

Avaya Solution & Interoperability Test Lab

# Application Notes for Configuring the Quintum Tenor AS or Tenor AX with Avaya Communication Manager and Avaya SIP Enablement Services - Issue 1.0

### Abstract

These Application Notes describe the steps for configuring the Quintum Tenor AS or Tenor AX VoIP Multipath Switch with Avaya Communication Manager and Avaya SIP Enablement Services. The Quintum Tenor AS or AX VoIP Multipath Switch provides analog telephone access with VoIP capability and multipath switching for redundancy. Emphasis of the testing was placed on verifying Tenor AS or AX interoperability with Avaya SIP Enablement Services. Please note that beginning with release 3.0, the Avaya Converged Communication Server (CCS) has been renamed to Avaya SIP Enablement Services (SES). Information in these Application Notes has been obtained through Developer*Connection* compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

### 1. Introduction

Avaya Communication Manager and Avaya SIP Enablement Services have the capability to extend advanced telephony features to SIP stations. This feature set can be extended to analog telephones through the use of the Quintum Tenor AS or AX VoIP Multipath Switch.

These Application Notes describe a solution for configuring the Quintum Tenor AS or AX VoIP Multipath Switch to interoperate with Avaya Communication Manager and Avaya SIP Enablement Services (SES). The Tenor AS or AX is a multipath switch capable of supporting analog telephones. The Tenor AS or AX registers with Avaya SES on behalf of the analog telephones that are connected to it, using SIP signaling. When a call is place from an analog telephone, the Tenor AS or AX will send control messages to SES to set up the call. Once the call has been set up, the Tenor AS or AX digitizes the analog signals from the analog telephone using the agreed upon codec established during call setup and sends the digitized signals out in RTP packets over the data network. In addition, the Tenor AS or AX was configured to route call to the Main Site through the PSTN should the data network become unavailable.

Quality of Service was achieved through the use of Layer-3 (DiffServ) parameter configuration on the Tenor AS or AX VoIP Multipath Switch.

### 1.1. Configuration

**Figure 1** illustrates the configuration used in these Application Notes. All Avaya SIP telephones and analog telephones are registered to Avaya Communication Manager via Avaya SIP Enablement Services (SES) and are administered as Off-PBX-Telephones stations in Avaya Communication Manager. All Avaya H.323 IP telephones are registered to Avaya Communication Manager. The two DID numbers of the ISDN-PRI trunk to the Main Site are each mapped to a telephone extension at the Main Site. The DID number of the POTS line is mapped to extension 40003 at the Branch Site.



Figure 1: Sample Network Configuration

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# 2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300 Media Server with Avaya G350	Avaya Communication Manager 3.1
Media Gateway	(R03.1-01.0.628.6)
	Service Pack
	01.0.628-11410
Avaya SIP Enablement Services (SES) Server	3.1 (build 18)
Avaya 4620 SIP Telephones	2.2.2
Avaya 4620 H.323 Telephones	2.3
Quintum Tenor AS VoIP Multipath Switch	P104-10-00
Quintum Tenor AX VoIP Multipath Switch	P104-10-00

# 3. Avaya Communication Manager

This section highlights the commands for configuring Avaya Communication Manager. For complete documentation on administering Avaya Communication Manager, see references [1] and [2]. Use the System Access Terminal (SAT) interface to perform these steps. Log in using appropriate credentials.

Step	Description										
1.	Use the <b>display system-parameters customer-options</b> command to verify that										
	Maximum Off-PBX Telephones – OPS has been set to a value that will accommodate										
	the number of SIP telephones to be supported										
	the number of Sh' telephones to be supported.										
	dignless such as a such and such as a such asuch as a such as a such as a such as a su										
	display system-parameters customer-options Page 1 of 10										
	G3 Version: V13										
	Location: 1										
	Platform: 13										
	Location: 1 RFA System ID (SID): 1										
	Platform:13RFA Module ID (MID):1										
	USED										
	Platform Maximum Ports: 900 48										
	Maximum VMORLE Stations: 40 20										
	Maximum Off-PBX Telephones - EC500: 50 0										
	Maximum Off-PBX Telephones - OPS: 50 10										
	Maximum Off-PBX Telephones - SCCAN: 0 0										
	(NOTE: You must logoff & login to effect the permission changes.)										

### 3.1. Coverage Paths for Branch Site Subscriber Extensions

The following screens illustrate the configuration for remote coverage path 1, which will be assigned to a Branch Site station that can be reached via Direct Inward Dialing (DID). That is, the user can be reached directly via a PSTN number. In the sample configuration, when a call is placed from the Main Site to station 40003 (located at the Branch Site) during a data network outage, the call will be routed to coverage path 2, which points to remote coverage 1 (917324501001).

In addition, coverage path 1 for voice mail was configured for extension 40002. Please see reference [4] for information on configuring the IA770 Intuity Audix Messaging Application.

