmap configuration may require customization. Refer to **Section 10 [9]** for further details.

The screenshot displays the Polycom RealPresence Trio 8800 web interface. The top navigation bar includes Home, Simple Setup, Preferences, Settings, Diagnostics, and Utilities. The breadcrumb trail indicates the current location: Settings > SIP. A sidebar on the left lists various system views, with SIP selected. The main content area is divided into three sections: Local Settings, Outbound Proxy, and Server 1. The Local Settings section includes fields for Local SIP Port (0), Calls Per Line Key (24), Enable Roaming buddies for (None), New SDP Type (Disable), Live Communication Server Support (Disable), Non Standard Line Seize (Enable), Disable Forward For Shared Line (Enable), Digitmap (a complex alphanumeric string), Digitmap Timeout (33333333), Remove End-of-Dial Marker (Enable), and Digitmap Impossible Match (2). The Outbound Proxy section is currently empty. The Server 1 section includes fields for Special Interop (Standard), Address (10.64.102.157), Port (5060), Transport (TCPpreferred), Expires (3600), Subscription Expires (3600), Register (Yes), Retry Timeout (0), Retry Maximum Count (3), and Line Seize Timeout (30).

7.5. Local Call Forward Settings

Navigate to **Settings**→**Lines** and configure **Call Diversion** section as shown screen below.

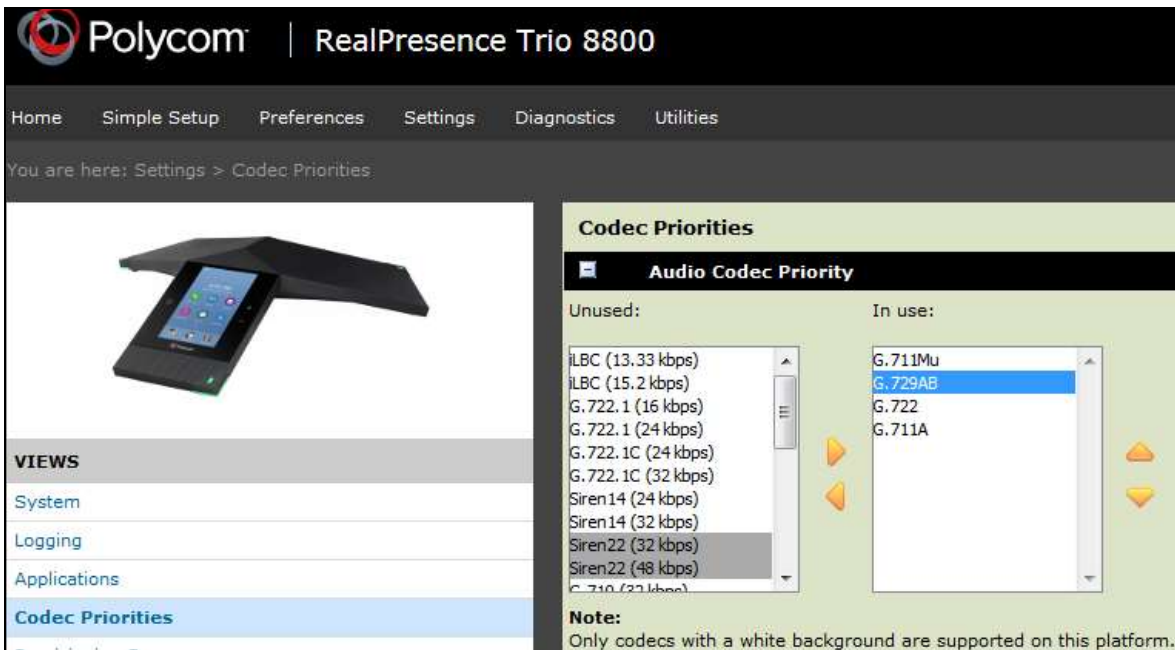
Note: These features can also be enabled directly from the phone too.

The screenshot displays the Polycom RealPresence Trio 8800 web interface. The top navigation bar includes 'Home', 'Simple Setup', 'Preferences', 'Settings', 'Diagnostics', and 'Utilities'. The breadcrumb trail indicates the current location: 'You are here: Settings > Lines > Line 1'. On the left, there is a 'VIEWS' section with 'Line 1' selected. The main content area shows the 'Line 1' configuration page, with a 'Call Diversion' section expanded. The 'Call Diversion' section includes the following settings:

- Enforced by Server:** Yes No
- Signaling Method:**
- Lync Forward:**
- Lync Forward Contact:**
- Always Forward:** Enable Disable
- Always Forward To Contact:**
- If Busy, Forward:** Enable Disable
- If Busy, Forward To Contact:**
- On No Answer, Forward:** Enable Disable
- On No Answer, Forward To Contact:**
- On No Answer, Forward After Rings:**
- * On Do Not Disturb, Forward:** Enable Disable
- * On Do Not Disturb, Forward To Contact:**
- * Disable Forward For Shared Lines:** Yes No
- * Forward Specific Caller:** Enable Disable

7.6. Audio Codec Settings

Navigate to **Settings**→**Codec Priorities** and configure as shown below. The codecs shown in the **In use** column were tested in this reference configuration. The priority can be changed by moving the codecs up or down the order.



