



DSP-1282 & DSP-1283
Crestron Avia™ DSP with
Avaya Aura® 7.0 Platform

Configuration Guide
Crestron Electronics, Inc.

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DSP-1282 & DSP-1283: SIP Endpoint with Avaya Aura® 7.0 Platform

Introduction

This configuration guide describes the procedures required to configure Crestron Avia™ Digital Signal Processor (DSP) devices. The devices operate on the Avaya Aura® Communication Manager as Session Initiation Protocol (SIP) endpoints.

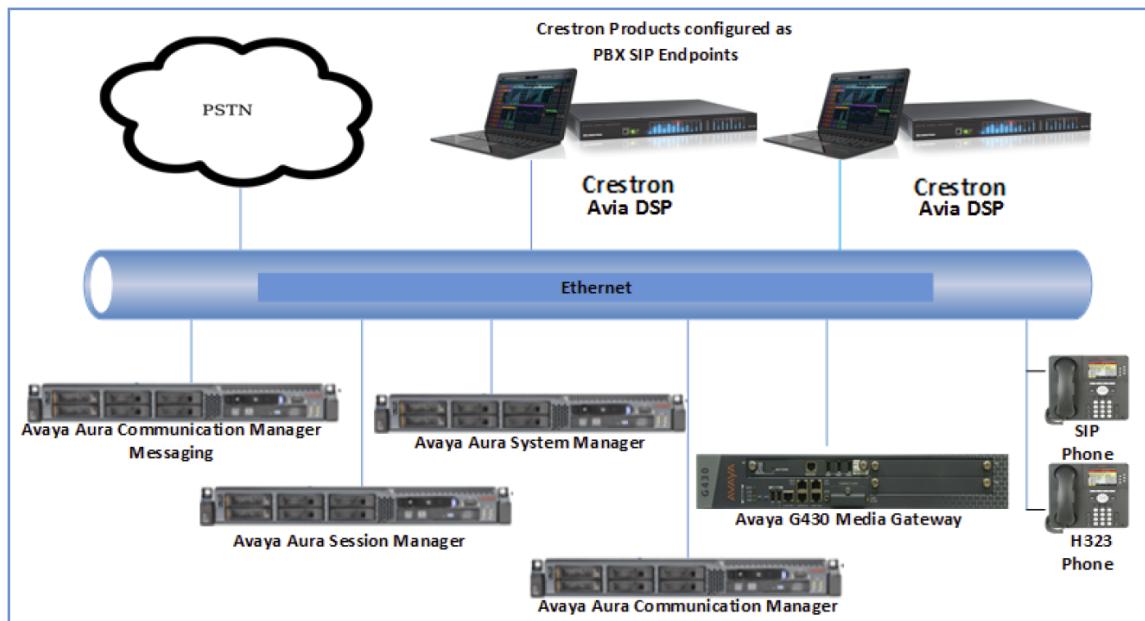
Audience

The intended audience includes those attempting to configure and use Crestron Avia DSP devices as SIP endpoints registered to Avaya Aura Communication Manager 7.0.

Topology

The diagram below shows the network topology for integration of a Crestron Avia DSP endpoint with Avaya Aura.

SIP Endpoint Integration with Avaya Aura - Reference Network



The lab network consists of the following components:

- Avaya Aura Communication Manager
- Avaya Aura Session Manager
- Avaya Aura System Manager
- Avaya H323 and SIP phones
- Avaya® G430 Media Gateway
- Avaya Aura Communication Manager Messaging as the voice mail system
- Crestron Avia DSP as the SIP endpoints

Software Requirements

- Avaya Aura Communication Manager v7.0.11.0.441.23169
- Avaya Aura Communication Manager Messaging v7.0-28.0
- Avaya Aura System Manager v7.0
- Avaya Aura Session Manager v7.0.1.1.701114
- Avaya g430 Media Gateway v37 .39 .0 /2
- Crestron Avia DSP: v1.00.121

Hardware Requirements

- Avaya Components either in a virtual environment or with separate hardware servers:
 - Avaya Aura Communication Manager
 - Avaya Aura Session Manager
 - Avaya G430 Media Gateway
 - Avaya Aura Communication Manager Messaging
 - Avaya Aura Session Manager
- Public Switched Telephone Network (PSTN) gateway
- Avaya Phones (3) in SIP and H323 mode
- Crestron Avia DSP devices (2):
 - Microphones for the DSP (2)
 - Speakers for the DSP (2)
 - Amplifiers for the DSP (2)
 - Appropriate cables for the above

Product Description

The Crestron Avia DSP products (DSP-1282 and DSP-1283, specifically) consist of a family of programmable digital audio signal processors intended for the commercial sound market. Each version provides 12 analog mic/line inputs and eight analog line outputs. The devices include a Local Area Network (LAN) connection and a Universal Serial Bus (USB) connection for programming and control. The programmable signal flow is a fixed topology with user-configurable input and output processing chains using a library of preset signal-specific DSP blocks.

Use the Crestron Avia tool to:

- Discover the device on the network
- Configure the SIP parameters
- Configure the mixers to allow 2-way communication on a SIP call

Save the audio configuration along with the SIP configuration as a project file. The project file can be loaded onto all of the DSPs that receive similar settings on a given project. Minor modifications may be necessary.

Use the Crestron Toolbox™ software to discover and control all Crestron devices on the network.

During the integration test, Crestron Toolbox can:

- Discover devices on the network
- Console connect to the devices
- Configure the Ethernet settings
- Upgrade firmware

Summary

This document describes how to configure the Crestron Avia DSP devices as basic SIP endpoints, since they support a single line/extension. It also provides information on how to register devices to the Avaya Aura Session Manager with digest authentication.

Supported features include:

- Registration with digest authentication
- Basic calls with G711u and G711a codecs
- Dual-Tone Multi-Frequency (DTMF) support
- Early media support
- Retrieval of a parked call
- Transferee in a call transfer
- Conference participant
- Member of hunt group

- Member of shared line configuration
- Voice mail access and interaction
- DND (Do Not Disturb)

Unsupported features include:

- Caller ID presentation
- Call hold and resume
- Call forwarding on the device (forwarding can be configured on the Private Branch Exchange (PBX) for the Domain Name (DN) assigned to the endpoint)
- Call waiting
- Conference
- Attended call transfer
- Early attended call transfer
- Blind call transfer
- Shared line (configuration of shared line on device)
- Initiating call park
- Message Waiting Indicator (MWI)

Known issues and limitations include:

- No support for caller ID on the Crestron Avia DSP. (This issue was tracked via Bugzilla™ software defect: 115708.)
- No support for MWI on the Crestron Avia DSP. (this issue was tracked via Bugzilla defect: 118991.)
- The DSP does not support Music on Hold when integrated with the Avaya Aura PBX. This issue was tracked via Bugzilla defect: 116049.
- The DSP fails to play a reorder tone when a call from the DSP to a PBX extension times out after the called party does not answer. This issue was tracked via Bugzilla defect: 120378.

Crestron Avia DSP Configuration

This section provides the following details:

- How to set up connections to the amplifier and speaker
- How to access the DSP on the network (once powered)
- How to configure the DSP for registration and integration with the Avaya Aura Communications Manager (CM)

Connections

Make the following connections:

- Connect microphone to DSP MIC/LINE INPUTS port 1
- Connect DSP LINE OUTPUTS port 1 to "Audio In" on amplifier
- Connect "Audio Out" of amplifier to speaker
- Connect LAN port to network
- Connect VOIP port to network

Device Discovery/Access

Use the Crestron Toolbox and the Crestron Avia tool to discover and access the connected LAN and/or VOIP ports) DSP devices.

Use the Help menu to assist when performing the discovery and configuration procedure.

Set Up SIP Interface

The DSP units have separate network interfaces for Voice over Internet Protocol (VoIP) and LAN on the rear panel. Configure either one for SIP calling. The default configuration binds SIP calling to the LAN interface. An optional console command binds the SIP interface to the VoIP connector. Configure all VoIP connections on a separate Virtual Local Area Network (VLAN) or subnet. VoIP connections cannot be on the same subnet as the LAN connection.

Ethernet

Use the **Ethernet** command to turn the VoIP port on/off.

```
DSP-1281>Ethernet ?
ETHERNET [<device_num> ON | OFF [/now]]
Device_num - 0  n
ON - enables VoI
OFF - disables VoIP
/now - take effect without a reboot
No parameter - displays the current setting
```

The VoIP port is off by default. The LAN port is not selectable.

```
<device_num> = 0 selects the LAN port  
<device_num> = 1 selects the VoIP port
```

SIP Interface

Use the **sipinterface** command to bind all SIP activity, data, and traffic to the selected port. If a VLAN or exclusive VoIP network is available, bind to the VoIP port (recommended).

```
DSP-1281>sipinterface ?  
Get or Set SIP Interface  
SIPINTERFACE [LAN | VOIP]  
LAN - normal LAN port  
VOIP - VOIP port  
No Parameter - Displays current setting
```

Set Up Routes

If the configured VoIP port is the SIP interface, add a static route to ensure that all SIP routing is via the VoIP port.

The following console commands (**routeadd**, **routedel**, **routeprint**, and **routetrace**) support the static IP routing configuration:

```
DSP-1282>routeadd ?  
ROUTEADD <destination> <netmask> <gateway> [/FORCE]  
destination - destination IP address in dot decimal notation  
netmask - netmask in dot decimal notation  
gateway - gateway in dot decimal notation  
/FORCE - force to add/delete even if failed to persist to NVRAM
```

```
DSP-1282>routedel ?  
ROUTEDELETE <destination> <netmask> <gateway> [/FORCE] | </ALL>  
destination - destination IP address in dot decimal notation  
netmask - netmask in dot decimal notation  
gateway - gateway in dot decimal notation  
/FORCE - force to add/delete even if failed to persist to NVRAM  
/ALL - delete all routes from NVRAM
```

```
DSP-1282>routeprint ?  
ROUTEPRINT - shows current routes
```

```
DSP-1282>routetrace ?  
ROUTETRACE <IPaddress>  
IPaddress - IP address in dot decimal notation
```

Device Configuration

The basic setup for a phone call requires:

- An analog input (such as from a microphone) routed out through the phone line
- Audio coming in from the phone line routed to an analog output (such as to an amplifier or speaker)

Configure the DSP Device

Use the Crestron Avia tool to select and configure the DSP device.

