zoomphone

Configuration Guide For Avaya SBC

Document version 1.1

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Revision History

Version	Date	Author	Change
1.0	10-August-2020	Zoom	Template design
1.1	4-December-2024	Rajesh Kannan	Updated document for Avaya SBC configurations

1 Overview

This document provides instructions on how to configure and add your device to the Zoom web portal. This document provides instructions on how to set up **Avaya Session Border Controller** (hereafter, referred to as SBC) for interoperability between Generic SIP Trunk and Zoom Phone environment.

2 Topology



3 Configuration Steps- ZOOM PBX

This section covers checking the basic readiness, adding the external BYOC DID phone numbers and mapping them to corresponding end point devices (such as IP phones and other SIP devices).

3.1 Adding Your SBC

• Login to Zoom Admin Portal and Navigate to Phone System Management->Company Info->Account Settings->Routing

ZOOM Products Sol	lutions Resources Plan	ns & Pricing		ç	Schedule	Join	Host ~	Web App ~	
> Device Management									
> Room Management	Company Info > Account	Settings							
> Workspaces Management									
 Phone System Management 	Settings Policy	Block List Spam List	External Contacts	Emergency Servic	es				
Users & Rooms									
Auto Receptionists	Multiple Sites	Multiple Sites							
Call Queues	Routing Notifications	Multiple Sites			C				
Shared Lines	Desk Phone	Once enabled, your current si	ite will default to your Main S	Site.					
Group Call Pickup	Security	Site Code			C				
Phone Numbers	Templates	Once enabled, you can assigr of [site code]-[short extension							
Provider Exchange	Others	reach another user in the sam sites.	number to reach users in o	other					
Phones & Devices		Site Manage							
Monitoring		one manage							
Assets Library		Routing							
Logs		BYOC Settings							
Company Info		Configurations for Bring Your	Own Carrier (BYOC).						
> Account Management		Allow Caller Name Deliver							
anced		Caller Name information w (Premises) call	vill be included in the signal	ing messages for a BYOC					a

• To add your SBC, locate Session Border Controllers and click on Manage



• Click on Add



- **Display Name:** Provide the Display name of your choice. Here, AVAYA_SBC is used
- **IP Address:** Provide the IP address AVAYA SBC interface facing towards Zoom and configure the port number
- In-Service: Enabled
- Settings: Check "Send OPTIONS ping messages to the SBC to monitor connectivity status" and "Include diversion headers in the sip signaling messages for forwarded calls"
- Click Save

Display Name	AVAYA_SBC
Description (Optional)	Enter
Protocol	TLS
IP Address ⑦	Public IP Address Port Number (?) 19 14
In-Service 🕐	
Settings	 Integrate an on-premises PBX (Bring Your Own PBX - Premises) with Zoom Send OPTIONS ping messages to the SBC to monitor connectivity status Include diversion headers in the sip signaling messages for forwarded calls Include original calling number within the P-Asserted-Identity (PAI) header for forwarded calls Use T.38 protocol for faxing ⑦ Allow REFER support to transfer calls BETA
Address(Optional)	Country/Region Select
Email(Optional) (?)	Enter Email

3.2 Adding Route Group

• Navigate to Phone System Management -> Company Info -> Account Settings -> Routing



• To add the Route Groups, locate Route Groups and click on Manage



• Click on Add

ZOOM Pro	oducts So	olutions	Resources	Plans & Pricing	g		Schedule	Join	Host ~	Web App ~	
> Room Management											
> Workspaces Manageme	> Workspaces Management			unt Settings > Rou	ite Group						
 Phone System Manage 	 Phone System Management 										
Users & Rooms	Lisers & Rooms		Route Group								
		Last Updated Time: 04:11 PM, Oct 16, 2024 C									
Auto Receptionists	Add	-						🕒 Pro	visioning Inform	ation	
Call Queues											

- Display Name: Provide the display name of your choice. Here, Avaya_Route Group is used
- Type: Select BYOC-P
- Region: Select "US01-US(SJ/DV/NY)"
- **Distribution:** Select Sequential from the dropdown and then add Avaya_SBC that was created in the above step
- Click Save

Add a new	Route Group	
Display Name	Avaya_Route Group	
Туре	BYOC-P	~
Region	US01 - US (SJ/DV/NY)	8~
Distribution	Sequential	~
	Session Border Controllers 1: AVAYA_SBC (192.65.79.114:5061) & Add	
Backup Route Group (Optional)	Select	
Got old Route Gro	ups? Save	Cancel

ZOOM Products So	lutions Resources Plan	s & Pricing			Schedule Join Host v	Web App 🗸 💄
Analytics & Reports		(az.os. a. 190.500 i)				
ADMIN	Avaya_Route Group					
Dashboard	Region (?) : US01 - US (SJ/DV/NY)	Sequential (?) :				
> User Management	- US Central (Colorado)	AVAYA_SBC				
> Device Management	0	(192.) :5061)	BYOC-P	 Completed (?)	Avaya_SG	Edit
> Room Management	- US West (N. California)	AVAYA_SBC (192.(:5061)				
> Workspaces Management	- US East (New York) (i)	AVAYA_SBC				
 Phone System Management 		(192. :5061)				
Users & Rooms						
Auto Receptionists	Route_	Sequential (?):				
Call Queues	US01 - US (SJ/DV/NY)					
Shared Lines	- US Central (Colorado)	•	BYOC-P	 Completed (?)	sip_group_ribbon	Edit
Group Call Pickup	- US West (N. California)	L.				
Phone Numbers	0	• ()				
Phones & Devices	- US East (New York) 🕞	•j1)				
onitoring						Q
assets Library	Route Group Audicodes					

• A green led indicates the trunk status is active as shown in screenshot below

• Moving the cursor towards green led shows the trunk status as shown in screenshot below

Regi USO1 - US (j)	to the SBC and rece	otions Ping messages eived successful AVAYA_SBC (15061) AVAYA_SBC (15061)	BYOC-P	 Completed 📀	Avaya_SG	Edit
	East (New York) (j)	(1 :5061) AVAYA_SBC (1 :5061)				

3.3 Adding SIP Group

 Navigate to Phone System Management -> Company Info -> Account Settings -> Routing



• To add the SIP Groups, locate SIP Groups and click on Manage

Click on Add

ZOOM Product	s Solutions Resources Plans & Pricing	Schedule	Join	Host ~	Web App \sim	•
> Room Management						
> Workspaces Management	Company Info > Account Settings > SIP Groups					
 Phone System Management 	SIP Groups					
Users & Rooms						
Auto Receptionists	Add					

- Display Name: Provide display name of your choice. Here Avaya_SG is used
- **Route Group:** Select Avaya_Route Group (BYOC) from the drop down
- Click Save

Add SIP Group						
Display Name	Avaya_SG					
	Send SIP Group Name in SIP header ⑦					
Route Group	Avaya_Route Group (BYOC)					
Description (Optional)	Enter					
	Save Cancel					

3.4 Adding Routing Rule

• To add the Routing Rule, Navigate to Phone System Management -> Company Info -> Account Settings -> Routing



• Locate Routing Rules and click on Manage



• Click Add Routing Rule to add your rule for outbound calls



- Rule Name: Provide Rule Name as per your choice. Here Outgoing is used
- Number Matching and Translation: Provide the Number Pattern as given below in the screenshot and select the Routing path as "Avaya_SG" which was created before
- Click on Save

Rule Name	Outgoing
Number Matching and Translation 🥝	
	Translation (Optional) Replacement Pattern must be in E.164 format Test ⑦
codes or e DTMF code	atching patterns for routing rules must not conflict with DTMF mergency numbers. Click here for details to learn more about e. Using emergency numbers as number matching patterns nd location information to the PSAP.
Routing Path Call Forwarding @	Avaya_SG
	Save Cancel

3.5 Adding Phone Users

• Navigate to User Management-> Users-> Add Users for adding new users

zoom	Products	Solutions	Resources	Plans & Pricing	Schedule	Join	Host ~	Web App ~	•
Analytics & Repor	ts								
ADMIN				tice: Zoom modified user license assignments for Zoom Workplace. As can join meetings but cannot host or schedule meetings. Read support		an now cre	ate users on	^{your} ×	
Dashboard	t	L	Jsers You have I	icenses still available to users. Assign license to users or manage your l	license count.			Documen	t
Users			Users Per	nding Advanced					
Groups			Q Search	Advanced Search 👻		Import	Export ~	+ Add Users	

- Enter the user email address
- Zoom Workplace: choose Zoom Workplace as "Zoom Meetings" from the dropdown
- In "License and add-ons", select the checkbox "Zoom Phone Basic"
- Click on Add

Г

Add Users						
Add users with their email addresses						
If you enter the email address	s of account owners, all users on their accounts will be added to this account.					
.com						
Zoom Workplace	Zoom Meetings (1 available)					
Licenses and add-ons	Large Meeting (500 participants) (20 available)					
	Zoom Phone Basic					
	i To assign Zoom Phone packages, go to Phone System Management.					
	Zoom Webinars (500 attendees) (20 available)					
Department	e.g. Product					
Manager	Enter manager's name or email					
Job Title	e.g. Product Manager					
Location	e.g. San Jose					
Cost Center						
	Add					

Add Calling Plan package to the user. When Zoom Phone license is assigned for a user, an extension number gets assigned to the user automatically. Navigate to Phone System Management -> Users & Rooms. To assign a calling plan package to the user, click on the user that has been created

ZOOM Products Soluti	ns Resources Plans & Pricing	Schedule	Join Host ~	Web App ~
	Plan Details			
Dashboard	Add Import Export to CSV			
> User Management				
> Device Management	Q Search by Name, Ext. or Number			
> Room Management	Department v Enter department full name Package (All) v User Status (All) v	Site (All)		
> Workspaces Management	Department v Enter department full name Package (All) V User Status (All) v	Site (All)		
 Phone System Management 				
Users & Rooms	Desk			\$
Auto Receptionists	Name \$ Ext. \$ Package Number(s) Phone(s)	User Status	Site	Group
Call Queues	poly user54 Zoom Phone Basic			
Shared Lines	om vsivamani@tekvizion.c 980076 (Migrated)	Active	Main Site	

• Click on Assign

ZOOM Products So	olutions Resources Plans & Pricing	Schedule	Join	Host ~	Web App 🗸 💄
Dashboard	Users & Rooms > Users > poly user54 (
Vser Management Device Management	poly user54 (
> Room Management	Profile Policy History User Settings				
Workspaces Management Phone System Management					
Users & Rooms	Site Main Site				
Auto Receptionists	Package Zoom Phone Basic (Migrated) ⑦ Assign				
Call Queues	Extension Number 980076 Edit				

