



## **White Paper / Application Note**

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# **Configuring Avaya Communication Server 1000E and Avaya Aura when deploying Avaya Communicator for Microsoft Lync (SIP) - Issue 1.0**

### **Abstract**

This Application Note describes the detailed procedures for configuring Avaya Communication Server 1000 and Avaya Aura when deploying Avaya Communicator for Microsoft Lync. This solution consists of the Avaya Communication Server 1000 and the Avaya Aura® solution. In the sample configuration described herein, an Avaya Communicator for Lync user has their primary call control (SIP) on the Avaya Aura Communication Manager. Communicator for Lync uses its Other Phone Mode (Aka telecommuter Mode) to place and receive calls through their Avaya Communication Server 1000E desk phone, The user continues to utilize their single Avaya CallPilot voice mailbox

The steps documented in this Application Note focus on how these attributes are configured across the solution.

Information in these Application Notes has been obtained through Solution Verification full stack testing and additional technical discussions.

# Table of Contents

1. Introduction.....	4
2. Interoperability Testing.....	7
2.1. Test Description and Coverage .....	8
2.2. Test Results and Observations .....	9
3. Reference Configuration .....	11
4. Equipment and Software Validated .....	14
5. Configure Avaya Communication Server 1000E .....	15
5.1. Logon to Avaya Aura® System Manager.....	16
5.2. Navigate to CS 1000 Element Manager .....	17
5.3. Confirm Node and IP Addresses .....	18
5.4. Configure SIP Trunk to Avaya Aura® Session Manager .....	19
5.5. Confirm Virtual D-Channel, Routes and Trunks .....	24
5.5.1. Confirm Virtual D-Channel Configuration.....	24
5.5.2. Confirm SIP Route and Trunk Configuration.....	24
5.6. Configure ESN for Route List Index and Digit Manipulation .....	26
5.6.1. Create Route List Index .....	26
5.6.2. Create Distant Steering Code.....	28
6. Configure Avaya Aura® Session Manager .....	31
6.1. Verify SIP Domains .....	32
6.2. Define Location for Avaya Communication Server 1000 .....	33
6.3. Configure Adaptation Module .....	34
6.4. Define SIP Entities .....	36
6.4.1. SIP Entity for CS 1000 .....	37
6.4.2. SIP Entity for Communication Manager .....	37
6.5. Define Entity Links .....	38
6.5.1. Entity Link for Avaya Communication Server 1000.....	39
6.5.2. Entity Link for Communication Manager.....	39
6.5.3. Define Routing Policy.....	40
6.5.4. Define the Routing Policy for calls to Avaya Communication Server 1000.....	42
6.6. Define Dial Pattern.....	43
7. Configure Avaya Aura® Communication Manager .....	47
7.1. Verify System Access Codes match.....	48
7.2. Verify IP Network Region –SIP Domain.....	50
7.3. Configure Trunk-to-Trunk Transfers .....	51
7.4. Administer SIP Signaling Group .....	52
7.5. Administer SIP Trunk Group .....	55

7.6.	Verify Signaling Group and Trunk Group are in-service .....	58
7.7.	Administer Private Numbering Plan .....	60
7.8.	Administer Public Numbering Plan .....	62
7.9.	Administer Uniform Dial Plan .....	63
7.10.	Administer Route Pattern .....	65
7.11.	Administer ARS Analysis .....	67
8.	User Management .....	70
8.1.	Confirm existing users in Avaya Communication Server 1000E Element Manager .....	70
8.2.	Create User Identities and Communication profiles .....	74
8.3.	Synchronize Communication Profiles.....	83
8.3.1.	Avaya Communication Server 1000E .....	83
8.4.	Personal Call Assistant Configuration (PCA).....	84
8.5.	Configuring CLID for the User's CS 1000 desk phone .....	86
8.6.	Manual Configuration of Avaya Communicator for Lync SIP client .....	87
9.	Verification Steps.....	89
9.1.	Verify Avaya Aura® Session Manager Operational Status .....	89
9.2.	Verify Avaya Aura® Session Manager Entity Links Status .....	90
9.3.	Verify Avaya Aura® Session Manager Security Module Status .....	91
9.4.	Verify Registrations of SIP Endpoints .....	92
10.	Conclusion .....	93
11.	Additional References.....	94

# 1. Introduction

This Application Note describes the procedures for configuring Avaya Communication Server 1000E Release 7.6 and Avaya Aura® solution Release 6.4 with Avaya Communicator for Microsoft Lync release 6.4 (SIP end point). Screenshots in this document may vary slightly with the different release of the products but methods and procedures remains consistent.

This solution is based on the combined Avaya Communication Server 1000 / Aura Communication Manager solution (formally known as Collaboration pack). In this deployment Avaya Aura® Midsize Enterprise or Avaya Aura® with discreet server components is used to extend the Avaya Communicator for Microsoft Lync functionality to Communication Server 1000 (CS 1000) users.

This solution is suitable for Customer's who wish to retain their CS 1000 desk phone and use the Avaya Aura to add additional functionality such as Video support with Avaya Lync Integration.

With this solution Avaya Aura Communication Manager (CM) is used to provide call controlled over the users extension. This allows ACA to provide softphone support (Computer Mode) with Avaya Lync integration register directly to CM as a SIP end point and the user's Media (Voice and Video) presented to the user's PC. The user can make and receive calls using their CS 1000 desk phone by selecting Other Phone Mode. The user is able to retain the usage of their Call Pilot mail box.

The solution supports the following functionality:

- Utilize the Lync 2010/Lync 2013 client for IM and Presence, Microsoft Lync Voice and Video capability are turned off
- Make a Voice or Video<sup>1</sup> call from their Contact list, Outlook, Excel, Word, PowerPoint, or Internet Explorer using their Avaya infrastructure
- Select if they wish to use their computer or another device such as a CS 1000 set or mobile devices to make and receive calls
- Escalate from an IM to a Voice or Video<sup>1</sup> call
- Control active calls via a conversation window which provides mid call options such as end call, place the call on hold, insert DTMF digits into the call and escalate to Video<sup>1</sup>
- Receive a toast pop-up of an incoming call with information on who is calling and perform actions such as Answer the call
- Allows the user to Automatically Answer with video or have the manual option to accept or decline a Video<sup>1</sup> call.

Note 1: Video support is applicable to Computer Mode. A video call can't be instigated when using Other Phone Mode to control the user's CS 1000, Mobile or other device

This Application note aims at minimizing the impact to the CS 1000 User configuration and introducing call routing which ensures calls can be correctly presented to the appropriate end point.

This document makes the following assumptions

1. The enterprise has an Active directory populated with E164 Numbers which are synchronized with the Lync Address book
2. The CS 1000 users existing extensions number is are a sub set of these E164 numbers
3. Their new Aura extensions is also be an subset of the E164 numbers

Example: User's full E164 extension is +1 303 447xxxx, their existing CS 1000 extension was 7xxxx, and their new Communication Manager extension will be 447xxxx.

CS 1000 clients tested in the sample configuration covered by this application note include the 11xx and i2002p2, i2004p2 UNISTim IP desk phones and 39xx digital desk phones. Although not explicitly tested in this environment Avaya 12xx sets are also supported.

Avaya Aura® Midsize Enterprise R6.3 currently supports up to 2,000 users on a single server platform that includes virtualized instances of Avaya Aura® Session Manager, Avaya Aura® System Manager, Avaya Aura® Communication Manager and Avaya Aura® Presence Services. A G430 or G450 gateway is also included as standard with the Avaya Aura® Midsize Enterprise.

In this deployment Avaya Aura® Presence Services is not utilized.

Where a higher user capacity is required or where the Customer has already deployed discreet elements of the Aura solution then components Session Manager, System Managers and Communication Manager can be deployed/reused.

The Avaya Communication Server 1000E R7.6 provides advanced telephony capability via M3900 series digital desk phones and 1100 / 1200 series IP desk phones with UNISTim software. Connectivity with the Avaya Aura® system is via SIP trunks and PSTN connectivity is provided through ISDN trunks on the CS 1000.

Avaya CallPilot® provides a centralized voice mail capability for all users in the solution offering a centralized voice mailbox and associated Message Waiting Indication (MWI) functionality. Network Message Service (NMS) capability must be enabled on CallPilot to allow the transmission of MWI to clients on the Avaya Aura® Midsize Enterprise system.

Dial-in and meet-me conference services only are provided with an optional Avaya Aura® Conference server.

This Application Note will document the steps necessary to configure the main components of the Avaya CS 1000 and Avaya Aura to accommodate one Communicator for Lync user. The document is based on an existing sample configuration used in the testing of the solution.

Steps described in this document include:

1. Configure Avaya Communication Server 1000E
2. Configure Avaya Aura® Session Manager,
3. Configure Avaya Aura® Communication Manager,
4. User Management– configure Communicator for Lync user,
5. Verification Steps.

Detailed administration of other aspects of the CS 1000/Aura or additional equipment to support the installation (e.g. Active Directory / Domain Name Servers, Voice / Data Network equipment, Wireless LAN infrastructure, etc.) will not be described as it is outside the scope of this Application Note.

Administration of CallPilot for this solution is not covered in this application note as are the administration of optional CS 1000 / Aura solution components such as Avaya Aura® Conference (AAC), ASBCE for Remote User interactions, etc. References to relevant documentation sources are provided in **Section 10** to cover these.

Throughout this Application Note, the term “Avaya Communication Server 1000 / Aura” may sometimes be abbreviated and referred as “CS 1000/Aura” and the product name “Avaya Communicator for Microsoft Lync” will be shortened to “Avaya Communicator for Lync” or “Communicator for Lync”. Session Manager will be abbreviated to SM and Communication Manager to CM

## 2. Interoperability Testing

A reference configuration containing all of the equipment for the CS 1000 / Aura was installed and a large number of tests cases were executed to ensure functionality of the various user endpoints supported and interoperability between CS 1000 and Avaya Aura® Mid-Size Enterprise solution.

In this configuration Avaya Communicator for Microsoft Lync user is configured on Communication Manager (CM) and registered to Session manager as SIP end point and as such call control is anchored on CM. The user has the ability to make and receive call using their Other Phone (with their CS 1000 phone) or Computer Mode.

When, the user selects Other Phone Mode and makes a call, CM will call the user's desk phone 2xxxx and when answered will proceed to call the called party. Communicator for Lync will present the user with a Conversation window which will allow them to control the call from their PC.

For an incoming call, it will be presented to CS 1000 virtual extension 7xxxx and using PCA this call will be forwarded to SM/CM extension 447xxxx. Communicator for Lync will present a Toast Pop up notifying the user to answer their call on their desk phone. When answered, Communicator for Lync will present the user with a Conversation window which will allow them to control the call from their PC.

When in Computer mode and the user make a call, CM will place the call directly to the called party. Communicator for Lync will present the user with a Conversation window which will allow them to control the call from their PC. For an incoming call it will be presented to CS 1000 virtual extension 7xxxx and using PCA this call will be forwarded to SM/CM extension 447xxxx. Communicator for Lync will present a Toast Pop up notifying to the user of the incoming call. The user can answer/decline this call by selecting the accept/ignore call option on the toast pop up. When answered, the user will be presented with a Conversation window which will allow them to control the call from their PC.

1. Communicator for Lync user's full E.164 number: +1 303 447 xxxx
  - a. CS 1000desk phone DN: 2xxxx
  - b. PCA virtual DN: 7xxxx
  - c. CM extension of Lync: 447xxxx
2. CS 1000 user with additional end point on Aura i.e. Avaya Communicator for Windows or Avaya Communicator for iPhone/Android clients
  - a. User's full E.164 number: +1 303 447 xxxx
  - b. PCA virtual DN: 7xxxx
  - c. CM extension of Lync: 447xxxx
3. Native users on CS 1000
  - a. User's full E.164 number: +1 303 447 xxxx
  - b. CS 1000desk phone DN: 7xxxx.

When the Communicator for Lync user want to make a call to another CS 1000 user they can select the user from their Lync Contact list, Search Lync for this contact or enter the user CS 1000 DN. Communicator for Lync will take this number, be it the 5 digit CS 1000 extension or the users full E164 number and convert this to the CS 1000 5 digit extension i.e. 7xxxx. This number is then passed to CM which routes the call via Session Manager to the CS 1000. If this call is destined for a native CS 1000 user then CS 1000 will present the call to their device. If the call is for another Communicator for Lync user then the call will receive its PCA treatment and be routed back to Aura.

It is recommended that for correct CLID, calls are made using the Communicator for Lync client. Load 15 can be used to configure the local desk phones CLID to display the users E164 number.

In the case of the Lync Client being logged out, call no answer or call busy, call redirection will occur which will redirection the call to the user's desk phone and / or to the user's single CallPilot voice mailbox.

PSTN calling is achieved with ISDN trunks off the CS 1000 for all clients.

It is presumed that the CS 1000E Release 7.6 system and software and the CallPilot integrated server and software have already been provisioned. This combination represents an existing CS 1000 Customer configuration. In addition, the extra components of the CS 1000 / Aura solution such as Avaya Aura® Midsize Enterprise system, various SIP endpoints and network infrastructure (LAN, WLAN, an optional Session Border Controller, etc.) and an optional Avaya Aura® Conferencing server are also presumed to have been provisioned.

This Application Note documents the procedures necessary to configure the main components of the solution (CS 1000, Session Manager and Communication Manager) including the SIP trunking between the CS 1000 and Session Manager and subsequent user administration for one new Avaya Communicator for Microsoft Lync user.

Note: An incoming PSTN or CS 1000 originated call presented to the Communicator for Lync user in Other Phone Mode will be route back to the users CS 1000 desk phone. Since this call continued to hosted on Aura Communication manager two trunks are consumed between the CS 1000 and Aura systems

## **2.1. Test Description and Coverage**

To verify the interoperability and operation for Avaya Communicator for Microsoft Lync Users the following features and functionality were covered during the testing:

- Single E164 number for CLID on incoming and outgoing calls
- Single voice mailbox via CallPilot with associated MWI functionality
- Voicemail navigation for inbound and outbound calls via CallPilot
- Presence status during basic call scenarios with Lync as the presence aggregator
- Incoming and outgoing PSTN calls
- Point to point calls (call flows between each user / endpoint)



- Multiple call scenarios
- User features such as hold and resume (with music on hold)
- Call transfer and conference calls (Communicator for Lync Computer mode only)
- Caller ID presentation during incoming and call transfers
- Proper codec negotiations (G711 / G729 / direct and in-direct media)
- CS 1000 Attendant console interactions / call flows

The following was not tested with this solution:

- Interactions with ACE based Lync Integration (not supported)
- Any clients on the Aura client other than those explicitly referenced in this document are considered out of scope
- Third party CDR applications
- AAC multiple / cascading media servers
- AAC Ad-hoc conference and Dial-out not supported for the solution at this stage
- No requirement to test SIP clients registered to CS 1000 SIP Line Gateway
- Support of a peer CS 1000 system with the same ME (CS 1000 Networking)
- Geo-redundancy and branch solutions
- PSTN calls routed directly to Aura
- SIP Trunks to Service Provider
- Off-Net Call forwarding
- PRI or SIP trunks between CS 1000 and Communication Manager for convergence
- FAX call testing
- Traffic / Load testing
- Scale testing with endpoints
- Internationalization/ Localization testing
- Web Alive
- Identity Engine Analytics
- DTLS (secure signaling link) for UNISTim IP sets on CS 1000
- Network Address Translation (NAT) remote endpoints through ASBCE
- Callpilot Desktop Messaging
- ACD agent as a interactions with Avaya Communicator for Microsoft Lync users
- CS 1000 features which cannot be supported with Communication Manager, e.g. MADN (Multiple Appearance DN), Call Park, Call Pickup, Boss Secretary, etc

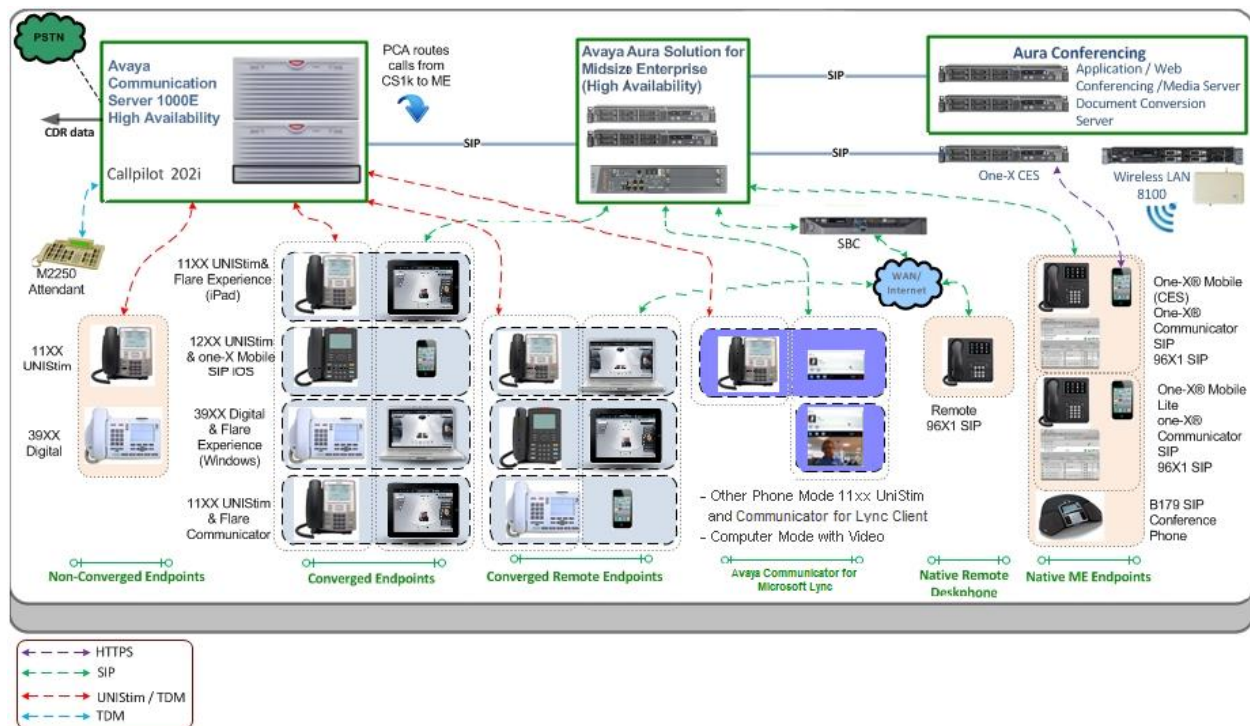
## 2.2. Test Results and Observations

Interoperability testing of Avaya Communicator for Microsoft Lync user with CS 1000 / Aura solution was completed successfully with the following observations made and issues / limitations noted.

- No Avaya Communicator for Microsoft Lync Conversation window will be displayed if calls are placed directly from the user's desk phone. Please use the Lync client to originate calls if you wish to maintain call control through your PC
- Similarly incoming calls must be answered by selecting "Accept" on the call notification pop up. If the user answers the call directly on their desk phone, a conversation window won't be displayed
- Placing calls on Hold or activating Call Transfer or Conferencing capabilities on the Users CS 1000 desk phone will not be reflected on the Communicator for Lync call window

### 3. Reference Configuration

The following diagram (**Figure 1**) shows the reference configuration used in the testing of a CS 1000 / Aura sample solution. It depicts a possible CS 1000 / Aura solution configuration.



**Figure 1: Typical CS 1000 / Aura Solution Configuration**

Four groups of users are defined as follows for CS 1000 / Aura solution:

**Group 1 - Non Converged User:** An existing CS 1000 user that continues to use their CS 1000 desk phone with no association to any client on the Aura. A CallPilot voice mailbox is assumed to be already in place for a non-converged user. Supported endpoints are:

- 11xx IP (UNISTIM) desk phone
- 12xx IP (UNISTIM) desk phone
- I2002p2/i2004p2 (UNISTIM) desk phone
- 39xx Digital desk phone

**Group 2 - Converged User:** An existing CS 1000 user that continues to use their CS 1000 desk phone and is also associated, via PCA on the CS 1000 side, with a SIP client on the Aura. The endpoints in this arrangement are referred to as “Converged Endpoints”. Some of these Aura clients may be remote users who are connected into the Enterprise network over the WAN via ASBCE. In that case, the endpoints can be referred to as “Converged Remote Endpoints”.

Supported endpoints in this group are:

- 11xx IP (UNISTim) desk phone (on CS 1000)
- 12xx IP (UNISTim) desk phone (on CS 1000)

- I2002p2/i2004p2 (UNISTIM) desk phone
- 39xx Digital desk phone (on CS 1000)
- one-X Mobile (SIP) for iOS (on ME)
- Avaya Communicator for iPhone (on ME)
- Avaya Communicator for Android (on ME)
- Avaya Communicator for Windows (on ME)
- Remote Avaya Communicator clients registered to ME via ASBCE

**Group 3 – Avaya Communicator for Microsoft Lync User:** A CS 1000 user who Call control moves from CS 1000 to CM. This user's previous extension is converted to a Virtual DN with PCA to route the call via SM to CM. Their CS 1000 desk phone is configured with a new extension number. Thus user also has Communicator for Lync client registered to SM as a SIP end point and uses Other Phone Mode (aka telecommuter mode) to make and receive call through their new CS 1000 Desk phone DN. A CallPilot voice mailbox is assumed to be already in place for this user but has to be updated to reflect the new configuration. Supported CS 1000 endpoints are:

- 11xx IP (UNISTIM) desk phone
- 12xx IP (UNISTIM) desk phone
- I2002p2/i2004p2 (UNISTIM) desk phone
- 39xx Digital desk phone
- Analogue Devices

Note: Other Phone Mode can also be used to make and receive calls with mobile and other devices such as hotel room and home phone which have a defined E164 number.

**Group 4 - Native User:** A user on the Aura that has no corresponding CS 1000 desk phone. Services for these users are provided via clients on the Aura only. Incoming PSTN calls or calls from non-converged users are routed to the Aura over SIP trunk from CS 1000 via PCA. The endpoints in this arrangement are referred to as "Native Endpoints". Some of these Aura clients may also be remote users connected into the Enterprise network over the WAN via ASBCE. In that case, the endpoints can be referred to as "Native Remote Endpoints". Native clients supported are:

- Avaya B179 SIP Conference phone
- Avaya one-X Communicator (SIP) with Audio provided by an Avaya one-X® Desk phone 96x1 SIP
- Avaya one-X Communicator (SIP) with Audio provided by an Avaya one-X® Desk phone 96x1 SIP phone and extended with EC500 to an Avaya one-X® Mobile Lite.
- Avaya one-X® Mobile with Client Enablement Services (CES) which is supported with an Avaya one-X® Desk phone 96x1 SIP on ME only (i.e. not supported for a CS 1000 phone).
- Avaya one-X® Desk phone 96x1 SIP
- Avaya Communicator for iPhone (on ME)
- Avaya Communicator for Android (on ME)
- Avaya Communicator for Windows (on ME)
- Remote Avaya Communicator clients registered to ME via ASBCE

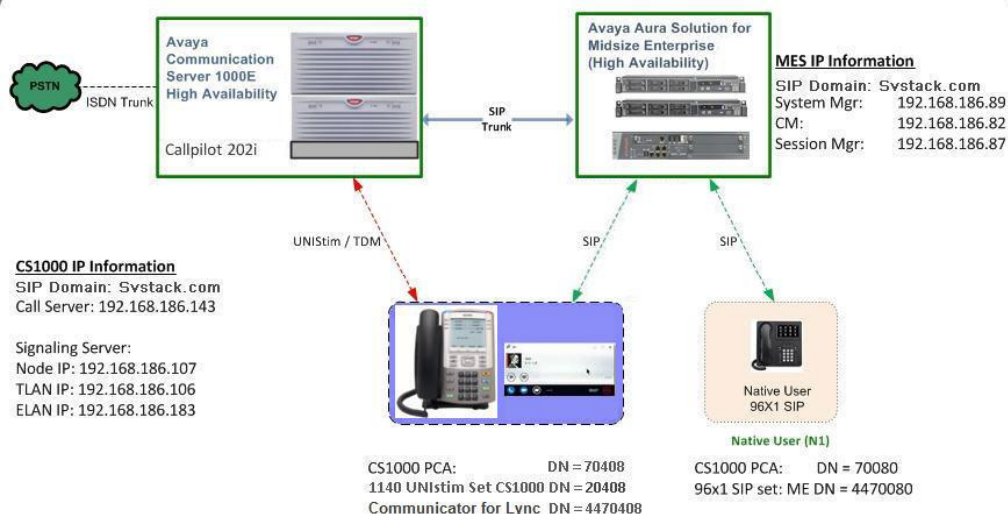
- Remote Avaya one-X® Desk phone SIP on 96x1 registered to ME via ASBCE

Other components of the solution are also shown in **Figure 1** above such as AAC, One-X CES and Wireless LAN 8100 infrastructure and a description of how these are configured for the CS 1000 / Aura solution is outside of the scope of this application note. **Section 10** has references to other documentation guides and application notes relevant to the CS 1000 / Aura solution covering topics such as configuration of CallPilot voicemail for Communicator for Lync users in a CS 1000 / Aura solution.

This Application Note describes the configuration of the various system components required to enable an existing CS 1000 user to be to Communicator for Lync user. It does not covers the configuration required for provisioning converged or native users on the ME system.

For the purposes of this application note, a more simplified diagram of the CS 1000/ Aura configuration is shown below in **Figure 2**. This diagram serves as the basis for the configuration steps which will be described throughout this application note.