Input Configuration

To configure the analog input:

1. Click **Signal**.

Crestron Avia tool: Audio Input Configuration (1/4)



2. Under **Analog In 1** (first row), double click **Gain**. In the new window set the following:

- a. Click **Mute** to **Off**.
- b. Select **33** for the **Analog Gain**.
- c. If a condenser microphone is being used, click **+48V** (phantom power) to **On**.

Crestron Avia Tool: Audio Input Configuration (2/4)



3. Under **Analog In 1** (first row), click **Ref/Phone Out** (right-most column) and enter **0** as the decibel value.

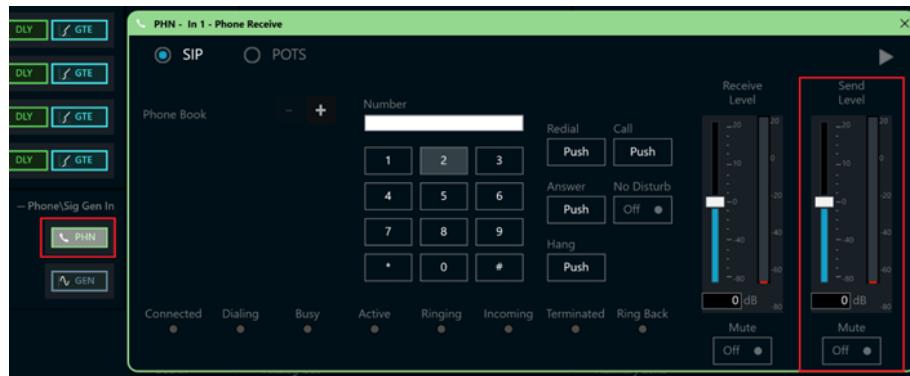
Crestron Avia Tool: Audio Input Configuration (3/4)



4. Under Phone\Sig Gen In, click PHN. In the new window set the following:

- Move the Send Level slider to 0 db.
- Click Mute to Off.

Crestron Avia Tool: Audio Input Configuration (4/4)



Output Configuration

To configure the analog output:

- Under Phone In 1 (first row), click Analog Out (left-most column) and enter 0 as the decibel value.

Crestron Avia Tool: Audio Output Configuration (1/3)



- Under Analog Out 1, double click LVL. In the new window set the following:

- Move the Level slider to 0 db.
- Click Mute to Off.

Crestron Avia Tool: Audio Output Configuration (2/3)



3. Under Phone\Sig Gen In, click PHN. In the new window set the following:

a. Move the Receive Level slider to 0 db.

b. Click Mute to Off.

Crestron Avia Tool: Audio Output Configuration (3/3)



Configure the SIP Parameters

From the open **PHN - In 1 - Phone Receive** window, select and configure the SIP parameters.

1. With **SIP** selected, click the chevron at the right top corner to expand the window.

Crestron Avia Tool: Phone Dialer, SIP Parameters Configuration



2. Enter the extension configured on Avaya Aura CM for the **Local Extension** for this device. This example uses **2101**.

3. Enter the Avaya Aura Session Manager for the **SIP Server IP Address**. This example uses **10.89.26.7**.

4. Enter the SIP server port (**5060**) for the **Port**.

5. Enter the same end user name configured for the Avaya Aura Session Manager with the digest authentication credentials for the **SIP Server User Name**.

6. Enter the same password as configured for the Avaya Aura Session Manager end user digest credentials for the **SIP Server Password**.

Avaya Aura Communication Manager Configuration

This section describes the Avaya Aura Communication Manager (Avaya CM) configuration necessary to support registration of Crestron devices and connectivity to the Public Switched Telephone Network (PSTN).

NOTE: Confirm that the general installation and basic Avaya CM configuration have been administered.

Node Names

Configure the node IP for Avaya Aura Session Manager (SM) and Avaya CM.

Use the **change name-names ip** command to add the node name. This example adds **ASM1** and **procr** with their respective IPs.

- Use **ASM1**, an Avaya Aura Session Manager, to register the SIP phones and third-party SIP devices.
- Use **procr** to register H323 phones and SIP trunk.

Avaya Aura CM: Configure Node

```
display node-names ip
          IP NODE NAMES
  Name      IP Address
ASM1      10.89.26.7
default   0.0.0.0
procr    10.89.26.4
procr6   ::

( 4  of 4    administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name

Command: [ ]
F1=Cancel F2=Refresh F3=Submit F4=Clr F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Media Gateway

Add the G430 media gateway for DSP resource utilization in Avaya CM.

The G430 provides VoIP services over the LAN and Wide Area Network (WAN). The G430 has an on-board VoIP DSP providing 20 VoIP channels, and optionally supports an additional DSP board providing 10, 20, or 80 VoIP channels.

Avaya Aura CM: Media Gateway Configuration (1/3)

MEDIA-GATEWAY REPORT						
Num	Name	Serial No/ FW Ver/HW Ver/HW Vint/ RecRule	IPV4 Address/ IPV6 Address/ Cntrl IP Addr	Type	NetRgn	Reg?
1	G430	16OL17035780 37 .39 .0 /2 none	10.89.26.14 10.89.26.4	g430	1	y

Use the **add media-gateway** command to configure the media gateway.

Avaya Aura CM: Media Gateway Configuration (2/3)

display media-gateway 1		Page 1 of 2
MEDIA GATEWAY		
Type:	g430	
Name:	G430	
Serial No:	16OL17035780	
Link Encryption Type:	any-ptls/tls	Enable CF? n
Network Region:	1	Location: 1
		Site Data:
Recovery Rule:	none	
Registered?	y	
FW Version/HW Vintage:	37 .39 .0 /2	
MGP IPV4 Address:	10.89.26.14	
MGP IPV6 Address:		
Controller IP Address:	10.89.26.4	
MAC Address:	a4:25:1b:a7:b5:91	
Mutual Authentication?	optional	

To configure the media gateway for this example:

1. Enter **g430** for the **Type**.
2. Enter **G430** for the **Name**.
3. Enter **14TG41631501** for the **Serial No**.
4. Enter **Y** for **Registered**.

5. Enter 10.89.26.14 for the MGP IPV4 Address.
6. Enter 10.89.26.4 (the procr IP) for the Controller IP Address.

Avaya Aura CM: Media Gateway Configuration (3/3)

```
display media-gateway 1                                         Page  2 of 2
                                                               MEDIA GATEWAY 1

                                                               Type: g430

Slot  Module Type          Name           DSP Type   FW/HW version
V1:
V2:  MM710                DS1 MM        MP120      153  0
V3:  MM711                ANA MM

                                                               Expansion Type HW version

V5:
V6:
V7:
V8:
V9:  gateway-announcements ANN VMM  Max Survivable IP Ext: 8

F1=Cancel F2=Refresh F3=Submit F4=Clr Fd F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Dial Plan Analysis

Configure several dial strings to ensure complete test coverage. This example includes calling between stations, calling to PSTN, and accessing PBX features.

Use the **change dialplan analysis** command to configure the following dial patterns for this example:

1. Enter **2** for the station number **Dialed string**.
2. Enter **8** for the feature access code **Dialed string**.
3. Enter **9** for the feature access code **Dialed string**.
4. Enter ***** for the feature access code **Dialed string**.
5. Enter **#** for the dial access code **Dialed string**.

Use the **display dialplan analysis** command to view the configured dial strings/codes.

Avaya Aura CM: Dial Plan Analysis

```
display dialplan analysis                                         Page  1 of 12
                                                               DIAL PLAN ANALYSIS TABLE
                                                               Location: all          Percent Full: 2
                                                              
Dialed      Total   Call      Dialed      Total   Call      Dialed      Total   Call
String     Length  Type      String     Length  Type      String     Length  Type
                                                              
2          4      ext
8          1      fac
9          1      fac
*          3      fac
#          3      dac
                                                              
                                                              
F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Uniform Dial Plan

Configure a dial plan using the **change uniform-dialplan n** command (where **n** represents the first digit of the extension numbers used for SIP stations in the system).

NOTE: This example uses a 4-digit extension starting with "21xx" for extensions associated with the Avaya SIP phones and Crestron SIP devices.

Issue the **change uniform-dialplan n** command and configure the dial plan (for this example):

1. Enter **21** (the starting digits for the extension number used for the SIP) for the **Matching Pattern**.
 2. Enter **4** for the **Len**.
 3. Enter **0** for the **Del**.
 4. Enter **aar** for the **Net**.

Avaya Aura CM: Uniform Dial Plan Configuration

Inbound Routing

DID numbers received from PSTN are mapped to extensions using the incoming call handling treatment of the receiving trunk group. Use the **change inc-call-handling-trmt** command to create an entry for each DID number.

Avaya Aura CM: Inbound Routing

INCOMING CALL HANDLING TREATMENT					Page	1 of 3
Service/ Feature	Number Len	Number Digits	Del	Insert		
tie	10	9722657277	10	2102		
tie	10	9722657278	10	2103		
tie	—	—	—	—		
tie	—	—	—	—		
tie	—	—	—	—		

Outbound Routing

Automatic Route Selection (ARS)

Use the Automatic Route Selection (ARS) feature to route outbound calls via the SIP trunk to PSTN. This example uses the single digit **9** as the ARS access code. PBX users initially dial "9" to initiate a call to PSTN. Use the **change dialplan analysis** command to define a dialed string (shown after this paragraph) beginning with **9** and length **1** as a feature access code (**fac**).

Avaya Aura CM: Outbound Routing - Configure Dial Plan Analysis Table

DIAL PLAN ANALYSIS TABLE				Page 1 of 12				
Location: all			Percent Full: 3					
Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type
0	1	attd	9	1	fac			

Configure the following feature access codes (for this example):

1. Enter **8** for the Auto Alternate Routing (AAR) Access Code.
2. Enter **9** for the Auto Route Selection (ARS) - Access Code 1.

Avaya Aura CM: Outbound Routing - Configure Feature Access Codes

```
display feature-access-codes          Page  1 of 10
                                         FEATURE ACCESS CODE (FAC)
    Abbreviated Dialing List1 Access Code:
    Abbreviated Dialing List2 Access Code:
    Abbreviated Dialing List3 Access Code:
Abbreviated Dial - Prgm Group List Access Code:
    Announcement Access Code:
    Answer Back Access Code: *11
    Attendant Access Code:
    Auto Alternate Routing (AAR) Access Code: 8
    Auto Route Selection (ARS) - Access Code 1: 9
    Automatic Callback Activation:
Call Forwarding Activation Busy/DA: *14      All: *10     Deactivation: *15
    Call Forwarding Enhanced Status:          Act: *16     Deactivation: *17
        Call Park Access Code: *01
        Call Pickup Access Code: *02
CAS Remote Hold/Answer Hold-Unhold Access Code:
    CDR Account Code Access Code:
        Change COR Access Code:
        Change Coverage Access Code:
Conditional Call Extend Activation:           Deactivation:
    Contact Closure   Open Code:             Close Code:

F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Use the **change ars analysis** command to configure the routing of dialed digits following the first digit 9. This example adds an entry for the number beginning with **214242**.

