

Avaya Solution & Interoperability Test Lab

Configuring Avaya AuraTM Session Manager with Avaya AuraTM Communication Manager Branch – Issue 1.0

Abstract

These Application Notes present a sample configuration for a network that uses Avaya Aura[™] Session Manager R5.2 to integrate with Avaya Aura[™] Communication Manager Branch R 2.0 SP2 and Avaya Aura[™] Communication Manager over Public SIP Trunk.

For the sample configuration, Avaya AuraTM Session Manager runs on an Avaya S8510 Server, Avaya AuraTM Communication Manager Branch on G450/ i120/i40 and Avaya AuraTM Communication Manager runs on G650 and Avaya S8730 servers. Testing was conducted via the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes present a sample configuration for a network that uses Avaya AuraTM Session Manager **R5.2** to integrate with Avaya AuraTM Communication Manager Branch R **2.0 SP2** over a Public SIP Trunk. The SIP trunk connects Avaya AuraTM Communication Manager Branch to Avaya AuraTM Session Manager, using its SM-100 (Security Module) network interface. The sample configuration includes two Avaya AuraTM Communication Manager Branch nodes with H.323 and SIP. All inter- Avaya AuraTM Communication Manager Branch calls are carried over public SIP trunks. Avaya AuraTM Session Manager supports inter- Avaya AuraTM Communication Manager Branch call routing based on the dialed number, ARS (Automatic Route Selection), dial pattern for the branch, and the extension number. Avaya AuraTM Session Manager is managed by Avaya AuraTM System Manager via the management network interface, and Avaya AuraTM Communication Manager Branch is administered by local device manager.



Figure 1: Configuring Avaya AuraTM Session Manager with Avaya AuraTM Communication Manager Branch

2. Equipment and Software Validated

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

Product / Hardware Platform	Version
Avaya Aura TM Session Manager	Session Manager 5.2.0.1 Build: 520017
• SM-100 Hardware	
Avaya S8510 Server	
Avaya Aura TM System Manager	System Manager 5.2.0.1 Build: 520017
• Dell Power Edge 1950	
Avaya Aura TM Communication Manager	Release 2.0 SP2.0.0.17
Branch - G450	
Avaya Aura TM Communication Manager	Release 2.0 SP2.0.0.17
Branch - i120	
Avaya Aura ^{1M} Communication Manager	Release 2.0 SP2.0.0.17
Branch - i40	
Avaya Aura TM Communication Manager	Release 5.2.1
• G650	
• Avaya \$8730	

3. Configure Avaya Aura[™] Session Manager

3.1 Avaya AuraTM Session Manager Configuration

Follow the Network Routing Policy Administrator's Guide (https://support.avaya.com/css/appmanager/public/support) to set up Session Manager. The configuration below is required to set up a SIP trunk between Session Manager and Communication Manager Branch.

3.1.1 Add SIP entity for Communication Manager Branch

Use the Network Routing Policy SIP Entities screen to administer SIP Entities. SIP Entities are all the network elements that act as the "SIP System". Enter the IP Address of the Communication Manager Branch to make it a SIP entity for Session Manager

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Home / Network Routing Policy / SI	IP Entities / SIP Entity Details			I
▶ Asset Management	SIP Entity Details		Commit	
Communication System Management	General			
▶ User Management	* Name:	ASM-A to C450-2		
▶ Monitoring	Name.	ASIM-A to G450-2		
Network Routing Policy	* FQDN or IP Address:	10.0.1.53		
Adaptations	Туре:	CM		
Dial Patterns	Notes	4SM-4 to 6450-2		
Entity Links				
Locations	Adaptation	~		
Regular Expressions	1			
Routing Policies	Location:			
SIP Domains	Time Zone:	Asia/Kolkata 💌		
SIP Entities	Override Port & Transport with DNS SRV:			
Time Ranges	* SIP Timer B/F (in seconds):	4		
Personal Settings	Credential name:			
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▶ Settings	SIP Link Monitoring			
▶ Session Manager	SIP Link Monitoring:	Use Session Manager Configuration 💙		
Shortcuts				
Change Password	Entity Links			
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	SIP Entity 1 Protocol Port	SIP Entity 2	Port Trusted	
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	Select : All, None (0 of 1 Selected)			
	* Input Required		Commit Cancel] _
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3.1.2 Add entity link for Communication Manager Branch

Entity link connects two SIP entities, which enables Network Routing Policy and Session Manager to identify specific connection configuration (e.g. trusted hosts, outbound proxy, etc.) between two SIP entities.