The numbering plan adopted for a Communicator for Lync user in the sample configuration has been designed such that a DN of the user on the Aura side and the DN of its equivalent on the CS 1000 side are both sub sets of the User E164 number. In this example, the users existing DN 70408 will be configured as a virtual extension, their 1140 UniStim telephone set has been provisioned on the CS 1000 system with a DN = 20408 and an Communicator for Lync user endpoint on the Avaya Aura® Midsize Enterprise system has been provisioned with a DN = 4470408. In Active Directory their work number is defined as User E164 number +1 303 447 0408 this is synchronized with the Lync Address book and appears as their Lync work number. The number routing and dial plan manipulations to allow the call routing of calls presented to the CS 1000 and / or Avaya Aura® Midsize Enterprise systems. The overall result is that any call made to user CS 1000 DN 70408 will automatically get routed to their new CM DN 4470408 and the user can adopt a mode to answer the call. By pre-selection Computer mode they are able to answer on their PC or pre-selection Other Phone mode to have calls presented to their Desk phone DN 20408.



**Figure 2: Simplified CS 1000 / Aura Configuration**

## 4. Equipment and Software Validated

The following equipment and software were used for the sample CS 1000 /Aura solution test configuration.

Equipment/Software	Release/Version
Avaya Communications Server 1000E PBX	R7.6 + latest patches. i.e. 7.65
Avaya CallPilot running on a 202i integrated server	R5.01.01 + PEPs CP0501SU001S, CP501S01G08S, CP501S01G09C
Avaya 1100 Series IP Telephonesfor Avaya Communications Server 1000E	Firmware version 5.5 (UNISim)
Avaya 1200 Series IP Telephonesfor Avaya Communications Server 1000E	Firmware version 5.5 (UNISim)
Avaya 3900 Series TDM Telephonesfor Avaya Communications Server 1000E	Firmware version AA94 delivered with CS 1000 R7.6
Avaya Aura® Solution including Midsize Enterprise (ME)	Avaya Aura® Communication Manager 6.3.8/6.3.9/6.3.10 Avaya Aura® System Manager 6.3.8/6.3.9/6.3.10/6.3.11 Avaya Aura® Session Manager 6.3.8/6.3.9/6.3.10/6.3.11
Avaya Communicator for Microsoft Lync	6.4

## 5. Configure Avaya Communication Server 1000E

This section describes the details for configuring CS 1000E to route calls to the Communication Manager via Session Manager over a SIP trunk. These instructions assume that the CS 1000E has been registered as a member of the System Manager Security framework. In addition, these instructions also assume that the configuration of the CS 1000E Call Server and Signaling Server applications has been completed to support SIP trunks, IP (UNISTim) telephones and Digital telephones. Refer to **Section 10** for more information on how to administer these functions.

Using the Avaya Unified Communications Management (UCM) interface, the following administration steps will be described:

- Logon to Avaya Aura® System Manager
- Enable Avaya Unified Communications Manager services in Avaya Aura® System Manager
- Confirm Node and IP addresses
- Configure SIP Trunk to Avaya Aura® Session Manager
- Confirm Virtual D-Channel, Routes and Trunks
  - Confirm Virtual D-Channel Configuration
  - Confirm SIP Route and Trunk Configuration
- Configure ESN for Route List Index and Digit Manipulation
  - Create Route List Index
  - Create Distant Steering Code

## 5.1. Logon to Avaya Aura® System Manager

Using any supported browser, access the web based GUI of System Manager by using the URL **https://<FQDN>/SMGR**, where <FQDN> is the Fully Qualified Domain Name of System Manager (for example <https://messmgr.svstack.com/SMGR>). In the **User ID** box, enter **admin** and enter the corresponding admin account password in the **Password** box. Click on the **Log On** button to login to the System Manager 6.3 console.

Recommended access to System Manager is via FQDN.

[Go to central login for Single Sign-On](#)

If IP address access is your only option, then note that authentication will fail in the following cases:

- First time login with "admin" account
- Expired/Reset passwords

Use the "Change Password" hyperlink on this page to change the password manually, and then login.

Also note that single sign-on between servers in the same security domain is not supported when accessing via IP address.

This system is restricted solely to authorized users for legitimate business purposes only. The actual or attempted

User ID:

Password:

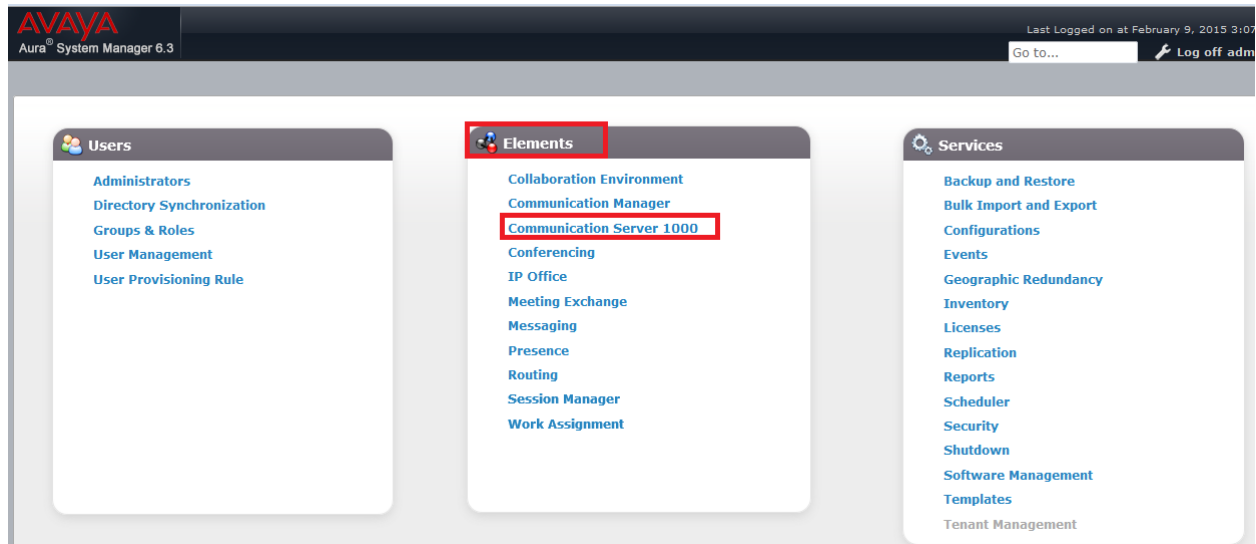
[Change Password](#)

**Supported Browsers:** Internet Explorer 8.x, 9.x or 10.x or Firefox 26.0, 27.0 and 28.0.

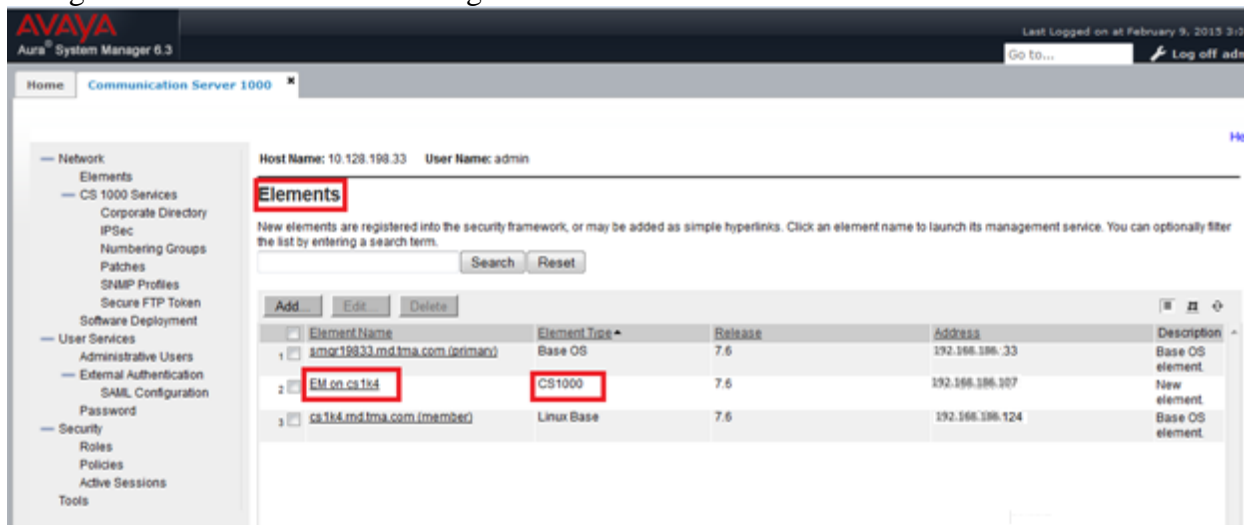


## 5.2. Navigate to CS 1000 Element Manager

To configure CS 1000 select Communication Server 1000 under the Elements



Navigate to the CS 1000 to be configured



### 5.3. Confirm Node and IP Addresses

On the left hand side of the **CS 1000 Element Manager**, if not already expanded, expand the **System** list. Then expand the **IP Network** list and select **Nodes: Servers, Media Cards**. The **IP Telephony Nodes** page is displayed as shown below. Click on the Node ID number in the **Node ID** column to view details of the node (e.g. Node ID **6100**).

The screenshot shows the CS1000 Element Manager interface. On the left is a navigation tree with 'System' expanded and 'Nodes: Servers, Media Cards' selected. The main area is titled 'IP Telephony Nodes' and shows a table of nodes. The first node, ID 6100, is highlighted. Below the table are checkboxes for 'Nodes', 'Component servers and cards', and 'IPv6 address'.

Node ID	Components	Enabled Applications	ELAN IP	Node/TLAN IPv4	Node/TLAN IPv6	Status
6100	1	LTPS, Presence Publisher, Gateway ( SIPGw )	-	192.168.186.107	-	Synchronized

The **Node Details** screen is displayed with additional details as shown below. Make a note of The **Node IPv4** address, **Call server IP** address and **TLAN IPv4** addresses of any Signaling Servers in the node. These addresses are used to configure other items later in this document.

The screenshot shows the 'Node Details' page for Node ID 6100. It displays various configuration fields including 'Call server IP address', 'Embedded LAN (ELAN)' settings, 'IP Telephony Node Properties', and 'Associated Signaling Servers & Cards'. The 'Node IPv4 address' and 'TLAN IPv4' fields are highlighted.

**Node Details ID: 6100 - LTPS, Presence Publisher, Gateway ( SIPGw )**

Node ID: 6100 \* (0-9999)

Call server IP address: 192.168.186.143

TLAN address type: ☒ IPv4 only ☐ IPv4 and IPv6

**Embedded LAN (ELAN)**

Gateway IP address: 192.168.186.129 \* Subnet mask: 255.255.255.128 \*

**Telephone LAN (TLAN)**

Node IPv4 address: 192.168.186.107 \* Subnet mask: 255.255.255.224 \*

Node IPv6 address:

**IP Telephony Node Properties**

- Voice Gateway (VGW) and Codecs
- Quality of Service (QoS)
- LAN
- SNTP
- Numbering Zones
- MCDN Alternative Routing Treatment (MALT) Causes

**Applications (click to edit configuration)**

- SIP Line
- Terminal Proxy Server (TPS)
- Gateway (SIPGw)
- Personal Directories (PD)
- Presence Publisher
- IP Media Services

**Associated Signaling Servers & Cards**

Hostname	Type	Deployed Applications	ELAN IP	TLAN IPv4	Role
cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIPH323), PD, Presence Publisher, IP Media Services	10.128.225.93	192.168.186.106	Leader

## 5.4. Configure SIP Trunk to Avaya Aura® Session Manager

While still in the **Node Details** screen as shown above in the previous **section 5.4**, use the scroll bar on the right side of the screen to navigate down to the **Applications** section and select the **Gateway (SIPGw)** link.

Hostname	Type	Deployed Applications	ELAN IP	TLAN IPv4	Role
cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIPH323), PD, Presence Publisher, IP Media Services	10.128.225.93	10.128.226.124	Leader

The **Node ID: 6100 - Virtual Trunk Gateway Configuration Details** page appears. Verify that the following fields have been pre-configured or enter new values if not (use default values for fields not specified here). The **SIP domain name** field should contain the SIP domain name for the solution (e.g. **Svstack.com**). Ensure that **5060** is entered in the **Local SIP port** field. A descriptive name should be entered in the **Gateway endpoint name** field (e.g. **cs1k4**). For the **Application node ID** field enter the Node ID value (e.g. **6100**). Then click on the **SIP Gateway Settings** link at the top of this page to jump to that section.

Managing: 10.128.225.93 Username: admin  
System > IP Network > IP Telephony Nodes > Node Details > Virtual Trunk Gateway Configuration

**Node ID: 6100 - Virtual Trunk Gateway Configuration Details**

General **SIP Gateway Settings | SIP Gateway Services**

Vtrk gateway application: ☒ Enable gateway service on this node

General

Vtrk gateway application: SIP Gateway (SIPGw)

SIP domain name: Svstack.com

Local SIP port: 5060 \* (1 - 65535)

Gateway endpoint name: cs1k4

Gateway password: \*

Application node ID: 6100 \* (0-9999)

Enable failsafe NRS: ☐

Note: FailSafe NRS will be enabled only on those servers in the node where NRS application is not deployed.

SIP ANAT: IPv4

\* Required Value. Note: Changes made on this page will NOT be transmitted until the Node is also saved.

Save Cancel

The SIP Gateway Settings page appears. Scroll down to the **Proxy or Redirect Server** section of the page. In the sub-section titled **Proxy Server Route 1**, enter the IP address of the Session Manager SIP signaling asset in the **Primary TLAN IP address** field (e.g. **192.168.186.87**). Enter **5061** in the **Port** field and select **TLS** as the **Transport protocol**.  
**Note:** For more information on configuring the system to use TLS, see the Application Note references in **Section 10**.

Scroll further down to the **SIP URI Map** section of the page. In the **Public E.164 domain names** and **Private domain names** sections, enter appropriate values in the fields to match the Customer specific solution. In the sample configuration, the values shown were used (**Note:** in the **Private domain names** section, the default entry for **Unknown** is “Unknown”. During test the default value was changed to “**UnknownTest**” to monitor the behavior during call flows). Click **Save** at the bottom of the screen to save any changes.

The **Node Details: 6100 – LTPS, Presence Publisher, Gateway Details** page re-appears. Press **Save**.

**AVAYA CS1000 Element Manager**

Managing: 10.128.225.93 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details

**Node Details (ID: 6100 - LTPS, Presence Publisher, Gateway ( SIPGw ))**

Node ID: 6100 \* (0-9999)

Call server IP address: 192.168.186.143 \* TLAN address type: ☒ IPv4 only ☐ IPv4 and IPv6

Embedded LAN (ELAN) Gateway IP address: 192.168.186.129 \* Subnet mask: 255.255.255.128 \*

Telephony LAN (TLAN) Node IPv4 address: 192.168.186.187 \* Subnet mask: 255.255.255.224 \*

Node IPv6 address:

**IP Telephony Node Properties**

- Voice Gateway (VGW) and Codecs
- Quality of Service (QoS)
- LAN
- SNTP
- Numbering Zones
- MCDN Alternative Routing Treatment (MALT) Causes

**Applications (click to edit configuration)**

- SIP Line
- Terminal Proxy Server (TPS)
- Gateway (SIPGw)
- Personal Directories (PD)
- Presence Publisher
- IP Media Services

\* Required Value. **Save** Cancel

**Associated Signaling Servers & Cards**

Select to add Add Remove Make Leader Print Refresh

Hostname	Type	Deployed Applications	ELAN IP	TLAN IPv4	Role
cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIP/H323), PD, Presence Publisher, IP Media Services	10.128.225.93	192.168.186.106	Leader

A confirmation message of **Node Saved** appears to indicate that the changes have been saved on the CS 1000 Call Server. Select **Transfer Now**.

**AVAYA CS1000 Element Manager**

Managing: 10.128.225.93 Username: admin  
System » IP Network » IP Telephony Nodes » Node Saved

**Node Saved**

Node ID: 6100 has been saved on the call server.

The new configuration must also be transferred to associated servers and media cards.

**Transfer Now...** You will be given an option to select individual servers, or transfer to all.

**Show Nodes** You may initiate a transfer manually at a later time.

Once the transfer is complete, the **Synchronize Configuration Files (Node ID <6100>)** page appears. Select all the Signaling Servers listed on this page and click on **Start Sync**.

- UCM Network Services
- Home
- Links
  - Virtual Terminals
- System
  - + Alarms
  - Maintenance
  - + Core Equipment
  - Peripheral Equipment
  - IP Network
    - [Nodes: Servers, Media Cards](#)
    - Maintenance and Reports
    - Media Gateways
    - Zones
    - Host and Route Tables
    - Network Address Translation (NAT)
    - QoS Thresholds
    - Personal Directories
    - Unicode Name Directory
    - + Interfaces

Managing: 10.128.225.93 Username: admin

System » IP Network » [IP Telephony Nodes](#) » Synchronize Configuration Files

### Synchronize Configuration Files (Node ID <6100>)

Note: Select components to synchronize their configuration files with call server data. This process transfers server INI files to selected components, and requires a restart\* of applications on affected server(s) when complete.

[Start Sync](#) [Cancel](#) [Restart Applications](#) [Print](#) | [Refresh](#)

<input checked="" type="checkbox"/>	Hostname	Type	Applications	Synchronization Status
<input checked="" type="checkbox"/>	cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIP/H323), PD, Presence Publisher, IP Media Services	Sync required

\* Application restart is only required for initial system configuration or if changes have been made to general LAN configurations, SNTP settings, SIP and H323 Gateway settings, network connectivity related parameters like ports and IP address, enabling or disabling services, or adding or removing application servers.

The screen will automatically refresh during the synchronization process. The **Synchronization Status** field will update from **Sync in progress** (as shown for the first Signaling Server) to **Synchronized** (as shown for the second Signaling Server).

- UCM Network Services
- Home
- Links
  - Virtual Terminals
- System
  - + Alarms
  - Maintenance
  - + Core Equipment
  - Peripheral Equipment
  - IP Network
    - [Nodes: Servers, Media Cards](#)
    - Maintenance and Reports
    - Media Gateways
    - Zones
    - Host and Route Tables
    - Network Address Translation (NAT)
    - QoS Thresholds
    - Personal Directories
    - Unicode Name Directory

Managing: 10.128.225.93 Username: admin

System » IP Network » [IP Telephony Nodes](#) » Synchronize Configuration Files

### Synchronize Configuration Files (Node ID <6100>)

Synchronization in progress. Status will be updated automatically.

(You may also navigate away from this page and return to the [IP Telephony Nodes](#) list to verify completion.)

[Start Sync](#) [Cancel](#) [Print](#) | [Refresh](#)

<input checked="" type="checkbox"/>	Hostname	Type	Applications	Synchronization Status
<input checked="" type="checkbox"/>	cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIP/H323), PD, Presence Publisher, IP Media Services	Sync in progress



After synchronization completes, again select all the Signaling Servers listed on this page and click on **Restart Applications** to use new SIP Gateway settings.



## CS1000 Element Manager

- UCM Network Services
- Home
- Links
  - Virtual Terminals
- System
  - + Alarms
  - Maintenance
  - + Core Equipment
  - Peripheral Equipment
  - IP Network
    - [Nodes: Servers, Media Cards](#)
    - Maintenance and Reports
    - Media Gateways
    - Zones
    - Host and Route Tables
    - Network Address Translation (NAT)
    - QoS Thresholds
    - Personal Directories

Managing: 10.128.225.93 Username: admin

System » IP Network » [IP Telephony Nodes](#) » Synchronize Configuration Files

### Synchronize Configuration Files (Node ID <6100>)

Note: Select components to synchronize their configuration files with call server data. This process transfers server INI files to selected components, and requires a restart\* of applications on affected server(s) when complete.

Start Sync Cancel Restart Applications [Print](#) [Refresh](#)

<input type="checkbox"/>	Hostname	Type	Applications	Synchronization Status
<input type="checkbox"/>	cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIP/H323), PD, Presence Publisher, IP Media Services	Synchronized

\* Application restart is only required for initial system configuration or if changes have been made to general LAN configurations, SNTP settings, SIP and H323 Gateway settings, network connectivity related parameters like ports and IP address, enabling or disabling services, or adding or removing application servers.

A message will appear stating that **Application restart/reboot has been invoked on selected servers in a synchronized** state to confirm the restart. Click on the **Refresh** button until this message disappears to indicate that the restart has completed.

### Synchronize Configuration Files (Node ID <6100>)

Note: Select components to synchronize their configuration files with call server data. This process transfers server INI files to selected components, and requires a restart\* of applications on affected server(s) when complete.

Start Sync Cancel Restart Applications [Print](#) [Refresh](#)

<input type="checkbox"/>	Hostname	Type	Applications	Synchronization Status
<input type="checkbox"/>	cs1k4	Signaling_Server	SIP Line, LTPS, Gateway (SIP/H323), PD, Presence Publisher, IP Media Services	Synchronized

## 5.5. Confirm Virtual D-Channel, Routes and Trunks

The CS 1000E Call Server communicates with the SIP Gateway (Signaling Server) and Avaya Aura® Session Manager using a virtual D-channel and associated SIP trunk and route. This section describes the steps to verify that this administration has already been completed.

### 5.5.1. Confirm Virtual D-Channel Configuration

Still in the CS 1000 Element Manager page, expand **Routes and Trunks** list on the left navigation panel and select **D-Channels**. The resulting screen shows all the D-channels configured on the CS 1000 system. In the sample configuration, there is a single D-channel assigned to **Channel: 10** with **Card Type: DCIP**. Specifying **DCIP** as the card type indicates that the D-channel is a virtual D-channel (i.e. D-Channel over IP).

**AVAYA** CS1000 Element Manager

Managing: **10.128.225.93** Username: admin  
Routes and Trunks » D-Channels

### D-Channels

**Maintenance**

- [D-Channel Diagnostics](#) (LD 96)
- [Network and Peripheral Equipment](#) (LD 32, Virtual D-Channels)
- [MSDL Diagnostics](#) (LD 96)
- [TMDI Diagnostics](#) (LD 96)
- [D-Channel Expansion Diagnostics](#) (LD 48)

**Configuration**

Choose a D-Channel Number:  and type:

Channel	Type	Card Type	Description	Action
Channel: 10	Type: DCH	Card Type: DCIP	Description: vtrk	<input type="button" value="Edit"/>

### 5.5.2. Confirm SIP Route and Trunk Configuration

Still in the CS 1000 Element Manager page, expand the **Routes and Trunks** list on the left navigation panel and select **Routes and Trunks**. The resultant **Routes and Trunks** page appears as shown in the example below. Click on **Customer: 0** to expand its entries. **Route 10** is shown with a description of **VTRK** (for Virtual Trunk). Expand **Route 10** to show that it has been configured with **Total trunks: 32** which indicate that the system is configured to handle 32 simultaneous calls out to Session Manager over SIP. Select **Edit** to verify the configuration of route 10.



- UCM Network Services
- Home
- Links
  - Virtual Terminals
- System
  - + Alarms
  - Maintenance
  - + Core Equipment
  - Peripheral Equipment
  - + IP Network
  - + Interfaces
  - Engineered Values
  - + Emergency Services
  - + Geographic Redundancy
  - + Software
- Customers
  - Routes and Trunks
    - Routes and Trunks
    - D-Channels
    - Digital Trunk Interface
  - Dialing and Numbering Plans
    - Electronic Switched Network

Managing: 10.128.225.93 Username: admin  
Routes and Trunks » Routes and Trunks

## Routes and Trunks

- Customer: 0	Total routes: 1	Total trunks: 32	Add route
- Route: 10 Type: TIE Description: SIP Edit Add trunk + Trunk: 1 - 32 Total trunks: 32			

The details of the virtual Route 10 defined for the sample configuration is shown below under the heading **Customer 0, Route 1 Property Configuration**. This example confirms that the **Node ID of signaling server of this route (NODE)** is set to **6100** and the **Protocol ID for the route (PCID)** has already been set to **SIP (SIP)**. It also shows that the **D channel number (DCH)** field has been set to match the virtual D-Channel value(**1**) identified above in section

- UCM Network Services
- Home
- Links
  - Virtual Terminals
- System
  - + Alarms
  - Maintenance
  - + Core Equipment
  - Peripheral Equipment
  - + IP Network
  - + Interfaces
  - Engineered Values
  - + Emergency Services
  - + Geographic Redundancy
  - + Software
- Customers
  - Routes and Trunks
    - Routes and Trunks
    - D-Channels
    - Digital Trunk Interface
  - Dialing and Numbering Plans
    - Electronic Switched Network
    - Flexible Code Restriction
    - Incoming Digit Translation
  - Phones
    - Templates
    - Reports
    - Views
    - Lists
    - Properties
    - Migration
  - Tools
    - + Backup and Restore
    - Date and Time
    - + Logs and reports
  - Security
    - + Passwords
    - + Policies
    - + Login Options

Managing: 10.128.225.93 Username: admin  
Routes and Trunks » Routes and Trunks » Customer 0, Route 10 Property Configuration

## Customer 0, Route 10 Property Configuration

### - Basic Configuration

Route data block (RDB) (TYPE):	RDB
Customer number (CUST):	00
Route number (ROUT):	10
Designator field for trunk (DES):	SIP
Trunk type (TKTP):	TIE
Incoming and outgoing trunk (ICOG):	Incoming and Outgoing (IAO)
Access code for the trunk route (ACOD):	8566
Trunk type M911P (M911P):	<input type="checkbox"/>
The route is for a virtual trunk route (VTRK):	<input checked="" type="checkbox"/>
- Zone for codec selection and bandwidth management (ZONE):	00255 (0 - 8000)
Node ID of signaling server of this route (NODE):	6100 (0 - 9999)
- Protocol ID for the route (PCID):	SIP (SIP)
- Print correlation ID in CDR for the route (CRID):	<input type="checkbox"/>
- Enable Shared Bandwidth Management for the route (SBWM):	<input type="checkbox"/>
Integrated services digital network option (ISDN):	<input checked="" type="checkbox"/>
- Mode of operation (MODE):	Route uses ISDN Signalling Link (ISLD)
D channel number (DCH):	10 (0 - 254)
- Interface type for route (IFC):	Meridian M1 (SL1)
- Private network identifier (PNI):	00001 (0 - 32700)
- Network calling name allowed (NCNA):	<input checked="" type="checkbox"/>
- Network call redirection (NCRD):	<input checked="" type="checkbox"/>

## 5.6. Configure ESN for Route List Index and Digit Manipulation

This section provides details of the routing configuration used in the sample configuration to route calls over the SIP Trunk from CS 1000 to Session Manager

**Note:** The CS 1000 Dialing plan and Aura routing with adaptations will normalize the dial plan allowing Convergence of User endpoints. The routing rules defined in this section are an example and were used in the reference configuration. Other routing policies may be appropriate for different customer networks.