Avaya Aura CM: Outbound Routing - Auto Route Selection

```
display ars analysis 2          Page  1 of 2
                                         ARS DIGIT ANALYSIS TABLE
                                         Location: all          Percent Full: 2
                                         Total          Route          Call          Node          ANI
                                         Min           Max          Pattern       Type          Num          Reqd
                                         2              7            7            2            hnpa          n
    214242          10           10           1            natl          n
                                         3              7            7            2            hnpa          n
                                         4              7            7            2            hnra          n
```

Configure the following auto route selection (for this example):

1. Enter **214242** for the **Dialed stringg** (to call PSTN numbers).
2. Enter **10** for the **Min**.
3. Enter **10** for the **Max**.
4. Enter **1** for the **Route Pattern**.
5. Enter **natl** for the **Call Type**.

Route Pattern

The route pattern defines which trunk group will be used for the call and performs any necessary digit manipulation. Use the **change route pattern n** command (where **n** represents the route pattern number to configure the parameters for the PSTN trunk route pattern).

Avaya Aura CM: PSTN Route Pattern Configuration

```
display route-pattern 1                                         Page  1 of  3
  Pattern Number: 1      Pattern Name: Trunk Group 1
  SCCAN? n   Secure SIP? n   Used for SIP stations? n

  Grp FRL NPA Pfx Hop Toll No.  Inserted
  No       Mrk Lmt List Del Digits
          Dgts

  1: 1 0
  2:
  3:
  4:
  5:
  6:

  BCC VALUE TSC CA-TSC    ITC BCIE Service/Feature PARM Sub  Numbering LAR
  0 1 2 M 4 W    Request      Dgts Format
  1: Y Y Y Y n  n        rest           lev0-pvt none
  2: Y Y Y Y n  n        rest           none
  3: Y Y Y Y n  n        rest           none
  4: Y Y Y Y n  n        rest           none
  5: Y Y Y Y n  n        rest           none
  6: Y Y Y Y n  n        rest           none

F1=Cancel F2=Refresh F3=Submit F4=Clr F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Configure a public numbering plan for calling PSTN via the Avaya Aura Session Manager:

1. Enter 1 for the **Route Pattern**.
2. Enter 1 for the **Grp No** (for this example).

Avaya Aura CM: Voice Mail Route Pattern Configuration

```
display route-pattern 2                                         Page 1 of 3
                                                               Pattern Number: 2      Pattern Name: Trunk Group 2
SCCAN? n    Secure SIP? n    Used for SIP stations? n

Grp FRL NPA Pfx Hop Toll No. Inserted                         DCS/ IXC
No          Mrk Lmt List Del Digits                            QSIG
                           Dgts                           Intw
1: 2   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 Sub Numbering LAR
0 1 2 M 4 W   Request   Dgts Format
1: Y Y Y Y n  n       rest           lev0-pvt none
2: Y Y Y Y n  n       rest           none
3: Y Y Y Y n  n       rest           none
4: Y Y Y Y n  n       rest           none
5: Y Y Y Y n  n       rest           none
6: Y Y Y Y n  n       rest           none

F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Configure a private numbering plan for the voice mail feature offered by the Avaya Communication Manager Messaging via the Avaya Aura Session Manager:

1. Enter **2** for the **Route Pattern**.
2. Enter **2** for the **Grp No** (for this example).

Auto Alternative Routing

Use the **change aar analysis n** command (where **n** represents the first digit of the extension numbers used for SIP stations in the system).

Avaya Aura CM: Modify AAR Digit Analysis Table

AAR DIGIT ANALYSIS TABLE						Page 1 of 2
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Regd
21	4	4	2	aar	n	
2222	4	4	2	aar	n	
28	4	4	2	aar	n	
3	7	7	254	aar	n	
4	7	7	254	aar	n	
5	7	7	254	aar	n	
6	7	7	254	aar	n	
7	7	7	254	aar	n	
8	7	7	254	aar	n	
9	7	7	254	aar	n	

Configure the following (for this example):

1. Enter **21** for the **Dialed number** (used for Avaya SIP phones and Crestron DSP SIP devices).
2. Enter **2222** for the **Dialed number** (used for voice mail access).

Trunk Groups

Configure two trunk groups (in this example):

- Trunk Group 1

This group utilizes a public numbering plan to access the stations registered to the Avaya Session Manager.

- Trunk Group 2

This group utilizes a private numbering plan to send a 4-digit calling number to Avaya Communication Manager Messaging or voice mail access.

Use the **add trunk group n** command to add a new trunk group (where **n** represents the trunk group number).

Trunk Group 1

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 1 (1/4)

```
display trunk-group 1                                         Page  1 of 21
                                                               TRUNK GROUP

Group Number: 1                                              Group Type: sip          CDR Reports: y
Group Name: trunk to asm                                    COR: 1                 TN: 1           TAC: #10
Direction: two-way                                         Outgoing Display? y
Dial Access? n                                            Night Service:
Queue Length: 0
Service Type: tie                                         Auth Code? n
                                                               Member Assignment Method: auto
                                                               Signaling Group: 1
                                                               Number of Members: 10
```

Configure Trunk Group 1 (entries for steps 1 through 7 are for this example):

1. Enter 1 for the **Group Number**.
2. Enter **trunk to asm** for the **Group Name**.
3. Enter **sip** for the **Group Type**.
4. Enter **tie** for the **Service Type**.
5. Enter **#10** for the **TAC**.
6. Enter **1** for the **Signaling Group**.
7. Enter **10** for the **Number of Members**.

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 1 (2/4)

```
display trunk-group 1                                         Page  2 of  21
  Group Type: sip

TRUNK PARAMETERS

  Unicode Name: auto

  Redirect On OPTIM Failure: 5000

  SCCAN? n   Digital Loss Group: 18
              Preferred Minimum Session Refresh Interval(sec): 1800

  Disconnect Supervision - In? y  Out? y

  XoIP Treatment: auto      Delay Call Setup When Accessed Via IGAR? n

  Caller ID for Service Link Call to H.323 1xC: station-extension

F1=Cancel F2=Refresh F3=Submit F4=Clr F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

8. Enter 1800 for the Preferred Minimum Session refresh Interval (sec)..

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 1 (3/4)

```
display trunk-group 1                                         Page  3 of  21
  TRUNK FEATURES

    ACA Assignment? n           Measured: none
                                Maintenance Tests? y

    Suppress # Outpulsing? n   Numbering Format: public
                                UUI Treatment: service-provider

    Replace Restricted Numbers? n
    Replace Unavailable Numbers? n

    Hold/Unhold Notifications? y
    Modify Tandem Calling Number: no

    Show ANSWERED BY on Display? y
```

9. Enter public for the Numbering Format.

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 1 (4/4)

```
display trunk-group 1                                         Page  4 of 21
                                         PROTOCOL VARIATIONS

                                         Mark Users as Phone? n
Prepend '+' to Calling/Alerting/Diverting/Connected Number? n
                                         Send Transferring Party Information? n
                                         Network Call Redirection? n

                                         Send Diversion Header? n
                                         Support Request History? y
                                         Telephone Event Payload Type:

                                         Convert 180 to 183 for Early Media? n
                                         Always Use re-INVITE for Display Updates? n
                                         Identity for Calling Party Display: From
                                         Block Sending Calling Party Location in INVITE? n
                                         Accept Redirect to Blank User Destination? n
                                         Enable Q-SIP? n

                                         Interworking of ISDN Clearing with In-Band Tones: keep-channel-active
                                         Request URI Contents: may-have-extra-digits

F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Trunk Group 2

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 2 (1/4)

The screenshot shows a terminal window titled "change trunk-group 2" with the heading "TRUNK GROUP". The configuration parameters are listed as follows:

Group Number: 2	Group Type: sip	CDR Reports: y
Group Name: CM Messaging	COR: 1	TN: 1
Direction: two-way	Outgoing Display? n	TAC: #002
Dial Access? n	Night Service: [highlighted]	
Queue Length: 0	Auth Code? n	
Service Type: tie	Member Assignment Method: auto	
	Signaling Group: 1	
	Number of Members: 5	

Configure Trunk Group 2 (entries for steps 1 through 7 are for this example):

1. Enter **2** for the **Group Number**.
2. Enter **CM Messaging** for the **Group Name**.
3. Enter **sip** for the **Group Type**.
4. Enter **tie** for the **Service Type**.
5. Enter **#002** for the **TAC**.
6. Enter **1** for the **Signaling Group**.
7. Enter **5** for the **Number of Members**.