ZOOM Products Sol	utions Resources Plans &	& Pricing	Schedule	Join	Host v	Web App ~	
Dashboard	Users & Rooms → Users → p	boly user54 (.com)					
Vser Management Device Management	poly user54 (.com)					
 Room Management Workspaces Management 	Profile Policy His	story User Settings					
✓ Phone System Management	Site	(Main Site					
Users & Rooms							
Auto Receptionists	Package	belect Package					
Call Queues		US/CA Unlimited Calling Plan (8 Available) Pro Features - Unlimited Domestic					
Shared Lines Group Call Pickup	Extension Number	Zoom Phone Power Pack (20 Available) Power Pack Features					

• Select US/CA Unlimited Calling Plan as shown in below screenshot

3.6 Adding Phone Numbers

• Add the BYOC phone numbers as shown below. Navigate to **Phone System Management** -> **Phone Numbers-> BYOC-P->**Click **Add**

ZOOM Products Sol	utions Resources Plans & Pricing Statement of the Statement Statement Schedule Join Host - Web App -
> Room Management	Phone Numbers
> Workspaces Management	Assigned Unassigned Ported BYOC-P Cloud Peering
 Phone System Management 	
Users & Rooms	Main Company Number: Set
Auto Receptionists	Add Import Export to CSV
Call Queues	Q. Search Number Type (All) v Assigned to (All) v Status (All) v Status (All)
Shared Lines	
Group Call Pickup	Number \$ Area \$ Number Type Messaging Voice Messaging Voice S
Phone Numbers	Capability Capability Status Status
Provider Exchange	

- Carrier: BYOC
- Numbers: Enter the phone numbers as shown in screenshot below
- SIP Group: Select the SIP Group "Avaya_SG" which was created before
- Check the acknowledgement box and Click on Submit

Add BY	OC Numbers
Site	Main Site
Carrier	BYOC ~
Numbers	972: 5,97: 5,972:
SIP Group	Choose a routing path for calls to/from the numbers
_	edge that by checking the box, I attest that the phone numbers to be imported me or my organization
	Submit Cancel

• Assign the BYOC numbers to the Zoom phone users as shown below. Navigate to **Phone System Management -> Phone Numbers-> Unassigned**

ZOOM Products Solution	ions Resources Plans & Pricing Web App ~ 💄
 Room Management Workspaces Management 	Phone Numbers Assigned Unassigned Ported BYOC-P Cloud Peering
 Phone System Management Users & Rooms Auto Receptionists 	Add Export to CSV
Call Queues	Q. Search Number Type (All) Status (All) Site (All) Move Site Delete
Group Call Pickup Phone Numbers	Number ↓ Area ↓ Number Type Voice Messaging Verification Status Voice Messaging Verification Number ♦ Capability Capability Status Status
Provider Exchange Phones & Devices	(*

• Select the phone number that needs to be assigned to Zoom phone users

	(9) B	United States	Toll Number	Incoming & Outgoing	Disabled	Unverified	Normal	Main Site
	(97:'6 B	United States	Toll Number	Incoming & Outgoing	Disabled	Unverified	Normal	Main Site
	(9 B	United States	Toll Number	Incoming & Outgoing	Disabled	Unverified	Normal	Main Site

- Click on Edit near "Assigned to" as shown below in the screenshot
- A dialog box pops out and in **Assign to**: select the user you need to assign the phone number and click **OK**. The number will be assigned to the selected user

ZOOM Products Soluti	ons Resources Plans & P	ricing		Schedule	Join	Host ~	Web App ~	
Device Management Room Management Workspaces Management Users & Rooms Auto Receptionists Call Queues Shared Lines	Phone Number > Unassigned (97 6 © Set Display Name Site Number Type Area SIP Group	Assign Numb Number Assign to	OPER (972) 598-0076 (BYOC) User poly user54 - Ext. 980076, Main Site OK Cancel					
Group Call Pickup Phono Numbors Provider Exchange	Voice Capability	Outgoing Incoming						
Phones & Devices Monitoring	Messaging Capability ⊘	Disabled						
Assets Library Logs Company Info	Messaging Verification Status @		rification process to enable the messaging capability.					
Account Management Advanced	Assigned to Number Status	Edit						

3.7 Provisioning Phones for Zoom Phone Users

- Provision desk phones for Zoom Phone users. Zoom certified vendor phone models are used for this test and will be available as shown below after provisioning
- Navigate to Phone System Management -> Phones & Devices ->Add

ZOOM Products	Solutions Resources Plans & Pricing	Schedule Join Host - Web App -
Koom Management Workspaces Management Phone System Management	Starting July 10th, 2024, customers who intend to send SMS/MMS to US numbers must ensure that their US and Canada Toil/Virtus SMS campaign. Canada to Canada SMS/MMS will not require 10DLC Registration. More Details	ual Service numbers are added to an approved 10DLC
Users & Rooms Auto Receptionists Call Queues	Phones & Devices Assigned Unassigned	
Shared Lines Group Call Pickup	Note: Zoom Phone Appliance devices can be assigned to Common Area. To manage Zoom Phone Appliance, please go to Device N	Management
Phone Numbers Provider Exchange	Add Export to CSV ③ Q. Search by User, Ext., MAC Address, or IP Address Device (All) ✓) (Brand (All) ✓) (Status (Jacobian Status (Jacobian Sta	Resync by Account/Site
Phones & Devices Monitoring		
Assets Library Logs	Display Name Device Type MAC Address Assigned to Status Firmware Version Site	IP Address Hot Desking P to I (Signed In) Temp
Company Info Account Management Red	Image: Solution of the set	n Site 172.17.13.35 Unsupported U

- Display Name: Provide the display name for the phone
- MAC Address: Enter the MAC Address of the Phone
- **Device Type**: Here Yealink t57w is used as an example
- Assigned to: Select the user to be assigned to the Phone and Click Add
- Click Save

Add Device	e e
Display Name	Test user 1
Description (Optional)	
MAC Address	80-5e-0c-56-ac-db
Device Type	Yealink
	(t57w ~
Assigned to	This device type supports up to 1 assignee.
	Add Cancel This field is required
Provision Template (Optional)	Not Set
	Save

4 Configuration Steps-Avaya SBC

The Avaya Session Border Controller (SBC) is a critical component in modern enterprise communication networks, providing robust security and seamless interoperability for SIP-based Unified Communications (UC). Designed to terminate SIP trunks efficiently, the Avaya SBC offers a cost-effective solution without the complexity typically associated with traditional SBCs. One of the standout features of the Avaya SBC is its comprehensive security capabilities. It protects enterprise networks from various threats, including Denial of Service (DoS) attacks, toll fraud, and malformed packets. Additionally, it ensures privacy by hiding internal network topology and encrypting SIP signaling and media packets. Interoperability is another key strength of the Avaya SBC. It facilitates communication between different networks through Network Address Translation (NAT) and header manipulation within SIP messages. This ensures that diverse systems can work together smoothly. The Avaya SBC also supports regulatory compliance by prioritizing emergency calls and enabling lawful interception of communications. Its media services include interpreting DTMF tones, transcoding media, and supporting diverse media streams such as video.

This document outlines the configuration best practices for the Avaya SBC when deployed with Zoom Bring Your Own Carrier (BYOC). This means that for all subscribers catering to Zoom customers, the PSTN calls terminating through the SBC are directly connected to the Service Provider of their choice.

4.1 Avaya SBC Login

- Log into Avaya Session Border Controller for Enterprise (ASBCE) web interface by typing "https://X.X.X.X/sbc"
- Enter the Username and Password and Click Log In

<u> </u>	Log In					
AVAYA	Username: ucsec					
Avaya Session Border Controller	Log In WELCOME TO AVAYA SBC Unauthorized access to this machine is prohibited. This system is for the use authorized users only. Usage of this system may be monitored and recorded by system personnel.					
	Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence from such monitoring to law enforcement officials.					
	© 2011 - 2023 Avaya Inc. All rights reserved.					

• Navigate to **Device: EMS** and select **sa** from drop down to expand the configuration for Avaya SBC

Device: EMS Alarms 1 EMS sa N	Incidents Status V Logs V Troubleshooting V Border Controller	Users				Settings 🗸	Help Y	
EMS Dashboard Software Management Device Management System Administration	Device Management							
Templates	Device Name	Management IP	Version	Status				
Backup/Restore Monitoring & Logging	53	10.80.13.196	10.2.0.2-94-24441	Commissioned	Reboot Shutdow	n Restart Application	View Edit	Uninstall

4.2 Zoom Leg Configuration

4.2.1 Server Interworking for Zoom PBX

- Navigate to Configuration Profiles > Server Interworking
- Select the default Interworking Profile avaya-ru, click Clone
- Set Clone Name: **ZOOM interworking**
- Click Finish

Device: sa ⊻ Alarms <mark>1</mark>	Incidents Status ∨ Logs ∨ Trou	oleshooting 🗸 Users	Cione Profile X	Settings ♥ Help ♥ Log Out
Avaya Sessior	Border Controller	Profile Name Clone Name	avaya-ru ZOOM interworkinng	avaya
EMS Dashboard Software Management Device Management Backup/Restore System Parameters Configuration Profiles Domain DoS Server Interworking Media Forking Routing Topology Hiding Signaling Manipulation URI Groups SNMP Traps Time of Day Rules FGDN Groups Reverse Proxy Policy URN Profile	Interworking Profiles: avaya Add Interworking Profiles cs2100		Errish	
Recording Profile H248 Profile IP/URI Blocklist		Delayed SDP Handling Re-Invite Handling Prack Handling	No No	

- Select Zoom Interworking that we had created in above step
 Select General tab and click Edit

waya Session	Border Controlle	r		AVAY
1S Dashboard ftware Management vice Management	Add	DM interworking		Rename Clone Delet
ckup/Restore	Interworking Profiles cs2100		Click here to add a description.	
System Parameters		General Timers Privacy URI Manipulation	n Header Manipulation Advanced	
Configuration Profiles Domain DoS	avaya-ru ZOOM interworking	Refer Handling	No	
Server	PSTN INTERWORKING	URI Group	None	
Interworking	PSININIERWORKING	Send Hold	No	
Media Forking		Delayed Offer	Yes	
Routing Topology Hiding		3xx Handling	No	
Signaling		Diversion Header Support	No	
Manipulation		Delayed SDP Handling	No	
URI Groups		Re-Invite Handling	No	
SNMP Traps		Prack Handling	No	
Time of Day Rules FGDN Groups		Allow 18X SDP	No	
Reverse Proxy				
Policy		T.38 Support	No	
URN Profile		URI Scheme	SIP	
Recording Profile		Via Header Format	RFC3261	
H248 Profile		SIPS Required	No	
IP/URI Blocklist Profile		Mediasec	No	

- All parameters are set to default, refer the below figure
- Click on **Finish**