Step	Description							
1.	Use the <b>change coverage remote</b> command to enter the DID number of the Branch Site							
	station.	-						
	change coverage remo	te 1		Page 1 of 23				
		REMOTE CALL COVERA ENTRIES FROM 1	GE TABLE TO 1000					
	01: 917324501001	16:		31:				
	02:	17:		32:				
	03:	18:		33:				
2.	Use the change cove	rage path command	to designat	e the above-defined remote				
	coverage <b>r1</b> in the <b>P</b>	<b>oint1</b> entry enable c	alls to be ro	uted to remote coverage 1 defined				
	above when coverage	noth 2 is invoked		ated to remote coverage r defined				
	above when coverage	paul 2 is invokeu.						
	change coverage path	2						
	change coverage pach	COVERAGE	DATH					
	C	overage Path Number:	2					
		Next Path Number:		nt after Coverage? n nkage				
	COVERAGE CRITERIA							
	Station/Group St	atus Inside Call	Outside	Call				
	Active?	n	n					
	Don't Answer?	y v	y v	Number of Rings: 2				
	All?	n	n					
	DND/SAC/Goto Cover?	У	У					
	Holiday Coverage?	n	n					
	COVERAGE POINTS	arage Dtg with Bridg	red Appearan	ces2 n				
		cruge res. with bildy	cu Appearall	CCD. II				
	Point1: r1	Rng: Point2:	Rng:	Point3:				
	Point4:	Point5:		Point6:				

Step		Desc	ription	
3.	Coverage path 1 was conf	igured for voice n	nail. Use	the change coverage path
	command to point coverage			
	_		_	
	change coverage path 1			
		COVERAGE I	PATH	
	Covera	ge Path Number: 1		
	Ne	ext Path Number:	Hur Lir	nt after Coverage? n nkage
	COVERAGE CRITERIA			
	Obebien (Geneve Obebue	Tradda Gall	Outride	2-11
	Active?	n n	n n	Call
	Busy?	У	У	
	Don't Answer?	У	У	Number of Rings: 2
	All?	n	n	
	Holiday Coverage?	y n	y n	
l				
I	COVERAGE POINTS Terminate to Coverage	Pts. with Bridged	l Appearanc	ces? n
	Point1: h1 Rng:	Point 2:	Rng:	Point3:
	Point4:	Point5:	iuigi	Point6:
4.	Hunt-group 1 is configure	d with eight audix	x extension	ns 49001-49008 in the sample
	configuration	0		
	configuration.			
	change hunt-group 1		TD	Page 1 of 60
		HONI GROC	) <u>F</u>	
	Group Number:	1		ACD? n
	Group Name	IA770		Queue? y
	Group Extension:	49000	G	Vector? n
	Group Type	uca-mia	Cove Soruido De	erage Path:
	COR	1 NIGIL	MM Fai	rly Answer? n
	Security Code	- Loc	al Agent I	Preference? n
	ISDN/SIP Caller Display:	200	,ar ngono i	
	Queue Limit			
		110   1 m 1 t o d		
	Queue Limit	unlimited Port:		
	Calls Warning Threshold: Time Warning Threshold:	unlimited Port: Port:		
	Calls Warning Threshold: Time Warning Threshold: change hunt-group 1	unlimited Port: Port:		Page 3 of 60
	Calls Warning Threshold: Time Warning Threshold: change hunt-group 1	unlimited Port: Port: HUNT GROU	ΤΡ	Page 3 of 60
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1	unlimited Port: Port: HUNT GROU Group Exter	JP 1sion: 4900	Page 3 of 60 Group Type: ucd-mia
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi	JP 1sion: 4900 .nistered N Total Adm	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi	JP 1sion: 4900 inistered M Total Adm:	<b>Page 3 of 60</b> 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 c	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi	JP 1sion: 4900 Inistered M Total Adm: Ext	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 c 1: 49001 audix 01	unlimited Port: Port: Group Exter - 1500 Admi	JP hsion: 4900 nistered M Total Adm: Ext .4:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02	unlimited Port: Port: Group Exter - 1500 Admi	JP hsion: 4900 nistered M Total Adm: Ext .4: .5:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP hsion: 4900 nistered M Total Adm: Ext .4: .5: .6: 7:	<b>Page 3 of 60</b> 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 c 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 04 5: 49005 audix 04	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP nsion: 4900 nistered N Total Adm: Ext L4: .5: .6: .7: 8	<b>Page 3 of 60</b> 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP nsion: 4900 nistered N Total Adm: Ext L4: L5: .6: .7: .8: 9:	<b>Page 3 of 60</b> 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP nsion: 4900 nistered N Total Adm: Ext L4: L5: L6: .7: .8: .9: 20:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP nsion: 4900 nistered N Total Adm: Ext 14: 15: 16: 17: .8: .9: 20: 21:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08 9:	unlimited Port: Port: Group Exter - 1500 Admi Characters)	JP nsion: 4900 nistered N Ext L4: L5: L6: L7: .8: .9: 20: 21: 22:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: I Member Range Allowed: I GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08 9:	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi tharacters) 1 1 1 1 2 2 2	JP nsion: 4900 nistered N Ext L4: L5: L6: L7: L8: .9: 20: 21: 22:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08 9:	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi tharacters) 1 1 1 2 2 2 2	JP nsion: 4900 nistered N Ext L4: L5: L6: L7: L8: L9: 20: 21: 22:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08 9:	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi tharacters) 1 1 1 1 2 2 2 2	JP nsion: 4900 nistered N Ext L4: L5: L6: L7: L8: L9: 20: 21: 22:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)
	Calls Warning Threshold: Time Warning Threshold: Change hunt-group 1 Group Number: 1 Member Range Allowed: 1 GROUP MEMBER ASSIGNMENTS Ext Name (24 of 1: 49001 audix 01 2: 49002 audix 02 3: 49003 audix 03 4: 49004 audix 04 5: 49005 audix 05 6: 49006 audix 06 7: 49007 audix 07 8: 49008 audix 08 9:	unlimited Port: Port: HUNT GROU Group Exter - 1500 Admi tharacters) 1 1 1 2 2 2 2	JP nsion: 4900 Total Adm: Ext L4: L5: L6: L7: L8: L9: 20: 21: 22:	Page 3 of 60 00 Group Type: ucd-mia Members (min/max): 1 /8 inistered Members: 8 Name (24 characters)