Polycom | RealPresence Trio 8800

Home Simple Setup Preferences Settings Diagnostics Utilities

You are here: Settings > Codec Priorities

Codecs

Views

- System
- Logging
- Applications
- Codec Priorities**

Codec Priorities

Audio Codec Priority

Unused:	In use:
iLBC (13.33 kbps)	G.711Mu
iLBC (15.2 kbps)	G.729AB
G.722.1 (16 kbps)	G.722
G.722.1 (24 kbps)	G.711A
G.722.1C (24 kbps)	
G.722.1C (32 kbps)	
Siren14 (24 kbps)	
Siren14 (32 kbps)	
Siren22 (32 kbps)	
Siren22 (48 kbps)	
G.710 (22 kbps)	

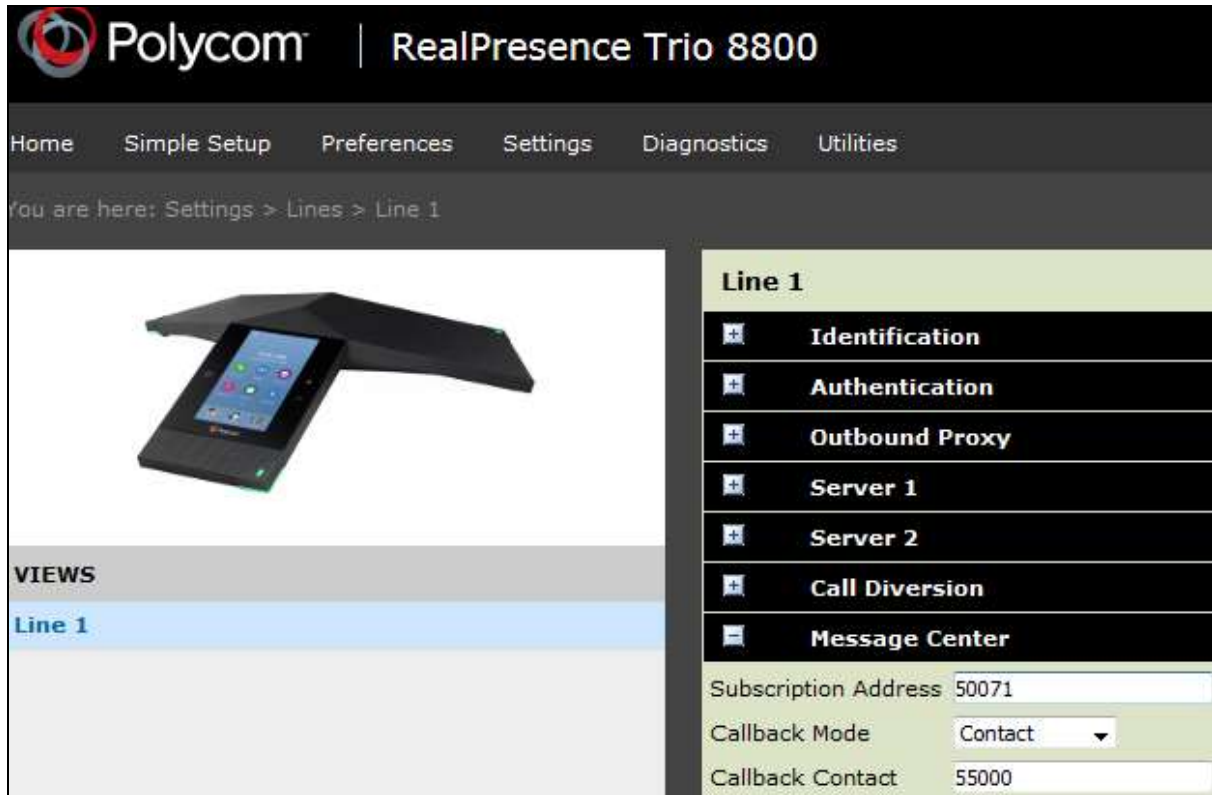
Note:
Only codecs with a white background are supported on this platform.