Device: sa 🗸 🛛 Alarms 💈	Incidents Status 🗸 Logs 🗸 Tro	Editing	Profile: ZOOM interworking	Settings V Help V Log Out
Avaya Sessio	on Border Controller	General Hold Support	None RFC2543 - c=0.0.0.0 RFC2543 - asondonly	Αναγα
MS Dashboard Coftware Management Device Management Sackup/Restore System Parameters Configuration Profiles Domain DoS Server Interworking Media Forking Routing Topology Hidting Signaling Manjoulation URI Groups SIMMP Traps Time of Day Rules FGDN Groups	Interworking Profiles: ZOO Add interworking Profiles cs2100 avaya-ru ZOOM Interworking PSTN INTERWORKING			Rename Cione Delete
Reverse Proxy Policy URN Profile Recording Profile H248 Profile IP/URI Blocklist Profile Services Domain Policies TLS Management Network & Flows DMZ Services Monitoring & Logaing		Prack Handling Aliow 18X SDP T.38 Support URI Scheme Via Header Format SIPS Required Mediasec Handling		

• Select Advanced tab and click Edit

Device: sa 🗸 Alarms 1	Incidents Status V Logs V T	roubleshooting V Users		Settings 🗸 Help 🖌 Log Out
Avaya Sessio	n Border Controlle	r		Αναγα
EMS Dashboard Software Management Device Management Backup/Restore > System Parameters Configuration Profiles	Interworking Profiles: ZOC Add Interworking Profiles cs2100 avgra-ru		Click here to add a description.	[Rename] Clone] Delete
Computation Promes Domain DoS Server Interworking Media Forking Routing Topology Hiding Signaling Manipulation URI Groups SNMP Traos	PSTN INTERWORKING	Record Routes Include End Point IP for Context Lookup Extensions Diversion Manipulation Has Remote SBC Route Response on Via Port MCBX Re-INVITE Handling NATing for 301/302 Redirection	Both Sides Yes None No Yes No Yes	
Time of Day Rules FGDN Groups Reverse Proxy Policy URN Profile Recording Profile H248 Profile		SaP Recording Relay INVTE Replace Conference URI Include Called Participant DTMF DTMF DTMF DTMF DTMF DTMF DTMF DTMF	No No	
IP/URI Blocklist Profile Services		DTMF Support	None	

- All parameters are set to default, refer the below figure
- Click on Finish

Device: sa 🗸 Alarms 2 Incidents Status 🗸 Logs 🗸 Tro	Editing Pro	ofile: ZOOM interworking X	Settings 🗸 Help 🖌 Log Out
Avaya Session Border Controller	Record Routes	 None Single Side ® both Sides Dialog-Initiate Only (Single Side) Dialog-Initiate Only (Both Sides) 	AVAYA
EMS Dashboard Interworking Profiles: ZOO Software Management Add	Include End Point IP for Context Lookup		Rename
Device Management	Extensions	None 🗸	tion.
Backup/Restore cs2100 C	Diversion Manipulation		
Configuration Profiles avaya-ru	Diversion Condition	None 🗸	
Domain DoS ZOOM interworking	Has Remote SBC	2	
Server PSTN INTERWORKING	Route Response on Via Port	0	
Media Forking	MOBX Re-INVITE Handling		
Routing Topology Hiding	NATing for 301/302 Redirection		
Signaling	SIP Recording		
Manipulation	-	0	
URI Groups SNMP Traps	Conference URI		
Time of Day Rules			
FGDN Groups	Include Called Participant		
Reverse Proxy Policy	DTMF		
URN Profile Recording Profile H248 Profile IP/URI Blocklist Profile	DTMF Support	None SIP Notify RFC 2833 Relay & SIP Notify SIP Info RFC 2833 Relay & SIP Info Inband	
Services		Finish	
Domain Policies TLS Management			
 Network & Flows 			
DMZ Services			
Monitoring & Logging			ित्र को हि

4.2.2 SIP Server

- Navigate to Services > SIP Servers
- Click Add
- Set Profile Name: zoom
- Click Next

Software Management Device Management Backup/Restore System Parameters 20	P Servers: zoom	General Authentication Heartbeat Registration Add Server Con Server Ty TLS Cien Profile Name Zoom	Ping Advanced Aguration Profile X		Rename Clone Delete
H248 Servers		DNS Quer Inbound Connection Neuse Holicy	Next		
LDAP RADIUS		IP Address / FQDN /CIDR Range	Port	Transport	Whitelist
Domain Policies		us01peer01.dv.zoom.us	5061	TLS	
TLS Management		us01peer01.ny.zoom.us	5061	TLS	
Network & Flows		us01peer01.sc.zoom.us	5061	TLS	
DMZ Services Monitoring & Logging			Edit		

- Set Server Type: Select **Trunk Server** from the drop down
- Set IP Address/FQDN/CIDR Range: Enter the **Zoom PBX FQDNs**
- Set Port: **5061**
- Set Transport: TLS
- Click **Finish**

	n Border Contro		Edit	SIP Server Profile - General		x		
MS Dashboard oftware Management	SIP Servers: zoom		Server Type can not be changed whit		7	Flow.		
evice Management ackup/Restore	Server Profiles	Add Gene	Server Type SIP Domain	Trunk Server V				Rename Clone Del
System Parameters Configuration Profiles Services	PSTN	Se TL	DNS Query Type Inbound Connection Reuse Policy	NONE/A V				
SIP Servers H248 Servers		DN	TLS Client Profile	ZOOM 🗸				
LDAP RADIUS		IP.	10 1 11 150011 (0100 D	Port Transport	Whitelist	Add	Transport	Whitelist
Domain Policies		us(IP Address / FQDN / CIDR Range us01peer01.dv.zoom.us	5061 TLS	VVnitelist	Delete	TLS	
FLS Management		us(us01peer01.ny.zoom.us	5061 TLS	✓	Delete	TLS	
Network & Flows DMZ Services Monitoring & Logging		usi	us01peer01.sc.zoom.us	5061 TLS	· ·	Delete	TLS	
Compliance				Finish				

- Navigate to SIP Servers > zoom > Advanced tab
- Click Edit
- Enable Grooming: Checked
- Signaling Manipulation Script: signaling manipulation 2 (Refer 4.2.12.2 FQDN to IP Manipulation)
- Interworking Profile: Select **ZOOM interworking**
- Click on **Finish**

Device: sa Y Alarms 1 In	ncidents Status Y Logs	✓ Troubleshooting ✓ User	S		Settings 🗸 Help 🖌 Log Out
Avaya Session	Border Contr	oller			Αναγα
EMS Dashboard Software Management Device Management Backup/Restore System Parameters Configuration Profiles Services SIP Servers LDAP RADIUS Domain Policies TLS Management Network & Flows DMZ Services Monitoring & Logging Compliance	SIP Servers: zoom		on Heartbeat Registration Ping Edit SIP Server Profile - Advanced	Advanced	Rename Cione Delete
Device: sa ∽ Alarms 1 Inci Avaya Session E	idents Status⊻ Logs Border Contre				Settings 👻 Holp 👻 Log Out
EMS Dashboard Software Management Device Management Backup/Restore System Parameters Configuration Profiles Services Services H248 Servers LDAP RADIUS Domain Policies TLS Management Network & Flows DMZ Services Monitoring & Logging Compliance	SIP Servers: zoom	Add General Authenticatio	Heartbeat Registration Ping IP Server Profile - Advanced IP Server	Advanced X envorking Edit	Rename Clone Delete

4.2.3Topology Hiding

- Navigate: Configuration Profiles > Topology Hiding
- Click Add
- Set Profile Name: zoom topology hiding
- Click Next



- Select the newly created profile **zoom topology hiding a**nd click **Edit**
- Overwrite Value: Replace the From header with ZOOM PBX Facing Public FQDN
- Click Finish

vaya 0033101	n Border Control				Edi	t Topology Hiding Pr	ofile	3	¢ .	AVAy
S Dashboard	Topology Hiding Profile	s: zoom topolog	Header	Criteria		Replace Action	Overwrit	e Value		
ce Management	Add		Via	✓ IP/Doma	in 🗸	Auto	~	Delete	Rer	name Clone Dele
up/Restore	Topology Hiding Profiles		SDP	✓ IP/Doma	in 🗸	Auto	~	Delete		
stem Parameters	default	Topology Hiding	То	✓ IP/Doma	in 🗸	Auto	~	Delete		
onfiguration Profiles	cisco_th_profile		Record-Route	✓ IP/Doma	in 🗸	Auto	~	Delete		
Domain DoS	zoom topology hiding	Header	Request-Line	✓ IP/Doma	in 🗸	Auto	~	Delete	Overwrite Value	
Server Interworking	PSTN TOPOLOGY HIDING	Via	Referred-By	✓ IP/Doma	in 🗸	Auto	~	Delete		
Media Forking Routing		SDP	Refer-To	✓ IP/Doma		Auto	~	Delete		
Topology Hiding		То	From	V IP/Doma		Overwrite	✓ s ¹	coi Delete		
Signaling		Record-Route								
Manipulation		Request-Line				Finish				
URI Groups		Referred-By		IP/Domain			Auto			
SNMP Traps		Refer-To		IP/Domain			Auto			
Time of Day Rules FGDN Groups		From		IP/Domain			Overwrite		sbc4.tekvizionlabs.co	m
Reverse Proxy							Edit			
Policy										
URN Profile										
Recording Profile										
H248 Profile										
IP/URI Blocklist Profile	_									

4.2.4 Routing

- Navigate to **Configuration Profiles > Routing**
- Click Add
- Set Profile Name: zoom2
- Click Next

IS Dashboard ftware Management	Routing Profiles: default						
vice Management	Add Routing Profiles			touting Profile		x	Clone
ckup/Restore System Parameters Configuration Profiles Domain DoS	default zoom2 PSTN	Profile Name	zoom2				Add
Server Interworking Media Forking Routing		1.	default	DNS/SRV	Auto-Detect	Transport Auto-Dete	
Topology Hiding Signaling Manipulation							
URI Groups SNMP Traps							
Time of Day Rules FGDN Groups Reverse Proxy							

- At Routing Profile Window, Click Add.
- Set Priority/Weight: 1, 2, 3.
 Select SIP Server Profile: zoom from the drop-down menu.
- Select Next Hop Address: Zoom PBX FQDN according to priority.
- Click **Finish**.