**Note:** All CS 1000 user before the introduction of Lync Integration have a 5 digit number beginning with 7 (7xxxx). CS 1000 endpoints in the sample configuration used a 5-digit number with all DN's beginning with 7 (e.g. 7xxxx). All Communicator for Lync Integration are provided with a new 5-digit number with all DN beginning with 2 (e.g. 20xxx). To allow other CS 1000 users to continue to use the 5 digit dial plan all of the Communicator for Lync users will also have a 5-digit virtual extension equal to their existing 5 digits of their endpoint extension (e.g. 7xxxx). All Aura endpoints in the sample configuration used a 7-digit number plan with all DN's Aura DN 447xxxx.

### 5.6.1. Create Route List Index

From the **CS 1000 Element Manager** page, expand **Dialing and Numbering Plans** on the left navigational panel and select **Electronic Switched Network**. The **Electronic Switched Network (ESN)** page appears. Click on the link for **Route List Block (RLB)**.

**AVAYA** **CS1000 Element Manager**

Managing: **10.128.225.93** Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN)

**Electronic Switched Network (ESN)**

- Customer 00
  - Network Control & Services
    - Network Control Parameters (NCTL)
    - ESN Access Codes and Parameters (ESN)
    - Digit Manipulation Block (DGT)
    - Home Area Code (HNPA)
    - Flexible CLID Manipulation Block (CMDB)
    - Free Calling Area Screening (FCAS)
    - Free Special Number Screening (FSNS)
    - **Route List Block (RLB)**
    - Incoming Trunk Group Exclusion (ITGE)
    - Network Attendant Services (NAS)
  - Coordinated Dialing Plan (CDP)
    - Local Steering Code (LSC)
    - Distant Steering Code (DSC)
    - Trunk Steering Code (TSC)
  - Numbering Plan (NET)
    - Access Code 1
      - Home Location Code (HLOC)
      - Location Code (LOC)
      - Numbering Plan Area Code (NPA)
      - Exchange (Central Office) Code (NXX)
      - Special Number (SPN)
      - Network Speed Call Access Code (NSCL)
    - Access Code 2
      - Home Location Code (HLOC)
      - Location Code (LOC)
      - Numbering Plan Area Code (NPA)

The **Route List Blocks** screen is displayed. Enter an available route list index number in the **Please enter a route list index** field (e.g. **10**) and click to **Add** as shown below.

Managing: 10.128.225.93 Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Network Control & Services » Route List Blocks

### Route List Blocks

Please enter a route list index  ( 0 - 1999 )

Route List Block Index	
10	<input type="button" value="Edit"/>

The **Route List Block** window appears. Under the **Options** section, in the drop-down list, select the **Route Number** of the route identified above in **Section 6.5.2** (i.e. Route Number **10**) and use default values for remaining fields as shown below.

Managing: 10.128.225.93 Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Network Control & Services » Route List Blocks » Route List Block

### Route List Block

**General Properties**

Number of Alternate Routing Attempts:  ( 1 - 10 )  
Initial Set:  ( 0 - 64 )  
Set Minimum Facility Restriction Level:   
Overlap Length:  ( 0 - 24 )  
Extended Local Calls: ☐  
Route List Index:   
Entry Number for the Route List:  ( 0 - 63 )

**Indexes**

Time of Day Schedule:   
Facility Restriction Level:  ( 0 - 7 )  
Digit Manipulation Index:   
ISL D-Channel Down Digit Manipulation Index:  ( 0 - 1999 )  
Free Calling Area Screening Index:   
Free Special Number Screening Index:   
Business Network Extension Route: ☐  
Incoming CLID Table:  ( 0 - 100 )

**Options**

Local Termination entry: ☐  
Route Number:   
Skip Conventional Signaling: ☐

Scroll down to the bottom of this window and click on Submit (not shown) to save the new RLB. The **Route List Blocks** window reappears. Expand the item **Route List Block Index -- 10** and then expand the item **Data Entry Index -- 0** for the new RLB and verify that the entries have been added ok.

**AVAYA CS1000 Element Manager**

Managing: 10.128.225.93 Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Network Control & Services » Route List Blocks

**Route List Blocks**

Please enter a route list index  ( 0 - 1999 )

**Route List Block Index -- 10**

**Data Entry Index -- 0**

Initial Set: 0  
Number of Alternate Routing Attempts: 5  
Set Minimum Facility Restriction Level: 0

Route Number: 10  
Expensive Route: N  
Facility Restriction Level: 0  
Digit Manipulation Index: 1  
ISL D-Channel Down Digit Manipulation Index: 0  
Free Calling Area Screening Index: 0  
Free Special Number Screening Index: 0  
Business Network Extension Route: NO

### 5.6.2. Create Distant Steering Code

A Distant Steering Code (DSC) digit string will be used as the unique Converged Route Prefix for each CS 1000 user's Personal Call Assistant (PCA) configuration to route voice calls to the Aura Communication Manager via the Session Manager. This DSC will also route Message Waiting Indicator (MWI) messages from CallPilot across the SIP trunk to Communication Manager via the Session Manager. The following table summarizes this as follows:

Number type	Prefix (DSC) / FLEN	RLI	Route
PCA: 447xxxx	447 / 7	10	10

So for example, a call made to CS 1000 virtual DN 70408 will also get sent, using the PCA feature, to CM extension 4470408 . DSC 447, which has a Flexible Length (FLEN) of 7, will send these 7 digits via RLI 1 to route 10 which is the SIP trunk route to Session Manager and on to Communication Manager.

When CallPilot wants to send an MWI to this user upon receiving a new voice mail, it will send the MWI directly to the set on CS 1000 (DN20408) and also to CM 4470408.

From the **CS 1000 Element Manager** page, expand **Dialing and Numbering Plans** on the left navigational panel and select **Electronic Switched Network**. The **Electronic Switched**

Network (ESN) page appears. Select **Distant Steering Code (DSC)** under the **Coordinated Dialing Plan (CDP)** section.

**AVAYA** **CS1000 Element Manager**

Managing: **10.128.225.93** Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN)

### Electronic Switched Network (ESN)

- Customer 00
  - Network Control & Services
    - Network Control Parameters (NCTL)
    - ESN Access Codes and Parameters (ESN)
    - Digit Manipulation Block (DGT)
    - Home Area Code (HNPA)
    - Flexible CLID Manipulation Block (CMDB)
    - Free Calling Area Screening (FCAS)
    - Free Special Number Screening (FSNS)
    - Route List Block (RLB)
    - Incoming Trunk Group Exclusion (ITGE)
    - Network Attendant Services (NAS)
  - Coordinated Dialing Plan (CDP)
    - Local Steering Code (LSC)
    - Distant Steering Code (DSC)
    - Trunk Steering Code (TSC)
  - Numbering Plan (NET)
    - Access Code 1
      - Home Location Code (HLOC)
      - Location Code (LOC)
      - Numbering Plan Area Code (NPA)
      - Exchange (Central Office) Code (NXX)
      - Special Number (SPN)

On the **Distant Steering Code List** page, select **Add** from the drop-down menu. In the box titled **Please enter a distant steering code** enter the dialed prefix for calls to be routed over SIP trunk to Session Manager (e.g. enter **447**). Click to **Add** button to create the new distant steering code.

**AVAYA** **CS1000 Element Manager**

Managing: **10.128.225.93** Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Coordinated Dialing Plan (CDP) » Distant Steering Code List

### Distant Steering Code List

Add ▼

Please enter a distant steering code **447** **to Add**

The **Distant Steering Code** window appears. For **Flexible Length number of digits**, enter **7**. For **Route List to be accessed for trunk steering code**, select the number **10** from the drop-

down list. This was the RLI number added in the previous **Section 5.6.1**. Click on **Submit** to save the new Distant Steering Code definition.

AVAYA CS1000 Element Manager

Managing: 10.128.225.93 Username: admin

Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Coordinated Dialing Plan (CDP) » [Distant Steering Code List](#) » Distant Steering Code

### Distant Steering Code

Distant Steering Code: 447

Flexible Length number of digits: 7 (0 - 10)

Display: Local Steering Code (LSC)

Remote Radio Paging Access: ☐

Route List to be accessed for trunk steering code: 10

Collect Call Blocking: ☐

Maximum 7 digit NPA code allowed:

Maximum 7 digit NXX code allowed:

**Submit** Cancel

The **Distant Steering Code List** page reappears. To view the DSCs just added, enter a DSC into the **Starting Distant Steering Code** box (e.g. **447**) and click on the **View** button. Expand the **Distant Steering Code List – 447** item to show the parameters of the DSC.

## Distant Steering Code List

Display ▼

Starting Distant Steering Code 447 Number of Steering Codes to display 1 **View**

- **Distant Steering Code List – 447** Edit

Flexible Length number of digits: 7

Display: LSC

Remote Radio Paging Access: N

Route List to be accessed for trunk steering code: 1

Collect Call Blocking: N

Maximum 7 digit NPA code allowed:

Maximum 7 digit NXX code allowed:

## 6. Configure Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager to receive and route calls over the SIP trunk between CS 1000 and the Avaya Aura

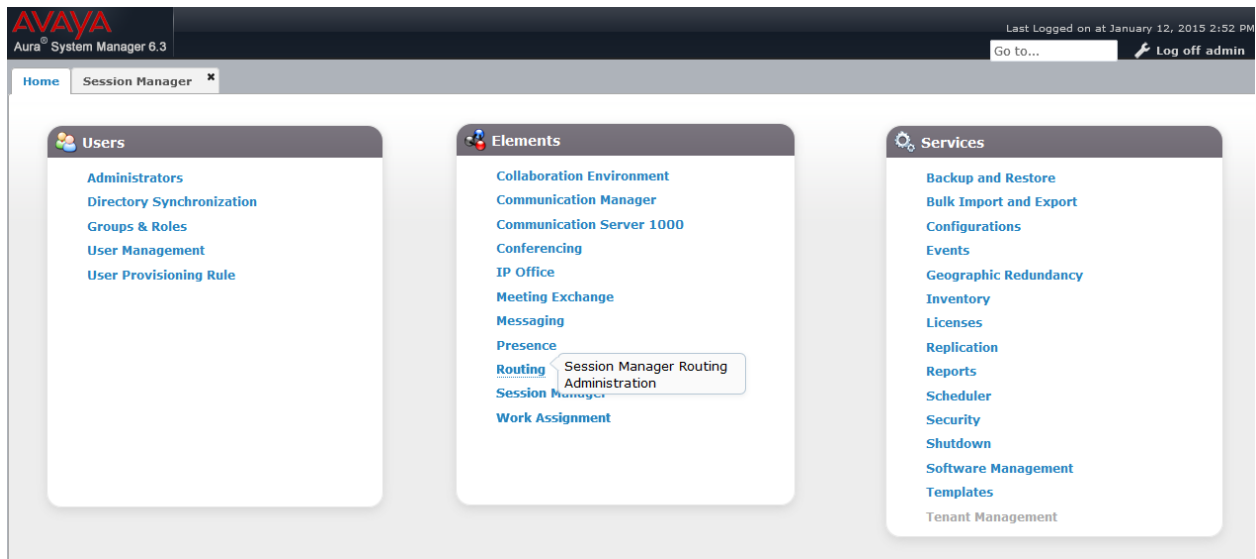
These instructions assume other administration activities have already been completed with the Avaya Midsize Enterprise Template installation such as defining the SIP entity for Session Manager and defining the network connection between System Manager and Session Manager. Upon completion of the Avaya Midsize Enterprise Template installation and configuration, the following Session Manager configuration tasks are required to align with the CS 1000.

Specifically, the following administration activities will be described:

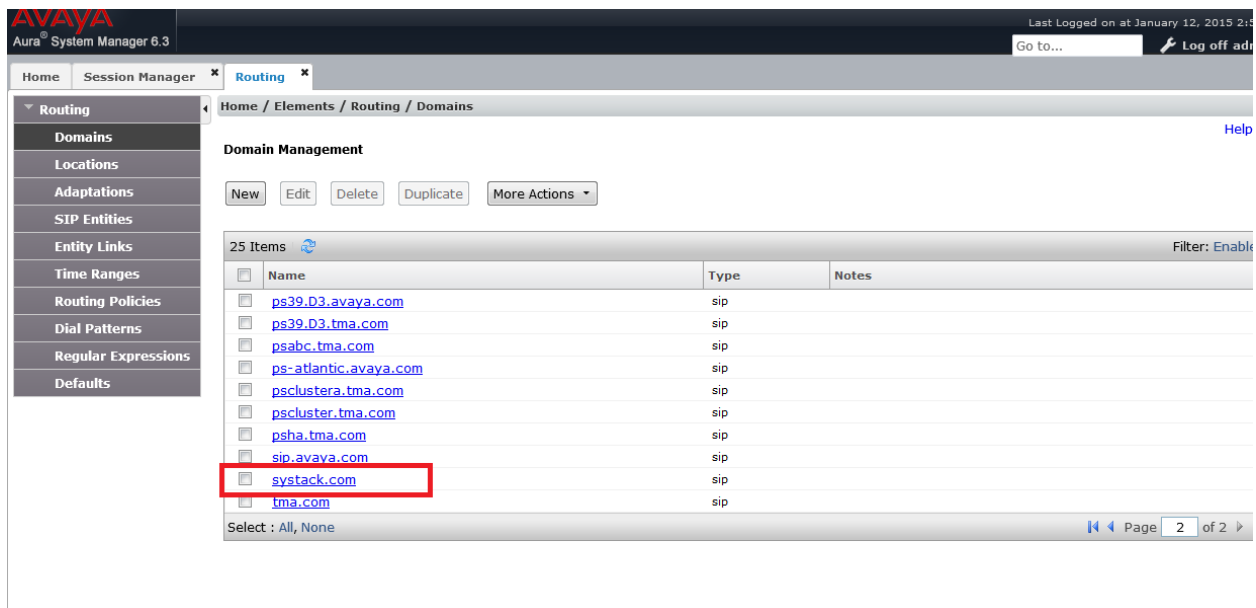
- Verify SIP Domains
- Define a Location for Avaya Communication Server 1000
- Configure Adaptation Module
- Define SIP Entities
  - SIP Entity for CS 1000
  - SIP Entity for Communication Manager
- Define Entity Links
  - Entity Link for Avaya Communication Server 1000
  - Entity Link for Communication Manager
- Define Routing Policy
  - Define the Routing Policy for calls to Avaya Aura® Communication Manager
  - Define the Routing Policy for calls to Avaya Communication Server 1000
- Define Dial Patterns.

## 6.1. Verify SIP Domains

From the main System Manager page under **Elements**, click on **Routing**.



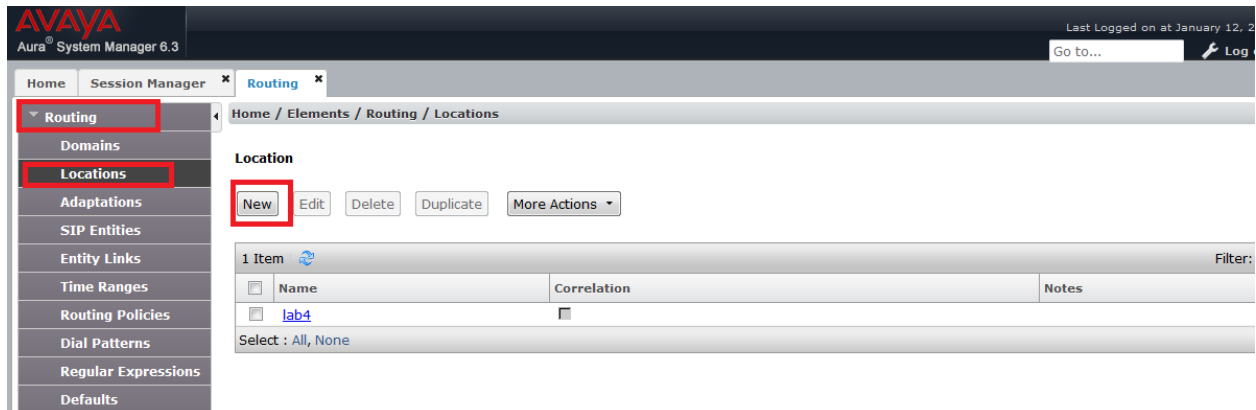
Expand the **Routing** list and select **Domains** from the left navigation menu and verify that the Domain **Name** is the same as the CS 1000 SIP Gateway Domain as shown in **Section 5.4**. In this sample configuration **svstack.com** was used.



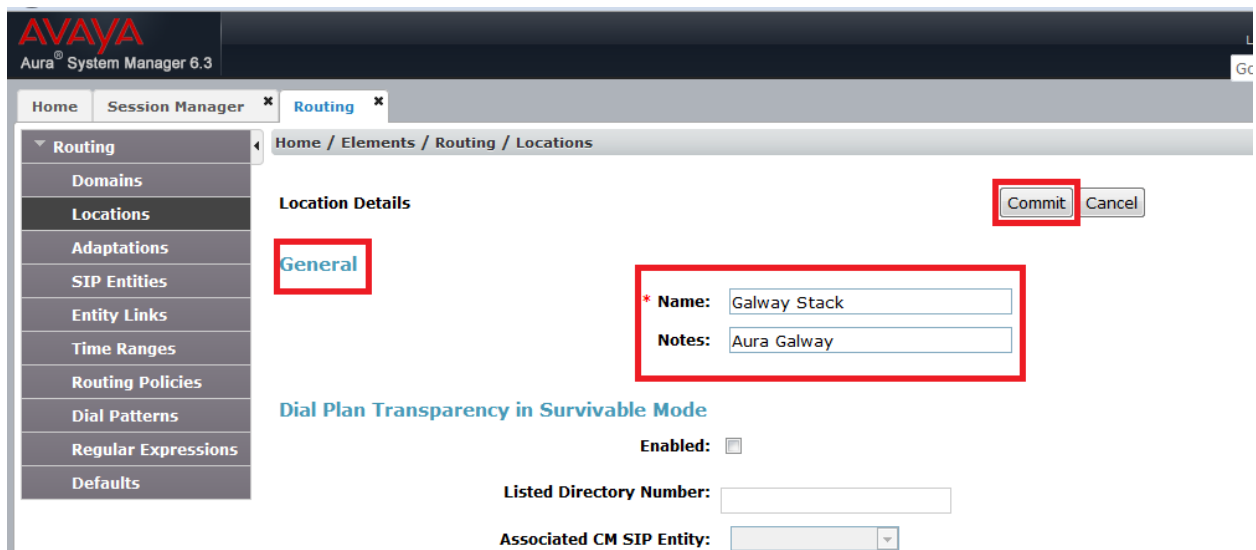


## 6.2. Define Location for Avaya Communication Server 1000

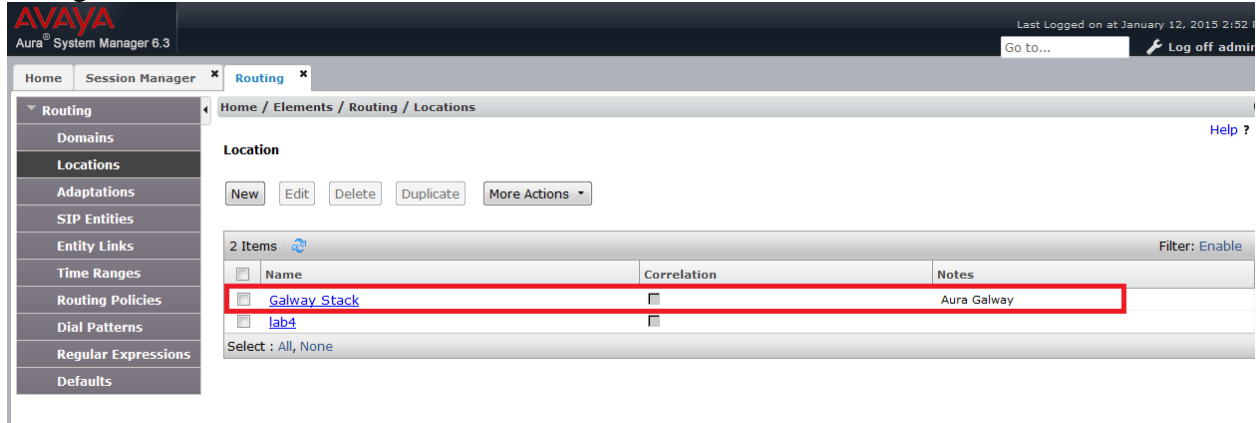
Locations are used to identify the logical and/or physical locations where SIP Entities reside and are also used for the purposes of bandwidth management or location-based routing. Under the **Routing** tab, select **Locations** from the left navigational menu. Click **New**.



In the **General** section, enter a location name in the **Name** box (e.g. **Galway Stack**). Optionally, enter some text into the **Notes** box (e.g. **Aura Galway**). Use the default values for all remaining fields and click **Commit** to save.



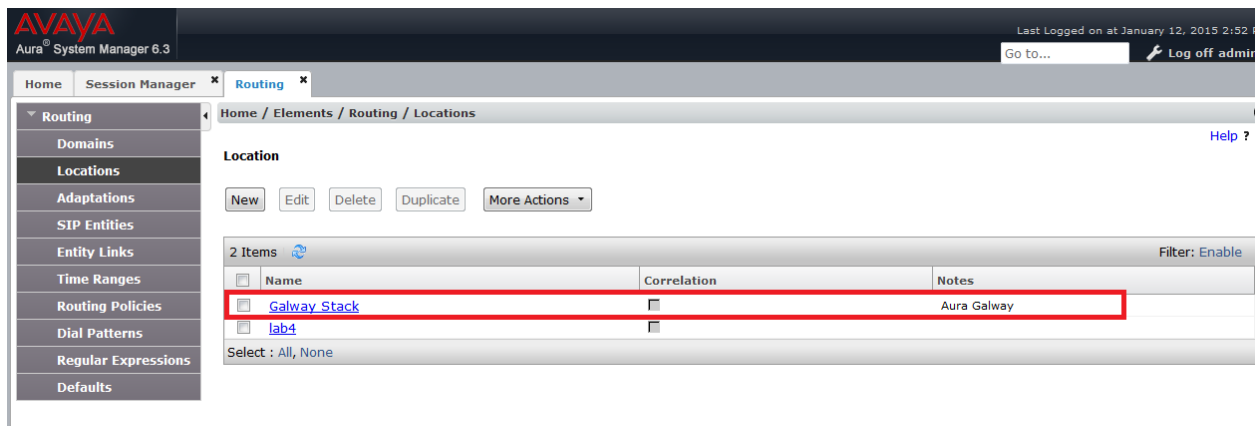
The resultant screen shows the Galway Stack location defined for CS 1000Aura in the sample configuration.



### 6.3. Configure Adaptation Module

To enable calls between endpoints on CS 1000 and SIP endpoints registered to Session Manager, Session Manager should be configured to use an Adaptation Module designed for CS 1000 to convert SIP headers in messages sent by CS 1000 to the format used by other Avaya products and endpoints. All calls to CS 1000 will have the CS 1000 NARS access code added as they leave Communication Manager ('1' is used for this sample configuration). The Session Manager will route all digit strings with a leading '1' to CS 1000. It will be necessary to delete the leading '1' for those calls that terminate within CS 1000 (station calls and Call Pilot).

Under the **Routing** tab, select **Adaptations** from the left navigational menu. Click **New**.



In the **Adaptation Details** page under the **General** section, enter the following values and use default values for remaining fields.

- **Adaptation Name:** Enter an identifier for the Adaptation Module (e.g. **CS 1000**).
- **Module Name:** Select **CS 1000Adapter** from the drop-down menu.
- **Module Parameter:** enter **fromto=true** in this field to ensure that the 'from' SIP header is updated.
- **Notes:** Optionally, enter some descriptive text into this field.

Home / Elements / Routing / Adaptations

[Help ?](#)

**Adaptation Details**

**General**

\* **Adaptation name:** CS1000

**Module name:** CS1000Adapter

**Module parameter:** fromto=true

**Egress URI Parameters:**

**Notes:** CS1k Adapter for PhoneContext

Matching patterns will be used for certain calls to adapt the SIP phone context information for the relevant call. In the sample configuration to simulate a PSTN call, an ISDN trunk was configured between the CS 1000E and a second CS 1000E system where a set with DN 2997 was used as the PSTN endpoint. When calls are made from a Collaborated endpoint to this simulated PSTN, a Private domain name of type Unknown, called "UnknownTest" in the sample configuration, will be sent back from the CS 1000 SIP Gateway to Session Manager which needs to be stripped off using this adaptation (**Note:** this has been configured earlier above as part of the SIP URI Map in **Section 5.4**). So the matching pattern of 29 is used for this purpose. Similarly, when a voice call is made from CS 1000 to a Collaborated endpoint the call is extended over SIP using a PCA and a CDP DSC of 447. Therefore a matching pattern of 44 is used to strip off the phone context of cdp.udp which also was defined earlier in the SIP URI Map in **Section 5.4**. These are summarized in the following table.

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
29	4	4	UnknownTest	0		origination	PSTN Calls
44	7	7	cdp.udp	0		both	CS1k PCA calls to CM

In the **Digit Conversion for Incoming Calls to SM** section, click **Add** and enter these values. It is also recommended to enter optional text in the **Notes** section as a description for each entry.

