

Avaya Solution & Interoperability Test Lab

Application Notes for the Nuance Communications OnDemand Hosted IVR MediaServer/SIP Proxy Configuration with Avaya Communication Manager and Avaya SIP Enablement Services – Issue 1.0

Abstract

These Application Notes describe a solution comprised of Avaya Communication Manager, Avaya SIP Enablement Services, and Nuance Communications MediaServer and SIP Proxy. The Nuance Communications SIP Proxy handles all the SIP-related signaling and the Nuance Communications MediaServer is VoIP software for executing Voice Extensible Markup Language (VXML) applications in a hosted environment. The function of VXML is application-specific and provides an IVR-driven menu for access to these applications. For the purpose of compliance testing, several VXML IVR applications provided by Nuance Communications were used to exercise SIP call flows with SIP and non-SIP telephones. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DevConnect* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

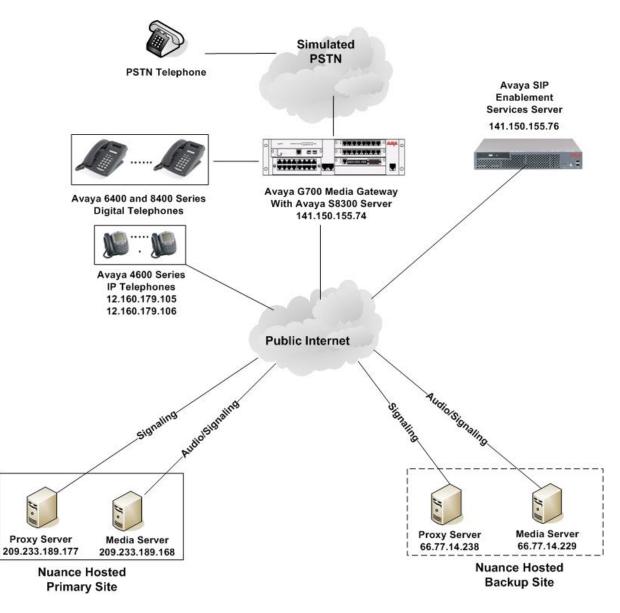
These Application Notes describe a solution comprised of Avaya Communication Manager 4.0.1, Avaya SIP Enablement Services 4.0, and Nuance Communications MediaServer 9.1.1 and SIP Proxy 0.8.14. The Nuance Communications SIP Proxy handles all the SIP-related signaling and the Nuance Communications MediaServer is VoIP software for executing Voice Extensible Markup Language (VXML) applications in a hosted environment. The function of VXML is application-specific and provides an IVR-driven menu for access to these applications. For the purpose of compliance testing, several VXML IVR applications provided by Nuance Communications were used to exercise SIP call flows with SIP and non-SIP telephones.

Figure 1 illustrates a sample configuration consisting of an Avaya S8300 Server, an Avaya G700 Media Gateway, an Avaya SIP Enablement Services (SES) server, and two Nuance Hosted Sites, Primary and Backup, each with a Nuance MediaServer and Nuance SIP Proxy (Nuance Hosted IVR). Avaya Communication Manager was installed on the Avaya S8300 Server. The solution described herein is also extensible to other Avaya Servers and Gateways. For completeness, Avaya 4600-Series SIP IP Telephones, Avaya 4600-Series H.323 IP Telephones, and Avaya 6400 and 8400-Series Digital Telephones are included in **Figure 1** to demonstrate calls from Avaya SIP, H.323, and digital telephones into the Nuance Hosted IVR. The analog PSTN telephone is also included to demonstrate calls routed by Avaya Communication Manager to the Nuance Hosted IVR.

Typical SIP call flows for Avaya Communication Manager and Avaya SES are as follows:

- Calls originating from SIP endpoints are routed to Avaya Communication Manager via Avaya SES over a SIP trunk and are routed to SIP endpoints from Avaya Communication Manager via Avaya SES over a SIP trunk.
- Calls originating from non-SIP endpoints come directly to Avaya Communication Manager and are routed to SIP endpoints from Avaya Communication Manager over SIP trunk via Avaya SES.