Device, sa + Alamis II III	oldenits otalius -	Logs • Houbleshooling •	03015			Settings + Heip + Log Out
Avaya Session	Border Cor		Pr	ofile : zoom2 - Edit Rule	;	AVAVA
		URI Group	* •	Time of Day	default 🗸	
EMS Dashboard	Routing Profiles	Load Balancing	Priority 🗸	NAPTR		
Software Management		Transport	None 🗸	LDAP Routing	0	Rename Clone Delete
Backup/Restore	Routing Profiles	LDAP Server Profile	None 🛩	LDAP Base DN (Search)	None 🗸	
System Parameters	default	Matched Attribute Priority		Alternate Routing		
Configuration Profiles Domain DoS	zoom2 PSTN	Next Hop Priority		Next Hop In-Dialog		Add
Server Interworking		Ignore Route Header	0			Transport
Media Forking Routing						TLS
Topology Hiding		ENUM	0	ENUM Suffix		TLS Edit Delete
Signaling Manipulation		Server Name Indication (SNI)		Server Name		TLS
URI Groups					Add	
SNMP Traps Time of Day Rules FGDN Groups		Priority LDAP Search / Attribute	LDAP Search Regex Pattern	LDAP Search SIP Sen Regex Result Profile	^{ver} Next Hop Address Transport	
Reverse Proxy		1		zoom	▼ us01peer01.ny▼ None ∨ Delete	
Policy URN Profile		2		zoom	✓ us01peer01.sc ✓ None ✓ Delete	
Recording Profile		3		zoom	♥ us01peer01.dv♥ None ♥ Delete	
H248 Profile IP/URI Blocklist Profile				Finish		

4.2.5 Media Rules

- Navigate to **Domain Policies > Media Rules**
- Select Media Rules **default-low-med** Click Clone
- Set Clone Name: SRTP-ZOOM
- Click on **Finish**

Device: sa 🗸 Alarms <mark>1</mark>	Incidents Status Y Logs Y	Troubleshooting Y Users			Settings 🗡 🛛 Help 🗡 Log Out
Avaya Sessior	n Border Contro	ller			Αναγα
EMS Dashboard Device Management Dackop Restore System Parameters Configuration Profiles Configuration Profiles Services Comain Policies Application Rules Border Rules Border Rules Media Rules Signating Rules Charging Rules Charging Rules End Point Policy Groups Session Policies	Media Rules: default-l Media Rules default-low-med default-low-med-enc default-high-enc avaya-low-med-enc SRTP-ZOOM dddddd	B B Clone Name Clone Name Clone Name Clone Name Auto Prefer Interworking Symmetric Context Reset Key Change in New Offer Preferred Formats Intervorking Symmetric Context Reset Key Change in New Offer Miscellaneous Copability Negotiation	Cione Rule default-low-med Str11=2200M Finish RTP RTP		
				Edit	

- Select newly created Media Rules **SRTP-ZOOM**
- Set Preferred Formats: SRTP_AES_CM_128_HMAC_SHA1_32, SRTP_AES_CM_128_HMAC_SHA1_80, RTP
- Set Encrypted RTCP: Checked
- Click on **Finish**.

			Media Encryption	X Settings V Help V Log Out
		Audio Encryption		
Avaya Sessio	n Border Controlle	Preferred Format #1	SRTP_AES_CM_128_HMAC_SHA1_32 V	Αναγα
		Preferred Format #2	SRTP_AES_CM_128_HMAC_SHA1_80 ~	
EMS Dashboard	Media Rules: SRTP-ZOON	Preferred Format #3	[RTP 🗸	
Software Management Device Management	Add	Encrypted RTCP		Rename Clone Delete
Backup/Restore	Media Rules	MKI		otion.
System Parameters	default-low-med	Lifetime Leave blank to match any value.	2^	
 Configuration Profiles Services 	default-low-med-enc default-high	Interworking		
 Domain Policies 	default-high-enc	Symmetric Context Reset		C_SHA1_32 C_SHA1_80
Application Rules Border Rules	avaya-low-med-enc	Key Change in New Offer		
Media Rules	SRTP-ZOOM	Video Encryption		
Security Rules	ddddd	Preferred Format #1	RTP	-
Signaling Rules Charging Rules		Preferred Format #2	NONE	
End Point Policy		Preferred Format #3	NONE	
Groups Session Policies		Encrypted RTCP		
TLS Management		WRI		
 Network & Flows DMZ Services 		Lifetime Leave blank to match any value.	2^	
Monitoring & Logging		Interworking		
Compliance		Symmetric Context Reset	2	
		Key Change in New Offer	0	
		Miscellaneous		
		Capability Negotiation		
			Finish	
				تهريق

4.2.6 End Point Policy Groups

- Navigate to **Domain Policies > End Point Policy Groups**
- Select **default-low** under Policy Groups
- Click Clone
- Set Clone Name: ZOOM SRTP
- Click Finish.

		Troubleshooting ~	0.00						Settings Help	
Avaya Session EMS Dashboard Software Management Device Management Backup/Restore > System Parameters Configuration Profiles > Genty and Profiles Software Rules Border Rules Border Rules Signaling Rules Charging Rules Charging Rules Charging Rules Charging Rules Signaling Rules Charging Rules TLS Management > Network & Flows > DIX Services > Monitoring & Logging > Compliance	Policy Groups: default-lo Ada Poley Group default-low default-med default-med default-med default-med default-med enc default-high default-med enc default-high-enc avaya-def-high-server ZOOM SRTP	w	ern Group Name Cione Name Application defauit	Border default	Clone Group default-low ZOOM SKITF Finish Mecka default-low-med	Security default low	X Signuling default	Charging None	RTCP Men Cen Of	Clone

- Select the newly created Group **ZOOM SRTP** and click **Edit**
- Set Media Rule: SRTP-ZOOM
- Click Finish

Device: sa 🗸 🛛 Alarms <mark>1</mark> II	ncidents Status 🛩 Logs 🛩 Trout	bleshooting Y Users			Setti	ngs 🗸 🐘 Help 🗸	Log Out
			Edit Policy Set	x			
Avaya Session	Border Controller	Application Rule	default 🗸		A		
		Border Rule	default 🗸				
EMS Dashboard	Policy Groups: ZOOM SRTP	Media Rule	SRTP-ZOOM 🗸				
Software Management Device Management	Add	Security Rule	default-low 🗸			Rename Clone	Delete
Backup/Restore	Policy Groups	Signaling Rule	default 🗸				
System Parameters	default-low	Charging Rule	None V				
Configuration Profiles	default-low-enc	cv C RTCP Monitoring Report Generation	Off V				
Services	default-med	cy c Trior montoning report contribution		_			
Domain Policies Application Rules	default-med-enc		Finish			Sum	nmary
Border Rules	default-high	rder Application Border	Media Security	Signaling	Charging	RTCP Mon Gen	
Media Rules	default-high-enc	D default default	SRTP-ZOOM default-low	default	None	Off	Edit
Security Rules	avaya-def-low-enc						
Signaling Rules Charging Rules	avaya-def-high-subscriber						
End Point Policy	avaya-def-high-server						
Groups	ZOOM SRTP						
Session Policies							
 TLS Management Network & Flows 							
DMZ Services							
Monitoring & Logging							
Compliance							

4.2.7 Network Management

- Navigate to Network & Flows > Network Management > Networks
- Click Add. A window will appear titled Add Network
- Set Name: WAN is given for the network facing ZOOM PBX
- Set Default Gateway: **192.65.XX.XX**
- Set Network Prefix or Subnet Mask: 255.255.255.XXX
- Set Interface: A1
- Set IP Address: 192.65.XX.XX facing ZOOM PBX
- Click Finish

Device: sa ⊻ Alarms <mark>1</mark>	Incidents Status V Logs V Tro	ubleshooting 🛩 Users					Settin	js ❤ Help ❤ Log O
Avaya Sessio	n Border Controller							AVAYA
EMS Dashboard	Network Management			Add Network		x		
Software Management		Name		WAN				
Device Management Backup/Restore	Interfaces Networks	Default Gateway		192.65.				
System Parameters		Network Prefix or Subn	et Mask	255.255.255.1				Add
Configuration Profiles	Name	Interface		A1 ¥			IP Address	
Services Domain Policies	1000	interface						Edit Delete
TLS Management						Add		
Network & Flows		IP Address	Public IP	Gateway Override	Passthroug	h		
Network Management		192.65.7	Use IP Addres	s Use Default		Delete		
Media Interface				Finish				
Signaling Interface						_		
End Point Flows								
Session Flows								
Advanced Options								
DMZ Services								
Monitoring & Logging								
Compliance								

4.2.8 Media Interface

- Navigate to Network & Flows > Media Interface. Click Add
- Set Name: A1_ZOOM is given here
- Set IP Address: Select WAN(A1,VLAN0) from the drop down and the IP address populates automatically. The IP address for Interface facing ZOOM PBX is **192.65.XX.XX**
- Set Port Range: **35000-40000**
- Click Finish.

Device: sa 🗸 Alarms 🚺 In	cidents Status 🛩 Logs 🛩 Tr	roubleshooting Y Users			Settings 🗸 Help 🖌 Log Out
Avaya Session	Border Controlle	r			Αναγα
EMS Dashboard Software Management	Media Interface				
Device Management	Media Interface		Edit Media Interface	x	
Backup/Restore System Parameters 		Name	A1_ZOOM		Add
 Configuration Profiles Services 	Name	IP Address	WAN (A1, VLAN 0)	Port Range	
 Domain Policies TLS Management 	A1_ZOOM	Port Range	35000 - 40000	35000 - 40000	Edit Delete
 Network & Flows Network Management 	B1_PSTN		Finish	35000 - 40000	Edit Delete
Media Interface					
Signaling Interface End Point Flows					
Session Flows					
Advanced Options					
DMZ Services					
Monitoring & Logging					
Compliance					

4.2.9 Signaling Interface

- Navigate to Network & Flows > Signaling Interface. Click Add, a new Add Signaling Interface window appears
- Set Name: **ZOOM_A1** is given for the interface facing **ZOOM PBX**
- Set IP Address: Select WAN(A1,VLAN0)
- Set TLS Port: **5061**
- Click Finish

Device: sa 🗸 🛛 Alarms 💈		oubleshooting 🛩 Users						
			Edit Signaling Interface	x				
Avaya Session	n Border Controlle	Name	ZOOM_A1				1	AVAYA
EMS Dashboard	Signaling Interface	IP Address	WAN (A1, VLAN 0)					
Software Management Device Management	Ŭ Ŭ	TCP Port Leave blank to disable						
Backup/Restore	Signaling interface	UDP Port Leave blank to disable						
 System Parameters Configuration Profiles 		TLS Port Leave blank to disable	5061					Add
Services	Name	TLS Profile	ZOOM 🗸		S Port	TLS Profile		
 Domain Policies TLS Management 	ZOOM_A1	Enable Shared Control			51	ZOOM		dit Delete
 Network & Flows 	PSTN_B1	Shared Control Port				None		dit Delete
Network Management Media Interface			Finish					
Signaling Interface								
End Point Flows								
Session Flows								
Advanced Options								
DMZ Services								
Monitoring & Logging								

4.2.10 End Point Flow

- Navigate to Network & Flows > End Point Flows > Server Flows and Click Add
- Set Flow Name: **ZOOM-PSTN**
- Set SIP Server Profile: zoom
- Received Interface: PSTN_B1
- Signaling Interface: **ZOOM_A1**
- Media Interface: A1_ZOOM
- End Point Policy Group: ZOOM SRTP
- Routing Profile: **PSTN**
- Topology Hiding Profile: zoom topology hiding
- Signaling Manipulation Script: manipulation zoom (Refer 4.2.12.1 Signaling Manipulation)
- Link Monitoring from Peer: Checked
- FQDN Support: Checked
- FQDN: sbc4.tekvizionlabs.com
- Leave the other parameters set to default.
- Click on Finish

Device: sa ∨ Alarms 1	Incidents Status ✓ Logs ✓ Troublesho				Settings 🗸 🛛 Help 🗸	Log Out		
Avaya Session	n Border Controller		Edit Flow: ZOOM-PSTN	x			A۱	/AYA
EMS Dashboard Software Management Device Management Backup/Restore > System Parameters > Configuration Profiles > Services > Domain Policies > TLS Management https://www.www.www.www.www.www.www.www.www.w	End Point Flows Subscriber Flow Subscriber Flow Filter Modifications made to a Server Flow will only SIP Server: PSTN Priority Flow Name Priority Flow Name SIP Server: zoom Priority Flow Name 2 ZOOM-PSTN	Flow Name SIP Server Profile URI Group Transport Remote Subnet Received Interface Signaling Interface Media Interface End Point Policy Group Routing Profile Topology Hiding Profile Signaling Manipulation Script Remote Branch Office Link Monitoring from Peer FQDN Support FQDN	ZOOM-PSTN zoom V * V * V PSTN_B1 V ZOOM_A1 V A1_ZOOM V None V ZOOM SRTP V PSTN V ZOOM topology hiding V manipulation zoom V Any V Ensist Finish		olay Grap P	Routing Profile zoom2	View Clone Edit	

4.2.11 TLS Profile

4.2.11.1 Generate CSR

• Navigate: TLS management > Certificates. Click Generate CSR.