**Adaptation Details**

**General**

\* Adaptation Name: CS1000Adapter

Module Name: CS1000Adapter

Module Parameter Type:

Egress URI Parameters:

Notes:

**Digit Conversion for Incoming Calls to SM**

Add Remove

2 Items Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Adaptation Data	Notes
*29	*4	*4	UnknowTest	*0		origination		PSTN calls
*44	*7	*7	cdp.udp	*0		both		CS1K PCA call to CM

Select: All, None

Click **Commit** to save the changes.

## 6.4. Define SIP Entities

SIP entities must next be added for CS 1000 and Communication Manager. From the System Manager main page under the **Routing** tab, select **SIP Entities** from the left navigational menu. Click **New** to create a new SIP Entity.

**SIP Entities**

New Edit Delete Duplicate More Actions

27 Items Filter: Enable

Name	FQDN or IP Address	Type	Notes
AAM22682	10.128.226.82	SIP Trunk	AAM for ACA
ace226117	10.128.226.117	Other	
aes226106	10.128.226.106	Other	
AS1	10.128.226.78	Conferencing	
ces19861	10.128.198.61	Other	
CM26254	100.20.26.254	CM	ACA testing
cm-duplex-22615	10.128.226.15	CM	
CS1K4	10.128.226.125	Other	
LyncEdgeExternal	10.128.226.72	Other	
ps48	10.128.228.48	Presence Services	
ps-atlantic	10.128.226.57	Presence Services	
ps-cs1k	10.128.198.30	SIP Trunk	
pssv19835	10.128.198.35	Presence Services	
pssv19838	10.128.198.38	Presence Services	
pssv19839	10.128.198.39	Presence Services	

A fully qualified domain name (ex. somehost.example.com) or an IP Address (ex. 192.186.2.1) is required.

### 6.4.1. SIP Entity for CS 1000

The **SIP Entity Details** page appears. In the **General** section, enter the following values and use default values for the remaining fields. For **Name**, enter an identifier for the SIP Entity (e.g. **CS1kHA**). For **FQDN or IP Address**, enter the Node IP address of the CS 1000 IP Telephony interface (e.g. **192.168.186.107**). For **Type**, select **SIP Trunk** from the drop-down menu. In the **Notes** box, enter an optional description text (e.g. **CS 1000 7.6 High Availability System**). From the drop-down **Adaptation** list select the **CS 1000** Adaptation Module defined earlier in **Section 5.3**. From the drop-down **Location** list, select the **Galway Stack** Location for CS 1000 as defined earlier in **Section 5.2**. In the **SIP Link Monitoring** section and from the **SIP Link Monitoring** drop-down list, select **Use Session Manager Configuration**. Click **Commit** to save the definition of the new SIP Entity.

The screenshot shows the AVAYA Aura System Manager 6.3 interface. The left sidebar contains a navigation menu with options: Home, Routing, Domains, Locations, Adaptations, SIP Entities, 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 is highlighted with a red box and contains the following fields: Name (CS1kHA), FQDN or IP Address (192.168.186.107), Type (SIP Trunk), Notes (CS1000 7.6 High Availability System), Adaptation (dropdown), Location (Galway Stack), Time Zone (Europe/Dublin), SIP Timer B/F (4), Credential name (empty), and Call Detail Recording (egress). The 'Loop Detection' section shows Loop Detection Mode set to Off. The 'SIP Link Monitoring' section is also highlighted with a red box and shows SIP Link Monitoring set to Use Session Manager Configuration.

A second SIP Entity is required for the CS 1000 to be associated with the TLS link required to send presence updates from CS 1000 to the Presence server. The name will be different than the first Entity created above and no adaptation will be applied. **Note:** configuration details required for Presence Services are not covered in this Application Note – check references in **Section 10** for more documentation guides for Presence Services.

### 6.4.2. SIP Entity for Communication Manager

The SIP Entity built during the installation of the Midsize Enterprise (ME) server is required for Collaboration clients to access Communication Manager for features and is dedicated to IMS (IP Multimedia Subsystem) functionality. A second SIP Entity is built for Communication Manager to handle Enterprise traffic (calls to/from CS 1000 and calls to PSTN via CS 1000). This Entity will have the same IP address as the SIP Entity built during the ME server installation but it will use a different TCP port (5062) and therefore use a different

Communication Manager SIP trunk than the SIP Entity and Entity Link built during the ME server install. This is done to ensure that Enterprise traffic can be handled separately from Collaboration client feature verification traffic and so that adaptations applied to Enterprise calling do not interfere with the IMS process. For the sample configuration, the second SIP Entity is named **MESCM-CS1kCollab**.

From System Manager main page under the Routing tab, select SIP Entities from the left navigational menu and click New to create a new SIP Entity (as shown above in **Section 5.4**). The **SIP Entity Details** page appears. In the **General** section, enter the following values and use default values for the remaining fields. For **Name**, enter an identifier for the SIP Entity (e.g. **MESCM-CS1kCollab**). For **FQDN or IP Address**, enter the IP address of the Communication Manager (e.g. **192.168.186.82**). For **Type**, select **CM** from the drop-down menu. In the **Notes** box, enter an optional description text (e.g. **For CS1k Aura PCA Calls**). From the drop-down **Location** list, select the **Galway Stack** Location as defined earlier in **Section 5.2**. In the **SIP Link Monitoring** section and from the **SIP Link Monitoring** drop-down list, select **Use Session Manager Configuration**. Click **Commit** to save the definition of the new SIP Entity.

The screenshot shows the Avaya Aura System Manager 6.3 interface. The left navigation pane is expanded to the 'Routing' tab, and the 'SIP Entities' option is selected. The main content area displays the 'SIP Entity Details' page. The 'General' section is highlighted with a red box and contains the following fields:

- Name:** MCSCM-CS1KCollab
- FQDN or IP Address:** 192.168.186.82
- Type:** CM (selected from a dropdown)
- Notes:** for cs1k aura PCA calls
- Adaptation:** (empty dropdown)
- Location:** Galway Stack (selected from a dropdown)
- Time Zone:** Europe/Dublin (selected from a dropdown)
- SIP Timer B/F (in seconds):** 4
- Credential name:** (empty text field)
- Call Detail Recording:** none (selected from a dropdown)

The 'Loop Detection' section is visible below the General section, with 'Loop Detection Mode' set to 'Off'.

The 'SIP Link Monitoring' section is highlighted with a red box and contains the following field:

- SIP Link Monitoring:** Use Session Manager Configuration (selected from a dropdown)

## 6.5. Define Entity Links

Any connections to Session Manager are described by an Entity Link. In the sample configuration there are two Entity Links between Session Manager and CS 1000, one for MWI/Voice traffic and one for Presence Services. Likewise, two Entity links are required between Session Manager and Communication Manager, one for Collaboration client IMS services (created during the ME server installation) and one for communication with the CS 1000.

From the System Manager main page under the **Routing** tab, select **Entity Links** from the left navigational menu. Click **New** to create a new Entity Link.

AVAYA  
Aura System Manager 6.3

Home / Elements / Routing / Entity Links

Entity Links

New Edit Delete Duplicate More Actions

34 Items Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy	Deny New Service	Notes
sm19848_cm-duplex-22615_5061_TLS	sm19848	TLS	5061	cm-duplex-22615	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm19848_pssv22076_5061_TLS	sm19848	TLS	5061	pssv22076	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_ace226117_5060_UDP	sm22630	UDP	5060	ace226117	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
sm22630_aes226106_5061_TLS	sm22630	TLS	5061	aes226106	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_AS1_5061_TLS	sm22630	TLS	5061	AS1	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_ces19861_5061_TLS	sm22630	TLS	5061	ces19861	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_cm26245_tls	sm22630	TLS	5061	CM26254	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_cm-duplex-22615_5061_TLS	sm22630	TLS	5061	cm-duplex-22615	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	
sm22630_CS1K4_5060_TCP	sm22630	TCP	5060	CS1K4	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
sm22630_LyncEdgeExternal_5061_TLS	sm22630	TLS	5061	LyncEdgeExternal	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	

### 6.5.1. Entity Link for Avaya Communication Server 1000

The SIP trunk between Session Manager and CS 1000 is described by an Entity link. In the **Entity Links** page, for **Name**, enter an identifier for the link to each telephony system (e.g. **MESSM-CS1kHA**). From the **SIP Entity 1** drop-down list, select the SIP Entity defined for Session Manager (e.g. **MESSM**). From the **SIP Entity 2** drop-down list, select the SIP Entity defined for CS 1000 for voice calls in **Section 5.4** (e.g. **CS1kHA**). From the **Protocol** drop-down list, after selecting both SIP Entities, select **TLS** as the required protocol. Verify that the default listen values in the **Port** fields for both SIP entities have been automatically set to **5061** for TLS. Also verify that the default Connection Policy is set to **Trusted**. Optionally enter a brief description in the **Notes** field (e.g. **Link to CS1k**). Click **Commit** to save the Entity Link definition.

AVAYA  
Aura System Manager 6.3

Home / Elements / Routing / Entity Links

Entity Links

Commit Cancel

1 Item Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy	Deny New Service	Notes
* SM-CS1k HA	* sm22630	* TLS	* 5061	* CS1kHA	<input type="checkbox"/>	* 5061	trusted	<input type="checkbox"/>	Link to CS1k

Select : All, None

### 6.5.2. Entity Link for Communication Manager

The Entity Link built between Session Manager and Communication Manager during the installation of the ME server is required for the Collaboration clients to access the Communication Manager for telephony features. A second Entity Link is required between Session Manager and Communication Manager to handle Enterprise traffic (calls to/from

CS 1000 and calls to PSTN via CS 1000). This link will use a different TLS port (e.g. 5062) than that used for the Entity Link built during the ME server installation. Using a different port requires a second SIP trunk to be built in Communication Manager and ensures that any inbound or outbound digit manipulation does not affect the IMS traffic required by the Collaboration clients to function properly.

From the System Manager main page under the Routing tab, select Entity Links from the left navigational menu and click New to create a new Entity Link (as shown above in **Section 5.5**). In the **Entity Links** page, for **Name**, enter an identifier for the link to each telephony system (e.g. **SM-CM-5062**). From the **SIP Entity 1** drop-down list, select the SIP Entity defined for Session Manager (e.g. **MESM**). From the **SIP Entity 2** drop-down list, select the SIP Entity defined for CM for voice calls in **Section 5.4** (e.g. **MESCM-CS1kCollab**). From the **Protocol** drop-down list, after selecting both SIP Entities, select **TLS** as the required protocol. Enter non-default listen values in the **Port** fields for both SIP entities (e.g. **5062**) for TLS. Also verify that the default Connection Policy is set to **Trusted**. Optionally enter a brief description in the **Notes** field (e.g. **Second Link from MESM to CM**). Click **Commit** to save **Entity Link** definition.

Avaya Aura System Manager 6.3

Home / Elements / Routing / Entity Links

Entity Links

Commit Cancel

1 Item Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy	Deny New Service	Notes
SM-MCSCM	* sm22630	TLS	* 5061	* MCSCM-CS1KCollab	<input type="checkbox"/>	* 5061	trusted	<input type="checkbox"/>	Second Link from M

Select : All, None

### 6.5.3. Define Routing Policy

Routing policies describe the conditions under which calls will be routed to CS 1000 from SIP endpoints registered to Session Manager. Routing Policies will also be used to send calls and Callpilot MWI notification messages from the CS 1000 to Communication Manager. From the System Manager main page under the **Routing** tab, select **Routing Policies** from the left navigational menu. Click **New** to create a new Routing Policy.



AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:15 PM  
Go to... Log off admin

Home Routing

Routing Policies

New Edit Delete Duplicate More Actions

9 Items Filter: Enable

Name	Disabled	Retries	Destination	Notes
<a href="#">AAC-POL</a>	<input type="checkbox"/>	0	AS1	
<a href="#">AAM22682</a>	<input type="checkbox"/>	0	AAM22682	binh
<a href="#">ace117</a>	<input type="checkbox"/>	0	ace226117	
<a href="#">CM26254</a>	<input type="checkbox"/>	0	CM26254	ACA
<a href="#">Lync-Pol</a>	<input type="checkbox"/>	0	LyncEdgeExternal	
<a href="#">to cm duplex 22615</a>	<input type="checkbox"/>	0	cm-duplex-22615	
<a href="#">to CS1K4</a>	<input type="checkbox"/>	0	CS1K4	
<a href="#">toPSAtlantic-pol</a>	<input type="checkbox"/>	0	ps-atlantic	
<a href="#">to ps-cs1k</a>	<input type="checkbox"/>	0	ps-cs1k	

Define the Routing Policy for calls to Avaya Aura® Communication Manager

In the **General** section, enter the following values. For **Name**, enter an identifier to define the routing policy (e.g. **ToMESCM\_PCA**). Leave the **Disabled** box unchecked. Optionally, enter some descriptive text in the **Notes** box (e.g. **CS1k Aura PCA calls to CM**). In the **SIP Entity as Destination** section, click **Select**. The SIP Entity List page opens (not shown). Select the SIP Entity associated with Communication Manager as defined above in **Section 5.4.2** (e.g. **MESCM-CS1kCollab**) and click **Select**. The selected SIP Entity displays on the **Routing Policy Details** page. Use default values for remaining fields. Click **Commit** to save Routing Policy definition.

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 PM  
Go to... Log off admin

Home Routing

Routing Policy Details

Commit Cancel

General

\* Name:

Disabled: ☐

\* Retries:

Notes:

SIP Entity as Destination

Select

Name	FQDN or IP Address	Type	Notes
MCSCM-CS1KCollab	192.168.186.82	CM	for cs1k aura PCA calls

Time of Day

Add Remove View Gaps/Overlaps

1 Item Filter: Enable

Ranking	Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	Notes
0	24/7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	00:00	23:59	Time Range 24/7

Select: All None

## 6.5.4. Define the Routing Policy for calls to Avaya Communication Server 1000

Following the same procedure as above in **Section 5.6.1**, a Routing Policy is built to CS 1000. In the **General** section, enter the following values. For **Name**, enter an identifier to define the routing policy (e.g. **ToCS1kHA**). Leave the **Disabled** box unchecked. Optionally, enter some descriptive text in the **Notes** box (e.g. **Route to CS1k**). In the **SIP Entity as Destination** section, click **Select**. The SIP Entity List page opens (not shown). Select the SIP Entity associated with CS 1000 as defined above in **Section 5.4.1** (e.g. **CS1kHA**) and click Select. The selected SIP Entity displays on the **Routing Policy Details** page. Use default values for remaining fields. Click **Commit** to save Routing Policy definition.

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 P  
Go to... Log off admin

Home Routing

Home / Elements / Routing / Routing Policies

Routing Policy Details

Commit Cancel

General

\* Name: ToCS1kHA

Disabled: ☐

\* Retries: 0

Notes: Route to CS1k

SIP Entity as Destination

Select

Name	FQDN or IP Address	Type	Notes
CS1kHA	192.168.186.107	SIP Trunk	CS1000 7.6 High Availability System

Time of Day

Add Remove View Gaps/Overlaps

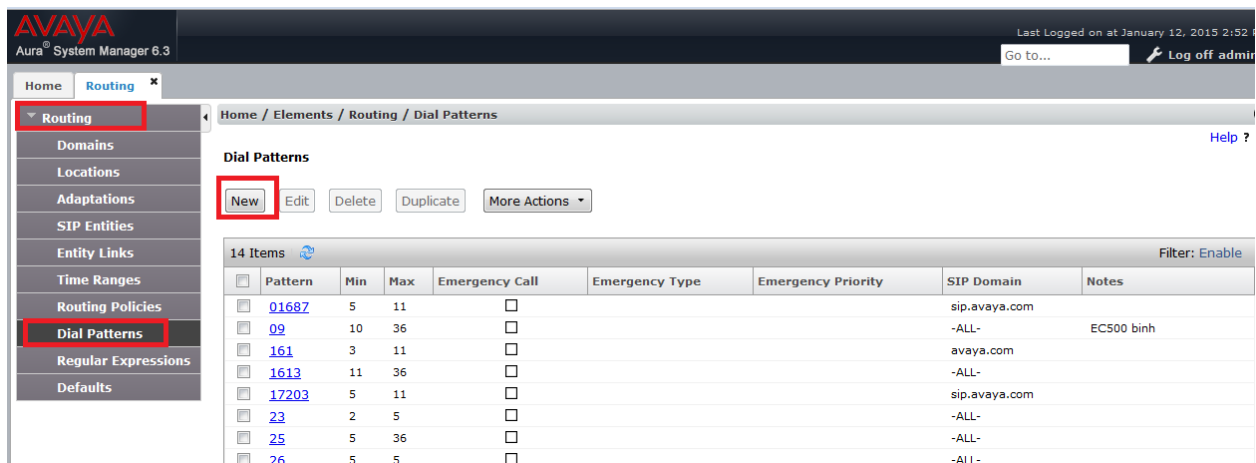
1 Item Filter: Enable

Ranking	Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	Notes
0	24/7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	00:00	23:59	Time Range 24/7

## 6.6. Define Dial Pattern

Dial patterns are used to route calls to appropriate SIP Entities. In the sample configuration, voice calls from CS 1000 to Communication Manager are extended by PCA with a prefix of 44 in front of the 5 digit DN. So a dial pattern of 44 is used to route these calls to Communication Manager. Calls from the Aura stations to CS 1000 are routed first to Communication Manager per the user profile application sequencing configuration. As CS 1000 extension has a prefix of 7 or 2, therefore dial patterns of 7 and 2 are used to route calls to CS 1000. Other Dial Patterns required for PSTN bound traffic and emergency dialing can be configured using the same steps described below.

From the System Manager main page under the **Routing** tab, select **Dial Patterns** from the left navigational menu. Click **New** to create a new Dial Pattern.



The screenshot shows the Avaya Aura System Manager 6.3 interface. The left sidebar has a 'Routing' tab selected, and 'Dial Patterns' is highlighted in the sub-menu. The main content area shows the 'Dial Patterns' configuration page. At the top, there are buttons for 'New', 'Edit', 'Delete', 'Duplicate', and 'More Actions'. Below these is a table with 14 items. The table has columns for 'Pattern', 'Min', 'Max', 'Emergency Call', 'Emergency Type', 'Emergency Priority', 'SIP Domain', and 'Notes'. The 'Pattern' column contains values like 01687, 09, 161, 1613, 17203, 23, 25, and 26. The 'Min' and 'Max' columns contain numerical values. The 'Emergency Call' column has checkboxes. The 'SIP Domain' column contains values like sip.avaya.com and -ALL-. The 'Notes' column contains a note 'EC500 binh'.

Pattern	Min	Max	Emergency Call	Emergency Type	Emergency Priority	SIP Domain	Notes
01687	5	11	<input type="checkbox"/>			sip.avaya.com	
09	10	36	<input type="checkbox"/>			-ALL-	EC500 binh
161	3	11	<input type="checkbox"/>			avaya.com	
1613	11	36	<input type="checkbox"/>			-ALL-	
17203	5	11	<input type="checkbox"/>			sip.avaya.com	
23	2	5	<input type="checkbox"/>			-ALL-	
25	5	36	<input type="checkbox"/>			-ALL-	
26	5	5	<input type="checkbox"/>			-ALL-	

Configure a dial pattern of 44 to be used to route CS 1000 voice calls to Communication Manager as follows. In the **General** section, enter the dial **Pattern** for calls to Communication Manager (e.g. 44). Because all voice calls to Communication Manager will be 7 digits in length, enter **7** in the **Min** and **Max** fields. In the drop-down **SIP Domain** list, select the SIP domain or select **All** (where Session Manager can accept incoming calls from all SIP domains). Optionally, enter a brief description in the Notes field (e.g. **CS1k PCA calls to CM**). In the **Originating Locations and Routing Policies** section, click **Add**.

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 PM

Go to... Log off admin

Home Routing

Home / Elements / Routing / Dial Patterns

Dial Pattern Details

Commit Cancel

General

\* Pattern: 44

\* Min: 7

\* Max: 7

Emergency Call: ☐

Emergency Priority: 1

Emergency Type:

SIP Domain: -ALL-

Notes: CS1k PCA calls to CM

Originating Locations and Routing Policies

Add Remove

0 Items

Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination	Routing Policy Notes

Denied Originating Locations

The **Originating Locations and Routing Policy List** page opens. In the **Originating Locations** table, select **Galway Stack**. In the **Routing Policies** table, select the Routing Policy that should be used to route the digits (e.g. **ToMESC\_M\_PCA**). Click **Select** to save these changes.

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 PM

Go to... Log off admin

Home Routing

Home / Elements / Routing / Dial Patterns

Originating Location

Select Cancel

Originating Location

☐ Apply The Selected Routing Policies to All Originating Locations

2 Items

Name	Notes
<input checked="" type="checkbox"/> Galway Stack	Aura Galway
<input type="checkbox"/> lab4	

Select : All, None

Routing Policies

10 Items

Name	Disabled	Destination	Notes
<input type="checkbox"/> AAC-POL	<input type="checkbox"/>	AS1	
<input type="checkbox"/> AAM22682	<input type="checkbox"/>	AAM22682	binh
<input type="checkbox"/> ace117	<input type="checkbox"/>	ace226117	
<input type="checkbox"/> CM26254	<input type="checkbox"/>	CM26254	ACA
<input type="checkbox"/> Lync-Pol	<input type="checkbox"/>	LyncEdgeExternal	
<input type="checkbox"/> to cm duplex 22615	<input type="checkbox"/>	cm-duplex-22615	
<input type="checkbox"/> to_CS1K4	<input type="checkbox"/>	CS1K4	
<input checked="" type="checkbox"/> ToMESC_M_PCA	<input type="checkbox"/>	MCSCM-CS1KCollab	CS1k Aura PCA calls to CM
<input type="checkbox"/> toPSAtlantic-pol	<input type="checkbox"/>	ps-atlantic	

The **Dial Pattern Details** page is displayed. Click **Commit** to save.

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 PM  
Go to... Log off admin

Home Routing

Home / Elements / Routing / Dial Patterns

**Dial Pattern Details**

**Commit** Cancel

**General**

\* Pattern: 44

\* Min: 7

\* Max: 7

Emergency Call: ☐

Emergency Priority: 1

Emergency Type:

SIP Domain: -ALL-

Notes: CS1k PCA calls to CM

**Originating Locations and Routing Policies**

Add Remove

1 Item

Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination	Routing Policy Notes
Galway Stack	Aura Galway	ToMESC_M_PCA	0	<input type="checkbox"/>	MCSCM-CS1KCollab	CS1k Aura PCA calls to CM

Select : All, None

**Denied Originating Locations**

Since all calls from Aura clients bound for the CS 1000 will have a leading digit '7' or '2' inserted, the dial pattern '7' or '2' is also used from Communicator for Lync clients, 5-digit station calls on CS 1000 and calls to CallPilot voicemail. Follow the same steps described above to configure a dial pattern of 7 to be used to route Communication Manager calls to the CS 1000. The resultant dial pattern configuration should look as follows. The **Originating Locations Name** is the same as before (i.e. **Galway Stack**). The **Routing Policy Name** this time should be set to route the calls to CS 1000 (i.e. **ToCS1kHA**).

AVAYA  
Aura® System Manager 6.3

Last Logged on at January 12, 2015 2:52 PM  
Go to... Log off admin

Home Routing

Home / Elements / Routing / Dial Patterns

Dial Pattern Details

Commit Cancel

General

\* Pattern: 7

\* Min: 5

\* Max: 5

Emergency Call: ☐

Emergency Priority: 1

Emergency Type:

SIP Domain: -ALL-

Notes: Call to CS1k/callpilot with prefix "1"

Originating Locations and Routing Policies

Add Remove

1 Item Filter: Enable

Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination	Routing Policy Notes
<input type="checkbox"/> Galway Stack	Aura Galway	ToCS1kHA	0	<input type="checkbox"/>	CS1kHA	for CS1k HA

Select : All, None

**Note:** For 112 / 911 Emergency calls from Aura clients, it may be desired not to strip off the leading prefix of 44 from the Calling Line ID (CLID) so that Emergency Services will receive the full 7-digit CLID rather than the usual 5-digit CLID for a converged / native user. This information can help to determine that the call was made from a collaborated client rather than a prime CS 1000 phone which may aid in locating the caller in this case. To do this a second SIP Entity can be created for CS 1000 (e.g. called "CS1k\_Emergency") with no adaptation applied (therefore no leading digits will be deleted from the origination address as documented in **Section 5.3**). Then a Routing Policy can be created specifically to route digits 112 or 911 to this SIP Entity where the full 7-digit incoming CLID will be presented to CS 1000 for further handling per standard emergency services. Detailed instructions and screenshots of this configuration are not shown in this document.

## 7. Configure Avaya Aura® Communication Manager

This section describes the steps required to configure Communication Manager (as an Evolution Server) to support Communicator for Lync Users with Avaya Aura® Midsize Enterprise. These instructions assume the Avaya G430 (or equivalent) Gateway is already configured on Communication Manager.

The following administration steps will be described:

- Verify System Access codes match
- Verify IP Network Region – SIP Domain
- Configure Trunk-to-Trunk transfers
- Administer SIP Signaling Group
- Administer SIP Trunk Group
- Verify Signaling Group and Trunk Group are in-service
- Configure incoming call handling for the SIP trunk group
- Administer Private and Public Numbering Plans
- Administer Uniform Dial plan
- Administer a Route Pattern
- Administer ARS Analysis
- Administer ARS Digit Conversion

## 7.1. Verify System Access Codes match

To allow users to utilize Converged dialing plans to route calls, verify Communication Manager AAR and ARS access codes match CS 1000 Access Codes. From System Manager Home Page under the Services category, navigate to UCM Services for CS 1000 management (as described earlier in **Section 4.2**). The Avaya Unified Communications Management Elements page opens in a new browser window. Under the Element Name column select one of the elements corresponding to CS 1000 in the Element Type column (e.g. EM on cs1kcores1). From the **CS 1000 Element Manager** page, expand **Dialing and Numbering Plans** on the left navigational panel and select **Electronic Switched Network**. The **Electronic Switched Network (ESN)** page appears. Click on the link for **ESN Access Codes and Parameters (ESN)**.