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 2 (2/4)

```
display trunk-group 2                                         Page  2 of 21
  Group Type: sip

TRUNK PARAMETERS

  Unicode Name: auto

  Redirect On OPTIM Failure: 5000

  SCCAN? n   Digital Loss Group: 18
  Preferred Minimum Session Refresh Interval(sec): 1800

Disconnect Supervision - In? y  Out? y

  XoIP Treatment: auto    Delay Call Setup When Accessed Via IGAR? n

  Caller ID for Service Link Call to H.323 1xC: station-extension

F1=Cancel F2=Refresh F3=Submit F4=Clr F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

8. Enter 1800 for the Preferred Minimum Session refresh Interval (sec)..

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 2 (3/4)

```
display trunk-group 2                                         Page  3 of 21
  TRUNK FEATURES

  ACA Assignment? n           Measured: none
                               Maintenance Tests? y

  Suppress # Outpulsing? n   Numbering Format: private
                               ovi treatment: service-provider

  Replace Restricted Numbers? n
  Replace Unavailable Numbers? n

  Hold/Unhold Notifications? y
  Modify Tandem Calling Number: no

  Show ANSWERED BY on Display? y
```

9. Enter **private** for the Numbering Format.

Avaya Aura CM: Trunk Configuration to Session Manager - Trunk Group 2 (4/4)

```
display trunk-group 2                                         Page  4 of 21
                                         PROTOCOL VARIATIONS

                                         Mark Users as Phone? n
Prepend '+' to Calling/Alerting/Diverting/Connected Number? n
                                         Send Transferring Party Information? n
                                         Network Call Redirection? n

                                         Send Diversion Header? n
                                         Support Request History? y
                                         Telephone Event Payload Type:

                                         Convert 180 to 183 for Early Media? n
                                         Always Use re-INVITE for Display Updates? n
                                         Identity for Calling Party Display: From
                                         Block Sending Calling Party Location in INVITE? n
                                         Accept Redirect to Blank User Destination? n
                                         Enable Q-SIP? n

                                         Interworking of ISDN Clearing with In-Band Tones: keep-channel-active
                                         Request URI Contents: may-have-extra-digits

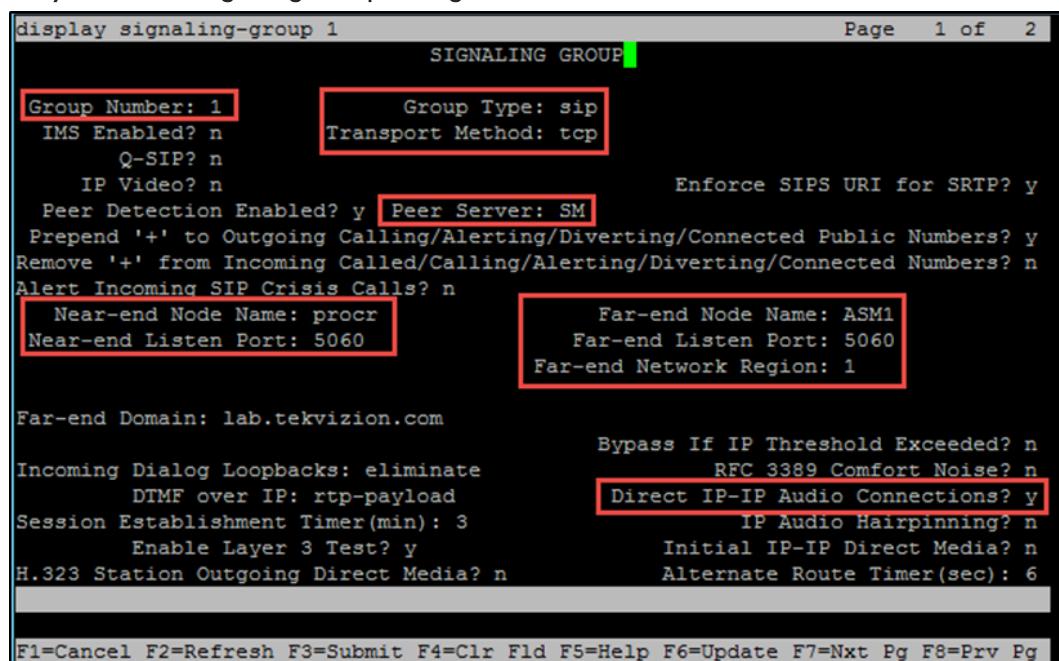
F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Signaling Group

Use the add signaling group command to create a signaling group between Communication Manager and Session Manager for use by the PSTN SIP trunk. Use the signaling group for inbound and outbound calls between the PBX and PSTN.

Use the **add signaling group n** command to add the signaling group in the system (where **n** represents the signaling group number for this example).

Avaya Aura CM: Signaling Group Configuration



To configure a signaling group (for this example):

1. Enter 1 for the **Group Number**.
2. Enter **sip** for the **Group Type**.
3. Enter **tcm** for the **Transport Method**.
4. Enter **SM** for the **Peer Server**.
5. Enter **procr** for the **Near-end Node Name**.
6. Enter **5060** for the **Near-end Listen Port**.
7. Enter **ASM1** for the **Far-end Node Name**.
8. Enter **5060** for the **Far-end Listen Port**.
9. Enter **1** for the **Far-end Network Region**.
10. Enter **lab.tekvizion.com** for the **Far-end Domain**.
11. Enter **n** for **Direct IP-IP Audio Connections**.

Codecs

Use the **change ip-codec-set** command to define a list of codecs to use for calls between the PBX and PSTN.

Avaya Aura CM: Codec Configuration

IP CODEC SET			
Codec Set: 1			
Audio Codec	Silence Suppression	Frames Per Pkt	Packet Size(ms)
1: G.711A	n	2	20
2: G.711MU	n	2	20
3:			
4:			

This example uses **1** for the **Codec Set**. The Crestron DSP device supports and includes G.711A and G.711MU in this set. To test with the DSP, enter **G.711A** and **G.711MU** in the **Audio Codec** column of the table. Use default values for all other fields.

Hunt Group

Configure two hunt groups (for this example):

- Hunt group extension 2200 used for the group hunt feature
- Hunt group extension 2222 used for the voice mail feature

Avaya Aura CM: Hunt Group Configuration (1/2)

HUNT GROUPS											
Grp No.	Grp Name/ Ext	Grp Type	ACD/ MEAS	Vec	MCH	No. Que	Cov Mem	Notif/ Path	Dom Ctg	Adj Ctrl	Message Center
1	Crestron HG 2200	circ	n/-	n	none	n	0	1	n		n
2	cmm hunt 2222	ucd-mia	n/-	n	none	n	0		n		s

Use the **add hunt group n** command to add a new hunt group (where **n** represents the available hunt group number).

Avaya Aura CM: Hunt Group Configuration (2/2)

```
display hunt-group 1
```

Page 1 of 60

HUNT GROUP

Group Number: 1	Coverage Path: 1
Group Name: Crestron HG	
Group Extension: 2200	
Group Type: circ	
TN: 1	Night Service Destination:
COR: 1	MM Early Answer? n
Security Code:	Local Agent Preference? n
ISDN/SIP Caller Display:	

Configure the hunt group (for this example):

1. Enter 1 for the **Group Number**.
2. Enter **Crestron HG** for the **Group Name**.
3. Enter **2200** for the **Group Extension**.
4. Enter **circ** for the **Group Type** to enable sequential ringing on the hunt group members.
5. Enter 1 for the **Coverage Path** to include sequentially alerted hunt group members.

Use the **add coverage path n** command (where **n** represents the available coverage path number) to add the coverage path, which includes members of the hunt group.

Configure **Coverage Path 1** for Hunt Group 1 for this example.

Avaya Aura CM: Hunt Group Coverage Path Configuration

```
display coverage path 1
          COVERAGE PATH

          Coverage Path Number: 1
          Cvg Enabled for VDN Route-To Party? n      Hunt after Coverage? n
          Next Path Number:           Linkage

COVERAGE CRITERIA
Station/Group Status   Inside Call   Outside Call
  Active?             n            n
  Busy?              Y            Y
  Don't Answer?      Y            Y      Number of Rings: 2
  All?               n            n
DND/SAC/Goto Cover?   Y            Y
  Holiday Coverage?  n            n

COVERAGE POINTS
Terminate to Coverage Pts. with Bridged Appearances? n
Point1: 2000          Rng: 1  Point2: 2103          Rng: 1
Point3: 2102          Rng: 3  Point4: 2101          Rng:
Point5:                           Point6:

Command: [green]
F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Configure the hunt group coverage path (for this example):

1. Enter 2000 for Point1.
2. Enter 2103 for Point2.
3. Enter 2102 for Point3.
4. Enter 2101 for Point4.

Avaya Aura CM: Hunt Group Configuration for Voice Mail

```
display hunt-group 2
          Page 1 of 60
          HUNT GROUP

          Group Number: 2          ACD? n
          Group Name: cmm_hunt    Queue? n
          Group Extension: 2222   Vector? n
          Group Type: ucd-mia    Coverage Path:
          IN: 1                  Night Service Destination:
          COR: 1                 MM Early Answer? n
          Security Code: 1234     Local Agent Preference? n
          ISDN/SIP Caller Display: mbr->name
```

Configure the voice mail hunt pilot (for this example):

1. Enter 2 for the **Group Number**.
2. Enter **cmm_hunt** for the **Group Name**.
3. Enter 2222 for the **Group Extension**.
4. Enter **ucd_mia** for the **Group Type**.

Music on Hold

Use the following commands to configure the Music on Hold (MoH) source:

- **enable announcement board 1v9**
Enables music source 1v9.
- **add audio group n**
Adds the audio source. This example uses 001v9.

Avaya Aura CM: MoH Configuration

```
display audio-group 1
AUDIO GROUP 1
Group Name: MOH

AUDIO SOURCE LOCATION
1: 001V9 16: 31: 46:
2: 17: 32: 47:
3: 18: 33: 48:
4: 19: 34: 49:
5: 20: 35: 50:
6: 21: 36:
7: 22: 37:
8: 23: 38:
9: 24: 39:
10: 25: 40:
11: 26: 41:
12: 27: 42:
13: 28: 43:
14: 29: 44:
15: 30: 45:

Command: F1=Cancel F2=Refresh F3=Submit F4=Clr F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

- **add announcement n**
Adds the new announcement associated with a station number.