Device: sa ∽ Alarms <mark>2</mark>	ncidents Status V Logs V Troubleshooting V Users	Settings ∨ H	lelp 🗸	' Loạ	g Out
Avaya Session	Border Controller		A	VA	/Α
EMS Dashboard Software Management Device Management Backup/Restore	Certificates	Install	Ger	nerate C	SR
 System Parameters Configuration Profiles Services Domain Policies 	Installed Certificates sbc4.pem Installed CA Certificates		View I	Delete	Î
TLS Management Certificates Client Profiles	DigiCertGlobalRootG2.crt zoom2.pem	١	View I	Delete Delete	
Server Profiles SNI Group Network & Flows	entrust_g2_ca.cer avayaitrootca2.pem zoom1.pem	1	View I	Delete Delete Delete	
 DMZ Services Monitoring & Logging Compliance 	root.pem AvayaDeviceEnrollmentCAchain.crt			Delete Delete	
	Installed Certificate Revocation Lists No certificate revocation lists have been installed. Installed Certificate Signing Requests				
	sbc4 tekvizionlabs com req			Delete	
- Set Country Name: **US**
- State/Province Name: **Texas**
- Locality Name: Plano
- Organization Name: Tekvizion
- Organizational Unit: lab
- Common Name: sbc4.tekvizionlabs.com
- Select Algorithm: SHA256
- Select Key Size (Modulus Length): 2048 bits
- In Key Usage Extension(s): Key Encipherment, Non-Repudiation, Digital Signature is checked
- In Extended Key Usage: Server Authentication, Client Authentication is checked
- Subject Alt Name: DNS: sbc4tekvizionlabs.com
- Set Passphrase & Confirm Passphrase: XXXXX
- Click Generate CSR

	Generate CSR X
Country Name	US
State/Province Name	Texas
Locality Name	Plano
Organization Name	Tekvizion
Organizational Unit	lab
Common Name	sbc
Algorithm	SHA256
Key Size (Modulus Length)	 2048 bits 4096 bits
Key Usage Extension(s)	 Key Encipherment Non-Repudiation Digital Signature
Extended Key Usage	Server AuthenticationClient Authentication
Subject Alt Name	DNS:sbc4
Passphrase	
Confirm Passphrase	[····•]
Contact Name	
Contact E-Mail	
	Generate CSR

4.2.11.2 Certificates Upload

- Navigate: TLS management > Certificates. Click Install
- Set Type: Select CA Certificate
- Set Name: zoom1
- Set Allow weak Certificate/Key: checked
- Set Certificate File: Click Choose File to select DigiCertGlobal1.crt.pem
- Click Upload

Device: sa ∨ Alarms 1 I	incidents Status 🗸 Logs 🗸 Tri	oubleshooting 🗸 Users		Settings 🗸 Help 🖌	Log Out
Avaya Session	Border Controlle	r		A	VAYA
EMS Dashboard Software Management	Certificates		Install Certificate	X Install Gen	nerate CSR
Device Management Backup/Restore System Parameters	Certificates	Туре	Certificate CA Certificate Certificate Certificate Revocation List		
 Configuration Profiles Services 	Installed Certificates sbc4.pem	Name Overwrite Existing	zoom1	View	/ Delete
Domain Policies TLS Management	Installed CA Certificates DigiCertGlobalRootG2.crt	Allow Weak Certificate/Key	2	View	/ Delete
Certificates Client Profiles	zoom2.pem entrust g2_ca.cer	Certificate File	Choose File DigiCertGlobal1.crt.pem		
Server Profiles SNI Group	avayaitrootca2.pem		Upload		
 Network & Flows DMZ Services 	zoom1.pem root.pem				/ Delete
 Monitoring & Logging Compliance 	AvayaDeviceEnrollmentCAchain.crt				/ Delete

- Navigate: TLS management > Certificates. Click Install
- Set Type: Select CA Certificate
- Set Name: **zoom2**
- Set Allow weak Certificate/Key: checked
- Set Certificate File: Click Choose File to select DigiCertGlobalRootG2.crt.pem
- Click Upload

Device: sa ∨ Alarms 1 Ir	ncidents Status 🗸 Logs 🗸 Tro	ubleshooting Y Users			Settings 🗸 Help 🖌 Log Out
Avaya Session	Border Controller				AVAYA
EMS Dashboard Software Management	Certificates	_	Install Certificate	x	Install Generate CSR
Device Management Backup/Restore > System Parameters	Certificates	Туре	Certificate CA Certificate Cartificate Certificate Revocation List		
 Configuration Profiles Services 	Installed Certificates sbc4.pem	Name Overwrite Existing	zoom2		View Delete
Domain Policies TLS Management Certificates	Installed CA Certificates DigiCertGlobalRootG2.crt	Allow Weak Certificate/Key Certificate File			View Delete
Client Profiles Server Profiles	zoom2.pem entrust_g2_ca.cer	Certificate File	Choose File DigiCertGlootG2.crt.pem		View Delete View Delete
SNI Group Network & Flows DMZ Services	avayaitrootca2.pem zoom1.pem				View Delete View Delete
 Monitoring & Logging Compliance 	root.pem AvayaDeviceEnrollmentCAchain.crt				View Delete View Delete

- Set Type: Select CA Certificate
- Set Name: root (i:e Go daddy intermediate certificate)
- Set Allow weak Certificate/Key: checked
- Set Certificate File: Click Choose File to select gd-g2_iis_intermediates.pem
- Click Upload

waya Sessio	n Border Controlle	r			AVAy
MS Dashboard	Certificates				
oftware Management			Install Certificate	x	Install Generate C
vice Management ckup/Restore	Certificates		Certificate		
System Parameters	Installed Certificates	Туре	CA Certificate Certificate Revocation List		
Configuration Profiles	sbc4.pem				View Dele
Services		Name	root		
omain Policies	Installed CA Certificates	Overwrite Existing			
LS Management	DigiCertGlobalRootG2.crt	Allow Weak Certificate/Key			View Dele
Certificates Client Profiles	zoom2.pem	Certificate File	Choose File gd-g2_iis_inates (1).pem		
Server Profiles	entrust_g2_ca.cer	Geruncate File			View Delet
SNI Group	avayaitrootca2.pem		Upload		
letwork & Flows	zoom1.pem			_	View Dele
MZ Services	root.pem				
Ionitoring & Logging	AvavaDeviceEnrollmentCAchain.cr				

- Navigate: TLS management > Certificates. Click Install
- Set Type: Select Certificate
- Set Name: sbc4
- Set Allow weak Certificate/Key: Checked
- Set Certificate File: Click Choose File to select sbc4.pem
- Set Key: Use Existing Key
- Select Key file: sbc4.key
- Click Upload

Device: sa 🗸 🛛 Alarms <mark>1</mark>	Incidents Status V Logs V Troub	leshooting Y Users			Settings 🗸 Help 🖌 Log Ou
Avaya Sessio	n Border Controller				AVAYA
EMS Dashboard Software Management	Certificates		Install Certificate	x	Install Generate CSR
Device Management Backup/Restore > System Parameters	Certificates Installed Certificates	Туре	Certificate CA Certificate Certificate Certificate Revocation List		
Configuration Profiles Services	sbc4.pem	Name	sbc4		View Delete
Ormain Policies TLS Management Certificates Client Profiles SNI Group Network & Flows DMZ Services Monitoring & Logging Compliance	Installed CA Certificates DigiCertGlobaRootS2 crt zoom2 pem entrust_g2_ca.cer avayatizota22 pem zoom1 pem root.pem AvayaDeviceEnrollmentCAchain.crt Installed Certificate Revocation Lists	Overwrite Existing Allow Vleak Certificate/Key Certificate File Trust Chain File Key Key File	Choose File sbc4 pem Choose File sbc4 pem Choose File No file chosen Use Existing Key Uspload Key File sbc4 key v		View Delete View Delete View Delete View Delete View Delete View Delete
	No certificate revocation lists have been	installed.			

4.2.11.3 Client Profile

- Navigate to TLS management > Client Profiles and Click Add
- Set Profile Name: ZOOM is given for interface facing ZOOM PBX
- Set **Certificate**: Select server certificate **sbc4.pem** for Avaya SBC interface facing ZOOM PBX
- Set **Peer Certificate Authorities**: Select **zoom1.pem**, **zoom2.pem**, **root.pem** which is uploaded in previous step
- Set Verification Depth: 1
- Click Next

Device: sa 🗸 🛛 Alarms <mark>1</mark> Ir					
			New Profile)		
Avaya Session	Border Controller	WARNING: Due to the way OpenSSL pass even if one or more of the cipher sure to carefully check your entry as in may cause catastrophic problems.	handles cipher checking, Cipher Suite validation will s are invalid as long as at least one cipher is valid. Make valid or incorrectly entered Cipher Suite custom values	AVAY	
EMS Dashboard Software Management	Client Profiles: ZOOM	TLS Profile			
Device Management	Add Client Profiles	Profile Name	ZOOM	Delete dd a description	
Backup/Restore System Parameters	ZOOM	Certificate	sbc4.pem 🗸	au a sessinjular.	
 Configuration Profiles Services 		SNI	Enabled		
 Domain Policies 		Certificate Verification Peer Verification	Required	I	
TLS Management Certificates		Peer Certificate Authorities	avayaitrootca2.pem		
Client Profiles Server Profiles		Peer Certificate Authorities	root pem AvayaDeviceEnrollmentCAchain.crt		
SNI Group A Network & Flows Network Management		Peer Certificate Revocation Lists	▲ ▼		
Media Interface Signaling Interface		Verification Depth	1		
End Point Flows		Extended Hostname Verification	0		
Session Flows Advanced Options		Server Hostname			
 DMZ Services Monitoring & Logging 			Next		
Compliance		Renegotiation Byte Count	0		