The Trusted field means that the link between the two SIP entities is trusted.

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Locations		ASMA-COCM	avaya-asma	TCP	5070	СОСМ	5070			_
Regular Expressions		ASMA-IBCMims	avaya-asma	TCP	5060	IBCMims	5060		ims enabled	
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SIP Domains		ASM-A to G450-1	avaya-asma	TCP	5060	ASM-A to G450-1	5060		ASM-A to G450-1	٦
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Time Ranges		ASM-A to pusqaI120-	avaya-asma	ТСР	5060	ASM-A to pusqaI120- BH1	5060	V	ASM-A to pusqaI120- BH1	
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Security		ASM-A to pusqaI40-	avaya-asma	TCP	5060	ASM-A to pusqaI40-	5060		ASM-A to pusqaI40-	1
Settings		ASMA-to-pusqaI40-	avaya-asma	ТСР	5060	ASMA-to-pusqaI40-	5060	V		_
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3.1.3 Define Routing Policy

Session Manager can simply route the call based on the starting digit and the number of digits defined in the dial pattern. When a call starting with 122- xxxx reaches Session Manager, it will route the incoming call to Communication Manager Branch. Session Manager can also route calls based on different parameters (e.g. time of day, origination of the caller, SIP domain of the called party).

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→ User Management														
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3.1.4 Define Dial Pattern

The Network Routing Policy Dial Patterns screen is used to assign Location based Routing Policies to dial patterns.

The routing capability can be limited by setting a destination domain, so the call will only route to a SIP entity with the given domain. The location value below can limit the originating SIP entity, as defined in section 3.1.1 above.

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Home / Network Routing Policy /	/ Dial Patterns / Dia	al Pattern Details							
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Monitoring			* Pattern: 122						
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4. Configure Avaya Aura[™] Communication Manager Branch

4.1 Configure dial plan with users

Dial plan can only be set while initializing the Communication Manager Branch Edition and cannot be changed later on. The Dial Plan allows adding new users or stations. Consider 4 digit dial plan for reference.

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Call Handling	4000	H323-G450-2	9640/9640G-H323	IP	
Automated Attendant Service	4001	SIP-G450-2	9620-SIP	IP	
Public Networking	4002	H323-G450-2-4002	9640/9640G-H323	IP	
Resources	4003	H.323-G450-2-4003	Softphone-H323	IP	
System Parameters	4004	4004-SIP	9630-SIP	IP	
Platonn	4005	Abhi_SIP	9620-SIP	IP	

4.2 Configure Trunk group

4.2.1 General settings

Create a SIP trunk from Communication Manager Branch to Session Manager



4.2.2 SIP settings

The check box for "Replace outgoing request-URI domain with selected server IP address" should be left unchecked, since Session Manager does not have URE functionalities for now. Checking this checkbox will display the selected server IP address instead of the domain name.

Add SIP domains below the SIP tab.

Far End:-

Far end SIP domain is a SIP domain configured at Session Manager. It can be set from

Network Routing Policy=>SIP domains from session manager.

Near End:-

Near end SIP domain is a domain name configured at Communication Branch Manager. It can be set from

Configuration=>Platform=>Network Connection=>DNS tab.

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Trunk Groups	silpunelab.com silpunelab.com
Outside Line Groups	
🗋 Incoming Called Numb	SIP General Parameters
Outgoing Calling Numb	Prepend E.164 '+' to calling number (PUN)
Route Patterns	Mark user as phone
Automatic Route Selec	
🗋 Cama Numbering	I Replace outgoing request-URI domain with selected server IP address
Multi Frequency Signali	Session Refresh interval (RFC4028)
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🕨 🧰 System Parameters	Fast Sequential Forking
	Timeout Max Search Time
Maintenance & Monitoring	2000 (10010000 msec.) 6000 (10010000 msec.)
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4.2.3 Servers settings

Enter the ip-address of Session Manager and select the Transport as 'TCP'.Let the priority be default, i.e.100.