The screenshot displays the Avaya CS1000 Element Manager web interface. The top header shows the Avaya logo and the title "CS1000 Element Manager". Below the header, a navigation pane on the left lists various system components, with "Dialing and Numbering Plans" and "Electronic Switched Network" highlighted. The main content area displays the "Electronic Switched Network (ESN)" configuration page. At the top of this page, it indicates the user is managing "10.128.225.93" with the username "admin". The page is organized into a tree structure under "Customer 00". The "Network Control & Services" section is expanded, showing "Network Control Parameters (NCT)" and "ESN Access Codes and Parameters (ESN)". The "ESN Access Codes and Parameters (ESN)" section is further expanded, showing "Access Code 1" and "Access Code 2". "Access Code 1" includes parameters like Home Location Code (HLOC), Location Code (LOC), Numbering Plan Area Code (NPA), Exchange (Central Office) Code (NXX), Special Number (SPN), and Network Speed Call Access Code (NSCL). "Access Code 2" includes the Home Location Code (HLOC).

**AVAYA** **CS1000 Element Manager**

Managing: **10.128.225.93** Username: admin  
Dialing and Numbering Plans » Electronic Switched Network (ESN)

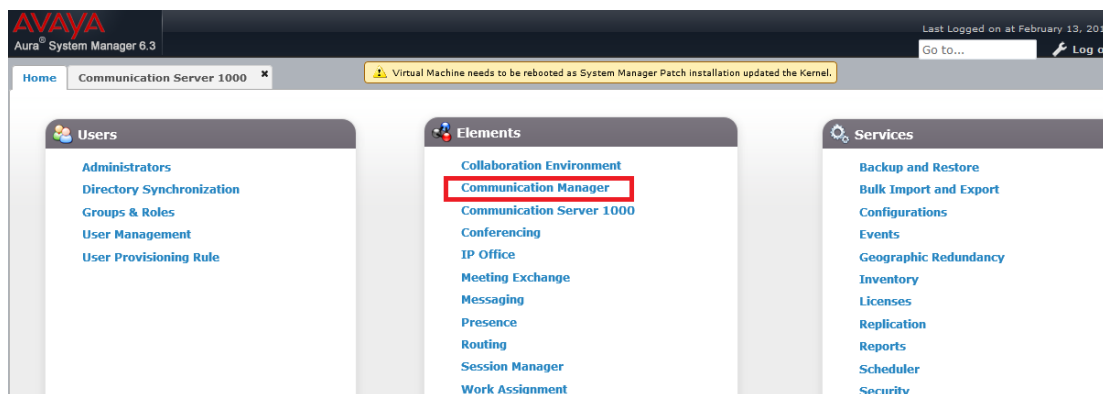
**Electronic Switched Network (ESN)**

- Customer 00
  - Network Control & Services
    - Network Control Parameters (NCT)
    - **ESN Access Codes and Parameters (ESN)**
      - Digit Manipulation Block (DGT)
      - Home Area Code (HNPA)
      - Flexible CLID Manipulation Block (CMDB)
      - Free Calling Area Screening (FCAS)
      - Free Special Number Screening (FSNS)
      - Route List Block (RLB)
      - Incoming Trunk Group Exclusion (ITGE)
      - Network Attendant Services (NAS)
  - Coordinated Dialing Plan (CDP)
    - Local Steering Code (LSC)
    - Distant Steering Code (DSC)
    - Trunk Steering Code (TSC)
  - Numbering Plan (NET)
    - Access Code 1
      - Home Location Code (HLOC)
      - Location Code (LOC)
      - Numbering Plan Area Code (NPA)
      - Exchange (Central Office) Code (NXX)
      - Special Number (SPN)
      - Network Speed Call Access Code (NSCL)
    - Access Code 2
      - Home Location Code (HLOC)



The **ESN Access Codes and Basic Parameters** page appears. Take note of the numbers used for **CS 1000 NARS/BARS Access Code 1** (e.g. 6) and **NARS Access Code 2** (e.g. 9).

From the main System Manager page under **Elements**, click on **Communication Manager**.

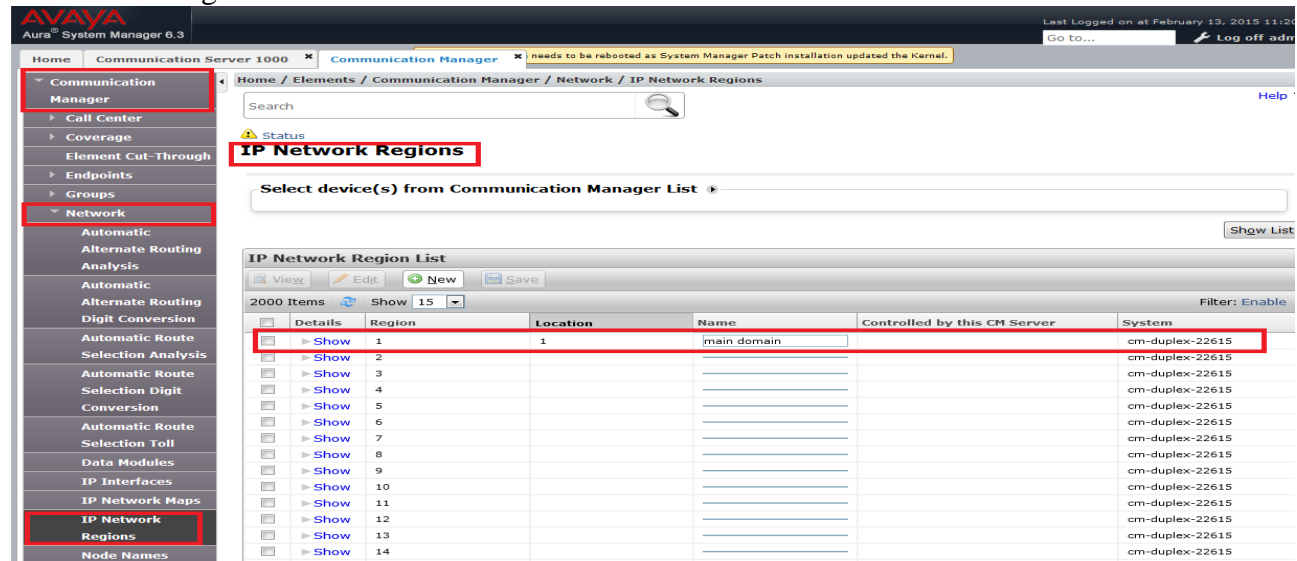


Under the **Communication Manager** list on the left hand side, expand the **System** list and select **Dialplan Analysis**. It is presumed that in the initial configuration of the Midsize Enterprise / Communication Manager, dial codes of 9 and 6 may already have been configured as they are commonly used codes. If so, they will show up on the **Dialplan Analysis List** (e.g. 9 is shown below). Verify that the **Total Length** is 1 and the **Call Type** is fac (this identifies the one-digit number as a Feature Access Code).

Dialed String	Total Length	Call Type	Location	System
#	4	fac	all	cm-duplex-22615
*	4	dac	all	cm-duplex-22615
987	10	ext	all	cm-duplex-22615
848	10	udp	all	cm-duplex-22615
80800	5	udp	all	cm-duplex-22615
6	1	fac	all	cm-duplex-22615
59	5	ext	all	cm-duplex-22615
51	7	ext	all	cm-duplex-22615
44	7	ext	all	cm-duplex-22615
42	5	udp	all	cm-duplex-22615
319	5	ext	all	cm-duplex-22615
318	5	ext	all	cm-duplex-22615
317	5	ext	all	cm-duplex-22615
76	6	ext	all	cm-duplex-22615

## 7.2. Verify IP Network Region –SIP Domain

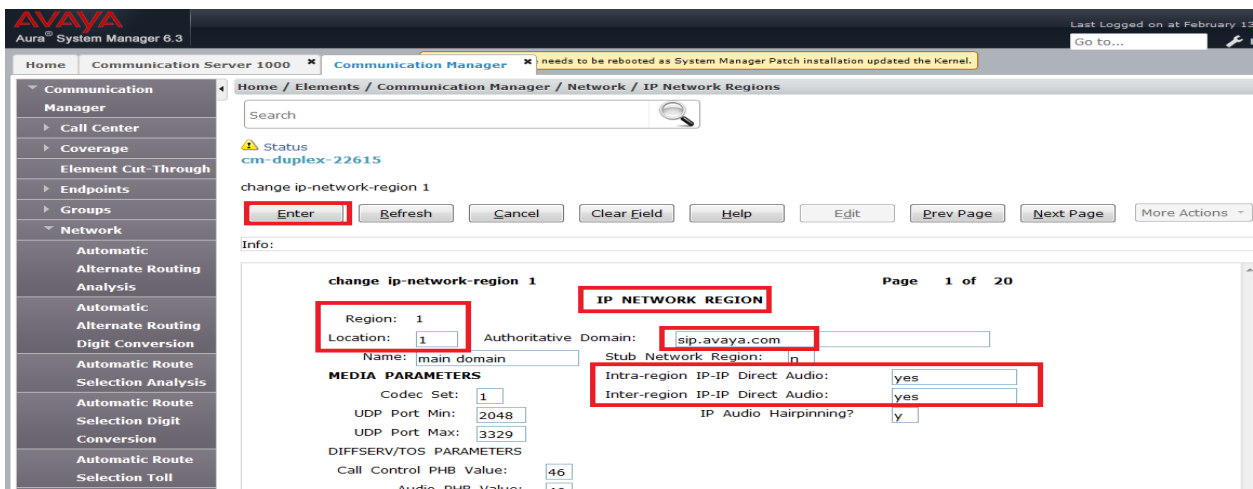
From the main System Manager page navigate to Elements and to Communication Manager. Under the **Communication Manager** list on the left hand side, expand the **Network** list and select **IP Network Regions**. From the **IP Network Region List** select Region 1 (presuming that this has already been configured on the Communication Manager). Click on **Edit** to view the details of this region.



Page 1 of the **IP NETWORK REGION** appears. Verify or enter the following values and use default values for remaining fields.

- **Authoritative Domain:** Enter the correct SIP domain for the configuration (e.g. **Svstack.com**).
- **Name:** Enter a descriptive name (e.g. **LOCAL**).
- **Codec Set:** Enter 1
- **Intra-region IP-IP Direct Audio:** Enter yes
- **Inter-region IP-IP Direct Audio:** Enter yes

Click on **Enter** if any changes were made otherwise click on **Cancel**.



### 7.3. Configure Trunk-to-Trunk Transfers

From the main System Manager page navigate to Elements and to **Communication Manager**. Under the **Communication Manager** list on the left hand side, expand the **Parameters** list and select **System Parameters - Features**. Select the **System Parameters – Features List** button item (shown as **false**), and click on **Edit**.

The screenshot shows the Avaya System Manager 6.3 interface. The left navigation pane has 'Parameters' expanded, and 'System Parameters - Features' is selected. The main content area displays the 'System Parameters - Features List' with a table containing one item: 'Terminal Translation Initialization (TTI) Enabled' with a value of 'false'. The 'Edit' button is highlighted in red.

The **change system-parameters features** page appears. Enable trunk-to-trunk transfers on a system wide basis to allow an incoming call to a SIP station to be transferred to another SIP station. Set the **Trunk-to-Trunk Transfer** field on **Page 1** to **all** using the drop-down list. Press **Enter** to save the change.

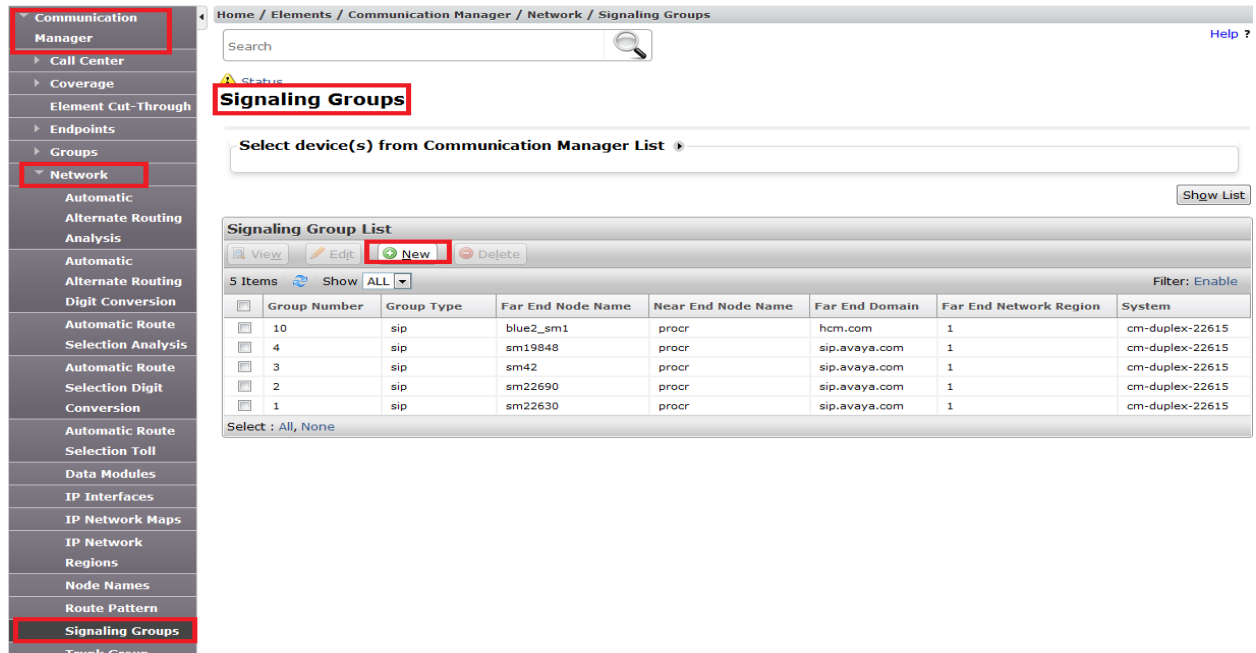
The screenshot shows the 'change system-parameters features' page. The left navigation pane has 'Parameters' expanded, and 'System Parameters - Features' is selected. The main content area displays the 'FEATURE-RELATED SYSTEM PARAMETERS' section with a table. The 'Trunk-to-Trunk Transfer' field is set to 'all'.

FEATURE-RELATED SYSTEM PARAMETERS	
Self Station Display Enabled?	y
Trunk-to-Trunk Transfer:	all
Automatic Callback with Called Party Queuing?	n
Automatic Callback - No Answer Timeout Interval (rings):	3
Call Park Timeout Interval (minutes):	10
Off-Premises Tone Detect Timeout Interval (seconds):	20
AAR/ARS Dial Tone Required?	y

## 7.4. Administer SIP Signaling Group

Signaling Group 3 and an associated SIP Trunk Group 3 is presumed to have already been setup and configured for the solution with the ME installation. Signaling Group 4 and an associated SIP Trunk Group 4 will be used for all Communication Manager traffic to the CS 1000 and needs to be configured to use a different TLS port from the default.

From the main System Manager page navigate to Elements and to **Communication Manager**. Under the **Communication Manager** list on the left hand side, expand the **Network** list and select **Signaling Groups**. The **Signaling Group List** page appears. Click on **New**.



The screenshot displays the Avaya System Manager interface. On the left, the navigation pane shows the hierarchy: **Communication Manager** > **Network** > **Signaling Groups**. The main content area is titled "Home / Elements / Communication Manager / Network / Signaling Groups". It features a search bar and a "Status" icon. Below this is a dropdown menu labeled "Select device(s) from Communication Manager List" and a "Show List" button. The "Signaling Group List" table is displayed, showing 5 items. The table has columns for Group Number, Group Type, Far End Node Name, Near End Node Name, Far End Domain, Far End Network Region, and System. The "New" button is highlighted in red.

Group Number	Group Type	Far End Node Name	Near End Node Name	Far End Domain	Far End Network Region	System
10	sip	blue2_sm1	procr	hcm.com	1	cm-duplex-22615
4	sip	sm19848	procr	sip.avaya.com	1	cm-duplex-22615
3	sip	sm42	procr	sip.avaya.com	1	cm-duplex-22615
2	sip	sm22690	procr	sip.avaya.com	1	cm-duplex-22615
1	sip	sm22630	procr	sip.avaya.com	1	cm-duplex-22615

The **Select Device(s) from Communication Manager List** page appears. Select the Communication Manager (or it may be automatically selected) and in the **Enter Qualifier** field, enter **4** (this is the signaling group number) and select **Add**.

Communication Manager

Call Center

Coverage

Element Cut-Through

Endpoints

Groups

Network

Automatic Alternate Routing Analysis

Automatic Alternate Routing Digit Conversion

Automatic Route Selection Analysis

Automatic Route Selection Digit Conversion

Automatic Route Selection Toll

Data Modules

Home / Elements / Communication Manager / Network / Signaling Groups

Search

Status

Select device from Communication Manager List

Add(+) Cancel

Select a CM from the following list

1 Item

Filter: Enable

Element Name	FQDN/IP Address	Last Sync Time	Sync Type	Sync Status	Location	Software Version
cm-duplex-22615	10.128.226.15	February 12, 2015 11:00:06 PM +07:00	Incremental	Completed		R016x.03.0.124.0

\* Enter Qualifier

4

Add(+) Cancel

\*Required

**Page 1** of the **add signaling-group 4** page appears. Select or enter the following values and leave all other fields as default.

- **Group Type:** Select **SIP** from the drop-down list.
- **Transport Method:** **TLS** may be selected by default (preferred choice).
- **Near-End Node Name:** Select **procr** from the drop-down list (this name is created during the ME server install).
- **Far-End Node Name:** Select **SM** from the drop-down list (this name is created during the ME server install).
- **Near-End Listen Port:** Enter **5062** as a different port number than the default used by signaling group 3.
- **Far-End Listen Port:** Enter **5062** as a different port number than the default used by signaling group 3.
- **Far-End Network Region:** Enter **1** in this field.
- **Far-end Domain:** Enter the SIP domain for the configuration (e.g. **svlstack.com**).

Click on **Enter** to save the new signaling group.

AVAYA  
Aura® System Manager 6.3

Last Logged on at February 13, 2015 1:10 PM  
Go to... Log off

Home Communication Server 1000 \* Communication Manager \* needs to be rebooted as System Manager Patch installation updated the Kernel.

Home / Elements / Communication Manager / Network / Signaling Groups

Search

Status  
cm-duplex-22615

change signaling-group 4

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info:

change signaling-group 4 Page 1 of 3

SIGNALING GROUP

Group Number: 4 Group Type: sip  
Transport Method: tls

IMS Enabled? n  
Q-SIP? n  
IP Video? y Priority Video? n Enforce SIPS URI for SRTP? n  
Peer Detection Enabled? y Peer Server: SM  
Prepend '+' to Outgoing Calling/Alerting/Diverting/Connected Public Numbers? y  
Remove '+' from Incoming Called/Calling/Alerting/Diverting/Connected Numbers? n  
Alert Incoming SIP Crisis Calls? n

Near-end Node Name: procr Far-end Node Name: sm19848  
Near-end Listen Port: 5061 Far-end Listen Port: 5061  
Far-end Network Region: 1

Far-end Domain: sip.avaya.com

Incoming Dialog Loopbacks: eliminate Bypass If IP Threshold Exceeded? n  
RFC 3389 Comfort Noise? n

## 7.5. Administer SIP Trunk Group

Trunk Group 4 will use signaling group 4 created in **Section 7.4** and will be used for all traffic to the CS 1000. From the main System Manager page navigate to Elements and to Communication Manager. Under the **Communication Manager** list on the left hand side, expand the **Network** list and select **Trunk Group**. The **Trunk Group List** page appears. Click on **New**.

Home / Elements / Communication Manager / Network / Trunk Group

Search

Status

**Trunk Group**

Select device(s) from Communication Manager List

Show List

**Trunk Group List**

View Edit **New** Delete

5 Items Show ALL Filter: Enable

	Group Number	Trunk Group Name	Group Type	Tenant Number	TAC	Number of Members	COR	CDR	Outgoing Display	Queue Length	System
<input type="checkbox"/>	10	OUTSIDE CALL	sip	1	*101	32	1	true	false	0	cm-duplex-22615
<input type="checkbox"/>	4	tosm19848	sip	1	*004	32	1	true	false	0	cm-duplex-22615
<input type="checkbox"/>	3	tosm42	sip	1	*003	32	1	true	false	0	cm-duplex-22615
<input type="checkbox"/>	2	to-sm22690	sip	1	*002	32	1	true	false	0	cm-duplex-22615
<input type="checkbox"/>	1	to-sm22630	sip	1	*001	32	1	true	false	0	cm-duplex-22615

Select : All, None

The **Select Device(s) from Communication Manager List** page appears. Select the CM (or it may be automatically selected) and in the **Enter Qualifier** field, enter **4** (this is the trunk group number) and select **Add**.

Communication Manager
Call Center
Coverage
Element Cut-Through
Endpoints
Groups
Network
Automatic
Alternate Routing
Analysis
Automatic
Alternate Routing
Digit Conversion
Automatic Route
Selection Analysis
Automatic Route
Selection Digit
Conversion
Automatic Route

Home / Elements / Communication Manager / Network / Trunk Group

Search

Status

**Select device from Communication Manager List**

Add(+)
Cancel

Select a CM from the following list

1 Item
Filter: Enable

	Element Name	FQDN/IP Address	Last Sync Time	Sync Type	Sync Status	Location	Software Version
<input checked="" type="radio"/>	cm-duplex-22615	10.128.226.15	February 12, 2015 11:00:06 PM +07:00	Incremental	Completed		R016x.03.0.124.0

\* Enter Qualifier

4

Add(+)
Cancel

\*Required



**Page 1** of the **add trunk-group 4** page appears. Select or enter the following values and leave all other fields as default.

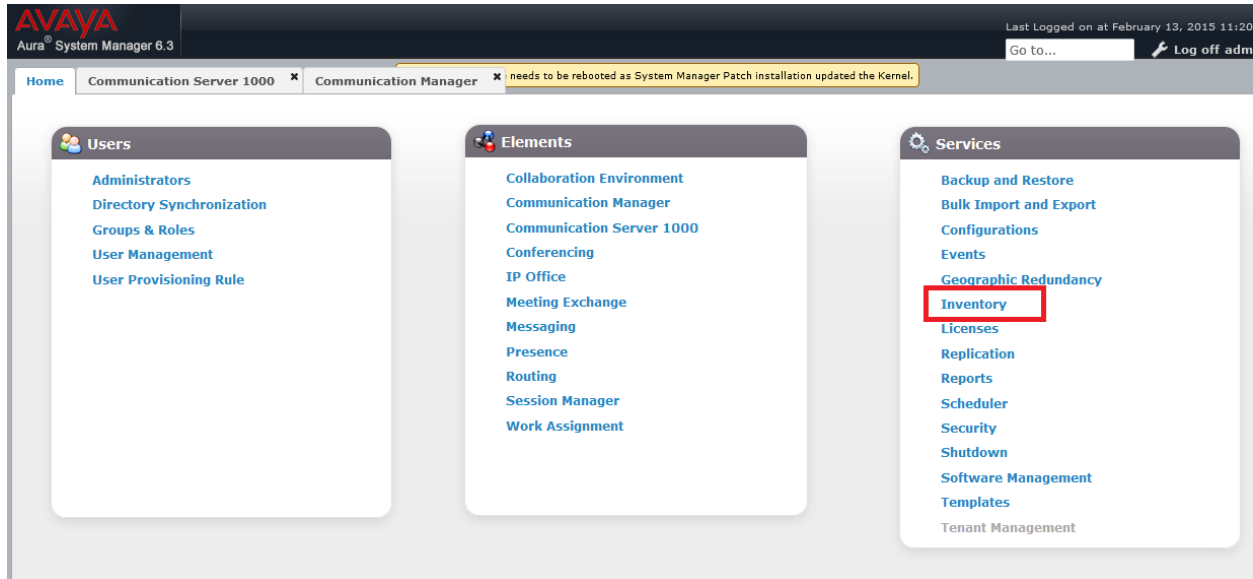
- **Group Type:** Select **SIP** from the drop-down list.
- **Group Name:** Enter a description for the trunk group (e.g. **SIP Trunk CS1k**).
- **TAC:** Enter **\*04** as the trunk access code.
- **Service Type:** Enter **tie** from the drop-down list.
- **Member Assignment Method:** Select **auto** from the drop-down list.
- **Signaling Group:** Enter **4** as the signaling group created in **Section 6.4**.
- **Number of Members:** Enter **100**.