- Set Version: Select TLS 1.2, TLS 1.3 versions
- Click Finish

	New Profile	x
Renegotiation Parameters		
Renegotiation Time	0 seconds	
Renegotiation Byte Count	0	
Handshake Options		
Version	TLS 1.3 TLS 1.2	
Ciphers	Default O FIPS O Custom	
Value (What's this?)	DEFAULT:ISHA	
	Back Finish	

4.2.11.4 Server Profile

- Navigate: TLS management > Server Profiles. Click Add
- Set Profile Name: **ZOOM** is given for interface facing Zoom
- Set Certificate: Select server certificate **sbc4.pem** for Avaya SBC interface facing ZOOM
- Click on Next

Device: sa 🗸 Alarms 1 Ir			ng 🗸 Users			
				New Profile	X	
Avaya Session	Border Controller	r	WARNING: Due to the way OpenSSL pass even if one or more of the cipher sure to carefully check your entry as in may cause catastrophic problems.	handles cipher checking, Cipher Suite vali s are invalid as long as at least one cipher valid or incorrectly entered Cipher Suite o	dation will is valid, Make ustom values	Αναγα
EMS Dashboard	Server Profiles: ZOOM		TLS Profile			
Software Management Device Management	Add		Profile Name	ZOOM		Delete
Backup/Restore	Server Profiles		Certificate	sbc4.pem	~	ption.
 System Parameters Configuration Profiles 		Server Pr	SNI Options	None 🗸		
Services		TLS Pro	SNI Group	None 🛩		
Domain Policies		Profile N				
 TLS Management 		Certifica	Certificate Verification		_	
Certificates		SNI Opt	Peer Verification	None 🗸		
Client Profiles Server Profiles		Certifica	Peer Certificate Authorities	avayaitrootca2.pem zoom1.pem	4	
SNI Group		Peer Ve	Teel Cerdicate Additities	root.pem AvayaDeviceEnrollmentCAchain.crt	-	
 Network & Flows 		Extende				
Network Management			Peer Certificate Revocation Lists			
Media Interface		Renego				
Signaling Interface End Point Flows		Renego	Verification Depth			
Session Flows		Renego				
Advanced Options		Handsh		Next		
 DMZ Services Monitoring & Logging 		Version		TLS 1.3	TLS 1.2	
 Wonitoring & Logging Compliance 		Ciphers		Default	O FIPS O	Custom
		Value		DEFAULT:IS	на	

- Set Version: Select TLS 1.2, TLS 1.3 versions
- Click **Finish**

	New Profile	x
Renegotiation Parameters		
Renegotiation Time	0 seconds	
Renegotiation Byte Count	0	
Handshake Options		
Version	TLS 1.3 TLS 1.2	
Ciphers	Default FIPS Custom	
Value (What's this?)	DEFAULT: ISHA	
	Back Finish	

Edit SIP Server

- Navigate to Services > SIP Servers
- Select Server Profiles: zoom
- Under General tab and Click Edit
- Set Server Type: Select Trunk Server from the drop down
- Set TLS Client Profile: **ZOOM**
- Set IP Address/FQDN/CIDR Range: Enter the ZOOM PBX FQDN's
- Set Transport: Select TLS from Dropdown
- Set Port: 5061
- Set TLS Client Profile: Select Client Profile ZOOM
- Click Finish



Edit Signaling Interface

- Navigate to Network & Flows > Signaling Interface
- Select interface ZOOM_A1
- Click Edit

Configuration Profiles Numo Signaling IP tetoen TCP Port UDP Port TLS Port TLS Profile SIP Servers GOM_A1 WAN (AT VLAN 0) 5080 5080 5081 ZOOM Edit Dot	Avaya Sessio	on E	Border Controlle	r					AVAY
Backup/Restore Signaling Interface > System Parameters Nameo > Configuration Profiles Signaling Interface > Services Signaling Interface Nameo Signaling Interface IZOM_A1 WAR (ST, VLAR 6) DAP RADIUS Bomain Policies - - TLS Management Cientif Policies Servier Profiles - Servier Servers - Nome Edit Delt - TLS Management - Offentations - Network Flows Network Flows Network Flows Metwork Flows			Signaling Interface						
backLypinestore System Pranmeters > Configuration Profiles SiPS prevers H248 Servers LDAP RADUS > Domain Policies T.S. Management Cellificates Cilent Profiles SNI Group Network & Flows Network & Flows Network & flows			Signaling Interface						
Configuration Profiles Services SiP Servers H248 Servers LDAP RADIUS Domain Policies TLS Management Certificates Client Profiles Server Profiles SiNi Group Network & Flows Network Management Media Interface Media Interface Client Profiles Server Profiles Sini Group									Add
Services SiP Servers SiP Servers LDAP RADIUS Domain Policies TCS Management Certificates Silver Profiles Server Profiles Server Profiles Sit Group Name Name Name Name Server Profiles Sit Group Name Name Name Name Server Profiles Sit Group Name Name Server Profiles Sit Group Name Name Site Server Site									Add
H248 Servers LOAP VAA (X, V, AA (s) 3000 3001 LOAR Loan Can Can RADIUS Domain Policies TLS Management Certificates Cilent Profiles SNI Group Network & Flows Network & Flows Media Interface	÷		Name	Signaling IP Network	TCP Port	UDP Port	TLS Port	TLS Profile	
H248 Servers LDAP RADIUS Domain Policies TLS Management Certificates Sin Group Network & Flows Network Management Media Interface	SIP Servers		ZOOM_A1	WAN (44 15 11 0)	5060	5060	5061	ZOOM	Edit Delete
ADIUS Domain Policies TLS Management Certificates Cilent Profiles Server Profiles Server Profiles Network Management Media Interface	H248 Servers		-	WAR (AL, YEAR 0)					
Domain Policies TLS Management Certificates Silent Profiles SNI Group Network & Flows Network Management Media Interface	LDAP		PSTN_B1	LAN (B1, VLAN 0)	5060	5060		None	Edit Delete
TLS Management Certificates Silient Profiles Server Profiles SNI Group Network & Flows Network Management Media Interface	RADIUS								
Certificates Client Profiles Server Profiles SNI Group Network & Flows Network Management Media Interface									
Client Profiles Server Profiles SNI Group Network & Flows Network Management Media Interface	-								
Server Profiles SNI Group Network & Flows Network Management Media Interface									
SNI Group Network & Flows Network Management Media Interface									
Network & Flows Network Management Media Interface									
Network Management Media Interface									
Management Media Interface									
Media Interface									
	-								
Signaling Interface									
End Point Flows									
	Session Flows	T							

- Set TLS Port: 5061.
 Set TLS Profile: Select ZOOM from the drop-down menu.
- Click Finish.

E	dit Signaling Interface X
Name	ZOOM_A1
IP Address	WAN (A1, VLAN 0)
TCP Port Leave blank to disable	5060
UDP Port Leave blank to disable	5060
TLS Port Leave blank to disable	5061
TLS Profile	ZOOM 🗸
Enable Shared Control	
Shared Control Port	
	Finish

4.2.12 Signaling Manipulation

The signaling manipulation feature provides the ability to add, change and delete any of the headers and other information in SIP messages. This feature addresses the interop issues.

4.2.12.1 SIP OPTIONS URI Manipulation

Zoom PBX expecting the request URI and To URI with resolved IP address of configured FQDN for OPTIONS heartbeat request, below sigma script is created to send OPTIONS message with resolved IP address of Zoom PBX. (Refer 4.2.10 End point Flow)

- Navigate to Configuration Profiles > Signaling Manipulation > manipulation zoom
- Below is the "manipulation zoom" script that is used in this test

Device: sa ∨ Alarms 1	Incidents Status V Logs V Tr	ubleshooting Y Users	Settings 🗸 🛛 Help 🖌 Log Out
Avaya Session	n Border Controlle		AVAYA
EMS Dashboard Software Management	Signaling Manipulation Sc	ipts: manipulation zoom	
Device Management	Upload Add Signaling Manipulation Scripts	Click here to add a description	Download Clone Delete
BackupRestore System Parameters Configuration Profiles Domain DoS Server Interworking Media Forking Routing Topology Hiding Signaling URI Groups URI Groups Time of Day Rules FGDN Groups Reverse Proxy Policy URN Profile Recording Profile H248 Profile	international call manipulation zoom1 signaling manipulation 2 manipulation zoom	Signaling Manipulation	
IP/URI Blocklist Profile			

```
Title manipulation zoom
    1 within session "ALL"
     2
     3
         act on message where %DIRECTION="OUTBOUND" and %ENTRY_POINT="POST_ROUTING" and %METHOD="OPTIONS"
   4
5
7
8
9
          {
              if(%REMOTE_IP ="162.12. ")then
              {
                    %HEADERS["Request_Line"][1].URI.HOST = "162.12."";
%HEADERS["To"][1].URI.HOST = "162.12.";
  10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

}
             }
              if(%REMOTE_IP ="162.12. ")then
              {
                    %HEADERS["Request_Line"][1].URI.HOST = "162.12. 5";
%HEADERS["To"][1].URI.HOST = "162.12.: ";
             }
             if(%REMOTE_IP ="162.12.1 ")then
              {
                   %HEADERS["Request_Line"][1].URI.HOST = "162.12.";
%HEADERS["To"][1].URI.HOST = "162.12.";
         }
```

```
within session "ALL"
{
act on message where %DIRECTION="OUTBOUND" and %ENTRY_POINT="POST_ROUTING" and
%METHOD="OPTIONS"
{
if(%REMOTE_IP ="162.12.XX.XX")then
{
%HEADERS["Request_Line"][1].URI.HOST = "162.12.XX.XX";
%HEADERS["To"][1].URI.HOST = "162.12.XX.XX";
}
if(%REMOTE_IP ="162.12.XX.XX")then
{
%HEADERS["Request_Line"][1].URI.HOST = "162.12.XX.XX";
                     %HEADERS["To"][1].URI.HOST = "162.12.XX.XX";
                                           }
if(%REMOTE_IP ="162.12.XXX.XX")then
                                           {
%HEADERS["Request_Line"][1].URI.HOST = "162.12.XX.XX";
                     %HEADERS["To"][1].URI.HOST = "162.12.XX.XX";
                                           }
                                           }
                                           }
```

4.2.12.2 FQDN to IP Translation

Avaya SBC uses SIGMA configuration to translate the FQDN to its IP address at the ingress. This translation is required for all In-dialog requests coming from Zoom. Without this SIGMA properly configured, In-dialog request coming from Zoom would be rejected with appropriate error response. For an example, in a Zoom to PSTN active call through Avaya SBC, In-Dialog request BYE coming from Zoom to terminate the call will be rejected, caused the SIP session towards PSTN will remain active until it is disconnected by the PSTN user. (Refer 4.2.2 SIP Server)

- Navigate to Configuration Profiles > Signaling Manipulation > signaling manipulation 2
- Below is the "signaling manipulation 2" script that is used in this test