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Managed Objects Image: Configuration Users Image: Configuration Image: Group Communication Image: Configuration Image: Call Handling Image: Call Handling Image: Call Handling	SIP Trunk Group 31 I Back to List General SIP Static List Address[iport] Transport Priority (065525) * 10.0.0.247 TCP • 100 UDP • 100 * Lower number equals higher priority.

4.2.4 Media Settings

Select the codecs that will be used for calls on the SIP trunk to Session Manager. These are generic codecs widely supported by most of the Avaya endpoints.



4.3 Add Route Pattern

4.3.1 Add route pattern to use SIP trunk 31

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 ▶ Group Communication ▶ Call Handling ▶ Automated Attendant Serv 	Route Pattern Details Pattern Number Pattern Name 1 Route to ASMA
🔻 🗁 Public Networking	Routes Selection
Trunk Groups	Order Trunk Group # Digits to Delete to Insert Format Capability
Incoming Called Numb	1 • Public_Trk_To_ASMA (31) • Public • Restricted •

4.4 Configure Automatic Route Selection

Setup Automatic Route Selection to route the call from Communication Manager Branch to Session Manager over the public SIP trunk

The following guideline is used for designing the dial plan.

- For any given leading digit (0-9, * and #), only one user will be assigned.
- All extensions within the system will be the same length. The length of extensions cannot be changed once set without erasing and re-installing the configuration, and may be preset before delivery.
- There must be at least one extension, at least one code for Feature Access Codes, at least one code for Trunk Access Codes.
- Typically, the customer will assign one single-digit code (the ARS) for the outside line FAC and one single-digit code for the inter-branch line FAC (the AAR). All the other FACs will be multiple digits, starting with "*"and/or "#". Other schemes, however, are allowed.
- Outside line starting digit is always single digit.
- Inter-branch line starting digit is always single digit.

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Trunk Groups	131	3	8	Route to ASMA	Public 🛛 🔻		\checkmark			
Outside Line Groups	121	3	6	Route to ASMA	Public v		✓			
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5. Verification Scenarios

Integrate two Communication Manager Branch devices with Session Manager over public SIP trunk as explained above. Use the following steps to verify inter-Communication Manager Branch calling.

5.1 Verification from Session Manager Side

5.1.1 Use the Call Routing Test under Session Manager Tab -> System Tools

- Enter the Called party URI, Calling Party URI & the Calling party Address and execute the test.
- Follow the routing decision process to see that the correct route is found as configured.

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Home / Session Manager / System 1	Tools / Call Routing Test		^
▶ ≜sset Management	Call Douting Test		
. Communication System			
Management	This page allows you to test SIP routing algorithms on Session Manager instances. Enter information about a SIP INVITE to learn how it will be ro current administration.	uted based on	
User Management	SIP INVITE Parameters		
▶ Monitoring	Called Darty LIRI Calling Darty Address		
Network Routing Policy	(121406@silpunelab.com) (10.0.1.53)		
▶ Security	Calling Party URI Session Manager Listen Port		
▶ Applications	1224005@silpunelab.com 5060 Transport Protocol		
▶ Settings	Monday VI 12:56 TCP V		
▼ Session Manager	Called Session Manager Instance		
Session Manager Administration	avaya-asma		
Network Configuration			
 Device and Location Configuration 			_
Application Configuration			
» System Status	Routing Decisions		
System Tools	Route < sip:121406@silpunelab.com > to SIP Entity ASM-A to G450-1 (12.0.0.23). Terminating Location is null.		
 Maintenance Tests 			-
 SIP Tracer Configuration SIB Trace Viewer 			-
Call Routing Test	Deutine Devicing Decessor		
	Routing Decision Process		
Shortcuts	Checking NRP to determine if this is a call to an emergency number.		
Change Password	Originating Location is null. Using digits < 121406 > and host < silpunelab.com > for routing.		
Help for Call Routing Testing	NRP Dial Patterns: Found a Dial Pattern match for pattern < 121 > Min/Max length 3/6 and domain < silpunelab.com >.		
Help for Page Fields	NRP Routing Policies: Ranked destination NRP Sip Entities: ASM-A to G450-1.		
	NRP Routing Policies: Removing disabled routes.		
	NRP Routing Policies: Ranked destination NRP Sip Entities: ASM-A to G450-1.		
	NRP Adaptations: no Incoming Adaptation administered.		
	NRP Sip Entities: Originating SIP Entity is ASM-A to G450-2.		
	Originating Location is null. Using digits < 121406 > and host < silpunelab.com > for routing.		
	NRP Dial Patterns: Found a Dial Pattern match for pattern < 121 > Min/Max length 3/6 and domain < silpunelab.com >.		
	NRP Routing Policies: Ranked destination NRP Sip Entities: ASM-A to G450-1.		
	NRP Routing Policies: Removing disabled routes.		
	NRP Routing Policies: Ranked destination NRP Sip Entities: ASM-A to G450-1.		
	Adapting and proxying for SIP Entity ASM-A to G450-1.		
	NRP Entity Links: Found direct link to destination. Link uses TCP to port 5060.	A	~
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5.2 Verification from Communication Manager Branch and Session Manager