The Nuance Hosted IVR at each site is configured as a trusted host with Avaya SES and supports the G711MU codec using RFC2823 for DTMF.





2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300 Server	Avaya Communication Manager 4.0.1
	(R014x.00.1.731.2)
Avaya G700 Media Gateway	26.33.0
MM710P DS1	HW05, FW013
MM717AP DCP	HW03, FW04
MM711AP ANA	HW03, FW17
Avaya SIP Enablement Services Server S8500B	Avaya SIP Enablement Services 4.0
	(SES-4.0.0.0-033.6)
Avaya 4600 Series IP Telephones	2.2.3 (4610SW SIP)
	2.3 (4602SW H.323)
	2.6 (4610SW H.323)
	2.5 (4625SW H.323)
Avaya 6400 and 8400 Series Digital Telephones	-
Analog Telephone	-
Nuance Communications MediaServer	9.1.1
Nuance Communications SIP Proxy	0.8.14

3. Configure Avaya Communication Manager

This section describes the steps for configuring Avaya Communication Manager to route the calls properly for interaction with the Nuance Hosted IVR via Avaya SES. The System Access Terminal (SAT) interface is used to configure IP codec set, SIP signaling and trunking between Avaya Communication Manager and Avaya SES and setting up the dial plan for routing the calls destined for Avaya SES. Configuration in the following sections is only for the fields where a value needs to be entered or modified. Default values are used for all other fields. Refer to [1] for additional details.

3.1. IP Codec Set

This section describes the steps for administering an IP codec set in Avaya Communication Manager. This IP codec set is used in the IP network region for communications between Avaya Communication Manager and Avaya SES.

Step	Description	
1.	Enter the change ip-codec-set < c > command, where c is a number betwee inclusive. This IP codec set is used in Section 3.2 to specify which IP coused within and between the associated network regions. For the compliantly G.711MU was used and Media Encryption was set to none as encourrently not supported for SIP telephony.	decs may be ance testing,
	change ip-codec-set 1 Pa	ge 1 of 2
	IP Codec Set	
	Codec Set: 1	
	Audio CodecSilence SuppressionFrames Per PktPacket 	
	Media Encryption 1: none 2: 3:	

3.2. IP Network Region

This section describes the steps for administering an IP network region in Avaya Communication Manager for communication between Avaya Communication Manager and Avaya SES.

Step	Description				
1.	Enter the change ip-network-region < n > command, where n is a number between 1 and				
	250 inclusive and configure the following:				
	• Authoritative Domain – This should match the SIP Domain value in Section 4,				
	Step 2. In this example, devcon.com is used.				
	• Intra-region IP-IP Direct Audio – Set to no. Intra-region IP-to-IP connectivity is				
	not supported in this solution.				
	• Codec Set – Set the codec set number as provisioned in Section 3.1.				
	• Inter-region IP-IP Direct Audio – Set to no. Inter-region IP-to-IP connectivity is				
	not supported in this solution.				
	not supported in this solution.				
	change ip-network-region 1 Page 1 of 19				
	IP NETWORK REGION				
	Region: 1				
	Location: Authoritative Domain: devcon.com				
	Name:				
	MEDIA PARAMETERSIntra-region IP-IP Direct Audio: noCodec Set: 1Inter-region IP-IP Direct Audio: no				
	UDP Port Min: 2048 IP Audio Hairpinning? y				
	UDP Port Max: 65535				
	DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y				
	Call Control PHB Value: 46 RTCP MONITOR SERVER PARAMETERS				
	Audio PHB Value: 46 Use Default Server Parameters? y				
	Video PHB Value: 26				
	802.1P/Q PARAMETERS				
	Call Control 802.1p 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 IP ENDPOINTS RSVP ENdpied? II H.323 Link Bounce Recovery? y RSVP Refresh Rate(secs): 15				
	Idle Traffic Interval (sec): 20 Retry upon RSVP Failure Enabled: y				
	Keep-Alive Interval (sec): 5 RSVP Profile: quaranteed-service				
	Keep-Alive Count: 5 RSVP unreserved (BBE) PHB Value: 46				

3.3. IP Node Names

This section describes the steps for defining the IP node name for Avaya SES in Avaya Communication Manager.