Device: sa ∽ Alarms 1	ncidents Status 🗸 Logs 🗸 Troub	leshooting ✓ Users	Settings 🏏 Help 🌱 Log Out
Avaya Session	Border Controller		AVAYA
EMS Dashboard Software Management Device Management Backup/Restore ■ Oxytem Parameters ■ Oxytem Parameters ■ Oxytem Parameters ■ Oxytem Parameters ■ Oxytem Parameters ■ Oxytem Parameters Domain DoS Server Intervorking Manajoulation URI Groups SNNIP Traps Time of Day Rules FGDN Groups Reverse Proxy Palicy URN Profile Recording Profile H248 Profile	Upload Add Signaling Manipulation Scripts	is: signalling manipulation 2 Circk here to add a description ignaling Manipulation	[Download][Clone][Delete]
IP/URI Blocklist Profile			



```
within session "all"
{
    act on message where %DIRECTION="INBOUND" and %ENTRY_POINT="AFTER_NETWORK"
    {
        %HEADERS["Request_Line"][1]. URI.HOST = "192.65.XX.XX";
    }
}
```

4.3 PSTN Leg Configuration

4.3.1 Server Interworking for PSTN Gateway

- Navigate to Configuration Profiles > Server Interworking
- Select the default Interworking Profile avaya-ru, click Clone
- Set Clone Name: PSTN INTERWORKING
- Click **Finish**

evice: sa ∽ Alarms <mark>1</mark> Ine	cidents Status 🛩 Logs 🛩 Troi	ubleshooting Y Users	Clone Profile	x	Settings 🗸 Help 🖌 Log Oul
Avaya Session	Border Controller	Profile Name	avaya-ru		AVAVA
•		Clone Name	PSTN INTERWORKIN		,
MS Dashboard Anagement	Interworking Profiles: avaya	a-ru	Finish		Clone
evice Management	Interworking Profiles	It is not recommended to edit the default-	s. Try cloning or adding a new profile instead.		
ackup/Restore System Parameters					
Configuration Profiles	avaya-ru	General Timers Privacy URI	Manipulation Header Manipulation Advanced		
Domain DoS	ZOOM interworking	General			
Server Interworking	PSTN INTERWORKING	Hold Support	None		
Media Forking		180 Handling	None		
Routing		181 Handling	None		
Topology Hiding		182 Handling	None		
Signaling		183 Handling	None		
Manipulation		Refer Handling	No		
URI Groups SNMP Traps		URI Group	None		
Time of Day Rules		Send Hold	No		
FGDN Groups		Delayed Offer	Yes		
Reverse Proxy		3xx Handling	No		
Policy		Diversion Header Support	No		
URN Profile		Delayed SDP Handling	No		
Recording Profile H248 Profile		Re-Invite Handling	No		
IP/URI Blocklist		Prack Handling	No		
Profile		Flack nationing	NO		

- Select Server Interworking: PSTN INTERWORKING
- Select General tab and click Edit

vaya Sessio	n Border Controlle	r		AVAY
S Dashboard tware Management vice Management	Interworking Profiles: PS	IN INTERWORKING		Rename Clone Delet
ckup/Restore	Interworking Profiles		Click here to add a description.	
System Parameters	cs2100	General Timers Privacy URI Manipulatio	n Header Manipulation Advanced	
Configuration Profiles Domain DoS	avaya-ru	Refer Handling	No	
Server	ZOOM interworking	URI Group	None	
Interworking	PSTN INTERWORKING	Send Hold	No	
Media Forking		Delayed Offer	Yes	
Routing				
Topology Hiding		3xx Handling	No	
Signaling		Diversion Header Support	No	
Manipulation URI Groups		Delayed SDP Handling	No	
SNMP Traps		Re-Invite Handling	No	
Time of Day Rules		Prack Handling	No	
FGDN Groups		Allow 18X SDP	No	
Reverse Proxy		T.38 Support	No	
Policy		UBI Scheme	SIP	
URN Profile	•	Via Header Format	RFC3261	
Recording Profile				
H248 Profile		SIPS Required	Yes	
IP/URI Blocklist Profile		Mediasec	No	

- All the parameters are set to default, refer the below figure
- Click on **Finish**

Device: sa ∽ Alarms 1 II	ncidents Status 🗸 Logs 🖌 Troublesho		Profile: PSTN IN TERWORKING	Settings 🗸 Help 🖌 Log Out
Avaya Session	Border Controller	General		Αναγά
EMS Dashboard Software Management	Interworking Profiles: PSTN INTE	Hold Support	 None RFC2543 - c=0.0.0.0 RFC3264 - a=sendonly Microsoft Teams 	
Device Management	Add	180 Handling	None O SDP O No SDP	Rename
Backup/Restore	Interworking Profiles	181 Handling	None O SDP O No SDP	ption.
 System Parameters Configuration Profiles 	Genera	182 Handling	None O SDP O No SDP	
Domain DoS	ZOOM interworking Hold	183 Handling	None O SDP O No SDP	
Server Interworking	PSTN INTERWORKING 180 H	Refer Handling		1
Media Forking Routing	181 #	URI Group	None V	
Topology Hiding	182 1	Send Hold		
Signaling Manipulation URI Groups	183 H	Delayed Offer		
SNMP Traps	Refe	3xx Handling		
Time of Day Rules		Diversion Header Support		
FGDN Groups Reverse Proxy Policy		Delayed SDP Handling	0	
URN Profile	3xx H	Re-Invite Handling		
Recording Profile		Prack Handling	0	
H248 Profile IP/URI Blocklist Profile	Delay	Allow 18X SDP		
 Services 	Re-Ir	T.38 Support		
Domain Policies	Prace	URI Scheme		
 TLS Management Network & Flows 	A	URI Scheme	● SIP ○ TEL ○ ANY	
 DMZ Services 	T.38	Via Header Format	RFC3261 RFC2543	
Monitoring & Logging	URI S Via H	SIPS Required		
Compliance	SIPS	Mediasec Handling		
	Medi		Finish	
			Edit	

• Select Advanced tab and click Edit

Avaya Session	Border Controlle	r		AVAYA
EMS Dashboard Software Management Device Management Backup/Restore	Interworking Profiles: PST Add Interworking Profiles cs2100		Click here to add a description.	Rename Clone Delete
 System Parameters Configuration Profiles 	avaya-ru	General Timers Privacy URI Manipulation Header	Manipulation Advanced	
Domain DoS	ZOOM interworking	Record Routes	Both Sides	
Server Interworking	PSTN INTERWORKING	Include End Point IP for Context Lookup	Yes	
Media Forking		Extensions	Avaya	
Routing		Diversion Manipulation	No	
Topology Hiding		Has Remote SBC	Yes	
Signaling Manipulation				
URI Groups		Route Response on Via Port	No	
SNMP Traps		MOBX Re-INVITE Handling	No	
Time of Day Rules FGDN Groups		NATing for 301/302 Redirection	Yes	
Reverse Proxy Policy		SIP Recording		
URN Profile		Relay INVITE Replace	No	
Recording Profile			NU	
H248 Profile		Conference URI		
IP/URI Blocklist Profile		Include Called Participant	No	
Services		DTMF		
Domain Policies		DTMF Support	None	
TLS Management				
Network & Flows			Edit	
DMZ Services				
Monitoring & Logging				

- All the parameters are set to default, refer the below figure
- Click on **Finish**

Device: sa 🗸 🛛 Alarms 🚹 Ir			ile: PSTN INTERWORKING X	
	Doudou Contuollou	Editing Prof		
AVaya Session EMS Dashboard Software Management	Border Controller	Record Routes	None Single Side Both Sides Dialog-Initiate Only (Single Side) Dialog-Initiate Only (Both Sides)	AVAYA
Device Management	Add	Include End Point IP for Context Lookup		Rename Clone Delete
Backup/Restore	Interworking Profiles	Extensions	Avaya 🗸	otion.
System Parameters Configuration Profiles	avaya-ru Genera	Diversion Manipulation	0	
Domain DoS	ZOOM interworking Reco	Diversion Condition	None	
Server Interworking Media Forking	PSTN INTERWORKING Includ	Has Remote SBC		
Routing	Exter	Route Response on Via Port	D	
Topology Hiding	Diver	MOBX Re-INVITE Handling		
Signaling Manipulation URI Groups	Has F	NATing for 301/302 Redirection		
SNMP Traps	MOB	SIP Recording		
Time of Day Rules FGDN Groups	NATir		0	
Reverse Proxy Policy	SIP R	Conference URI		
URN Profile	Relay	Include Called Participant	0	
Recording Profile H248 Profile	Confe	DTMF		
IP/IRI Blocklist Profile Services Domain Policies TLS Management Network & Flows Motiona & Logging Compliance	DTM DTM	DTMF Support	None SiP Notfy SiP Notfy RFC 2333 Relay & SiP Notfy SiP Info RFC 2333 Relay & SiP Info Inband Finish	

4.3.2SIP Server

- Navigate to Services > SIP Servers
- Click Add •
- Set Profile Name: PSTN
- Click Next

waya occorro	n Border Contr				- CUCY
MS Dashboard	SIP Servers: zoom				
oftware Management evice Management		Add Add Server Configura	ation Profile X		Rename Clone Dele
ackup/Restore	Server Profiles	Ge Profile Name PSTN			
System Parameters	zoom				
Configuration Profiles	PSTN		Next		
Services SIP Servers		DNS Query Type	NONE/A		
H248 Servers		Inbound Connection Reuse Policy	None		
LDAP RADIUS		IP Address / FQDN /CIDR Range	Port	Transport	Whitelist
Domain Policies		us01peer01.dv.zoom.us	5061	TLS	0
TLS Management		us01peer01.ny.zoom.us	5061	TLS	
Network & Flows		us01peer01.sc.zoom.us	5061	TLS	
DMZ Services Monitoring & Logging			Edit		

- Set Server Type: Select Trunk Server from the drop down
 Set IP Address/FQDN/CIDR Range: Enter the PSTN Gateway IP address
- Set Port: **5060**
- Set Transport: TCP
- Click Finish

Device: sa 🗸 🛛 Alarms 💈 Inc		oubleshooting 🗸 Users	SIP Server Profile - General	v	Settings 🛩 Help 🖌 Log Out
Avaya Session	Border Controlle	Server Type can not be changed wh	ile this SIP Server Profile is associated to a Server Flow.		avaya
EMS Dashboard Software Management Device Management Backup/Restore > System Parameters > Configuration Profiles > Configuration Profiles > Services SIP Servers LDAP RADIUS > Domain Policies > TLS Management > Network & Flows > DMZ Services > Monitoring & Logging > Compliance	SIP Servers: PSTN Add Server Profiles zoom PSTN	Server Type SIP Domain DNS Query Type Inbound Connection Reuse Policy TLS Client Profile IP Address / FQDN / CIDR Range 10.	Trunk Server INONE/A → None None None Add Port Transport Whitelist 5060 TCP Finish	Transport UDP	Rename Clone Delete Whitelist