### **3.2. Define Stations in Avaya Communication Manager**

Assign the appropriate coverage path to the station. The sample configuration assigned the coverage path 2 defined in Section 3.1 to station 40003 and coverage path 1 to station 40002. In addition, the extensions assigned to the analog telephones connected to the Tenor AS or AX must be administered as OPS extensions, since the Tenor AS or AX will be communicating with Avaya SES on behalf of the analog stations. For additional information on Avaya SES, consult references [2] and [5].

add station 40003	Page 1 of 4
	STATION
Extension: 40003	Lock Messages? n BCC: 0
Type: 6408D+	Security Code: TN: 1
Port: X	Coverage Path 1: 2 COR: 1
Name: SIP40003	Coverage Path 2: COS: 1
	Hunt-to Station:
STATION OPTIONS	
Loss Group: 2	Personalized Ringing Pattern: 1
Data Module? n	Message Lamp Ext: 40003
Speakerphone: 2-way	Mute Button Enabled? y
Display Language: english	
	Media Complex Ext:
	TP SoftPhone? n

		Description					
	Use the <b>add station</b> command to create new station extension 40002.						
	add station 40002	Page 1 of 4					
		STATION Fage 1 01 4					
	Extension: 40002	Lock Messages? n BCC: 0					
	Type: 6408D+	Security Code: TN: 1					
	Port: X	Coverage Path 1: 1 COR: 1					
	Name: SIP40002	Coverage Path 2: COS: 1 Hunt-to Station:					
	STATION OPTIONS						
	Loss Group: 2	Personalized Ringing Pattern: 1					
	Data Module? n	Message Lamp Ext: 40003					
l	Speakerphone: 2-way	Mute Button Enabled? y					
	Display Language: english						
		Media Complex Ext:					
		IP SoftPhone? n					
	add station 40002	Page 2 of 4					
		STATION					
	FEATURE OPTIONS						
	LWC Reception: audix	Auto Select Any Idle Appearance? n					
	LWC Activation? y	Coverage Msg Retrieval? y					
	LWC Log External Calls? n	Auto Answer: none					
	CDR Privacy? n	Data Restriction? n					
	Ber Button Bing Control2 n	Bridged Idle Line Breference? n					
	Per Buccon King Control: In Bridged Call Alerting? n	Restrict Last Appearance? n					
	Active Station Ringing: single	Conf/Trans on Drimary Appearance: n					
	Active beacton kinging. Single	contylitatio on filmary appearance. If					
	H.320 Conversion? n	Per Station CPN - Send Calling Number? y					
	Service Link Mode: as-needed						
	Multimedia Mode: basic						
		Display Client Redirection? n					
l	AUDIX Name: IA770	Select Last Used Appearance? n					
		Coverage After Forwarding? s					
		Direct IP-IP Audio Connections? v					
	Emergency Location Ext: 40002	IP Audio Hairpinning? y					

Description								
Use the change off-pbx-telephone station-mapping command to							p Avay	a
Con exte	nmunicat ensions.	ient Sei	rvice (S	SES				
cha	ange off-j	<b>bx-telephone</b> STATI(	e station-map	ping 40003 PBX TELEPHONI	E INTEGRATION	Page	1 of	2
St Ex 40 40	ation stension 0003 0002	Application OPS OPS	n Dial Ph Prefix - 40 - 40	one Number 003 002	Trunk Selection 1 1	Config Set 1 1	guration	n
cha	ange off-j	p <b>bx-telephone</b> STATI(	e station-map DNS WITH OFF-	ping 40003 PBX TELEPHONI	E INTEGRATION	Page	2 of	2
St Ex	ation tension 0003	Call Limit <b>3</b>	Mapping Mode <b>both</b>	Calls Allowed <b>all</b>	Bridged Calls <b>both</b>			

### 3.3. Define Trunk Group in Avaya Communication Manager

Step	Description					
1.	The following shows the sett	his trunk group connects Avaya				
	Communication Manager wi	th Avava SES. For addition	nal information on the			
	installation and configuration	n of Avava SES please refe	r to [2] and [5]			
	instantation and configuration	i ol Avaya SLS, please lele	1 to [2] and [5].			
	display trunk-group 1		Page 1 of 20			
	display claim gloup i	TRUNK GROUP	rage i or zo			
	Group Number: 1	Group Type: sip	CDR Reports: y			
	Group Name: To SES	COR: 1	TN: 1 TAC: 101			
	Direction: two-way	Outgoing Display? n				
	Dial Access? n	Busy Threshold: 255	Night Service:			
	Queue Length: 0					
	Service Type: tie	Auth Code? n				
			Signaling Group: 1			
			Number of Members: 24			
	IRUNK PARAMETERS					
	Unicode Name: y	Redirect	On OPTIM Failure: 5000			
	SCCAN? n	Di	gital Loss Group: 18			
			5			