Capture Call trace/SIP trace on Communication Manager Branch for inter-Communication Manager Branch call.

- Register extension 4000 with Communication Manager Branch-1 and extension 211 with Communication Manager Branch-2
- Log on to Communication Manager Branch-1. Go to Maintenance & Monitoring -> Telephony -> SIP Traces.
- Log on to Session Manager as **root**, run command **traceASM** to capture traces on Session Manager.
- Dial <Automatic Route Selection> + < Communication Manager Branch 2 Dial pattern, as defined in section 3.1.4 above> + 211, from ext 4000 of Communication Manager Branch-1 and place a call.(e.g.9123211)

AAA; Reviewed:	
SPOC 1/31/2010	

 Capture the Communication Manager Branch and Session Manager traces for this call as mentioned in points above. (Kindly contact Avaya representative for the root login.)

🛿 Sil-G450-2 [10.0.1.53] - Avaya Communication Manager Branch Edition Device Manager - G450 - Windows Internet Explorer 📃 🖻				
💽 🔻 🙋 https://10.0.1.53/	🔽 😵 Certificate Error			
e Edit View Favorites Tools Help Google G-	🕶 Go 🖗 🛷 🏕 🔹 🏠 Bookmarks 🕶 🔊 14 blocked 🛛 🍄 Check 👻 🔨 AutoLink 👻 🔚 AutoFill 🍙 Send to 🕶 🏼	Setting		
Favorites 🛛 🙀 🏉 Suggested Sites 🔻	🖉 Free Hotmail 🖉 Get More Add-ons 🔻	ools + 🔞+		
Home	Save Configuration	on 🖪		
Managed Objects 😨	SIP Traces			
Configuration				
Maintenance & Monitoring				
🗋 System Summary 🔺	Start Stop Refresh Display limit is 300K 10481 bytes Download Cl	ear		
Component Inventory		_		
Alarms		Ĥ		
Logs	Dec 14 19:18:32 2009 : [Recv Request]			
Reboot	{connection: host=10.0.1.53 port=5061 protocol=TLS}			
Network Diagnostics	From: #1323-G450-			
🖉 🗁 Telephony	To: "123211" (sip:123211@silpunelab.com)			
Users	Call-ID: 0f4d4f3aef4de1c6764b153c000 CSeg: 1 INVITE			
Trunk Groups	Max-Forwards: 70			
Outside Line Groups	Route: <sip:10.0.1.53:5061;1r;phase=terminating;transport=t1s> Record=Route: <sip:10.0.1.53:6002;1r;transport=t1s></sip:10.0.1.53:6002;1r;transport=t1s></sip:10.0.1.53:5061;1r;phase=terminating;transport=t1s>			
BRI Data Endpoints	Via: 51F/2.U/TLS 10.0.1.53:6002;branch=z9hG4bK0f4d4f3aef4de1c7764b153c000 User-Agent: Avaya CM/R013v.02.0.034.0			
🗋 Remote CDR	Supported: 100rel, timer, replaces, join, histinfo			
SIP Traces	Contact: "H323-G450-2" <sip:4000@10.0.1.53:6002;transport=tls></sip:4000@10.0.1.53:6002;transport=tls>			
СТІ	Session-Expires: 1200;refresher=uac Min-SE: 1200			
🗋 Phone Messages Files	P-Asserted-Identity: "H323-G450-2" <sip:4000@silpunelab.com:6002> Content-Type: application/sdp</sip:4000@silpunelab.com:6002>			
	History-Info: <sip:123211@silpunelab.com>;index=1</sip:123211@silpunelab.com>			
Favorites	history-inio: 1/3/11 (sip:1/3/11@silpunelab.com);index=1.1			
Search				
		100%		