- Navigate to Heartbeat tab
- Set Enable Heartbeat: Checked
- Set Method: **OPTIONS**
- Set Retry Timeout on Connection Failure: 30 seconds
- Set Frequency: 60 seconds
- Set From URI: ping@<Signaling Interface IP of PSTN Gateway>
- Set To URI: ping@< PSTN Gateway IP>
- Click Finish

SIP Servers: PSTN			
Server Profiles	General Authentication Heartbeat	Registration Ping Advanced	
PSTN	Edit SIP S	erver Profile - Heartbeat	x
	Enable Heartbeat		
	Method		
	Retry Timeout on Connection Failure	30 seconds	abs.com
	Frequency	60 seconds	abs.com
	From URI	ping@sbc4.tekvizionlabs.con	
	To URI	ping@10.64.1.72	
		Finish	

- Navigate to **Advanced** tab
- Enable Grooming: Checked
- Interworking Profile: Select PSTN INTERWORKING
- Click Finish

SIP Servers: PSTN		
Server Profiles	General Authentication Heartbea	at Registration Ping Advanced
zoom	Edit SI	P Server Profile - Advanced X
PSTN	Enable DoS Protection	
	Enable Grooming	
	Interworking Profile	PSTN INTERWORKING -
	Signaling Manipulation Script	None 🗸
	Securable	
	Enable FGDN	
	TCP Failover Port	
	TLS Failover Port	
	Tolerant	
	URI Group	None
	NG911 Support	
		[Finish]

4.3.3Topology Hiding

- Navigate to Configuration Profiles > Topology Hiding
- Click Add
- Set Profile Name: PSTN TOPOLOGY HIDING
- Click Next

Natal generation Addition Incrementation Concentration Concentra
Domain DoS Zoom topology hiding Overheite Value Overheite Value Server Intervorking Media Forking PSTN TOPOLOGY HDING Image: Common
During Long 200m topology hiding
Media Forking Important Auto Routing To IPDomain Auto Topology Hding Signaling Record-Route IPDomain Auto Nanpulation Request-Line IPDomain Auto URI Groups Refered-By IPDomain Auto
Topology Hilding Record-Route PDomain Rout
Signaling Request-Line IP/Domain Auto URI Groups Refered-By IP/Domain Auto
Manipulation Reguest-Une IP Domain Auto URI Groups Referred-By IP Domain Auto
nonal not
SNMP Traps Refer-To IP/Domain Auto
Time of Day Rules From IP-Domain Auto
FGDN Groups East Contract Cont

- Select the newly created profile **PSTN TOPOLOGY HIDING** and click **Edit**
- Overwrite Value: Replace the Request-line with PSTN facing IP
- Overwrite Value: Replace the To with PSTN facing IP
- Click Finish

Device: sa 🗸 🛛 Alarms 🚹 🛛 I							
Avaya Session	Border Controlle			Edit Topology Hiding Pi	rofile	X	Αναγά
EMS Dashboard	Topology Hiding Profiles:	Header	Criteria	Replace Action	Overwrite Value		
Software Management	Add	Via	✓ IP/Domain	✓ Auto	~	Delete	Rename Clone Delete
Device Management	Topology Hiding Profiles	SDP	✓ IP/Domain	✓ Auto	~	Delete	
Backup/Restore	default	То	✓ IP/Domain	✓ Overwrite	✔ 10.64.1.72	Delete	
System Parameters Configuration Profiles	cisco_th_profile	Record-Route	✓ IP/Domain	✓ Auto	~	Delete	
Domain DoS	zoom topology hiding	Request-Line	✓ IP/Domain	✓ Overwrite	✔ 10.64.1.72	Delete	Overwrite Value
Server Interworking	PSTN TOPOLOGY HIDING	Referred-By	✓ IP/Domain	✓ Auto	~	Delete	
Media Forking		Refer-To	✓ IP/Domain	✓ Auto	~	Delete	
Routing		From	✓ IP/Domain	✓ Auto	~	Delete	10.64.1.72
Topology Hiding							
Signaling Manipulation				Finish			10.64.1.72
URI Groups		Referred-By		IP/Domain	Auto		
SNMP Traps		Refer-To		IP/Domain	Auto		
Time of Day Rules FGDN Groups		From		IP/Domain	Auto		
Reverse Proxy Policy					Edit		
URN Profile							
Recording Profile							
H248 Profile							
IP/URI Blocklist Profile							6
FIOIlie							**

4.3.4 Routing

- Navigate to **Configuration Profiles > Routing**
- Click Add
- Set Profile Name: **PSTN**
- Click Next

Device: sa ∨ Alarms 1 In							
Avaya Session	Border Control	ler					AVAYA
EMS Dashboard Software Management Device Management Backup/Restore > System Parameters	Routing Profiles: defaul	đ	ended in with the defaults. Try closen or addice a	new rentile instead Routing Profile	_	×	Clone
Configuration Profiles Domain DoS Server Interworking	zoom2 PSTN	Profile Name	PST	N Next		Transport	Add
Media Forking Routing Topology Hiding Signaling Manipulation URI Groups SNMP Traps Time of Day Rules FGDN Groups Reverse Proxy Policy URN Profile Recarding Profile H248 Profile IP/URI Blockitst Profile			* default	DNSSRV	Auto-Detect	Auto-Detec	t Edit Delete

- At Routing Profile Window, Click Add.
- Set Priority/Weight: 1
- Select SIP Server Profile: PSTN from the drop-down menu
- Click Finish

Device: sa Y Alarms 1 Incidents Status Y Logs Y Troubleshooting Y Users							
Avera Cassian	Dandan Cant		x				
Avaya Session Border Conti		URI Group	* •	Time of Day	default 🗸		AVAYA
EMS Dashboard	Routing Profiles: PS	Load Balancing	Priority 🗸	NAPTR			
Software Management	Routing Fromes. Fo	Transport	None 🗸	LDAP Routing			Rename Clone Delete
Device Management	Routing Profiles	LDAP Server Profile	None 🗸	LDAP Base DN (Search)	None 🗸		
Backup/Restore System Parameters	default	Matched Attribute Priority		Alternate Routing			
 Configuration Profiles 	zoom2	Next Hop Priority		Next Hop In-Dialog			Add
Domain DoS Server Interworking	PSTN	Ignore Route Header					Transport
Media Forking							TCP Edit Delete
Routing		ENUM		ENUM Suffix			
Topology Hiding Signaling		Server Name Indication (SNI)		Server Name			
Manipulation						Add	
URI Groups SNMP Traps		Priority LDAP Search	I DAP Search	LDAP Search SIP Serve	re and a second s		
Time of Day Rules		Weight Attribute	Regex Pattern	LDAP Search SIP Servi Regex Result Profile	^{ar} Next Hop Address	Transport	
FGDN Groups		1		PSTN	✓ 50€ ✓	None 🗸 Delete	
Reverse Proxy Policy				Finish			
URN Profile					_	_	
Recording Profile H248 Profile							
IP/URI Blocklist Profile							

4.3.5 Network Management

- Navigate to Network & Flows > Network Management > Networks
- Click Add. A window will appear titled Add Network
- Set Name: LAN is given for the network facing PSTN gateway
- Set Default Gateway IP Address: 10.80.XX.X
- Set Network Prefix or Subnet Mask: 255.255.255.X
- Set Interface: B1
- Set IP Address facing PSTN Gateway: 10.80.XX.XX
- Click Finish

Device: sa 🗸 Alarms <mark>1</mark> Inci	idents Status 🗸 Logs 🖌 Troubl	eshooting 🖌 Users				Settings '	✓ Help ✓	Log Out
Avaya Session E	Border Controller						AV	AYA
EMS Dashboard Software Management Device Management Dackup Reasone Device Management Device Management Domain Policies Domain Policies Domain Policies Devices Network & Flows Network Management Modia Interface Signaling Interface Signaling Interface Signaling Interface Signaling Interface Signaling Interface Signaling Interface Signaling Interface DMZ Services DMZ Services	Network Management	Name Default Gateway Network Prefix or Subnet Mask Interface IP Address Public IP 10.80 Use IP Addre	Add Network AN AN Second Se	Passthrough	X Add	IP Address		Add Delete Delete

4.3.6 Media Interface

- Navigate to Network & Flows > Media Interface. Click Add
- Set Name: **B1_PSTN** is given here
- Set IP Address: Select LAN(B1,VLAN0) from the drop down and the IP address populates automatically. The IP address for Interface facing PSTN Gateway is **10.XX.XX.XX**
- Set Port Range: **35000-40000**
- Click Finish

Device: sa ⊻ Alarms <mark>1</mark> In		nooting Y Users				Settings 🗸 🛛 Help 🖌 L	og Out
Avaya Session	Border Controller					AVA	NYA
EMS Dashboard Software Management Device Management Backup/Restore	Media Interface	_	Edit Media Interface	x			
System Parameters Configuration Profiles Services Domain Policies TLS Management Network & Flows Network Management	Name A1_200M B1_PSTN	Name IP Address Port Range	B1.PSTN LAN (B1, VLAN 0) 10.80 35000 - [40000	3	Port Range 35000 - 40000 35000 - 40000	Edit De Edit D	
Media Interface Signaling Interface End Point Flows Session Flows Advanced Options DMZ Services Monitoring & Logging Compliance							

4.3.7 Signaling Interface

- Navigate to Network & Flows > Signaling Interface. Click Add, a new Add Signaling Interface window appears
- Set Name: **PSTN_B1** is given for the interface facing **PSTN gateway**
- Set IP Address: Select LAN(B1, VLAN0)
- Set TCP Port: 5060
- Click Finish

Device: sa ∽ Alarms <mark>2</mark> Ir		ubleshooting 🛩 Users	Edit Signaling Interface	x			Settings ∨ Hel		
Avaya Session	Border Controller	Name	PSTN_B1					AVA	ŊΑ
EMS Dashboard	Signaling Interface	IP Address	LAN (B1, VLAN 0)						
Software Management Device Management		TCP Port Leave blank to disable	5060						
Backup/Restore	Signaling Interface	UDP Port Leave blank to disable							
 System Parameters Configuration Profiles 		TLS Port Leave blank to disable						ļ	Add
 Services 	Name	TLS Profile	None 🗸		S Port	TLS Profile			
 Domain Policies TLS Management 	ZOOM_A1	Enable Shared Control		-	51	ZOOM			
Network & Flows	PSTN_B1	Shared Control Port				None			
Network Management Media Interface			Finish						
Signaling Interface End Point Flows									
Session Flows									
Advanced Options DMZ Services									
Monitoring & Logging									

4.3.8 End Point Flow

- Navigate to Network & Flows > End Point Flows > Server Flows and Click Add
- Set Flow Name: **PSTN-ZOOM**
- Set SIP Server Profile: PSTN
- Received Interface: **ZOOM_A1**
- Signaling Interface: PSTN_B1
- Media Interface: **B1_PSTN**
- Routing Profile: zoom2
- Topology Hiding Profile: PSTN TOPOLOGY HIDING
- Click on **Finish**



END OF THE DOCUMENT