Avaya Aura CM: Announcement Configuration

```
display announcement 2050
ANNOUNCEMENTS/AUDIO SOURCES

Extension: 2050 COR: 1
Annc Name: music TN: 1
Annc Type: integ-mus Queue? b
Source: 001V9
Protected? n Rate: 64
```

- **display music scores**

Displays the list of music sources configured on the system. This example uses **1** for the **Source No.**, **music** for the **Type**, and **ext 2050** for the **Source**.

Avaya Aura CM: Music Source Configuration

```
display music-sources                                         Page  1 of  17
                                                               MUSIC SOURCES

  Source No.   Type    Source                               Description
  1:       music  Type: ext   2050
  2:       none
  3:       none
  4:       none
  5:       none
  6:       none
  7:       none
  8:       none
  9:       none
 10:      none
 11:      none
 12:      none
 13:      none
 14:      none
 15:      none

F1=Cancel F2=Refresh F3=Submit F4=Clr Fld F5=Help F6=Update F7=Nxt Pg F8=Prv Pg
```

Use the list integrated-announcement board command to verify the configuration.

Avaya Aura CM: Integrated Announcement Configuration

```
list integrated-annnc-boards

  INTEGRATED ANNOUNCEMENTS
  Source: 001V9          Time Remaining at 64Kbps:  2796

Internal Group  Announcement                                Length    Size
Number   Number Extension        Name                (Sec)    (Kb)
NA        2050           music                  51        411
```

User Configuration for Each Device/Phone

Configure a user for each phone and Crestron device:

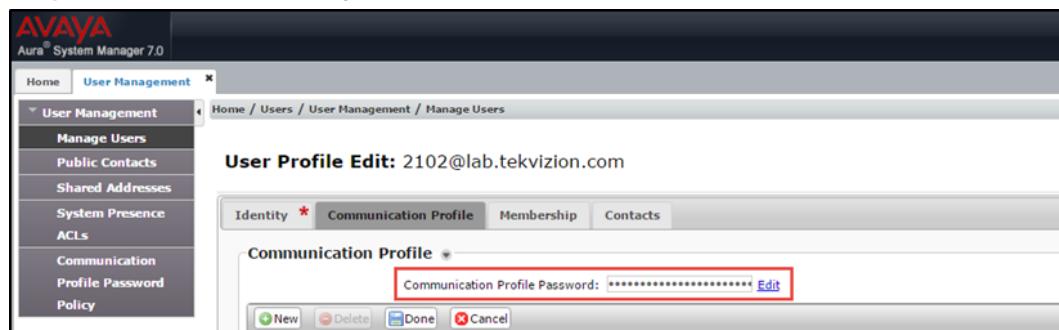
1. Click **Home > User Management > Manage Users**.
2. Click **Add New**. The **User Profile View** window appears.

Avaya Aura CM: Phone Configuration (1/4)

The screenshot shows the 'User Profile View' window for a user with the login name '2102@lab.tekvizion.com'. The window has tabs for Identity, Communication Profile, Membership, and Contacts. The Identity tab is selected. A red box highlights the 'Identity' section, which contains fields for Last Name, First Name, and Login Name. The 'Last Name' field contains 'Test2', the 'First Name' field contains 'user2', and the 'Login Name' field contains '2102@lab.tekvizion.com'. Other fields in the Identity section include Middle Name, Description, Update Time (September 15, 2016 9:17), and various source and display name fields. The Communication Profile tab is visible at the top of the window.

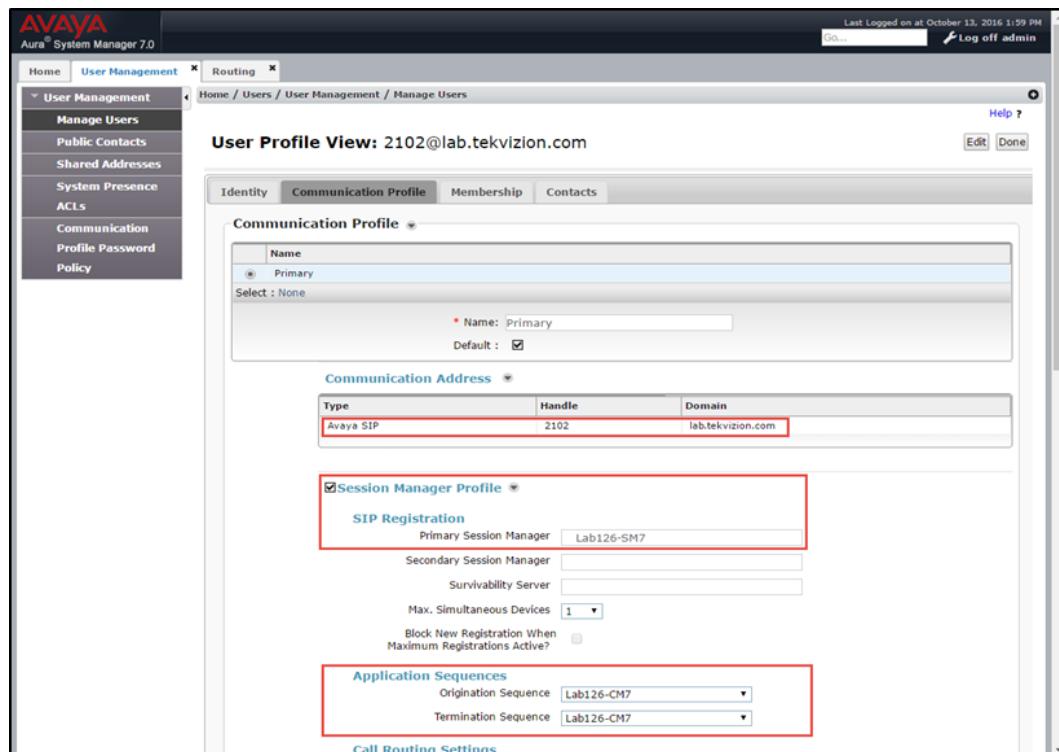
3. Enter **Test2** for the **Last Name** (for this example).
4. Enter **Test2** for the **First Name** (for this example).
5. Enter **2102@lab.tekvizion.com** for the **Login Name** (for this example).
6. Click the **Communication Profile** tab.

Avaya Aura CM: Phone Configuration (2/4)



7. Enter the desired SIP user registration password for the **Communication Profile Password**.
8. Confirm the password.
9. Scroll down to the **Communication Address** subsection and click **New** to add a new address.

Avaya Aura CM: Phone Configuration (3/4)



10. Set the Communication Manager **Type** to **Avaya SIP**.
11. Enter **Lab126-SM7** for the **Primary Session Manager**.

Avaya Aura CM: Phone Configuration (4/4)

The screenshot shows the 'Phone Configuration' screen in the Avaya Aura CM interface. The 'CM Endpoint Profile' section is highlighted with a red box. Inside this box, the following fields are visible:

- System:** Lab126-CM7
- Profile Type:** Endpoint
- Extension:** 2102
- Set Type:** 9600SIP

Below this section, there are several other configuration options:

- Enhanced Callr-Info display for 1-line phones:
- Delete Endpoint on Unassign of Endpoint from User or on Delete User:
- Override Endpoint Name and Localized Name:
- Allow H.323 and SIP Endpoint Dual Registration:

At the bottom right of the configuration area, there are 'Edit' and 'Done' buttons.

12. Check **CM Endpoint Profile**.
13. Select **Lab126-CM7** for the **System** (for this example).
14. Select **Endpoint** for the **Profile Type** (for this example).
15. Enter **2102** for the **Extension** (for this example).
16. Click **Done**.

Avaya Aura Session Manager

Domain

To route calls, create a SIP domain for each domain administered by the Session Manager.

To configure a domain:

1. Click **Home > Routing > Domains**.
2. Click **New**.

Avaya Aura SM: Domain Configuration



The screenshot shows the 'Domain Management' page in the Avaya Aura SM interface. The left sidebar has 'Routing' selected, with 'Domains' expanded. The main area shows a table with one item. The table columns are 'Name', 'Type', and 'Notes'. The single row contains 'lab.tekvizion.com' in the Name column, 'sip' in the Type column, and 'Lab126-Avaya Aura 7.0' in the Notes column. A red box highlights the 'lab.tekvizion.com' entry in the Name column.

Name	Type	Notes
lab.tekvizion.com	sip	Lab126-Avaya Aura 7.0

3. Enter the domain name for the **Name**. This example uses **lab.tekvizion.com**.
4. Select **sip** for the **Type**.
5. Enter a brief description for the **Notes** (optional).
6. Click **Commit** to save (not shown).

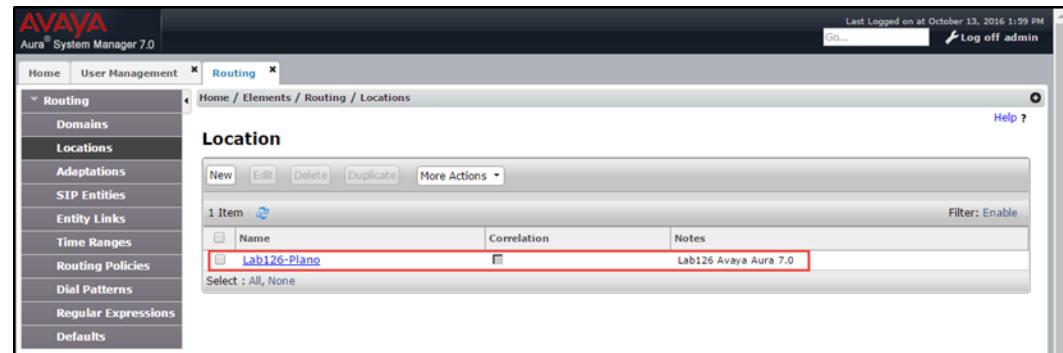
Location

Use locations to identify logical and/or physical locations where SIP entities reside for the purposes of bandwidth management and call admission control.