Communication Manager Branch Traces:

Session Manager Traces:

🧬 avaya-asma -	traceSM - Captured: 47 Displayed: 47				
10.0.0.247 SM					
19:18:36,952) Dial Pattern route parameters	URI Domain: silpunelab.com Location: null			
19:18:36,952	Trying Dial Pattern route	Domain: silpunelab.com Location: null			
19:18:36,952	Dial Pattern route parameters	URI Domain: null Location: null			
19:18:36,952) Irying Dial Pattern Foute	Jomain: null Location: null			
19:10:30,932	Poute Polygr found	IDI: 123211 Fattern: 123 Dattern: 123 DoutsBolignTist: ASM_A to puggaT120_PB1			
19:10:30,932	Poute found	for sin:1232110silounsels com GIDEntitu. 184.1 to nuscel120-BH1			
19:18:36.952	Finity Link found	SIPEritiv: ASM-A to nuscal120-BH1 EntityLink: avava-asma-STCP, biDirId=nu			
19:18:36.954	No hostname resolution required	Routing to: sip:15.0.0.25;transport=tcp;lr;phase=terminating			
19:18:36,954	Location not found	for: 10.0.1.53			
19:18:36,954	Location not found	for: 15.0.0.25			
19:18:36,956	<reinvit-< th=""><th>(3) T:123211 F:4000 U:123211</th></reinvit-<>	(3) T:123211 F:4000 U:123211			
19:18:36,982	Trying>	(3) 100 Trying			
19:18:37,101	Ringing->	(3) 180 Ringing			
19:18:37,106	<ringing- < th=""><th>(3) 180 Ringing</th></ringing- <>	(3) 180 Ringing			
19:18:37,154	PRACK>	(3) sip:15.0.0.25			
19:18:37,156	<prack < th=""><th>(3) sip:15.0.0.25</th></prack <>	(3) sip:15.0.0.25			
19:18:37,210	200 OK>	(3) 200 OK (PRACK)			
19:18:37,212	<mark><200 OK</mark>	(3) 200 OK (PRACK)			
Stannad Distant	a-Start g-Ouit F	NTED-Details f-Filters w-Write o-SW100 g-Cloor i-ID			
acobber 1	S-Start q-Quit E	WILK-PEDALIS I-FILEELS W-WILLE A-SHIDD C-CLEAR I-IF			

6. Conclusion

As illustrated in these Application Notes, Communication Manager Branch can interoperate with Session Manager using public SIP trunks. The tests were carried out using SIP Trunk with transport protocols: UDP, TCP.

7. Test results

Feature	CMB Platform
Automated Attendant	G450.i120
Logs and alarms	G450,i120
Backup and restore	G450
Call Hold	i40,i120
Call Drop	i40,i120
Flexible Storage Capacity	G450,i120
Whisper Page	G450
Centralized and Distributed Trunking	G450,i120
UUI/UCID testing for CMBE with ASM	G450

The following functionalities are validated:-

Call flows-Inter CMBE (G450, i120, i40), CM-SM-CMB (G450) calling, CMB (G450)-CM calling.

Known issues:-

1) Call Transfer cannot be completed over the same public SIP trunk.

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