7.7. Voice Mail Setting

Navigate to **Settings**→**Lines** and configure **Message Center** section as follows:

- **Subscription Address:** Set to the Authentication ID field value **Section 7.3**
- **Callback Mode:** Set to the *Contact*
- **Callback Contact:** Set to voicemail messaging Pilot number

Click **Save** (not shown)



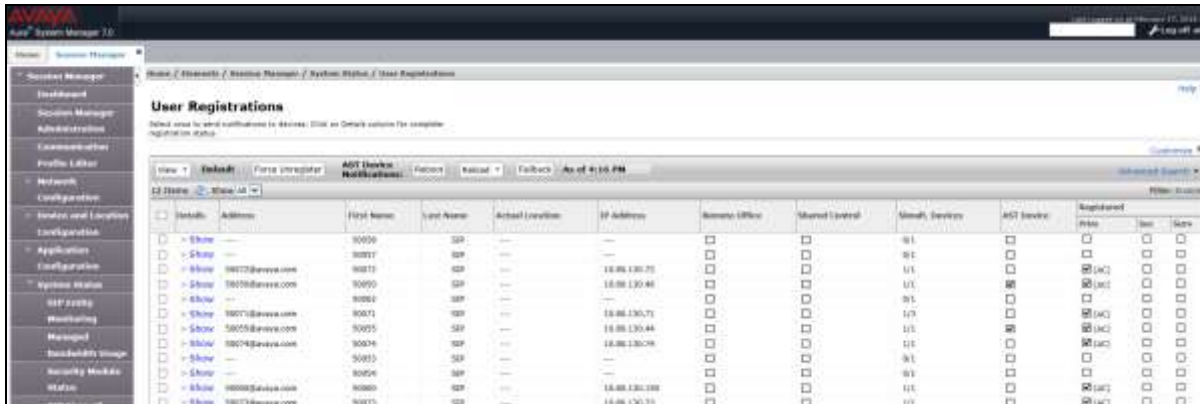
The screenshot displays the Polycom RealPresence Trio 8800 web interface. The top navigation bar includes links for Home, Simple Setup, Preferences, Settings, Diagnostics, and Utilities. The breadcrumb trail indicates the current location: Settings > Lines > Line 1. On the left, there is a 'VIEWS' section with 'Line 1' selected. The main content area shows the configuration for 'Line 1', with the 'Message Center' section expanded. The configuration details are as follows:

Line 1	
+	Identification
+	Authentication
+	Outbound Proxy
+	Server 1
+	Server 2
+	Call Diversion
-	Message Center
Subscription Address	50071
Callback Mode	Contact
Callback Contact	55000

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Session Manager and Communication Manager with Trio 8800.

- Verify that Trio 8800 is registered with Session Manager. The following screen shows the registered SIP users with Session Manager:



The screenshot displays the Avaya Aura System Manager interface, specifically the 'User Registrations' page. The page shows a list of registered SIP users with columns for 'Details', 'Address', 'First Name', 'Last Name', 'Actual Location', 'IP Address', 'Business Office', 'Shared Control', 'Service', 'Asterisk', 'Registered', 'Pin', 'Set', and 'Start'. The table contains 12 rows of data, each representing a registered user with various attributes like IP addresses and service settings.

- Verify that basic calls can be made from and to Trio 8800.

9. Conclusion

These Application Notes describe the configuration steps required for Polycom® Trio™ 8800 conference station to successfully interoperate with Avaya Aura® Session Manager and Avaya Aura® Communication Manager. All feature and serviceability test cases were completed with the exceptions noted in **Section 2.2**.

10. Additional References

This section references the product documentation available at support.avaya.com relevant to these Application Notes.

- [1] [Deploying Avaya Aura® System Manager, Release 7.0, January 2015](#)
- [2] [Administering Avaya Aura® System Manager, Release 7.0, January 2016](#)
- [3] [Deploying Avaya Aura® Session Manager on VMWare, Release 7.0, August 2015](#)
- [4] [Administering Avaya Aura® Session Manager, Release 7.0, August 2015](#)
- [5] [Deploying Avaya Aura® Communication Manager in Virtualized Environment, Release 7.0, August 2015](#)
- [6] [Deploying and Updating Avaya Aura® Media Server Appliance, Release 7.7, October 2015](#)
- [7] [Implementing and Administering Avaya Aura® Media Server, Release 7.7, January 2016](#)
- [8] [Deploying Avaya Aura® Communication Manager Messaging, Release 7.0, September 2015](#)
- [9] Polycom Trio 8800 Conference Phone technical product documentation is available at http://support.polycom.com/PolycomService/support/us/support/voice/realpresence_trio/realpresence_trio.html

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