Click on **Enter** to save the new signaling group

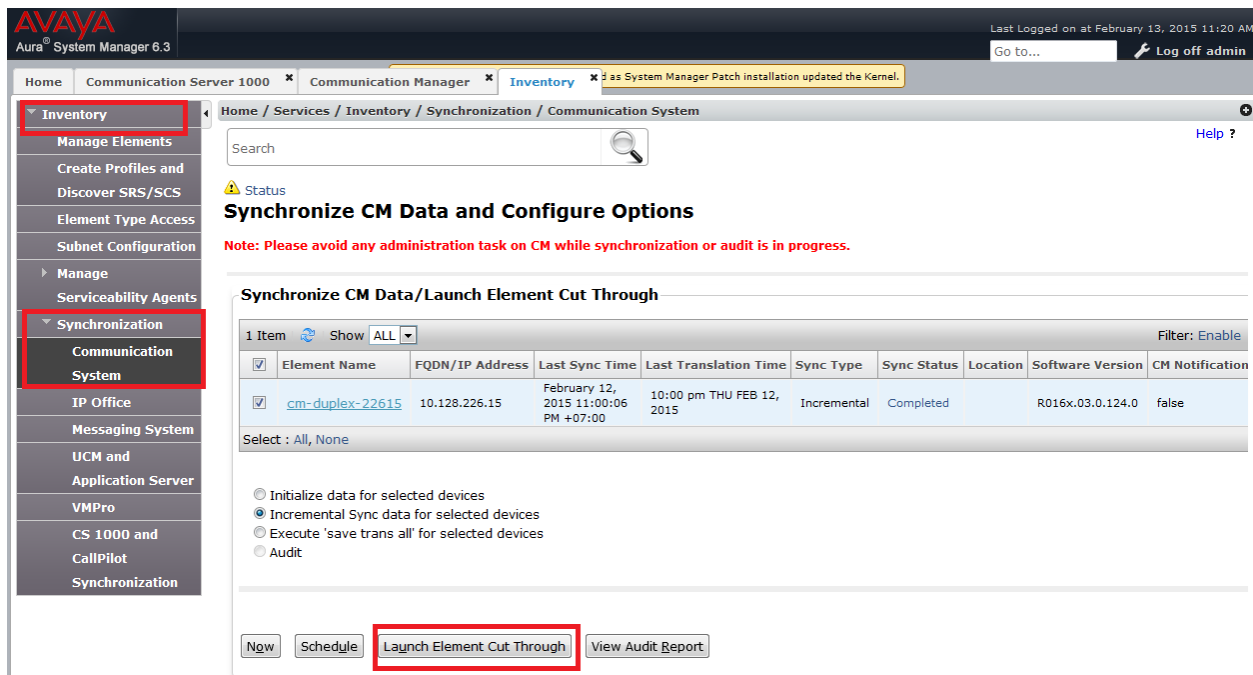
The screenshot shows the 'change trunk-group 4' page in the Avaya Communication Manager interface. The page has a left sidebar with navigation options and a main content area. The main content area has a search bar and a status indicator. Below the search bar, there are buttons for 'Enter', 'Refresh', 'Cancel', 'Clear Field', 'Help', 'Edit', 'Prev Page', 'Next Page', and 'More Actions'. The 'Enter' button is highlighted with a red box. Below the buttons, there is an 'Info:' section. The 'Info:' section contains a form for configuring the trunk group. The form has a title 'change trunk-group 4' and a page indicator 'Page 1 of 21'. The form fields are grouped into sections. The 'TRUNK GROUP' section contains the following fields: Group Number (4), Group Type (sip), CDR Reports (y), Group Name (tosm19848), COR (1), TN (1), TAC (\*004), 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 (4), and Number of Members (32). The fields for Group Type, Group Name, Service Type, Signaling Group, and Number of Members are highlighted with red boxes.

## 7.6. Verify Signaling Group and Trunk Group are in-service

After Signaling Group 4 and Trunk Group 4 have been added, ensure that both are up and in-service. From the main System Manager page under **Elements**, click on **Inventory**.



Under the **Inventory** list on the left hand side, expand the **Synchronization** list and select **Communication System**. Click on **Launch Element Cut Through**.



The **Element Cut Through** window appears. In the **Command** box, enter **status signaling-**

The screenshot shows the Avaya Aura System Manager 6.3 interface. The left sidebar contains a navigation menu with options like 'Inventory', 'Manage Elements', 'Create Profiles and Discover SRS/SCS', 'Element Type Access', 'Subnet Configuration', 'Manage Serviceability Agents', 'Synchronization', 'Communication System', 'IP Office', 'Messaging System', 'UCM and Application Server', 'VMPro', 'CS 1000 and CallPilot', and 'Synchronization'. The main content area displays the 'Element Cut Through' window for 'cm-duplex-22615'. The 'Command' box contains the text 'status signaling-group 4', and the 'Send' button is highlighted. Below the command box, the 'Info' section displays details for 'status signaling-group 4', including 'Group ID: 4', 'Group Type: sip', and 'Group State: in-service'.

**group 4** and click on **Send**. Verify that the **Group State** shows **in-service**.

In the **Command** box, enter **status trunk 4** and click on **Send**. Verify that the **Service State** shows **in-service/idle** and **Mtce Busy** is **no** for all 100 members (use **Next Page** to verify other members).

**Element Cut Through**

cm-duplex-22615

Command:

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info: press CANCEL to quit -- press NEXT PAGE to continue

Member	Port	Service State	Mlce Connected Ports
0004/001	T00129	in-service/idle	no
0004/002	T00130	in-service/idle	no

## 7.7. Administer Private Numbering Plan

The full extension numbers used for the Aura clients registered to Session Manager must be added to the private numbering table on Communication Manager. For the reference configuration, private numbering was used and all extension numbers were unique within the private network.

Using the same **Element Cut Through** window used in the previous **Section 7.6**, in the **Command** box, enter a command of the format “change private-numbering n”, where n is the length of the private number (e.g. 7). For the sample configuration where all collaborated endpoint DNs were 7 digits long, the command is **change private-numbering 7**. Click on the **Send** button. Fill in the indicated fields as shown below.

- **Ext Len:** Enter the length of the collaborated sets extension numbers (e.g. 7).
- **Ext Code:** Enter the leading digit(s) for the collaborated sets extension numbers (e.g. 44 was used as a prefix for all collaborated endpoints).
- **TrkGrp(s):** Enter 3 as the trunk group.
- **Total Length:** Enter 7 since a private prefix was not defined.

Click on **Enter** to accept the change.



## 7.8. Administer Public Numbering Plan

The full extension numbers used for the Aura clients registered to Session Manager must be added to the public numbering table on Communication Manager. For the reference configuration, public numbering was used and all extension numbers were unique within the public network. These settings will ensure that a 7-digit Collaborated SIP station will show a 5-digit Calling Party Number (CPN) on outbound calls. For example, SIP extension 4470015 will show a Calling Party Number of 70015.

Using the same **Element Cut Through** window used in the previous **Section 7.6**, in the **Command** box, enter a command of the format “change public-unknown-numbering n”, where n is the length of the public number (e.g. 7). For the sample configuration, the command used was **change public-unknown-numbering 7**. Click on the **Send** button. Fill in the indicated fields as shown below.

- **Ext Len:** Enter the length of the collaborated sets extension numbers (e.g. 7).
- **Ext Code:** Enter the leading digit(s) for the collaborated sets extension numbers (e.g. 44 was used as a prefix for all collaborated SIP endpoints).
- **TrkGrp(s):** Enter 4 as the trunk group in this case.
- **Total Length:** Enter 5 since a private prefix was not defined.

Click on **Enter** to accept the change.

AVAYA  
Aura® System Manager 6.3

Home / Services / Inventory / Synchronization / Communication System

Search

Status

**Element Cut Through**

Done

cm-duplex-22615

Command: change public-unknown-numbering 7

Send

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info: Enter number of digits to send (between 0-15), or blank

change public-unknown-numbering 7

Page 1 of 2

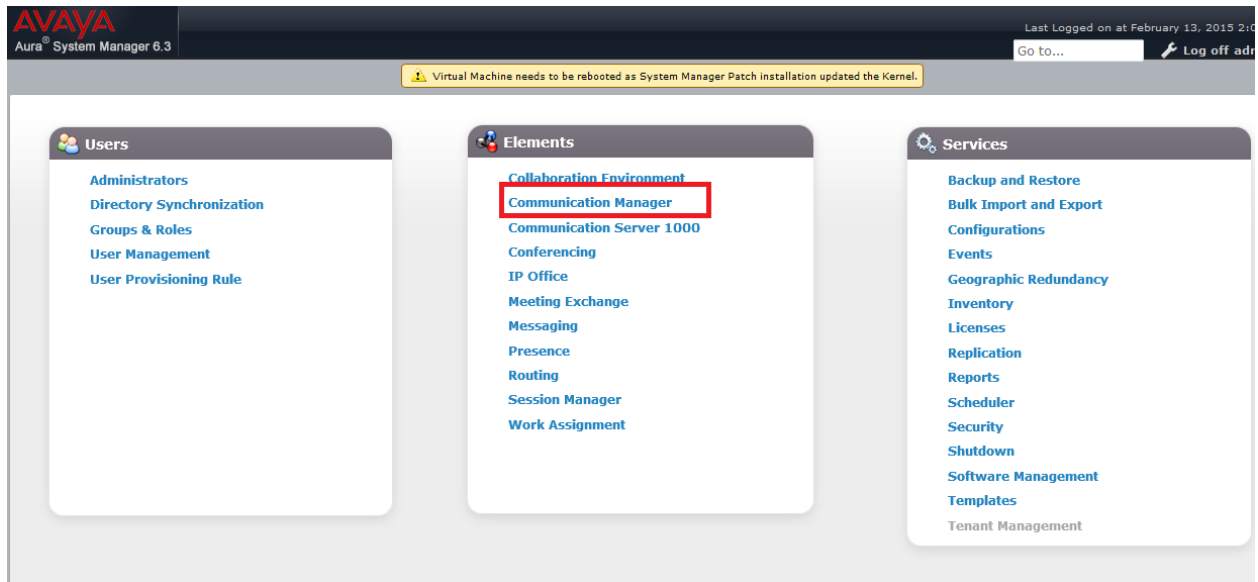
Ext Len	Ext Code	Trk Grp(s)	CPN Prefix	Total CPN Len
7	44	4		5

Total Administered: 0  
Maximum Entries: 9999

Note: If an entry applies to a SIP connection to Avaya

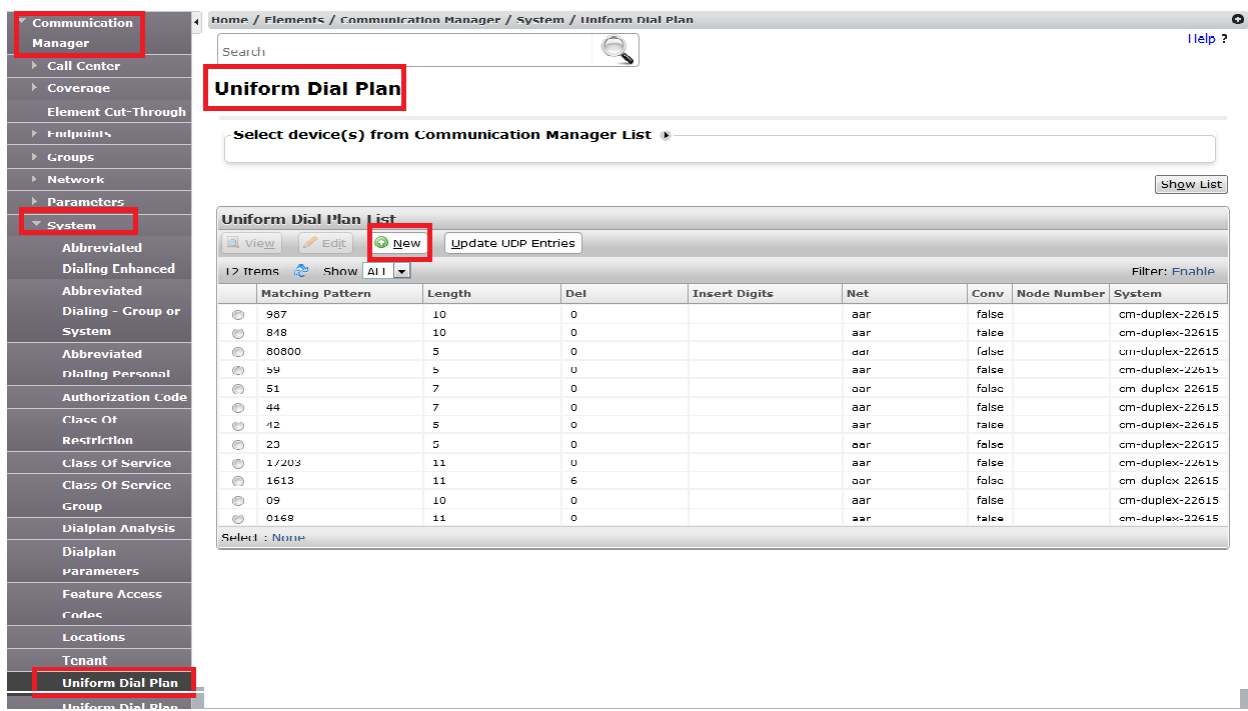
## 7.9. Administer Uniform Dial Plan

From the main System Manager page under **Elements**, click on **Communication Manager**.



Under the **Communication Manager** list on the left hand side, expand the **System** list and select **Uniform Dial Plan**. Click on **New**.

As all extensions on the CS 1000 in the sample configuration begin with the digit 7 or 2, enter 7 into the **Enter Qualifier** box. (Do the same for '2')



**AVAYA**  
Aura® System Manager 6.3

Last Logged on at February 13, 2015 2:09 PM

Go to... Log off admin

Home / Elements / Communication Manager / System / Uniform Dial Plan

Select device from Communication Manager List

Select a CM from the following list

Element Name	FQDN/IP Address	Last Sync Time	Sync Type	Sync Status	Location	Software Version
cm-duplex-22615	10.128.226.15	February 12, 2015 11:00:06 PM +07:00	Incremental	Completed		R016x.03.0.124.0

\* Enter Qualifier 7

\*Required

The **change uniform-dialplan 7** window appears. In the reference configuration, **7xxxx** was used as the uniform dialing plan for Converged Users dialing across CS 1000/ Aura solution. Fill in the indicated fields as shown below and use default values for remaining fields.

- **Matching Pattern** Enter a digit pattern to represent the prime extension number for all user endpoints in the solution (e.g. enter 7).
- **Len** Enter extension length (e.g. 5).
- **Del** Enter number of digits to delete (e.g. 0).
- **Net** Enter **ars** from the drop-down list.

Click on **Enter** to accept the change.

**AVAYA**  
Aura® System Manager 6.3

Last Logged on at February 13, 2015 2:09 PM

Go to... Log off admin

Home / Elements / Communication Manager / System / Uniform Dial Plan

cm-duplex-22615

change uniform-dialplan 7

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info:

change uniform-dialplan 7

Page 1 of 2

Percent Full: 0

Matching Pattern	Len	Del	Insert Digits	Net	Conv	Node Num
80800	5	0		aar	n	
848	10	0		aar	n	
987	10	0		aar	n	
7	5	0		ars	n	
					n	
					n	



## 7.10. Administer Route Pattern

This section describes the configuration of the Route Pattern used in Communication Manager for the routing of calls to CS 1000. All calls from ARS will use this route pattern 4. Route Pattern 3 is created during the ME server installation and is dedicated for the IMS signaling required by the Aura clients. Using a separate route pattern (route pattern 4 in this sample configuration) allows for digit manipulation on enterprise calls without affecting the IMS traffic that is using Route Pattern3.

From the main System Manager page navigate to Elements and to Communication Manager. Under the **Communication Manager** list on the left hand side, expand the **Network** list and select **Route Pattern**. The **Route Pattern List** page appears. Click on **New**.

Home / Elements / Communication Manager / Network / Route Pattern

Search

Status

**Route Pattern**

Select device(s) from Communication Manager List

Show List

Route Pattern List

View Edit **New**

5 Items Show ALL Filter: Enable

Pattern Number	Pattern Name	System
10	blue2_sm1	cm-duplex-22615
4	toSM19848	cm-duplex-22615
3	tosm42	cm-duplex-22615
2	to sm22690	cm-duplex-22615
1	to sm22630	cm-duplex-22615

Select : None

Enter the route pattern number **4** into the **Enter Qualifier** box and click on **Add**.

Home / Elements / Communication Manager / Network / Route Pattern

Search

Status

Select device from Communication Manager List

Add(+) Cancel

Select a CM from the following list

1 Item Filter: Enable

Element Name	FQDN/IP Address	Last Sync Time	Sync Type	Sync Status	Location	Software Version
cm-duplex-22615	10.128.226.15	February 12, 2015 11:00:06 PM +07:00	Incremental	Completed		R016x.03.0.124.0

\* Enter Qualifier 4

Add(+) Cancel

\*Required

In the **change route-pattern 4** page which appears, enter the following values and use default values for remaining fields.

- **PatternName** Enter a description of the route-pattern (e.g. **ToCS1K**).
- **Grp No** Enter **4** as the trunk group number to be used for this route.
- **FRL** Enter **0** as the minimal facility access code restriction value.
- **Inserted Digits** Enter **1** which is the lead routing digit that Session Manager will use to point calls to CS 1000.

Click on **Enter** to accept the changes.

Home / Elements / Communication Manager / Network / Route Pattern

Search

Status  
cm-duplex-22615

change route-pattern 4

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info:

change route-pattern 4 Page 1 of 3

Pattern Number: 4 Pattern Name: toSM19848

SCCAN? n Secure SIP? n

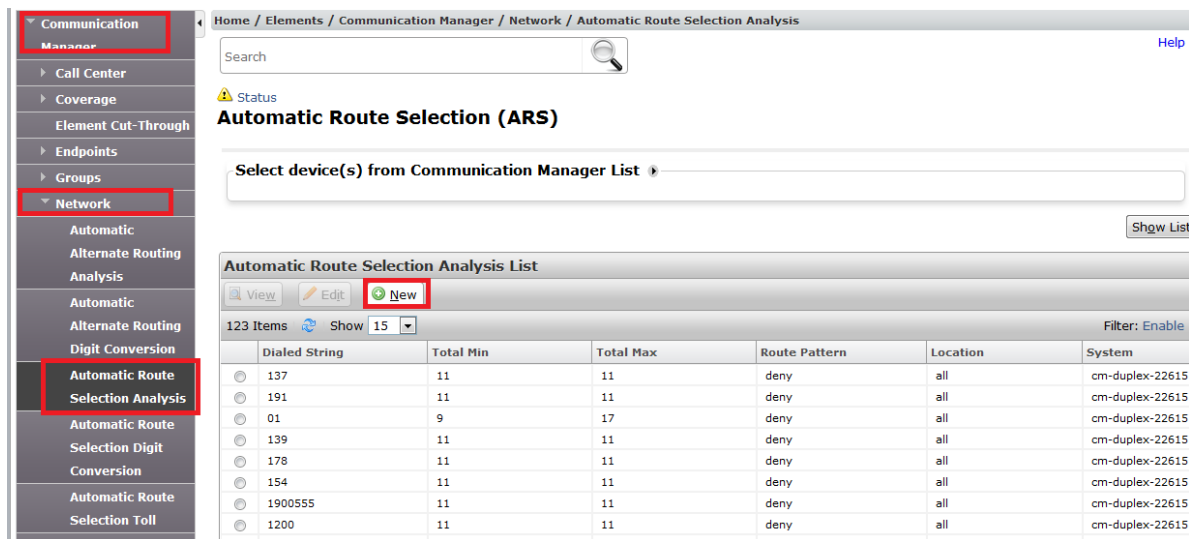
Grp	FRL	NPA	Pfx	Hop	Toll	No.	Inserted	DCS/ IXC	QSIG
No	Mrk	Lmt	List	Del	Digits				
1:	4	0						n	user
2:								n	user
3:								n	user
4:								n	user
5:								n	user
6:								n	user

BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR  
0 1 2 M 4 W Request Dgts Format

## 7.11. Administer ARS Analysis

This section details the configuration of the ARS pattern used in the reference configuration for routing calls between Aura clients and CS 1000 stations. All dialed numbers identified on the ARS table will be sent to Session Manager and routed to the CS 1000 via Route pattern 4 created in section 6.11.

From the main System Manager page navigate to Elements and to Communication Manager. Under the **Communication Manager** list on the left hand side, expand the **Network** list and select **Automatic Route Selection Analysis**. The **Automatic Route Selection (ARS)** page appears. Click on **New**.



Home / Elements / Communication Manager / Network / Automatic Route Selection Analysis

Search

Status

**Automatic Route Selection (ARS)**

Select device(s) from Communication Manager List

Show List

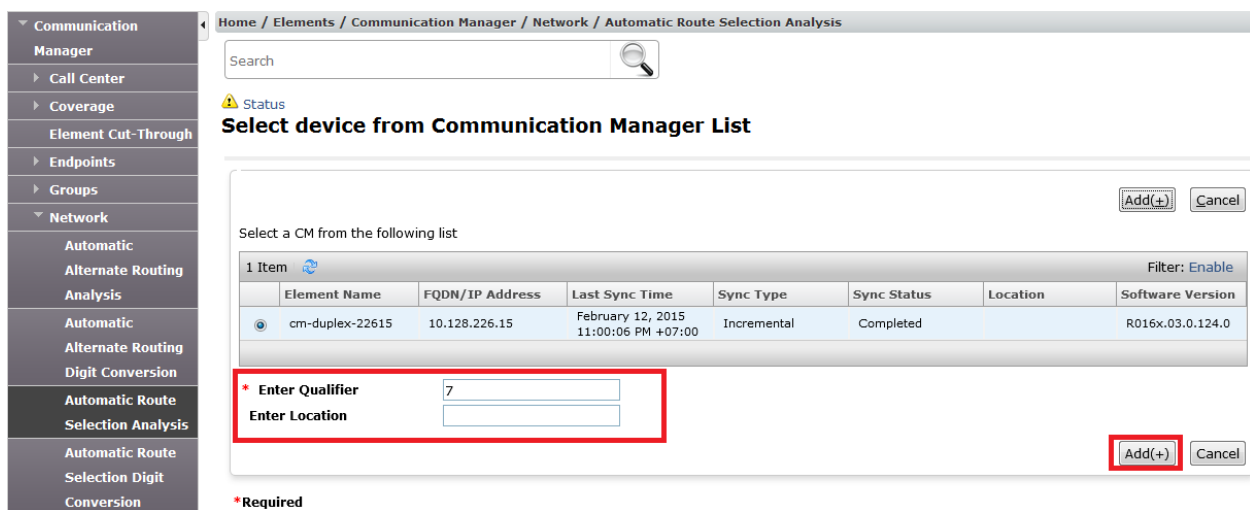
Automatic Route Selection Analysis List

View Edit New

123 Items Show 15 Filter: Enable

	Dialed String	Total Min	Total Max	Route Pattern	Location	System
<input type="radio"/>	137	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	191	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	01	9	17	deny	all	cm-duplex-22615
<input type="radio"/>	139	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	178	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	154	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	1900555	11	11	deny	all	cm-duplex-22615
<input type="radio"/>	1200	11	11	deny	all	cm-duplex-22615

In the **Enter Qualifier** box, enter the leading digit to add e.g. in the sample configuration, all set DN's on CS 1000 start with digit 7 or 2 while all stations on Aura begin with digits 44. So in the first pass, enter **7** and in the **Enter Location** box, leave it blank to include all locations. Click on **Add**. (Do the same for '2')



Home / Elements / Communication Manager / Network / Automatic Route Selection Analysis

Search

Status

**Select device from Communication Manager List**

Add(+) Cancel

Select a CM from the following list

1 Item Filter: Enable

	Element Name	FQDN/IP Address	Last Sync Time	Sync Type	Sync Status	Location	Software Version
<input checked="" type="radio"/>	cm-duplex-22615	10.128.226.15	February 12, 2015 11:00:06 PM +07:00	Incremental	Completed		R016x.03.0.124.0

\* Enter Qualifier 7

Enter Location

Add(+) Cancel

\*Required

The **change ars analysis 7** page appears. Enter the following values per the sample configuration example:

- **Dialed String** Enter leading digit(s) of extension numbers (e.g. enter **7**).
- **Min** Enter the minimum number of digits that must be dialed (e.g. **5**).
- **Max** Enter the maximum number of digits that may be dialed (e.g. **5**).
- **Route Pattern** Enter the Route Pattern for the call (e.g. **4**).
- **Call Type** Enter **locl** for a Local call.

Click on **Enter** to complete the change.

Communication Manager
Call Center
Coverage
Element Cut-Through
Endpoints
Groups
Network
Automatic Alternate Routing Analysis
Automatic Alternate Routing Digit Conversion
Automatic Route Selection Analysis
Automatic Route Selection Digit Conversion
Automatic Route Selection Toll
Data Modules
IP Interfaces

Home / Elements / Communication Manager / Network / Automatic Route Selection Analysis

Status
cm-duplex-22615

change ars analysis 7

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

change ars analysis 7

ARS DIGIT ANALYSIS TABLE
Location: all Percent Full: 1

Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Band
7	5	5	4	locl		n
8	7	7	2	hnpa		n
811	3	3	1	svcl		n
9	7	7	2	hnpa		n
911	3	3	1	svcl		n
976	7	7	deny	hnpa		n
						n

Repeat the same steps to add a Dialed String of 44 for calls to collaborated endpoints (except this time, use a Min / Max value of 7). The completed ARS table should look like the following example.

Communication Manager
Call Center
Coverage
Element Cut-Through
Endpoints
Groups
Network
Automatic
Alternate Routing Analysis
Automatic
Alternate Routing Digit Conversion
Automatic Route Selection Analysis
Automatic Route Selection Digit Conversion
Automatic Route Selection Toll
Data Modules
IP Interfaces
IP Network Maps
IP Network
Regions
Node Names
Route Pattern

Home / Elements / Communication Manager / Network / Automatic Route Selection Analysis

Search

Status  
cm-duplex-22615

change ars analysis 44

Enter Refresh Cancel Clear Field Help Edit Prev Page Next Page More Actions

Info:

change ars analysis 44

ARS DIGIT ANALYSIS TABLE
Location: all Percent Full: 1

Dialed String	Total		Route Pattern	Call Type	Node Num	ANI Req'd
	Min	Max				
5	7	7	2	hnpa		n
555	7	7	deny	hnpa		n
6	7	7	2	hnpa		n
611	3	3	1	svcl		n
7	7	7	2	hnpa		n
8	7	7	2	hnpa		n
811	3	3	1	svcl		n
9	7	7	2	hnpa		n
911	3	3	1	svcl		n
976	7	7	deny	hnpa		n
44	7	7	4	locl		n
						n
						n

## 8. User Management

This section describes the details for configuring Converged and Native users across the CS 1000 and the Aura using Element Manager and System Manager User Management.