To add a location:

1. Click **Routing > Locations**.
2. Click **New**.

Avaya Aura SM: Location Configuration



3. In the **General** section, do the following:
 - a. Enter a descriptive name for the **Name** of the location. This example uses **Lab126-Plano**.
 - b. Enter a brief description for the **Notes** (optional).
 - c. Use the default values for all remaining fields.
4. Click **Commit** to save (not shown).

Adaptation

Use adaptations to modify administered SIP messages. A SIP entity can have its own unique adaptation, or multiple entities can share one adaptation. Session Manager includes the DigitalConversionAdapter module, which can convert digit strings in various message headers as well as hostnames in the Request-URI and other headers.

To configure an adaptation:

1. Click **Home > Routing > Adaptations**.
2. Click **New**.

Avaya Aura SM: Adaptation Configuration

The screenshot shows the 'Adaptation Details' configuration page in the Avaya Aura SM 7.0 interface. The 'General' tab is selected. Key fields include 'Adaptation Name: DomainAdapter' and 'Module Name: DigitConversionAdapter'. A table lists parameters: fromto (true), odstd (lab.tekvizion.com), and osrcd (lab.tekvizion.com). Below this is a section titled 'Digit Conversion for Incoming Calls to SM' containing two items with matching patterns 19725980143 and 19725980145, and associated conversion rules.

3. Enter **DomainAdapter** for the **Adaptation Name** (for this example).
4. Select **DigitConversionAdapter** for the **Module Name**.
5. Select **Name-Value Parameter** for the **Module Parameter Type**.
6. In the **Name** and **Value** columns, enter the following:
 - a. **fromto : true**
 - b. **odstd : lab.tekvizion.com**
 - c. **osrcd : lab.tekvizion.com**
7. Type a brief description for the **Notes** (optional).
8. Click **Commit** to save.

SIP Entity

Add a SIP entity for each SIP telephony system connected to the Session Manager, which includes Communication Manager and Avaya Communication Manager Messaging Component.

Avaya Aura SM: SIP Entity

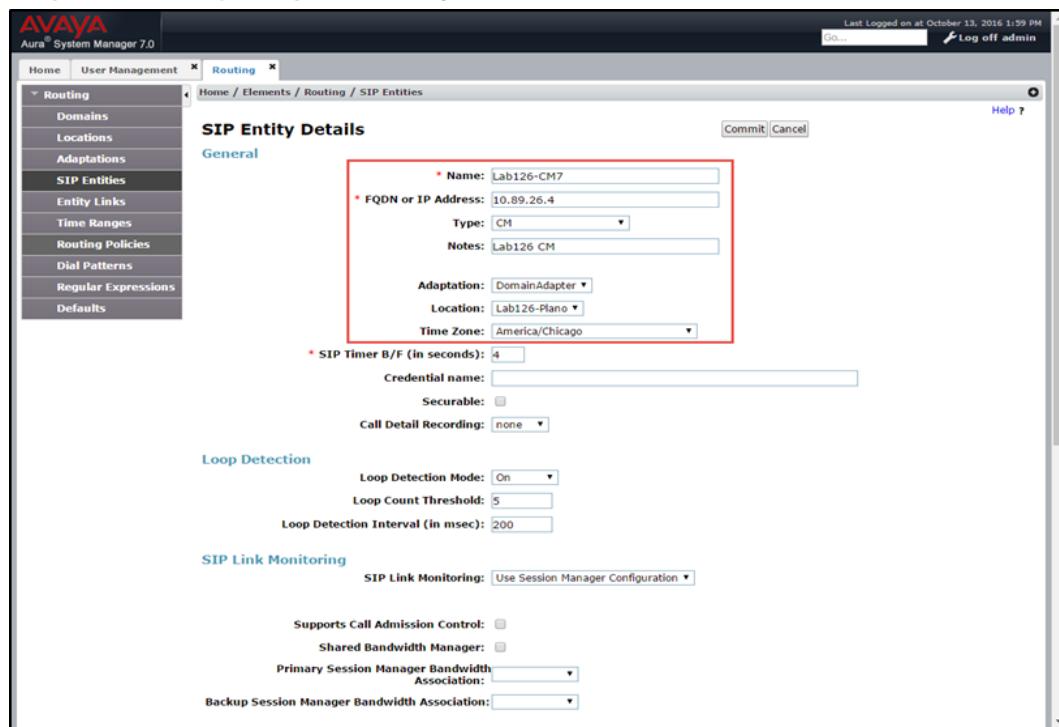
The screenshot shows the Avaya Aura System Manager 7.0 interface. The title bar says "Avaya" and "Aura® System Manager 7.0". The top menu has items like "Home", "User Management", "Routing", "Elements", "SIP Entities", etc. The "Routing" tab is selected. The left sidebar has a tree view with "Routing" expanded, showing "Domains", "Locations", "Adaptations", "SIP Entities" (which is selected), "Entity Links", "Time Ranges", "Routing Policies", "Dial Patterns", "Regular Expressions", and "Defaults". The main content area is titled "SIP Entities" and shows a table with 7 items. The table has columns: "Name", "FQDN or IP Address", "Type", and "Notes". The data is as follows:

Name	FQDN or IP Address	Type	Notes
Lab126-CM7	10.89.26.4	CM	Lab126 CM
Lab126-CMM7	10.89.26.25	Messaging	
Lab126-EDP	10.89.26.15	Avaya Breeze	
Lab126-PS7	lab.tekvizion.com	Presence Services	
Lab126-SBC7	10.89.26.13	SIP Trunk	
Lab126-SM7	10.89.26.7	Session Manager	Lab126 Avaya Session Manager 7.0
PSTN-CorpGW	10.64.1.72	Other	

To add a SIP entity:

1. Click **Routing > SIP Entities**.
2. Click **New**.

Avaya Aura SM: Sip Entity - CM Configuration (1/2)



3. In the **General** section, do the following:
 - a. Enter a descriptive name for the **Name**. This example uses **Lab126-CM7** for the Avaya CM.
 - b. Enter the FQDN or IP address of the SIP entity interface used for SIP signaling for the **FQDN or IP Address**. This example uses **10.89.26.4**.
 - c. Select **Session Manager** (for Session Manager), **CM** (for Communication Manager), and **Other** (for the Avaya SBCe) for the **Type**.
 - d. Select **DomainAdapter** for the **Adaptation** (for this example).
 - e. Select **Lab126-Plano** (a location previously defined) for the **Location**.
 - f. Select the time zone for the location in the previous step for the **Time Zone**.
 - g. Scroll to the **Port** section of the **SIP Entity Details** screen to define the ports used by Communication Manager.

Avaya Aura SM: SIP Entity - CM Configuration (2/2)

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
* Lab126SM-Lab126CM	Lab126-SM7	TCP	5060	Lab126-CM7	5060	trusted	None

Click **Add** and enter the following values:

- i. Enter the port number on which the CM listens for SIP requests for the **Port**. This example uses **5060**.
- ii. Select the protocol used to send SIP requests for the **Protocol**. This example uses **TCP**.
- iii. Use the default values for all remaining fields.

To add a SIP entity for the Avaya SM:

1. Click Routing > SIP Entities.
2. Click New.

Avaya Aura SM: SIP Entity - SM Configuration (1/2)

The screenshot shows the Avaya System Manager 7.0 interface. The main window title is "Avaya System Manager 7.0". The top navigation bar includes "Home", "User Management", and "Routing". The "Routing" tab is selected. On the left, a sidebar under "Routing" lists "Domains", "Locations", "Adaptations", "SIP Entities" (which is highlighted in blue), "Entity Links", "Time Ranges", "Routing Policies", "Dial Patterns", "Regular Expressions", and "Defaults". The main content area is titled "SIP Entity Details" and has a sub-section titled "General". A red box highlights the following fields:

- * Name: Lab126-SM7
- * FQDN or IP Address: 10.89.26.7
- Type: Session Manager
- Notes: Lab126 Avaya Session Manager 7.0
- Location: Lab126-Plano
- Outbound Proxy: (dropdown menu)
- Time Zone: America/Chicago

Below the General section is a "SIP Link Monitoring" section with a dropdown menu set to "Use Session Manager Configuration".

3. In the **General** section, do the following (for this example):
 - a. Enter **Lab126-SM7** for the **Name** (for a SIP entity of Avaya SM).
 - b. Enter **10.89.26.7** for the **FQDN or IP Address**.
 - c. Select **Session Manager** for the **Type**.
 - d. Enter **Lab126 Avaya Session Manager 7.0** for the **Notes**.
 - e. Select **DomainAdapter** for the **Adaptation**.
 - f. Select **Lab126-Plano** for the **Location**.
 - g. Select **America/Chicago** for the **Time Zone**.

Avaya Aura SM: SIP Entity - SM Configuration (2/2)

SIP Link Monitoring

SIP Link Monitoring:

Supports Call Admission Control:

Shared Bandwidth Manager:

Primary Session Manager Bandwidth Association:

Backup Session Manager Bandwidth Association:

Entity Links

Override Port & Transport with DNS SRV:

Add	Remove	Filter: Enable							
		Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
		* Lab126-SM7_PSTN-Cor	Lab126-SM7	UDP	* 5060	PSTN-CorpGW	* 5060	trusted	<input type="checkbox"/>

Select : All, None

SIP Responses to an OPTIONS Request

Add	Remove	Filter: Enable		
		Response Code & Reason Phrase	Mark Entity Up/Down	Notes

To add a SIP entity for the PSTN gateway:

1. Click **Routing > SIP Entities**.
2. Click **New**.

Avaya Aura SM: SIP Entity - PSTN GW Configuration (1/2)

The screenshot shows the Avaya Aura SM interface for adding a SIP Entity. The left sidebar has 'Routing' selected under 'SIP Entities'. The main window title is 'SIP Entity Details' with a 'General' tab selected. A red box highlights the 'General' section where fields are being filled out. The fields include:

- Name: PSTN-CorpGW
- FQDN or IP Address: 10.64.1.72
- Type: Other

Below this, there are other optional fields like Adaptation, Location, Time Zone, SIP Timer B/F, Credential name, Securable, Call Detail Recording, and CommProfile Type Preference.