Step	Description
2.	The following shows the Signaling Group associated with Trunk Group 1.
	display signaling-group 1
	STONALING GROUP
	Group Number: 1 Group Type: sip Transport Method: tls
	Near-end Node Name:procrFar-end Node Name:CCSNear-end Listen Port:5061Far-end Listen Port:5061
	Far-end Network Region:
	Far-end Domain. devcon.com
	Bypass If IP Threshold Exceeded? y
	DTMF over IP: rtp-payload Direct IP-IP Audio Connections? y
	IP Audio Hairpinning? y Session Establishment Timer(min): 120
3.	Define a Trunk Group for the ISDN-PRI connection using the add trunk-group
	command.
	add trunk-group 10 Page 1 of 21 TRUNK GROUP
	Group Number: 10 Group Type: isdn CDR Reports: y
	Group Name: From PSTN COR: 1 TN: 1 TAC: 110
	Direction: two-way Outgoing Display? n Carrier Medium: PRI/BRI Dial Access? y Busy Threshold: 255 Night Service:
	Queue Length: 0
	Far End Test Line No:
	TestCall BCC: 4
	display trunk-group 10 Page 5 of 21
	Administered Members (min/max): 1/23
	GROUP MEMBER ASSIGNMENTS Total Administered Members: 23
	Port Code Sfx Name Night Sig Grp
	2: 001V502 MM710 10
	3: 001V503 MM710 10 4: 001V504 MM710 10
	5: 001v505 MM710 10
	6: 001V506 MM710 10 7: 001V507 MM710 10
	8: 001V508 MM710 10
	10: 001V510 MM710 10
	11: 001V511 MM710 10 12: 001V512 MM710 10
	13: 001v513 MM710 10
	14: 001V514         MM710         10           15: 001V515         MM710         10

Step	Description									
4.	Define a Signaling Group for the ISDN-PRI Trunk Group using the <b>add signaling-</b>									
	group command.									
	add signaling-group 10 Page 1 of 5									
	SIGNALING GROUP									
	Group Number: 10 Group Type: isdn-pri									
	Associated Signaling? y Max number of NCA TSC: 0									
	Primary D-Channel: 001V524 Max number of CA TSC: 0									
	Trunk Group for NCA TSC:									
	Trunk Group for Channel Selection:									
	Supplementary Service Flococol. a									

### 3.4. Define Incoming Call Handling in Avaya Communication Manager

At the Main Site, each DID number is mapped to a station extension using the **change inc-handling-trmt trunk-group** command. Trunk Group 10 is the ISDN-PRI trunk between the PSTN and Avaya Communication Manager. In the sample configuration, calls to DID 732-450-2001 will be sent to station 40001, and calls to DID 732-450-2002 will be sent to station 40012.

tep				Descri	ption	
ι.						
	change inc-ca	all-handl	ing-trmt trunk	-group 10		Page 1 of 3
			INCOMING CAL	L HANDLIN	G TREATMENT	
	Service/	Calle	Per Call Night			
	Feature	Len	Number			CPN/BN Serv
	tie	10	7324502001	10	40001	
	tie	10	7324502002	10	40012	

### 3.5. Configure Audio Codec

In order for calls to be established successfully, during initial call setup, the two end points must agree upon a mutually supported codec.

r	Use the <b>change ip-codec-set</b> command to change the appropriate codec-set.									
	or A	X sunnorts	both G 711 an	d G 729	codecs	11 1				
	UT A	A supports	00til 0.711 all	100.727	couces.					
	cha	nge ip-codeo	c-set l			Page	l of	2		
			IP	Codec Set						
		Codec Set:	1							
		Audio	Silence	Frames	Packet					
		Codec	Suppression	Per Pkt	Size(ms)					
	1:	G.711MU	n	2	20					
	2:	G.729AB	n	2	20					

### 3.6. IP Network Region

Step	Description	
1.	Use the change ip-network-region command to set the Audio PHB Value. The Tenor	
	AS or AX will be set to use the same DiffServ value in Section 4, Step 15.	
	change ip-network-region 1 Page 1 of 19	
	IP NETWORK REGION	
	Region: 1	
	Location: 1 Authoritative Domain: devcon.com	
	MEDIA PARAMETERS Intra-region IP-IP Direct Audio: yes	
	Codec Set: 1 Inter-region IP-IP Direct Audio: yes	
	UDP Port Min: 2048 IP Audio Hairpinning? y	
	UDP Port Max: 3028	
	DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y	
	Call Control PHB Value: 34 RTCP MONITOR SERVER PARAMETERS	
	Audio PHB Value: 46 Use Default Server Parameters? y	
	VIGEO PHE VALUE, ZO	
	Call Control 802 in Priority: 6	
	Audio 802.1p Priority: 6	
	Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS	
	H.323 IP ENDPOINTS RSVP Enabled? n	
	H.323 Link Bounce Recovery? y	
	Idle Traffic Interval (sec): 20	
	Keep-Alive Interval (sec): 5	
	Keep-Alive Count: 5	

### 4. Configure the Tenor AS Multipath Switch

The following steps describe the configuration for the Tenor AS VoIP Multipath Switch to register with Avaya SIP Enablement Services (SES). Configuration for the Tenor AX is the same as the Tenor AS described below. For detail information on installing and running Tenor Configuration Manager, consult references [7] and [8].