The Communication Address and Profile Extension number defined for Session Manager and Communication Manager in the sample configuration is a seven-digit number which is identical to the CS 1000 primary Directory Number plus the route prefix (e.g. 4470xxx). The following assumes Midsize Enterprise template is configured as the Primary Security Server for the Unified Communications Management application and CS 1000 is registered as a member of the System Manager Security framework.

In the sample configuration, a user with CS 1000 DN of 20408 already exists and a Communicator for Lync client on Windows will be configured as a new Collaborated endpoint – the end result will be a Converged User with DN 70408.

In the case of a new Native User who will have no physical CS 1000 desk phone but will have a SIP endpoint on the Session Manager, a PCA configuration on CS 1000 is still required to direct the call from the Prime DN to the user's endpoint. So to add a new Native user, a PCA configuration must be added on CS 1000 for this purpose.

The following administration steps will be described:

- Confirm existing users in Avaya Communication Server 1000E Element Manager,
- Create User Identities and Communication profiles,
- Personal Call Assistant Configuration (PCA),
- Manual Configuration of Avaya SIP Clients.
- Synchronize CS 1000E Profile to User Identities in System Manager,
- Add PCA to CS 1000 User Communication profiles.

### 8.1. Confirm existing users in Avaya Communication Server 1000E Element Manager

It is presumed that existing CS 1000 users have been previously created using CS 1000 Element Manager which has configured the main endpoint phone Terminal Number (TN) / Directory Number (DN) and Call Party Name Display (CPND - First Name, Last Name). For each CS 1000 user defined in Element Manager a corresponding user identity must be added in System Manager. The **First Name** and **Last Name** of the user must match exactly on both CS 1000 Element Manager and System Manager User Management. This is important for proper Presence synchronization and import synchronization for user CS 1000 and CallPilot endpoint profiles.

Using the UCM Services link in the System Manager main page, access the **CS 1000 Element Manager** as described above in **Section 5.2**. Click on the link to **Phones**. In the **Search For Phones** window, the **Criteria** drop-down box is set by default to **Prime DN**. In the **Value** box, enter the prime DN of the existing CS 1000 user (e.g. **20408**). Click on **Search** button.

The screenshot shows the Avaya CS1000 Element Manager web interface. On the left is a navigation menu with categories like UCM Network Services, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The 'Phones' link under 'Dialing and Numbering Plans' is highlighted with a red box. The main content area is titled 'CS1000 Element Manager' and 'Managing: EM on cs1kcores1 (135.64.186.143)'. Below this is a 'Search for Phone' section with a 'Search For Phones' title. A red box highlights the search criteria: 'Criteria: Prime DN' and 'Value: 20408'. Another red box highlights the 'Search' button. Below the search bar, there are buttons for 'Add...', 'Import...', 'Retrieve...', 'Delete', 'Clear local DB', and a 'More Actions' dropdown. A 'Refresh' button is also present. The interface includes a 'Results Per Page' dropdown set to '10'.

The result of the search comes back and displays **Phones Found**. Click on the TN hyperlink for the phone entry found (e.g. **004 0 04 08**).

## Search For Phones

[Advanced](#) | [Hide](#)

Criteria: Prime DN ▼ Value: 20408

Results Per Page 10 ▼

Phones Found (2)


<input type="button" value="Add..."/>		<input type="button" value="Import..."/>		<input type="button" value="Retrieve..."/>		<input type="button" value="Delete"/>		<input type="button" value="Clear local DB"/>		<input type="button" value="More Actions"/>		<input type="button" value="Refresh"/>
<input type="checkbox"/>	Customer	TN ▲	Prime DN	Designation	Phone Type	Template	UXID					
1 <input type="checkbox"/>	0	004 0 04 08	20408	DIGI	M3904							

(1)



The **Phone Details** page now appears. Scroll down to the **Keys** properties section and make note of the **First Name** and **Last Name** of the user (e.g. **20408**, **CU6**).

Phone Details



System: EM on cs1kcores1  
Phone Type: M3904  
Sync Status: TRN

General Properties | Features | Keys | User Fields

Custom View: All

General Properties

Customer Number: 0 \*  
Terminal Number: 004 0 04 08  
Designation: DIGI \* (1-6 characters)

Keys

Key No.	Key Type	Key Value								
0	SCR - Single Call Ringing	<div> Directory Number 20408 </div> <div> <input checked="" type="checkbox"/> Multiple Appearance Redirection Prime(MARP) </div> <table border="1"> <tr> <td>First Name</td> <td>Last Name</td> <td>Display Format</td> <td>Language</td> </tr> <tr> <td>20408</td> <td>CU6</td> <td>First, Last</td> <td>Roman</td> </tr> </table>	First Name	Last Name	Display Format	Language	20408	CU6	First, Last	Roman
First Name	Last Name	Display Format	Language							
20408	CU6	First, Last	Roman							

Ensure Feature FTTC is configured as “Unrestricted Conf. or Transfer” to ensure conferences and transfers work across SIP trunk between CS 1000 and Session Manager as shown below.

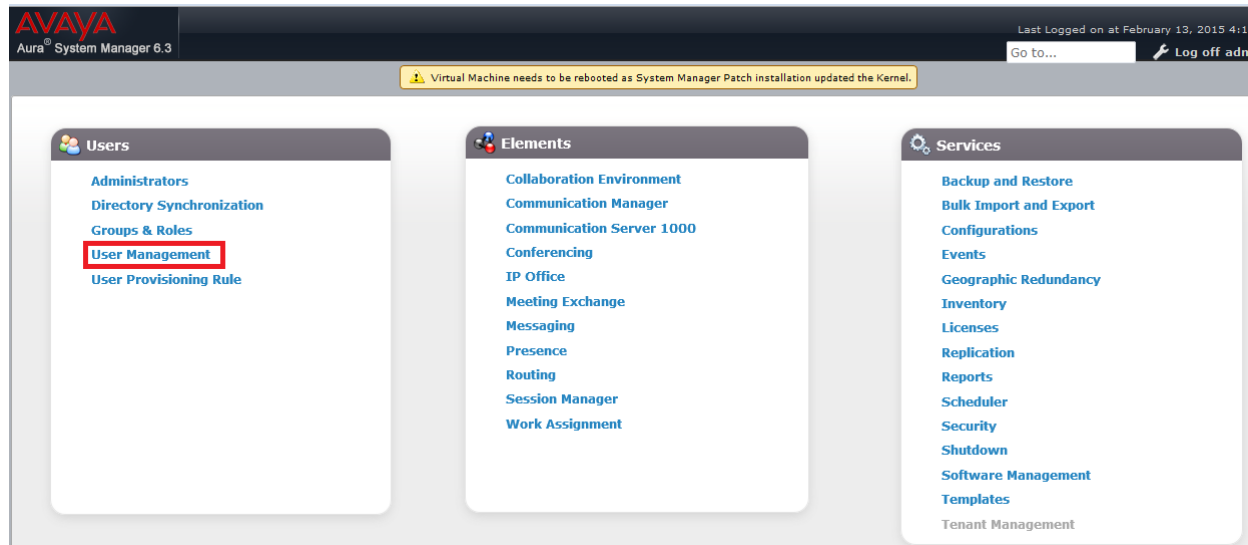
Features

Feature	Description
FTTC	Restricted Conference or Transfer

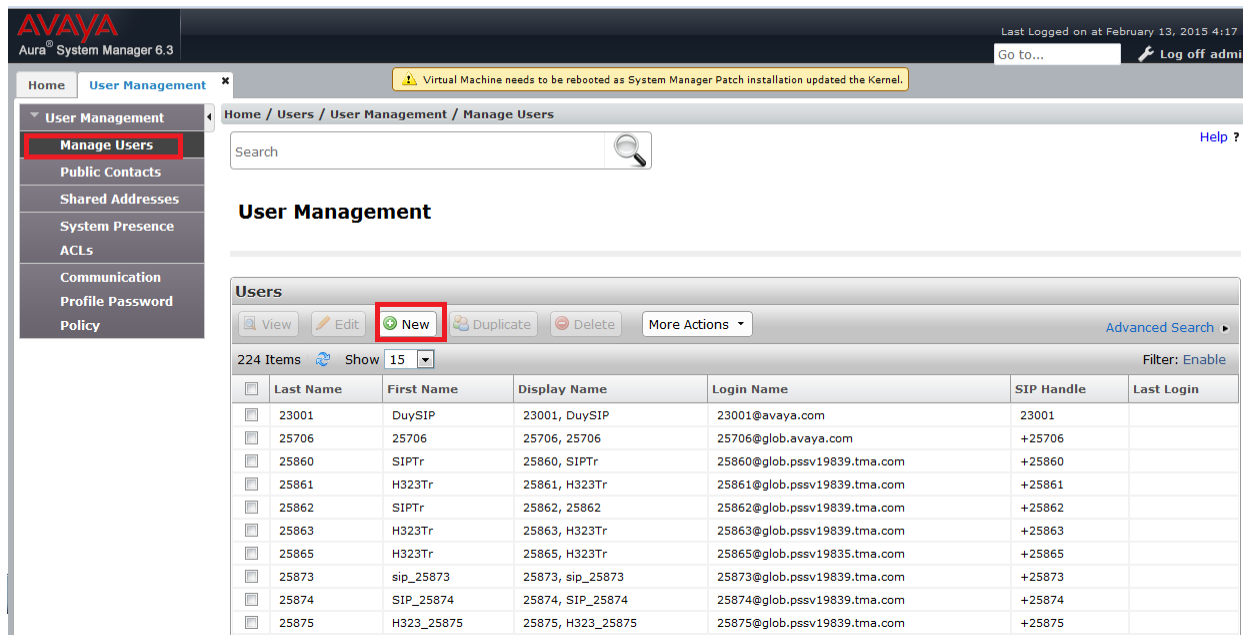
Unrestricted Conf. or Transfer

## 8.2. Create User Identities and Communication profiles

To create new users on System Manager, go to the main System Manager page and under **Users**, click on **User Management**.



Under the **User Management** list on the left navigation menu, click on **Manage Users**. Click on **New** to add a new user.



In the **New User Profile** page which appears, under the **Identity** section, enter values for the following required attributes for a new user and use default values for remaining fields.

- **Last Name:** Enter last name of user (e.g. **CU6** as noted above in **Section 7.1**).
- **First Name:** Enter first name of user (e.g. **70408** as noted above in **Section 7.1**).
- **Description:** Optionally enter a description.
- **Login Name:** Enter using the format “**handle@<domain>**” where “**<domain>**” matches the domain from **Section 5.1** (e.g. **70408@svstack.com**).
- **Authentication Type:** Verify **Basic** is selected.
- **Password:** Enter the password used to log into System Manager.
- **Confirm Password:** Repeat password entered above.
- **Localized Display Name:** Enter a display name for the user (optional).
- **Language Preference:** Select the appropriate language from the drop-down list.

The field names marked with an asterisk (\*) are mandatory fields. Before you click **Commit & Continue** ensure that all the mandatory fields have valid information.

The screenshot shows the 'New User Profile' page. The sidebar on the left includes 'User Management' and 'Manage Users'. The main area has a 'New User Profile' header with 'Commit & Continue', 'Commit', and 'Cancel' buttons. Below the header are tabs for 'Identity', 'Communication Profile', 'Membership', and 'Contacts'. The 'Identity' tab is selected and contains a 'User Provisioning Rule' dropdown. The 'Identity' section includes the following fields:

- \* Last Name:** CU6
- Last Name (Latin Translation): CU6
- \* First Name:** 70408
- First Name (Latin Translation): 70408
- Middle Name:
- Description:
- \* Login Name:** 70408@avaya.com
- \* Authentication Type:** Basic
- Password: [masked]
- Confirm Password: [masked]
- Localized Display Name:
- Endpoint Display Name:
- Title:
- Language Preference:
- Time Zone:** (+7:0)Bangkok, Hanoi, Jakarta

Next select the **Communication Profile** tab. Enter the password the user will use to register to Session Manager in the **Communication Profile Password** and **Confirm Password** fields (e.g. 123456 was used in the sample configuration). Verify there is a default entry identified as the **Primary** profile as shown below. Click on **Commit & Continue** to save this data.

The screenshot displays the 'User Profile Edit' interface for the user 70408@avaya.com. The left sidebar contains a navigation menu with options: User Management, Manage Users, Public Contacts, Shared Addresses, System Presence, ACLs, Communication, Profile Password, and Policy. The main content area has a breadcrumb trail: Home / Users / User Management / Manage Users. A status icon and 'Status' link are present. The title is 'User Profile Edit: 70408@avaya.com'. At the top right, there are buttons: 'Commit & Continue' (highlighted with a red box), 'Commit', and 'Cancel'. Below the title, there are tabs: Identity, Communication Profile (selected), Membership, and Contacts. The 'Communication Profile' section contains two password fields: 'Communication Profile Password' and 'Confirm Password', both masked with dots and highlighted with a red box. A 'Cancel' link is next to the confirm password field. Below the password fields is a table with columns 'New', 'Delete', 'Done', and 'Cancel'. The table has one row with the name 'Primary', which is highlighted with a red box. Below the table, it says 'Select : None'. At the bottom, there is a 'Name' field with the value 'Primary' and a 'Default' checkbox which is checked.

Next, Expand the **Communication Address** sub-section and select **New** to define a **Communication Address** for the new user. Enter values for the following required attributes:

- **Type:** Select **Avaya E.164** from the drop-down menu.
- **Fully Qualified Address:** Enter extension number+4470408 **Domain:** Verify value matches Domain name defined in **Section 5.1** (e.g. **svstack.com**).

Click **Add** to save the Communication Address. **Note:** The Avaya XMPP communication address is added automatically to the communication profile because Presence Services is enabled as part of the Avaya Midsize Enterprise template. Telephony Presence will not display properly on a Collaboration client unless both XMPP and Avaya E.164 information have been entered.

The screenshot shows a web interface for managing communication addresses. At the top, a tab labeled "Communication Address" is selected. Below the tab are three buttons: "New" (highlighted with a red box), "Edit", and "Delete". A table with columns "Type", "Handle", and "Domain" is shown, with a message "No Records found" below it. Below the table, there is a form for adding a new address. The "Type" dropdown is set to "Avaya E.164". The "Fully Qualified Address" field contains "+4470408" and the "Domain" dropdown is set to "svstack". The "Add" button is highlighted with a red box.

Scroll down to the **Session Manager Profile** section and expand this section. Enter the following required values and leave other values as default.

- **Primary Session Manager** Select a Session Manager from the drop-down list (e.g. **sm22630**).
- **Survivability Server** Select **(None)** from drop-down menu.
- **Origination Application Sequence** Select the Application Sequence defined for the Communication Manager from the drop-down list (e.g. **MESCM**).
- **Termination Application Sequence** Select the Application Sequence defined for the Communication Manager from the drop-down list (e.g. **MESCM**).
- **Home Location** Select a Location from the drop-down list (e.g. **Galway Stack**).
- **Conference Factory Set** Retain the default value of **(None)**.

☒ **Session Manager Profile**

**SIP Registration**

\* Primary Session Manager

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

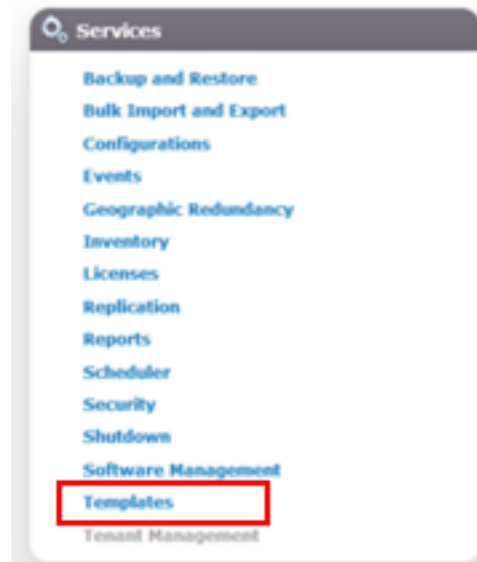
Conference Factory Set

Primary	Secondary	Maximum
125	0	125

Primary	Secondary	Maximum
0	79	79

Scroll back up to the top of the page and click on Commit & Continue (not shown) to save this data before proceeding.

Prior to creating the Communication Manager endpoint profile for a non-standard user / endpoint (e.g. Avaya Communicator for Microsoft Lync ), it is recommended to create a customized template. There is no standard template for Communicator for Lync type collaboration clients. Using the default 9641 SIP template, a duplicate may be made which can then be used for creating the Communication Manager endpoint profiles for these user types. From the main System Manager page under the **Services** list, click on **Templates**.



Under the **Templates** list on the left navigation menu, click on **CM Endpoint**. In the **Endpoint Templates** check the box for **System Type** and **Software Version** as **CM 6.2**. Click on **Show List**.

[Help ?](#)

**Endpoint Templates**

---

**Supported Feature Server Versions** ▼

5 Items Refresh Filter: Enable

<input type="checkbox"/>	System Type	Software Version
<input checked="" type="checkbox"/>	CM	6.3
<input type="checkbox"/>	CM	6.2
<input type="checkbox"/>	CM	5.0
<input type="checkbox"/>	CM	5.1
<input type="checkbox"/>	CM	

Select : All, None

Show List

In the **Templates List** screen find the template called **DEFAULT\_9641SIP\_CM\_6\_3**, select the checkbox and then select the **Duplicate** button.

**Note:** Edit and Delete operations are not allowed on Default Templates.

**Templates List**

63 Items Refresh Show 15 ▼ Filter: Enable

<input type="checkbox"/>	Name	Set Type	Owner	Version	Default	System Type	Software Version	Last Modified
<input type="checkbox"/>	DEFAULT_4602+_CM_6_3	4602+	System	0	Yes	CM	6.3	November 30, 2014 4:46:32 PM +00:00
<input type="checkbox"/>	DEFAULT_9641SIPCC_CM_6_3	9641SIPCC	System	0	Yes	CM	6.3	November 30, 2014 4:46:31 PM +00:00
<input type="checkbox"/>	DEFAULT_9621SIPCC_CM_6_3	9621SIPCC	System	0	Yes	CM	6.3	November 30, 2014 4:46:31 PM +00:00
<input type="checkbox"/>	DEFAULT_WCBRI_CM_6_3	WCBRI	System	0	Yes	CM	6.3	November 30, 2014 4:46:30 PM +00:00
<input type="checkbox"/>	DEFAULT_9408_CM_6_3	9408	System	0	Yes	CM	6.3	November 30, 2014 4:46:29 PM +00:00
<input checked="" type="checkbox"/>	DEFAULT_9641SIP_CM_6_3	9641SIP	System	0	Yes	CM	6.3	November 30, 2014 4:46:28 PM +00:00
<input type="checkbox"/>	DEFAULT_9608SIPCC_CM_6_3	9608SIPCC	System	0	Yes	CM	6.3	November 30, 2014 4:46:27 PM +00:00



In the next screen, **Duplicate Endpoint Template**, enter a name in the **New Template Name** box (e.g. **AC\_Lync\_SIP**). Click on the **Feature Options (F)** tab.

In the list of **Features**, tick the box for **IP Softphone** and **IP Video Softphone** (if Video calling is required in Computer mode).

For Communicator for Lync user, CM extension should be enabled “call forward no answer” and

\*Required

Done Cancel

“call forward busy” to its CS 1000 desk phone (e.g. Communicator for Lync user 70804 has CM extension 4470408 and is set call forward to its CS 1000 desk phone 20408)

General Options (G) *	Feature Options (F)	Site Data (S)	Abbreviated Call Dialing (A)	<b>Enhanced Call Fwd (E)</b>
Button Assignment (B)	Group Membership (M)			

	Forwarded Destination	Active
Unconditional For Internal Calls To	<input type="text"/>	<input type="checkbox"/>
External Calls To	<input type="text"/>	<input type="checkbox"/>
Busy For Internal Calls To	20408	<input type="checkbox"/>
External Calls To	20408	<input type="checkbox"/>
No Reply For Internal Calls To	20408	<input type="checkbox"/>
External Calls To	20408	<input type="checkbox"/>

\*Required

**Done** Cancel

Select the Commit & Continue button (not shown) to save the data.

Navigate back to User Management and Manage Users as described earlier in this **Section 8.2**. Edit the user “70408 CU6” and scroll down to the **CM Endpoint Profile** section and expand the section. Enter the following values and use defaults for remaining fields.

- **System** Select Managed Element defined for Communication Manager (e.g. **MESCM**).
- **Profile Type** Select **Endpoint**.
- **Use Existing Endpoints** Leave this box unchecked to automatically create a new endpoint when a new user is created.
- **Extension** Enter the CM extension number for the user (e.g. **4470408**).
- **Template** Select the template called **AC\_Lync\_SIP**
- **Security Code** Enter numeric value used to register the Communicator for Lync SIP endpoint. **Note:** this field should match the value entered for the Communication Profile Password above (e.g. 123456).
- **Port** Select **IP** from drop down menu.
- **Voice Mail Number** Leave this field blank.
- **Preferred Handle** Leave this set to (None).

**CM Endpoint Profile**

\* System **MESCM**

\* Profile Type **Endpoint**

Use Existing Endpoints ☐

\* Extension **4470408** **Endpoint Editor**

\* Template **AC\_Lync\_SIP**

Set Type

Security Code

\* Port **IP**

Voice Mail Number

Preferred Handle **(None)**

## 8.3. Synchronize Communication Profiles

System Manager provides an account synchronization feature to synchronize profiles between the different elements of the solution e.g. CS 1000, CallPilot, etc. It synchronizes profiles in User Management with the profiles in the respective elements. During synchronization, the account synchronization feature uses the account data in the elements as the master data. Therefore, when a profile data is not in synchronization with the element, the account data from the element is copied to System Manager.

### 8.3.1. Avaya Communication Server 1000E

Account synchronization with CS 1000 will import and synchronize all CS 1000 users into their previously created System Manager Identity CS 1000 Endpoint Profiles by matching each user's **First Name** and **Last Name**. After building the user identities, perform an on demand synchronization with CS 1000. From the System Manager home page under Elements click on Inventory (not shown). From the **Inventory** menu on the left hand side, under **Synchronization**, select **CS 1000 and CallPilot Synchronization**. Select a row associated with the CS 1000 and click on the **Start** button to initiate the synchronization process. Use the **Refresh** button in the table header to verify status of the synchronization. This synchronization process will add the CS 1000 Endpoint Profile to System Manager for each CS 1000 user name match.

The screenshot displays the Avaya Aura System Manager 6.3 web interface. The top navigation bar includes the Avaya logo, version information, and a 'Last Logged on' timestamp. A yellow warning banner indicates a virtual machine needs a reboot. The left sidebar contains a tree view with 'Inventory' and 'CS 1000 and CallPilot Synchronization' highlighted with red boxes. The main content area is titled 'Synchronize Communication Profiles' and includes a 'Start' button, a 'Stop' button, a 'Clear' button, and a 'Reload' button. Below these buttons is a table with the following data:

Element	Status	Date	Summary (click to resolve anonymous profiles)
EM on cs1k4			0 profile(s) processed

## 8.4. Personal Call Assistant Configuration (PCA)

The PCA feature is utilized to enable the routing of calls for a CS 1000 user who is provisioned with Avaya Communicator Microsoft Lync integration on the Communication Manager. When calls are placed to the users published extension (DN: 70408) PCA will be used to route these calls to an Aura Extension 4470408. The steps below describe PCA configuration for an existing CS 1000 user (e.g. Prime DN 70408) to enable that user to be converged with a collaborated endpoint at 4470408.

To achieve this call routing a PCA must be configured per Communicator for Lync user. When there is a call on CS 1000 to Communicator for Lync user, the PCA sends call signaling to the Avaya client endpoint via a CS 1000 SIP trunk to Session Manager. It is presumed that the PCA feature is licensed on the CS 1000 and enabled in the CS 1000 Customer Data Block. The following steps are required to configure a PCA:

1. For each Communicator for Lync user:
  - Configure key 0 as the Primary DN (e.g. 70408, note that CS 1000 desk phone DN for this user should be configured as 20408).
  - Configure key 1 as HOT P key with the appropriate route prefix and DN as required to reach the twinned Avaya client endpoint. (e.g. 4470408)

Step to add PCA: first navigate to “Phones” menu of CS 1000 EM page then click “Add”:  
For **Phone Type** select **PCA-Personal Call Assistant** from the drop down menu. Next check the box to **Automatically assign TN starting TN**. Scroll down and select the Preview button (not shown).

**New Phones**

---

Number of phones :  \* (1-100).  
Maximum value for Attendant consoles is 63.

Customer :

☒ Phone Type


Type : ☐ Template   
☐ Copy From TN

Options :

<input type="checkbox"/> Default value for DES	<input type="text" value=""/> * (1-6 characters)
<input type="checkbox"/> Default value for ZONE <small>Only applicable to IP phone types</small>	<input type="text" value=""/>
<input type="checkbox"/> Default value for Node Id <small>Only applicable to UEXT-SIPL phone types</small>	<input type="text" value=""/>
<input checked="" type="checkbox"/> Automatically assign TN starting TN	<input type="text" value=""/>
<input type="checkbox"/> Automatically assign DN starting DN	<input type="text" value=""/> *

The Phone Details screen appears. Enter a CS 1000 **Customer Number** (e.g. **0**) and **Designation** (e.g. **Collab**).

**Phone Details**



System: EM on cs1kcores1  
 Phone Type: PCA  
 Sync Status: NEW

General Properties | Features | Keys | User Fields
Custom View: All ▼

**General Properties**

Customer Number: 0 \*

Terminal Number: 096 0 00 20 \* 🔍

Designation: Collab \* (1-6 characters)

Scroll down to the **Keys** section. For **Key No. 0**, select **SCR – Single Call Ringing** from the drop-down **Key Type** list. In the **Directory Number** enter the prime DN for the user (e.g. **70408**). The **First Name** (e.g. **70408**) and **Last Name** (e.g. **CU6**) fields should automatically populate at this point. For **Key No. 1**, select **Hot\_P – Hotline(PCA)** from the drop-down **Key Type** list. Enter the **Target DN Length** (e.g. **7**) and the **Target DN** of the Collaborated endpoint (e.g. **4470408**).