At the bottom, there's a 'Loop Detection' section with fields for Mode (On), Loop Count Threshold (5), and Interval (200 msec).

3. In the **General** section, do the following (for this example):
 - a. Enter **PSTN-CorpGW** for the **Name** (for a SIP entity of PSTN gateway).
 - b. Enter **10.64.1.72** for the **FQDN or IP Address**.
 - c. Select **Other** for the **Type**.
 - d. Select **America/Chicago** for the **Time Zone**.

Avaya Aura SM: SIP Entity - SIP Entity Configuration (2/2)

SIP Link Monitoring

SIP Link Monitoring:

Supports Call Admission Control:

Shared Bandwidth Manager:

Primary Session Manager Bandwidth Association:

Backup Session Manager Bandwidth Association:

Entity Links

Override Port & Transport with DNS SRV:

Add	Remove	Filter: Enable							
		Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
		* Lab126-SM7_PSTN-Cor	Lab126-SM7	UDP	* 5060	PSTN-CorpGW	* 5060	trusted	<input type="checkbox"/>

Select : All, None

SIP Responses to an OPTIONS Request

Add	Remove	Filter: Enable		
		Response Code & Reason Phrase	Mark Entity Up/Down	Notes

To add a SIP entity for the Avaya Communication Manager Messaging:

1. Click Routing > SIP Entities.
2. Click New.

Avaya Aura SM: SIP Entity - Avaya Communication Manager Messaging Configuration (1/2)

The screenshot shows the 'SIP Entity Details' configuration page in the Avaya Aura System Manager 7.0. The 'General' section is highlighted with a red box. It contains the following fields:

- Name: Lab126-CMM7
- FQDN or IP Address: 10.89.26.25
- Type: Messaging
- Notes: (empty)
- Adaptation: DomainAdapter
- Location: Lab126-Plano
- Time Zone: America/Chicago

Below the General section, there are other sections like Loop Detection, Credential name, Securable, and Call Detail Recording, but they are not highlighted.

3. In the **General** section, do the following (entries for steps b through f are for this example):
 - a. Enter **Lab126-CMM7** for the **Name** (for a SIP entity of Avaya Communication Manager Messaging).
 - b. Enter **10.89.26.25** for the **FQDN or IP Address**.
 - c. Select **Messaging** for the **Type**.
 - d. Select **DomainAdapter** for the **Adaptation**.
 - e. Select **Lab126-Plano** for the **Location**.
 - f. Select **America/Chicago** for the **Time Zone**.

Avaya Aura SM: SIP Entity - Avaya Communication Manager Messaging Configuration (2/2)

SIP Link Monitoring

SIP Link Monitoring:

Supports Call Admission Control:

Shared Bandwidth Manager:

Primary Session Manager Bandwidth Association:

Backup Session Manager Bandwidth Association:

Entity Links

Override Port & Transport with DNS SRV:

Add	Remove	Filter: Enable							
		Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
<input type="checkbox"/>		* Lab126-CMM7	Lab126-SM7	TCP	* 5060	Lab126-CMM7	* 5060	trusted	<input type="checkbox"/>

Select : All, None

SIP Responses to an OPTIONS Request

Add	Remove	Filter: Enable		
		Response Code & Reason Phrase	Mark Entity Up/Down	Notes
<input type="checkbox"/>				

Entity Links

A SIP trunk between Avaya Session Manager and a telephony system is an entity link. This example creates an entity link to each of the following:

- Communication Manager
- Avaya Communication Manager Messaging
- PSTN gateway

Avaya Aura SM: Entity Links

The screenshot shows the 'Entity Links' page in the Avaya Aura SM interface. The table displays five entries, each with a checkbox, Name, SIP Entity 1, Protocol, Port, SIP Entity 2, DNS Override, Port, Connection Policy, Deny New Service, and Notes columns. The entries are:

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy	Deny New Service	Notes
Lab126-CMM7	Lab126-SM7	TCP	5060	Lab126-CMM7	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
Lab126-SM7 Lab126-SBCE 5060 TCP	Lab126-SM7	TCP	5060	Lab126-SBCE	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
Lab126-SM7 PSTN-CorpGW 5060 UDP	Lab126-SM7	UDP	5060	PSTN-CorpGW	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
Lab126SM-Lab126CM	Lab126-SM7	TCP	5060	Lab126-CM7	<input type="checkbox"/>	5060	trusted	<input type="checkbox"/>	
Lab126SM-Lab126EDP	Lab126-SM7	TLS	5061	Lab126-EDP	<input type="checkbox"/>	5061	trusted	<input type="checkbox"/>	

To add Avaya CM as an entity link:

1. Click **Routing > Entity Links**.
2. Click **New**.

Avaya Aura SM: Avaya CM Entity Link Configuration

The screenshot shows the 'Entity Links' configuration dialog. A new row is being added with the following values:

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy
*	*Lab126SM-Lab126CM	*Lab126-SM7	TCP	*5060	*Lab126-CM7	5060	trusted

3. In the new row that is displayed, do the following:
 - a. Enter a descriptive name for the **Name**.
 - b. Select the Session Manager for **SIP Entity 1**.
 - c. Select **TCP** (for the **Protocol** for this example).
 - d. Enter **5060** for the **Port** (for this example).
 - e. Select the Communication Manager for **SIP Entity 2**.
 - f. Enter **5060** for the **Port** (for this example).
 - g. Select **trusted** for the **Connection Policy**.
4. Click **Commit** to save.

To add Avaya Communication Manager Messaging as an entity link:

1. Click **Routing > Entity Links**.
2. Click **New**.

Avaya Aura SM: CMM Entity Link Configuration

The screenshot shows the 'Entity Links' configuration page in the Avaya Aura System Manager 7.0. The table displays one item with the following details:

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy
* Lab126-CMM7	* Lab126-SM7	TCP	5060	* Lab126-CMM7		5060	trusted

3. In the new row that is displayed, do the following:
 - a. Enter a descriptive name for the **Name**.
 - b. Select Avaya Communication Manager Messaging for **SIP Entity 1**.
 - c. Select **TCP** (for the **Protocol** for this example).
 - d. Enter **5060** for the **Port** (for this example).
 - e. Select the Session Manager for **SIP Entity 2**.
 - f. Enter **5060** for the **Port** (for this example).
 - g. Select **trusted** for the **Connection Policy**.
4. Click **Commit** to save.

To add PSTN GW as an entity link:

1. Click **Routing > Entity Links**.
2. Click **New**.

Avaya Aura SM: PSTN GW Entity Link Configuration

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy
Lab126-SM7_PSTN-Corp	Lab126-SM7	UDP	5060	PSTN-CorpGW	5060	trusted

3. In the new row that is displayed, do the following:
 - a. Enter a descriptive name for the **Name**.
 - b. Select the PSTN GW for **SIP Entity 1**.
 - c. Select **TCP** (for the **Protocol** for this example).
 - d. Enter **5060** for the **Port** (for this example).
 - e. Select the Session Manager for **SIP Entity 2**.
 - f. Enter **5060** for the **Port** (for this example).
 - g. Select **trusted** for the **Connection Policy**.
4. Click **Commit** to save.

Routing Policy

Routing policies describe the conditions under which the SIP entities receive routed calls. This example creates a routing policy for each of the following:

- Communication Manager
- PSTN gateway
- Voice mail

To add a routing policy for Avaya CM:

1. Click **Routing > Routing Policies**.
2. Click **New**.

Avaya Aura SM: Routing Policy Configuration (1/3)

The screenshot shows the 'Routing Policy Details' configuration page in the Avaya Aura System Manager 7.0. The left sidebar is collapsed, and the main area has tabs for 'General', 'SIP Entity as Destination', 'Time of Day', and 'Dial Patterns'. The 'General' tab is active.

General section:

* Name: <input type="text" value="Routing to CM7"/>
Disabled: <input type="checkbox"/>
* Retries: <input type="text" value="0"/>
Notes: <input type="text"/>

SIP Entity as Destination section:

Name	FQDN or IP Address	Type	Notes
Lab126-CM7	10.89.26.4	CM	Lab126 CM

Time of Day section:

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

Dial Patterns section:

Add	Remove	Filter: Enable				
Pattern	Min	Max	Emergency Call	SIP Domain	Originating Location	Notes
2	2	4	<input type="checkbox"/>	-ALL-	Lab126-Plano	
9722657	10	36	<input type="checkbox"/>	lab.tekvizion.com	Lab126-Plano	

3. In the **General** section, enter **Routing to CM7** for the **Name** (for this example). The remaining fields use default values.
4. In the **SIP Entity as Destination** section, select the Avaya CM. This example uses **Lab126-CM7**.
5. In the **Dial Patterns** section, add the patterns to a call per the routing policy.
 - a. Add the **2** pattern. The Avaya and Crestron endpoints have their first 4-digit extensions starting with **2**.
 - b. Add the **9722657** pattern. The 10-digit Avaya and Crestron endpoints DID start with **9722657**.

To add a routing policy for the PSTN GW:

1. Click Routing > Routing Policies.
2. Click New.

Avaya Aura SM: Routing Policy Configuration (2/3)

The screenshot shows the 'Routing Policy Details' configuration page in Avaya Aura SM. The left sidebar has 'Routing Policies' selected. The main area has tabs for 'General', 'SIP Entity as Destination', 'Time of Day', and 'Dial Patterns'. The 'Dial Patterns' section is highlighted with a red box around the table.