Step	Description
1.	Connect to the Tenor AS from the Tenor Configuration Manager. Select the Tenor AS
	switch and click on <b>Connect</b> .
	Address Book
	Welcome to Tenor Configuration Manager! Please specify/select a Tenor DX/BX/AX/AS/AF/CMS.
	Discover Cancel Edit
	Tenor IP Address Server Port Description Serial Number Software Version Login
	10.1.1.40 8080 Avaya Lab AS A012-1039C6 P104-10-00 admin
	Connect Close Export Import

Step	Description
2.	Click on the Advanced Explorer icon on the menu bar.
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)
	Basic Config <mark>uration</mark>
	- IP Address Configuration Specify how your Tenor will obtain an IP Address
	Dial Plan Configuration     O Obtain an IP address automatically
	-Phone Port Configuration
	-Multi Path Configuration
	- Line Port Configuration Static IP Address
	-VolP Routing Configuration -SIP Configuration IP Address: 10 . 1 . 1 . 40
	Subnet Mask: 255 . 255 . 0
	Default Gateway: 10 . 1 . 254
	External NAT IP Address: 0 . 0 . 0
	DNS Server IP Address
	Obtain DNB Server addresses automatically     O Use manually configured DNS Servers
	Primary DNS Server IP Address: 12 . 127 . 16 . 67
	Secondary DNS Server IP Address: 12 . 127 . 17 . 71
	Confirm/OK Cancel Refresh Help
	ОК

Step	Description
3.	From the <b>Advanced Explorer</b> panel on the left, click on the + sign next to <b>System-</b>
	Wide Configuration to expand the field. Under System-Wide Configuration, select
	DNS Hosts. Click Add to display the Add DNS Host pop-up window.
	Tenor Configuration Manager (Connected to Tenor A5 10.1.1.40)
	Advanced Explorer DNS Hosts
	P System-Wide Configuration ▲
	- Sixier Server
	- Time Server devcon.com 50.1.1.50:5060 0
	- IVR File Server
	- DNS Server
	- Remote Tenor Manager
	E 1 Radius Servers
	🔁 🦈 Ethernet Configuration
	e 🖫 VolP Configuration
	- Tone Profile
	CAS Signaling Groups
	Confirm/OK Cancel Refresh Help
	ОК
4.	Enter the <b>Host Name</b> and <b>IP Address</b> of the Avaya SES server. "devcon.com" is the
	sample DNS domain used in the sample configuration. Click <b>OK</b> to complete.
	Add DNE Hoch
	Lipst Name: devean com
	Host Name.
	IP Address: 50 1 1 50 5060
	Priority: 0
	OK Cancel Help

Step	Description
5.	From the Advanced Explorer panel on the left, click on the + sign next to VoIP Configuration $\rightarrow$ SIP Signaling Groups to expand the field. Select the SIP Signaling
	Group-I field. Under the General tab, enter the Primary SIP Server domain name.
	The sample configuration uses the domain name <i>aevcon.com</i> .
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)
	File View Action Help
	Advanced Explorer
	General MWI & Session Timer Advanced User Agent
	Gatekeepen/Border Element     Register Expiry Time (in sec.): 3600
	P SIP Signaling Groups         Primary SIP Server:         devcon.com         Primary SIP Server Port.         5060
	- SIP Signaling Group-1 Secondary SIP Server: Secondary SIP Server: 5060
	- DN Channel Map
	- Gateway Primary Outbound Server: Primary Outbound Server: 5060
	Fax Profile     Secondary Outbound Server:
	P H
	e Way Codec Profiles
	P I P Routing Groups
	be∄}→ VoIP Routing
	train Configuration
	Confirm/OK Cancel Refresh Help

Add User Agent pop-
×
Add Delete Edit
d Milling Name Mill Parcourd
Minor Oser Marrie Minor Fassionia

Step	Description	
7.	In the Add User Agent pop-up window, enter the following information:	
	Primary User:40003< station defined in Avaya SES	
	<b>Contact[1]:</b> 40003 < station defined in Avaya SES	
	Click <b>OK</b> to continue.	
	Add User Agent	
	UA: 101	
	SIP Listen Port: 5060	
	Primary User: 40003	
	Primary Password: 123456	
	Secondary User:	
	Secondary Password:	
	MWI User Name:	
	MWI Password:	
	Contacts[1]: 40003	
	Contacts[2]:	
	OK Cancel Help	





Step			Description
11.	In the Add DN Channel Map pop-up window, enter the following information.		
	Channel: DN: User Agent: Public DN: Register DN:	1 40003 101 checked checked	< port number on the Tenor AS to which the analog phone is connected < extension < user agent defined for 40003 in Step 7 < default < default
	Click <b>OK</b> to co sunburst icon t	ontinue.	Add DN Channel Map         Slot:         Span:         Channel:         DN:         40003         Calling Name:         User Agent:         101         Version         Register DN         OK:         Cancel         Help    At the DN Channel Map panel, click Confirm/OK and the set the change.

Step	Description		
12.	From the <b>Advanced Explorer</b> panel on the left, select the <b>Gateway</b> . Enter a		
	<b>Description</b> and check the <i>SIP only</i> radio button for the <b>Outgoing IP Routing</b> field		
	under the Gateway panel on th	ne right.	
	Click <b>Confirm/OK</b> , and then t	the sunburst icon on the menu bar to implement the	
	change.		
	Tenor Configuration Manager (Connected to	Tenor AS 10.1.1.40)	
	File View Action Help		
	Advanced Explorer	Galeway	
	- Time Server		
	- IVR File Server	Description: Tenor AS Gateway	
	- DNS Server		
	- DNS Hosts	Modern Bypass Retention Hours: 108	
	– Remote Tenor Manager	Outgoing IP Routing: C H323 only C SIP only	
	□ □ □ Radius Servers		
	U SysLog Servers	F Remote NAT	
	Ethornot Configuration		
	Gatekeeper/Border Element		
	- H323 Signaling Group		
	다 SIP Signaling Groups		
	- SIP Signaling Group-1		
	SIP Signaling Group-2		
	– DN Channel Map		
	- Gateway		
	– Fax Profile		
	End Point Address Directory		
	Dice Codecs		
	Codec Profiles	Confirm/OK Cancel Refresh Help	
		ок	
	15		