**Keys**

Key No.	Key Type	Key Value
0	SCR - Single Call Ringing	<div style="border: 2px solid red; padding: 5px;">           Directory Number: 70408 🔍  <input type="checkbox"/> Multiple Appearance Redirection Prime(MARP)            First Name: 70408    Last Name: CU6    Display Format: First, Last    Language: Roman         </div>
1	HOT_P - Hotline(PCA)	<div style="border: 2px solid red; padding: 5px;">           CLID Entry (Numeric or D): 0            ANIE Entry:            Target DN Length: 7            Target DN: 4470408 🔍         </div>
2	NUL - Unassigned	

Select Commit (not shown) to save changes. When this is done, preform the account re-synchronization of the CS 1000 users to System Manager again using instructions in **Section 7.3.1**.

## 8.5. Configuring CLID for the User's CS 1000 desk phone

As described previously the Users CS 1000 desk phone has been configured with a new DN and this DN is used by Avaya Communicator for Microsoft Lync Other Phone Mode to make and receive calls on this device. While Communicator for Lync is controlling this desk phone the correct CLID for this user is presented to other users and externally.

If the user decides to make a call from the device then the CLID for this device i.e. 20408 will be exposed. To ensure the correct CLID is presented CS 1000 Load 15 is used to provide mapping of the existing DN to the correct CLID.

Example:

C1000 extn (PCA) = 70408

CM Extension of Lync = 4470408

CS 1000 Desk phone = 20408

E164 number +1 303 447 0408

In LD 15 Set create a new table enter this example is using 16

INTL Country Code = +1

Entry = 16

HNTN National Area Code = 303

HLCL Local Code for Listed Number = 447

DIDN\_LEN DID Length = 4 (as the last 4 digits remain for the Lync extension and the CS 1000 phone and **0408** will be sent as part of the number)

```
>ld 15
CDB000
MEM AVAIL: (U/P): 94292520   USED U P: 8454965 904864   TOT: 103652349
SCH5066

REQ: chg
TYPE: net_data
CUST 0
OPT
AC2
FNP
CLID yes
  SIZE
  INTL 1
  ENTRY 16
    HNTN 303
    ESA_HLCL
    ESA_INHN
    ESA_APDN
    HLCL 447
    DIDN yes
    DIDN_LEN 4
    HLOC
    LSC
    CLASS_FMT
    ENTRY 16 SAVED!
ENTRY
```

```
ld 20
PT0000
REQ: chg
TYPE: 1140
TN 96 0 0 13
ECHG yes
ITEM key 0 scr 20408 HNT FNA 16
  MARP
  CPND
  VMB
  ANIE
  KEY
ITEM
```

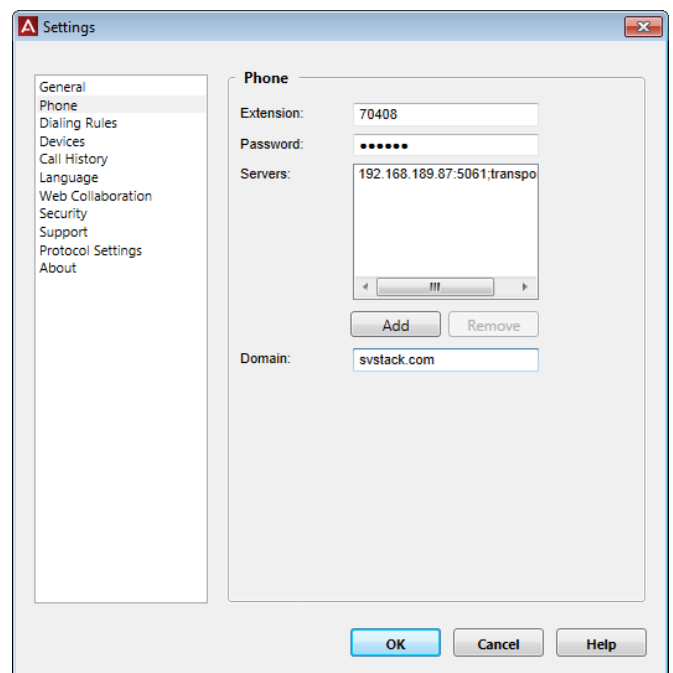
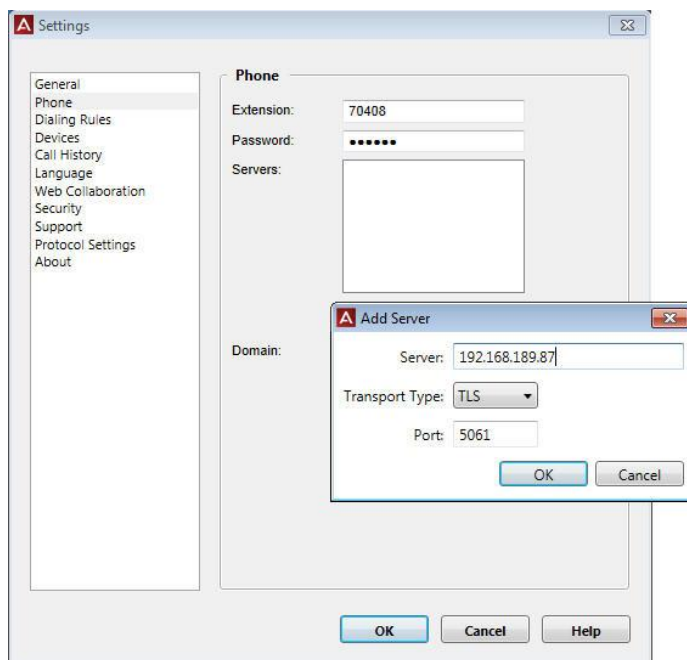
In LD 20 edit Key 0 of the phone to use this CLID table, configured as number 16 in this example from Ld 15 above. This desk phone DN is 20408

key 0 scr 20408 16

## 8.6. Manual Configuration of Avaya Communicator for Lync SIP client

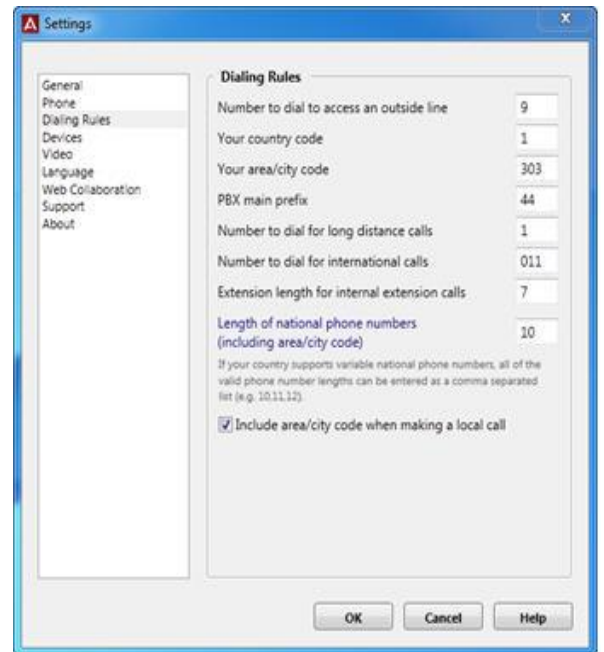
This section shows the steps required to manually configure a Communicator for Lync as an example of configuring a Collaboration endpoint / user to register to Session Manager.

It is presumed that the Communicator for Lync has been previously installed and the application has been launched. Click on the settings icon to open the **Settings** window. From the left hand list, select **Phone**. , Enter the Extension and Password and **Server address** of the Session Manager (e.g. **192.168.186.87, Port 5061, TLS**) and the domain name **svstack.com**. Click on OK to save the settings.

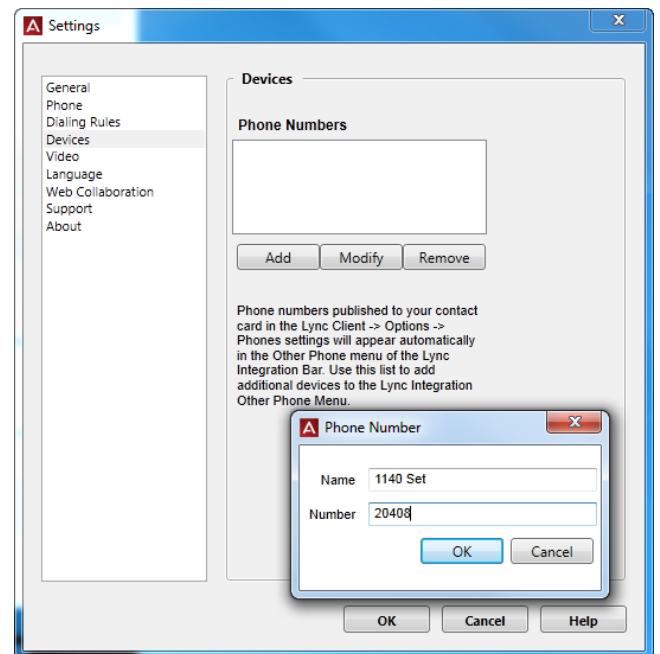
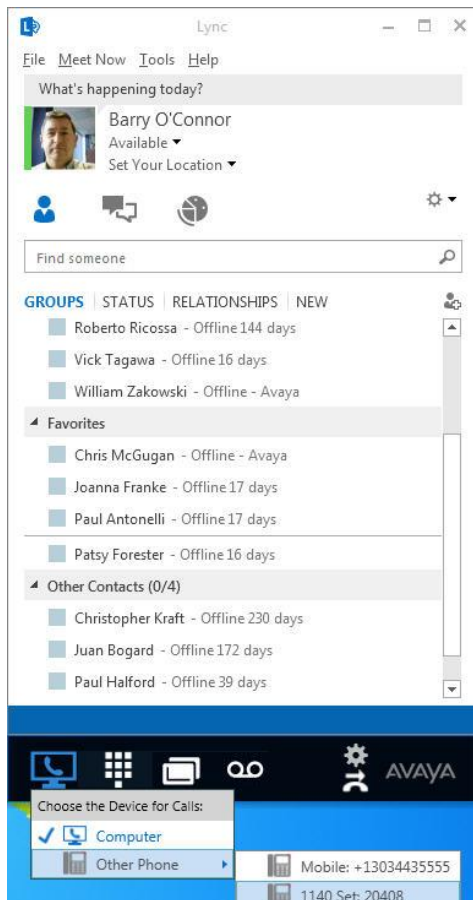




The following Dialing Rules are used for this configuration.



Under **Devices** select Add and enter a name and the number of the user's desk phone (20408).



This device as well as other devices specified in Lync Options Phone such as their Mobile Phone will be available to the user to select to make calls through under Other Phone Mode.

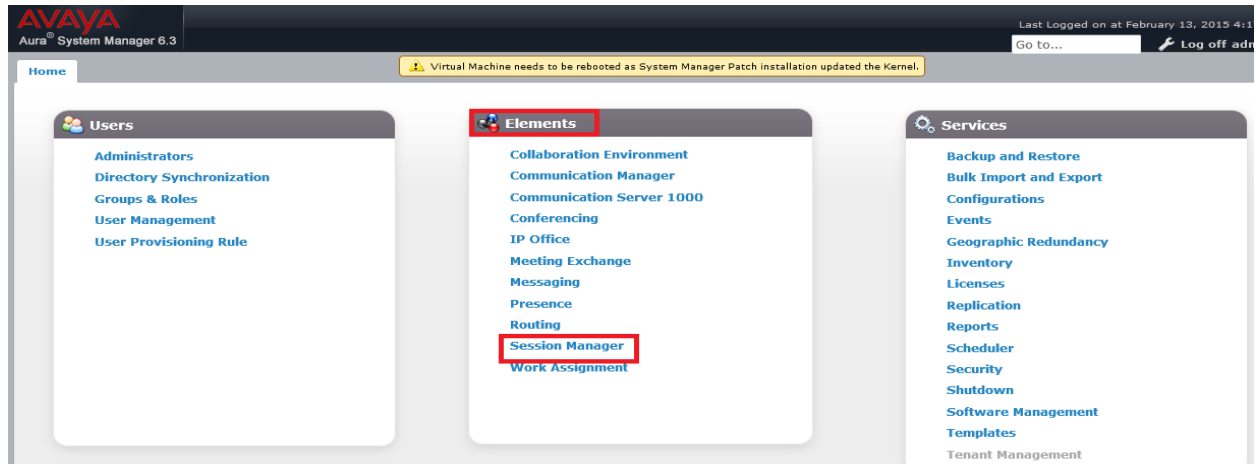


## 9. Verification Steps

To verify the status of some of the main elements in the solution, some checks can be carried out on Session Manager which is a core component in the integration of all the elements.

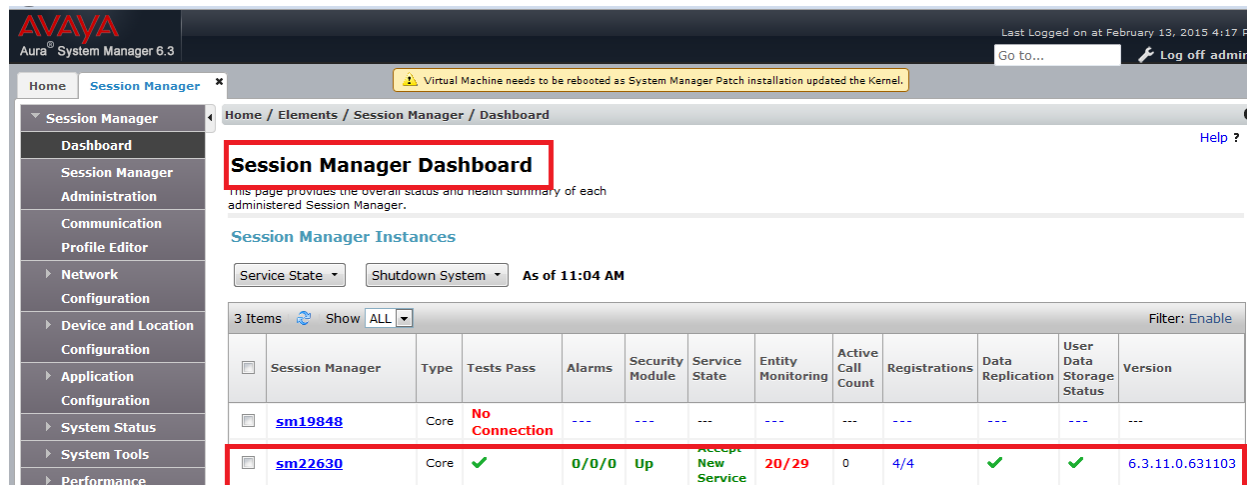
### 9.1. Verify Avaya Aura® Session Manager Operational Status

To verify Session Manager operational status, navigate from the main System Manager page under the **Elements** list, click on **Session Manager**.



The **Session Manager Dashboard** window appears. For the Session Manager instance (e.g. MESSM), verify that the following fields:

- **Alarms** should show as 0/0/0 to indicate no alarms present,
- **Test Pass** should have a green tick-mark,
- **Security Module** should show as **Up**,
- **Service State** should show as **Accept New Service**,
- **Entity Monitoring** should ideally show a count indication of 0 entity down links / total links (in the example shown, there are 4 entity down links out of a total of 13 links – this is because this sample Session Manager has other entity links which are not up at this time).



**Session Manager Dashboard**

This page provides the overall status and health summary of each administered Session Manager.

**Session Manager Instances**

Service State: Shutdown System: As of 11:04 AM

Session Manager	Type	Tests Pass	Alarms	Security Module	Service State	Entity Monitoring	Active Call Count	Registrations	Data Replication	User Data Storage Status	Version
sm19848	Core	No Connection	---	---	---	---	---	---	---	---	---
sm22630	Core	✓	0/0/0	Up	Accept New Service	20/29	0	4/4	✓	✓	6.3.11.0.631103

## 9.2. Verify Avaya Aura® Session Manager Entity Links Status

To further verify the Session Manager entity link status, click on **System Status** in the left hand list. Click on the link to **SIP Entity Monitoring**. The **SIP Entity Link Monitoring Status Summary** page appears. In the list of **All Monitored SIP Entities**, the sample configuration shows two entity links relevant to the CS 1000 / Aura solution. These are **CS1kHA** and **MESCM-CS1kCollab**. Click on the **CS1kHA** link first to check its status.

**SIP Entity Link Monitoring Status Summary**

This page provides a summary of Session Manager SIP entity link monitoring status.

**Entity Link Status for All Session Manager Instances**

[Run Monitor](#)

1 Item [Refresh](#)

<input type="checkbox"/>	Session Manager Name	Entity Links Down/Total	Entity Links Partially
<input type="checkbox"/>	<a href="#">MESSM</a>	4/13	1

Select : All, None

**All Monitored SIP Entities**

[Run Monitor](#)

12 Items [Refresh](#) Show [ALL](#) Filter: [Enable](#)

<input type="checkbox"/>	SIP Entity Name
<input type="checkbox"/>	<a href="#">AAC70</a>
<input type="checkbox"/>	<a href="#">CS1k_Emergency</a>
<input type="checkbox"/>	<a href="#">CS1kHA</a>
<input type="checkbox"/>	<a href="#">EVOLUTION</a>
<input type="checkbox"/>	<a href="#">MANGO</a>
<input type="checkbox"/>	<a href="#">MESAES</a>
<input type="checkbox"/>	<a href="#">MESCM</a>
<input type="checkbox"/>	<a href="#">MESCM-CS1kCollab</a>

The **SIP Entity, Entity Link Connection Status** window appears. It shows **All Entity Links to SIP Entity: CS1kHA**. Verify that the **Conn. Status** is shown as **Up** and the **Link Status** is also **Up**.

**SIP Entity, Entity Link Connection Status**

This page displays detailed connection status for all entity links from all Session Manager instances to a single SIP entity.

**All Entity Links to SIP Entity: CS1kHA**

[Summary View](#)

1 Item [Refresh](#) Filter: [Enable](#)

<a href="#">Details</a>	Session Manager Name	SIP Entity Resolved IP	Port	Proto.	Conn. Status	Reason Code	Link Status
<a href="#">Show</a>	<a href="#">MESSM</a>	192.168.186.107	5061	TLS	Up	200 OK	Up

Similarly, from the SIP Entity Link Monitoring Status Summary page, click on the **MESCM-CS1kCollab** link next to check its status (not shown). The **SIP Entity, Entity Link Connection Status** window appears. It shows **All Entity Links to SIP Entity: MESCM-CS1kCollab**. Verify that the **Conn. Status** is shown as **Up** and the **Link Status** is also **Up**.

### SIP Entity, Entity Link Connection Status

This page displays detailed connection status for all entity links from all Session Manager instances to a single SIP entity.

All Entity Links to SIP Entity: MESSM-CS1kCollab

Summary View

1 Item	Refresh							Filter: Enable
Details	Session Manager Name	SIP Entity Resolved IP	Port	Proto.	Conn. Status	Reason Code	Link Status	
► Show	MESSM	192.168.186.82	5062	TLS	Up	200 OK	Up	

## 9.3. Verify Avaya Aura® Session Manager Security Module Status

Next verify the Session Manager Security Module status. From the **Session Manager** drop-down list on the left hand side, click on **System Status** and then on **Security Module Status**. In the **Security Module Status** window, verify the **Status** column displays **Up** as shown below.

Session Manager

Dashboard

Session Manager Administration

Communication Profile Editor

Network Configuration

Device and Location Configuration

Application Configuration

System Status

SIP Entity Monitoring

Managed Bandwidth Usage

Security Module Status

Home / Elements / Session Manager / System Status / Security Module Status

Help ?

Security Module Status

This page allows you to view the status of each Session Manager's Security Module and to perform certain actions.

Reset

Synchronize

Certificate Management

Connection Status

1 Item

Refresh

Show ALL

Filter: Enable

Details	Session Manager	Type	Status	Connections	IP Address	VLAN	Default Gateway	NIC Bonding	Entity Links (expected / actual)	Certificate Used
► Show	MESSM	SM	Up	38	192.168.186.87/27	---	192.168.186.65	Disabled	15/15	SIP CA

Select : None

## 9.4. Verify Registrations of SIP Endpoints

To verify that SIP endpoints have successfully registered with the Session Manager, perform the following check. From the **Session Manager** drop-down list on the left hand side, click on **System Status** and then on **User Registrations**. In the **User Registrations** window, verify the status of the sample endpoint which was successfully logged in per **Section 8.5** (i.e. user “70408, CU6”) by checking that it is registered with the primary (**Prim**) session manager.

[Home](#) / [Elements](#) / [Session Manager](#) / [System Status](#) / [User Registrations](#)[Help ?](#)

### User Registrations

Select rows to send notifications to devices. Click on Details column for complete registration status.

[Customize](#)

View ▾

Default

Force Unregister

AST Device Notifications:

Reboot

Reload ▾

Failback

As of 3:40 PM

[Advanced Search](#)

1 Item Found

Show 

ALL ▾

Filter: Disable, Apply, Clear

<input type="checkbox"/>	Details	Address	First Name	Last Name	Actual Location	IP Address	Remote Office	Shared Control	Simult. Devices	AST Device	Registered		
											Prim	Sec	Surv
<input type="checkbox"/>	<a href="#">Show</a>	70408@sip.avaya.com	70408	CU6	---	192.168.92.89	<input type="checkbox"/>	<input type="checkbox"/>	1/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (AC)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Select : All, None

## 10. Conclusion

This Application Note describes the configuration and test results for Communicator for Lync registered to Avaya Aura and interworking with CS 1000 Release 7.6.

The solution is made up of the either Avaya Aura® Midsize Enterprise system or discreet Aura component and Avaya Communication Server 1000E Release with CallPilot Release. This can be considered as a stepping stone for Avaya Communication Server 1000E installed base migration to a full Avaya Aura solution.

Within the test set up calls to and from Communicator for Lync users were performed with the following user types were successfully tested.

A list of the clients tested in the sample configuration is as follows:

### **CS 1000 Users:**

- 11xx IP (UNISTIM) desk phone
- 12xx IP (UNISTIM) desk phone
- I2002p2/i2004p2 (UNISTIM) desk phone
- 39xx Digital desk phone

### **Avaya Communicator Microsoft Lync Users:**

- Communicator for Lync clients registered to Communication Manager (SIP) making calls On Other Phone Mode through CS 1000 registered devices
  - 11xx IP (UNISTim) desk phone – CS 1000
  - 12xx IP (UNISTim) desk phone – CS 1000
  - I2002p2/i2004p2 (UNISTIM) desk phone – CS 1000
  - 39xx Digital desk phone – CS 1000

### **Aura Users:**

- Avaya Communicator for Windows – ME
- Remote Avaya Communicator for Windows registered to ME via ASBCE
- One-X Communicator (SIP/SIP)

All testing was successful with the exception of those issues and limitations documented in **Section 1.2.**

## 11. Additional References

Relevant Application Notes:

- A1. Application Note to administer voice mailboxes on Avaya CallPilot® R5.1 to provide shared messaging services for users in a CS 1000 Collaboration Pack solution.
- A2. Configuring Secure SIP Connectivity using Transport Layer Security (TLS) between Avaya Aura® Communication Manager R6.3, Avaya Aura® Session Manager R6.3 and Avaya Communication Server 1000E R7.6.
- A3. Application Notes for Configuring Converged and Native Users in a Collaboration Pack 1.1 for Avaya Communication Server 1000E Release 7.6

Additional Avaya product documentation is available at <http://support.avaya.com>.

Avaya Communicator for Microsoft Lync technical documentation

- Administrating Avaya Communicator for Microsoft Lync on Aura Release 6.4

Specific CS 1000Release 7.6 documentation guides relevant to this sample configuration are:

- Software Input Output Reference – Administration Avaya Communication Server 1000 (NN43001-611).
- Software Input Output Reference – Maintenance Avaya Communication Server 1000 (NN43001-711).
- IP Peer Networking Installation and Commissioning Avaya Communication Server 1000 (NN43001-313).
- Unified Communications Management Common Services Fundamentals Avaya Communication Server 1000 (NN43001-116).
- Element Manager System Reference – Administration Avaya Communication Server 1000 (NN43001-632).
- Emergency Services Access Fundamentals Avaya Communication Server 1000 (NN43001-613).
- Call Detail Recording Fundamentals Avaya Communication Server 1000 (NN43001-550).

Relevant Avaya Aura® documentations are also listed below for reference:

- ME Intelligent Workbook,
- Overview of Avaya Aura® Solution for Midsize Enterprise, Release 6.3,
- Implementing Avaya Aura® Solution for Midsize Enterprise Template Release 6.3,
- Installation and Upgrades for the Avaya G430 Branch Gateway,
- Administering Avaya Aura® Communication Manager(Doc ID 03-300509),
- Administering Avaya Aura® Communication Manager Server Options(Doc ID 03-603479),
- Administrating Avaya Aura® System Manager,

A sample of Avaya CallPilot documentation guides relevant to this sample configuration are listed below for reference:

- Avaya CallPilot® Fundamentals Guide (NN44200-100)
- Avaya CallPilot® Library Listing (NN44200-117)
- Avaya CallPilot® Planning and Engineering Guide (NN44200-200)
- Avaya Meridian 1 and Avaya CallPilot® Server Configuration Guide (NN44200-302)
- Avaya Communication Server 1000 System and Avaya CallPilot® Server Configuration Guide (NN44200-312)
- Avaya CallPilot® Administrator Guide (NN44200-601)
- Avaya CallPilot® Software Administration and Maintenance Guide (NN44200-600)
- Avaya CallPilot® 202i Server Maintenance and Diagnostics Guide (NN44200-708)

A sample of documentation references relevant to the optional CS 1000 / Aura solution components of Avaya Aura® Conference and ASBCE are given below. These documents can be obtained from <http://support.avaya.com>.

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