General

* Name:	to PSTNCorpGw
Disabled:	<input type="checkbox"/>
* Retries:	0
Notes:	[Text input field]

SIP Entity as Destination

Name	FQDN or IP Address	Type	Notes
PSTN-CorpGW	10.64.1.72	Other	

Time of Day

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

Dial Patterns

Pattern	Min	Max	Emergency Call	SIP Domain	Originating Location	Notes
011	3	15	<input type="checkbox"/>	-ALL-	Lab126-Plano	
1	11	11	<input type="checkbox"/>	-ALL-	Lab126-Plano	
214242	10	10	<input type="checkbox"/>	-ALL-	Lab126-Plano	
97259	10	10	<input type="checkbox"/>	-ALL-	Lab126-Plano	

3. In the **General** section, enter **to PSTNCorpGW** for the **Name** (for this example). The remaining fields use default values.
4. In the **SIP Entity as Destination** section, select **PSTNCorpGW**.
5. In the **Dial Patterns** section, add the patterns to a call per the routing policy.
 - a. Add the **011** pattern, an 11-digit international dialing pattern starting with **1**.
 - b. Add the **1** pattern, an 11-digit national dialing pattern starting with **1**.
 - c. Add the **214242** pattern, a 10-digit PSTN dialing pattern starting with **214242**.

To add a routing policy for the Avaya Communication Manager Messaging - Voice Mail System:

1. Click **Routing > Routing Policies**.
2. Click **New**.

Avaya Aura SM: Routing Policy Configuration (3/3)

The screenshot shows the 'Routing Policy Details' configuration page in Avaya Aura SM. The left sidebar has 'Routing Policies' selected. The main area has three tabs: 'General', 'SIP Entity as Destination', and 'Dial Patterns'. The 'General' tab is active.

General section:

- * Name: Routing to CMM7
- Disabled:
- * Retries: 0
- Notes: [empty]

SIP Entity as Destination section:

Name	FQDN or IP Address	Type	Notes
Lab126-CMM7	10.89.26.25	Messaging	

Time of Day section:

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

Dial Patterns section:

Pattern	Min	Max	Emergency Call	SIP Domain	Originating Location	Notes
2222	4	4	<input type="checkbox"/>	-ALL-	Lab126-Plano	

3. In the **General** section, enter **Routing to CMM7** for the **Name** to reach PSTN. The remaining fields use default values.
4. In the **SIP Entity as Destination** section, select **Lab126-CMM7**.
5. In the **Dial Patterns** section, add the **2222** pattern, used as the voice mail pilot in this example.

Avaya Communication Manager Messaging

This section describes the steps for configuring the Avaya Communication Manager Messaging to work with Avaya Aura Session Manager via SIP trunking.

Switch Link Administration

To administer the switch link:

1. Click Administration > Messaging > Switch Link Administration > Switch Link Admin.
Avaya Communication Manager Messaging: Switch Link Administration

The Screenshot shows the Avaya Aura® Communication Manager Messaging System Management Interface (SMI) with the following details:

- BASIC CONFIGURATION:**
 - Extension Length: 4
 - Switch Integration Type: SIP
 - IP Address Version: IPv4
- SIP SPECIFIC CONFIGURATION:**
 - SIP Domain: Messaging lab.tekvizion.com
 - Far-end Connections: 1
 - Connection 1: IP 10.89.26.7, Port 5060, Monitor interval 0
 - Messaging Address: IP 10.89.26.25, TCP Port 5060, TLS Port 5061
 - Messaging Ports: Call Answer Ports 24, Maximum 24, Transfer Ports 12
 - Switch Trunks: Total 36, Maximum 36

Buttons at the bottom: Save, Help, Show Capacity Calculator, Show Advanced Options.

2. Under **BASIC CONFIGURATION**, do the following (for this example):
 - a. Select 4 for the **Extension Length**.
 - b. Enter **SIP** for the **Switch Integration Type**.
 - c. Enter **IPv4** for the **IP Address Version**.
3. Under **SIP SPECIFIC CONFIGURATION**, do the following (for this example):
 - a. Enter **lab.tekvizion.com** for the **SIP Domain**.
 - b. Enter **10.89.26.7** (the Avaya Session Manager IP) for **Connection 1**.
 - c. Enter **10.89.26.25** for the **Messaging Address**.

Messaging Server

For this example, configure the parameters for the Communication Manager Messaging Server:

1. Click Administration > Messaging > Server Administration > Messaging Server Admin.

Avaya Communication Manager Messaging: Messaging Server Configuration

The screenshot shows the Avaya Aura® Communication Manager Messaging System Management Interface (SMI). The main title is "Edit Messaging Server". The left sidebar lists various administration options under "Administration / Messaging". The "Server Administration" section is currently selected. The main form contains fields for "Server Name" (Lab126-CMM7), "IP Address" (10.89.26.25), "Password" (redacted), "Server Type" (tcpip), "Mailbox Number Length" (4), "Default Community" (1), "Voiced Name" (NO), "Voice ID" (redacted), "Updates In" (no), "Updates Out" (no), "Remote LDAP Port" (56389), and "Log Updates In" (no). Below the form is a table titled "MAILBOX NUMBER RANGES" with columns "Prefix", "Starting Mailbox Number" (2000), and "Ending Mailbox Number" (2999). The bottom of the screen displays the copyright notice: "© 2001-2015 Avaya Inc. All Rights Reserved."

2. Enter **Lab126-CMM7** for the **Server Name**.
3. Enter **10.89.26.25** for the **IP Address**.
4. Enter **2000** for the **Starting Mailbox Number**.
5. Enter **2999** for the **Ending Mailbox Number**.

Subscriber

To create a subscriber for the messaging server:

1. Click **Administration > Messaging > Messaging Administration > Subscriber Management.**
2. Click **Add.**

Avaya Communication Manager Messaging: Subscriber Configuration (1/3)

The screenshot shows the Avaya Aura® Communication Manager Messaging System Management Interface (SMI). The title bar reads "Avaya Aura® Communication Manager Messaging System Management Interface (SMI)". The left sidebar menu includes "Help Log Off", "Administration / Messaging", "Messaging Administration" (selected), "Attendant Management", "Enhanced List Setup", "Enhanced List Management", "Classes-of-Service", "Limits", "Features", "Sending Restrictions", "System Administration", "Announcement Sets", "Announcement Admin", "Announcement Copy", "Fax Options", "Fax Dial Strings", "Dial Sequences", "MCAP1 Options", "MCAP1 Password", "Thresholds", "Outcalling Options", "Activity Log Configuration", "Non-Admin Remote Subs", "Server Administration" (selected), "External Hosts", "Trusted Servers", "Messaging Server Admin", "Networked Servers", "Request Remote Update", "IMAP/SMTP Administration" (selected), "General Options", "Mail Options", "IMAP/SMTP Status", "Messaging Networked Machines", "Excluded Mailbox Admin", "Server Information", and "System Status". The main content area is titled "Edit Local Subscriber" and contains a note: "The Edit Local Subscriber allows the changing or deletion of a local subscriber." It has three sections: "BASIC INFORMATION", "SUBSCRIBER DIRECTORY", and "MISCELLANEOUS". In the "BASIC INFORMATION" section, fields include "Last Name" (tekvdut), "First Name" (empty), "Mailbox Number" (2102, highlighted with a red border), "Password" (empty), "Class Of Service" (0 - class00), "Covering Extension" (empty), "MWI Enabled?" (yes), "Account Code" (empty), "Community ID" (1), "Broadcast Mailbox?" (no), "Secondary Ext" (empty), "Time Zone" (empty), "Locked?" (no), and "Messaging Locale" (Default (English)). In the "SUBSCRIBER DIRECTORY" section, fields include "Email" (2102 @Lab126-CMM7) and "Ascii Name" (tekvdut). In the "MISCELLANEOUS" section, there are two tabs: "Miscellaneous1" and "Miscellaneous2". At the bottom, a copyright notice reads "© 2001-2015 Avaya Inc. All Rights Reserved."

3. Enter **tekvdut** for the **Last Name** (for this example).
4. Enter **2102** for the **Mailbox Number** (for this example).
5. Select **yes** for **MWI Enabled**.
6. Leave all other fields at the default values.

Avaya Communication Manager Messaging: Subscriber Configuration (2/3)

The screenshot shows the 'Edit Local Subscriber' configuration page. The left sidebar lists various management categories. The main panel has tabs for 'BASIC INFORMATION', 'SUBSCRIBER DIRECTORY', and 'MISCELLANEOUS'. Under 'BASIC INFORMATION', fields include Last Name (tekvdut), First Name (empty), Mailbox Number (2102), Password (empty), Class Of Service (0 - class00), Covering Extension (empty), MWI Enabled? (yes), Account Code (empty), Community ID (1), Broadcast Mailbox? (no), Secondary Ext (empty), Time Zone (empty), Locked? (no), and Messaging Locale (Default (English)). Under 'SUBSCRIBER DIRECTORY', fields include Email (2102) and Ascii Name (tekvdut). Under 'MISCELLANEOUS', there are two tabs: 'Miscellaneous1' and 'Miscellaneous2'.

Avaya Communication Manager Messaging: Subscriber Configuration (3/3)

The screenshot shows the 'Incoming Mailbox' configuration page. The left sidebar lists various management categories. The main panel has tabs for 'INCOMING MAILBOX', 'OUTGOING MAILBOX', and 'MISCELLANEOUS'. Under 'INCOMING MAILBOX', fields include Order (FIFO), Category Order (nuo), Retention Time, New (10 days, Forever), Retention Time, Old (10 days, Forever), and Retention Time, Unopened (10 days, Forever). Under 'OUTGOING MAILBOX', fields include Order (FIFO), Category Order (unfda), Retention Time, File (10 days, Forever), and Delivered/Nondeliverable (5). Under 'MISCELLANEOUS', fields include Voice Mail Message (seconds), Maximum Length (300), Minimum Needed (8), Call Answer Message (seconds), Maximum Length (300), Minimum Needed (2), End of Message Warning Time (seconds) (empty), Maximum Mailing Lists (25), and Total Entries in all Lists (600).

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