![](_page_23_Picture_0.jpeg)

Step	Description
14.	From the Advanced Explorer panel on the left, select the IP Routing Group-default under IP Routing Groups. In the General tab of the IP Routing Group-default panel on the right, select <i>Out-of-Band RFC 2833</i> for SIP Digit Relay from the drop-down menu.
	Advanced Employer
	Advanced Explored     System-Wide Configuration   VolP Configuration   GatekeeperBorder Element   H323 Signaling Group   SIP Signaling Group   SIP Signaling Group   SIP Dig Naine Map   Gateway   Fax Profile   End Polial Address Directory   Fax Profiles   The Routing Group-Getaul   Fax Profiles   Fax Profiles   Fax Profiles   Fax Profiles   Fax Ording Group-Getaul   Fax Profiles   Fax Ording Group-Getaul   Fax Profiles   Fax Profiles   Fax Ording Group-Getaul   Fax Profiles   Fax Profiles   Fax Profiles   Fax Profiles   Fax Ording Group-Getaul     Fax Profiles   Fax Ording Group-Getaul     Fax Profiles     Fax Ording Group-Getaul     Fax Profile (FXS)/Line (FXO) Configuration     Phone (FXS)/Line (FXO) Configuration
	Confirm/OK Cancel Refresh Help
	ОК
	Confirm/OK Cancel Refresh Help

Step	Description
15.	Click on the Advanced tab under the IP Routing Group-default panel on the right. Change the Media QOS Value to b8. This configures the DiffServ value in the RTP media stream to have a DiffServ value of b8 (same as the decimal value of 46 set in Avaya Communication Manager in Section 3.6). Click Confirm/OK, and then the sunburst icon on the menu bar to implement the change.
	Image: Connected to Tenor AS 10.1.1.40)         File View Action Help         Image: Connected Explorer
	Image: Second

Step	Description
16.	From the Advanced Explorer panel on the left, expand Circuit Configuration → Trunk Routing Configuration → Hopoff Number Directories, and select the Hopoff Number Directory-1 field. Enter a Description for this Hopoff Number Directory-1. Click on Add to display the Add Hopoff Number pop-up window.
	Tener Configuration Manager (Connected to Tenor AS 10.1.1.40)
	Advanced Explorer Hopot Number Orestony 1
	System-Wide Configuration
	Auto Switch Configuration Caller ID Translation Directories Inbound DNIS Translation Directories Directories Hopoff Number Directories Excertification Direc
	ContinuCik Cancel Refresh Help.

Step	Description			
17.	At the <b>Add Hopoff Number</b> pop-up window. Enter the following information:			
	Number Pattern: Replacement:	40001 7324502001 Hopoff Number	< station extension at Main Site < DID number to reach the Static	on 
		Number Pattern: 400 Replacement: 732	01 4502001	
		Description:		
		TON: Unk	nown	
		NPI: Unk	nown	
		OK	Cancel Help	
	Click <b>OK</b> to contir	ue.		
	Repeat Steps 16 an 40012 in the sample	d 17 for any other e configuration, e	extension that need to be reached. Inter the following:	For extension
	Number Pattern: Replacement:	40012 7324502002	< station extension at Main Site < DID number to reach the Static	on
	After completing, o	click on <b>Confirm</b> /	<b>OK</b> in the <b>Hopoff Number Directo</b>	<b>ry-1</b> panel and
	CIICK on the st	indurst icon on the	e menu bar to implement the change.	

Step	Description		
18.	From the Advanced Explorer panel on the left, expand Circuit Configuration $\rightarrow$ Line		
	Routing Configuration $\rightarrow$ Hunt LDN Directories, and select the Hunt LDN		
	<b>Directory-pub1</b> field. Enter a <b>Description</b> for this <b>Hunt LDN Directory-pub1</b> . Click		
	on Add.		
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)		
	Advanced Explorer		
	P System-Wide Configuration		
	Ethernet Configuration Description: 40003		
	VolP Configuration     Type:      Public     Private     Prefix Country Code Area Code		
	Signaling Configuration		
	Add Delete Edit		
	Index and the intervalues     Index and the intervalues     Index and the intervalues     Index and the intervalues     Index and the intervalues		
	40005		
	Bypass Number Directories		
	Hunt LDN Directories		
	Hunt LDN Director≁pub1		
	- Hunt LDN Directory-prv1		
	Line Circuit Routing Groups		
	B Mar ( Xdy Configuration		
	Confirm/OK Cancel Refresh Help		
19.	In the <b>Add Hunt LDN Number</b> pop-up window, enter the <b>Number Pattern</b> for an		
	extension at the Branch Site. Click <b>OK</b> to continue.		
	Add Hunt LDN Number		
	Number Pattern: 40003		
	Humber Lattern. 40000		
	OK Cancel Help		
	After completing, click on Confirm/OK in the Hunt LDN Directory-pub panel and		
	click on the sunburst icon on the menu bar to implement the change.		

Step	Description		
20.	Repeat Steps 18 and 19 for extension 40002 except this time select Hunt LDN		
	Directory-pub2 from the Advanced Explorer screen panel.		
21.	From the Advanced Explorer panel on the left, expand Circuit Configuration $\rightarrow$ Line		
	Routing Configuration $\rightarrow$ Line Circuit Routing Groups, and select Line Circuit		
	Routing Group-phone.		
	Click on the <b>General</b> tab in the <b>Line Circuit Routing Group-phone</b> panel on the right.		
	From the SIP User Agent drop-down menu, select SIPUserAgent-101. This SIP User		
	Agent name was automatically assigned by the system in Section 4, Step7. Click the		
	Call Services tab.		
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)		
	Advanced Explorer Line Circuit Rouling Group-phone		
	General T unk ID/Caller ID IVR Numbering Call Services Bypass/Hunt Advanced Interface		
	Static Route-1		
	- Auto Switch Configuration		
	Caller ID Translation Directories		
	Infound DNIS Translation Directori		
	Pass Through: Disabled Inbound Access Level: 0		
	Bypass Number Directories Pass Through ID: 99 Outbound Access Level: 0		
	🖶 Hunt LDN Directories		
	Line Circuit Routing Groups		
	Line Circuit Routing Group-ph		
	🛱 🚈 Phone (FXS)/Line (FXO) Configur		
	Analog Interface-phone		
	DSP Configuration		
	Confirm/OK Cancel Refresh Help		
	Un		

Step		Description	
22.	In the <b>Call Services</b> tab in the <b>Line Circuit Routing Group-phone</b> panel on the right, check to enable the appropriate services to be available for the analog phone. The sample configuration has <b>Hold</b> , <b>Unattended Transfer</b> , <b>Attended Transfer</b> , and <b>Call Waiting</b> abacked. Click on the <b>ByPass/Hunt</b> tab to continue		
	Waiting checked. Click	en the ByPass/Hunt tab to continue.	
Confirm/OK Ca		Confirm/OK Cancel Refresh Help	
	<u> </u>	ОК	

![](_page_31_Figure_0.jpeg)

Step	Description		
24.	In the <b>Advanced</b> tab in the <b>Line Circuit Routing Group-phone</b> panel on the right, check the radio button for <b>Enable Multi Path</b> .		
	Click <b>Confirm/OK</b> , and then the sunburst icon on the menu bar to implement the change.		
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)		
	Advanced Explorer Line Circuit Routing Group-phone		
	System-Wide Configuration   Ethernet Configuration   VolP Configuration   VolP Configuration   Signaling Configuration   Signaling Configuration   Signaling Configuration   Math Configuration   Signaling Configuration   Caller ID Translation Directories   Inbound DNIS Translation Directories   Hunt LDN Directories   Hunt LDN Directories   Hunt LDN Directories   Hunt LDN Directories   Phone (FXS)/Line (FXO) Configuration   DSP Configuration   DSP Configuration		
	Confirm/OK Cancel Refresh Help		
	ОК		

Step	Description		
25.	Repeat Steps 21 to 24, except this time select the following for Step 21 and 23.For Step 21Select Line Circuit Routing Group-phone2 on the left panel, and select SIPUserAgent-201 from the drop-down menuFor Step 23Select Hunt LDN Directory-pub2 and click << as shown below.		
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)		
	File View Action Help		
	Avaited bepolver Avaited bepolver Avaited bepolver Avaited between all of the first of the fi		
	Confirm/OK Cancel Refresh Help		
	Click <b>Confirm/OK</b> , and then the sunburst icon on the menu bar to implement the change.		

Step	Description		
26.	From the <b>Advanced Explorer</b> panel on the left, expand <b>Phone (FXS)/Line (FXO)</b> <b>Configuration</b> , and select <b>Analog Interface-phone</b> , and then click <b>Add</b> .		
	······································		
	Tenor Configuration Manager (Connected to Tenor AS 10.1.1.40)		
	Advanced Explorer		
	Configuration Add Delete Edit		
	Example Circuit Configuration		
	Caller ID Translation Directories		
	Discrete Provide the second se		
	PUD Trunk Routing Configuration		
	Broass Number Directories		
	B Hunt LDN Directories		
	Line Circuit Routing Groups     Associated Signaling Group:		
	Check (CXC)/Line (CXC) Configurati     Associated Routing Group:		
	Analog interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-interace-		
	E Inser DSP Configuration		
	Confirm/OK Cancel Refresh Help		
27.	Enter a description for the Channel Group and click OK to continue.		
	Specify a Unique Name		
	Channel Group - phone		
	OK Council		

Step	Description		
28.	In the Add Channel Group-Channel Group phone pop-up window, configure the		
	following information.		
	Associated Signaling Group: CAS Signaling Group-phone		
	Associated Routing Group: Line Circuit Routing Group-phone		
	<b>FXS Channel Assignment:</b> check the radio button for <b>1</b>		
	Click <b>OK</b> to complete		
	Chek OK to complete.		
	Add Channel Group-Channel Group phone		
	Selected Analog Interface: Analog Interface-phone		
	Associated Signaling Group CAS Signaling Group-phone		
	Associated Routing Group: Line Circuit Routing Group-phone		
	EVO Channel Assignment		
	Select All De-select All Reset		
	Select All Available De-select All Available		
	OK Cancel Help		

Step	Description		
29.	Repeat Steps 26-28, and enter the following information.		
	Enter a description for the <b>Channel Group</b> and click <b>OK</b> .		
	Specify a Unique Name		
	Channel Group - phone2		
	OK Cancel		
	In the Add Channel Group-phone pop-up window, select the following fields:		
	Associated Signaling Group:CAS Signaling Group-phoneAssociated Routing Group:Line Circuit Routing Group-phone2FXS Channel Assignmentcheck radio button for 2		
	Click <b>OK</b> to complete.		
	Add Channel Group-Channel Group phone2		
	Selected Analog Interface: Analog Interface-phone		
	Associated Signaling Group CAS Signaling Group-phone		
	Associated Rodung Group.   Line Circuit Rodung Group-phone2		
	EVS Channel Assignment		
	Select All Descelect All Report		
	Select All Available De-select All Available		
	OK Cancel Help		

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![](_page_37_Figure_0.jpeg)

Step	Description		
31.	In the Edit Channel Group-li	In the Edit Channel Group-line pop-up window, configure the following information.	
	Associated SignalingCAGroup:Associated RoutingTruGroup:Group:GroupFXO Channel1AssignmentFactorial	S Signaling Group-line unk Circuit Routing pup-line The port where the POTS line is connected.	
	Edit Channel Group-line	X	
	Selected Analog In Associated Signali Associated Routing	terface: Analog Interface-line ng Group CAS Signaling Group-line g Group: Trunk Circuit Routing Group-line	
		FXO Channel Assignment	
	Select	All Available De-select All Available	
		OK Cancel Help	
	Click <b>OK</b> to continue. In the <b>Analog Interface-line</b> panel, click <b>Confirm/OK</b> , and then the sunburst icon on the menu bar to implement the change.		

# 5. Interoperability Compliance Testing

The interoperability compliance testing focused on assessing the ability of the Quintum Tenor AS or AX to register with Avaya SIP Enablement Services and interoperate with Avaya SIP and Avaya H.323 telephones, and to provide the capability of rerouting calls (Multipath Switching) through the PSTN during data network outages.

#### 5.1. General Test Approach

The general test approach was to place and receive calls through the analog telephones connected to the Tenor AS or Tenor AX at the Branch Site to and from Avaya SIP and Avaya H.323 IP telephones.

The main objectives were to verify that:

- The Tenor AS and Tenor AX can successfully register with Avaya SIP Enablement Services.
- Calls can be placed and received successfully through the Tenor AS and Tenor AX.
- Analog telephones connected through the Tenor AS and Tenor AX can successfully access features available from Avaya Communication Manager. These features include Transfer, Hold, Voice Mail, Message Waiting Indicator, and Off-PBX-Station Features Name Extensions such as call forwarding, forward to voice mail, and whisper page.
- DTMF is supported.
- Call can be placed and received successfully during data network outages.
- G.711 and G.729 codecs are supported.
- Shuffled and non-shuffled calls are successfully completed.
- QoS (Layer-3, DiffServ) is supported.

#### 5.2. Test Results

The Quintum Tenor AS and Tenor AX successfully achieved all main objectives. Calls from analog telephones successfully interoperated with Avaya SIP and Avaya H.323 telephones in the sample network. Through the use of the on/off hook button and/or the numeric keypad buttons, the analog telephone was able to support features such as Transfer, Hold, and Off-PBX-Station Features Name Extension such as call forwarding, forward to voice mail, and whisper page offered by Avaya Communication Manager. DTMF was successfully verified through access to the voice mail system. Layer-3 QoS information was confirmed via the use of a network analyzer. In simulated data network outage, calls to the Main Site were successfully routed through the PSTN as configured in the Tenor AS and Tenor AX. Local calling among analog telephones during a data network outage is not supported in the release tested.

### 6. Verification Steps

The following steps may be used to verify the configuration:

- Place calls call from the analog telephones.
- Log in to the Avaya SIP Enablement Service server via a web browser. Verify that the analog stations extensions are registered with SES.

# 7. Support

For technical support on the Quintum Tenor AS and Tenor AX, contact Quintum at:

- (toll-free) 1.877.435.7553 from within the United States,
- +1.732.460.9399 from outside the United States
- <u>www.quintum.com</u>

# 8. Conclusion

These Application Notes have described the administration steps required to configure the Quintum Tenor AS or AX VoIP Multipath Switch to interoperate with Avaya SIP Enablement Services and Avaya Communication Manager in supporting analog telephones and enabling the multipath switching capability of the Tenor AS or Tenor AX.

### 9. Additional References

- [1] Administrator Guide for Avaya Communication Manager, Doc # 03-300509, Issue 2, February 2006
- [2] Avaya Communication Manager Advanced Administration Quick Reference, Doc # 03-300364, Issue 2, June 2005 Release 3.0
- [3] *Expanded Meet-me Conference (EMMC) version 1.0 Installation and Troubleshooting Guide for the S8500*, Doc # 04-300527, Issue 1, June 2005
- [4] Avaya IA 770 INTUITY AUDIX Messaging Application, Doc # 11-300532, May 2005
- [5] Installing and Administering SIP Enablement Services R3.1, Doc# 03-600768, Issue 1.5, February 2006
- [6] Avaya Extension to Cellular and Off-PBX Station (OPS) Installation and Administration Guide Release 3.0, version 6.0, Doc # 210-100-500, Issue 9, June 2005
- [7] Tenor AS VoIP Multipath/Gateway Switch Product Guide, P/N 480-0059-00-13
- [8] Tenor Configuration Manager/Tenor Monitor Product Guide. P/N 480-0028

Product documentation for Avaya products may be found at http://support.avaya.com.

Product documentation for Quintum Tenor AS or Tenor AX VoIP Multipath Switch products may be found at <u>http://www.quintum.com/support/products/2G/tenor\_2G/index.shtml</u>.

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