Step	Description							
1.	Enter the change	Enter the change node-names ip command and add a node name for Avaya SES along						
	with its IP addr	ess. Take note of the IP address of procr	as this will be used in Section 4.					
	change node-na	-	Page 1 of 1					
		IP NODE NAMES						
	Name	IP Address						
	procr	141.150.155.74						
	default	0.0.0						
	SES							

3.4. SIP Signaling

This section describes the steps for administering a signaling group in Avaya Communication Manager for communication between Avaya Communication Manager and Avaya SES.

Step	Desc	ription			
1.	 Issue the command add signaling-group <s and="" configure="" following:<="" li="" the=""> Group Type – Set to sip. </s>	s>, where s is an available signaling group,			
	 Transport Method – Set to tls. 				
	 Near-end Node Name - Set to procr as displayed in Section 3.3. 				
	-	SES name configured in Section 3.3.			
	• Far-end Network Region - Set to the	-			
	8	n.com . This should match the SIP Domain			
	value in Section 4, Step 2.				
	• DTMF over IP - Set to rtp-payloa	d.			
	Direct IP-IP Audio Connections –	Set to n.			
	add signaling-group 1 SIGNALI	Page 1 of 1 NG GROUP			
	Group Number: 1 Group Typ Transport Metho	-			
	Near-end Node Name: procr	Far-end Node Name: SES			
	Near-end Listen Port: 5061	Far-end Listen Port: 5061 Far-end Network Region: 1			
	Far-end Domain:devcon.com	-			
		Bypass If IP Threshold Exceeded? n			
	DTMF over IP: rtp-payload	Direct IP-IP Audio Connections? n IP Audio Hairpinning? y			
	Enable Layer 3 Test? n				
	Session Establishment Timer(min): 120				
1					

3.5. SIP Trunking

This section describes the steps for administering a trunk group in Avaya Communication Manager for communication between Avaya Communication Manager and Avaya SES.

ep			Description		
	Issue the comma	and add trun l	k-group <t< b="">>, where t i</t<>	is an a	vailable trunk group number,
	and configure the	e following:			
	Group T	Type – Set to s	sip.		
	-		any descriptive name.		
	-		Code) – Set to any avai		trunk access code
	,		· •		figured in Section 3.4 .
		-		-	•
					een 0 and 255. Set to a value
	large eno	ough to accom	imodate the number of	SIP t	elephone extensions being use
Note: Each SIP call between two SIP endpoints (whether internal or external) req					
	Note: Each SIP	call between	two SIP endpoints (wh	ether	internal or external) requires
			× '		, 1
	two SIP trunks fo	for the duratio	× '		internal or external) requires e installed on the system contro
		for the duratio	× '		, 1
	two SIP trunks fo the maximum pe	for the duratio prmitted.	A (e installed on the system contro
-	two SIP trunks fo	for the duratio prmitted.	on of the call. The licen		, 1
_	two SIP trunks fo the maximum pe	for the duratio prmitted.	A (e installed on the system contro
-	two SIP trunks fo the maximum pe	for the duratio prmitted.	n of the call. The licen	ese file	e installed on the system contro Page 1 of 21
-	two SIP trunks for the maximum per add trunk-group	for the duratio prmitted.	n of the call. The licen TRUNK GROUP Group Type:	ese file	e installed on the system contro Page 1 of 21
-	two SIP trunks for the maximum per add trunk-group Group Number: 1 Group Name: T Direction: t	for the duratio prmitted. p 1 1 To SES two-way	TRUNK GROUP Group Type: COR:	sip	Page 1 of 21 CDR Reports: y TN: 1 TAC: 101
-	two SIP trunks for the maximum per add trunk-group Group Number: 1 Group Name: 1 Direction: t Dial Access? r	for the duratio prmitted. p 1 1 To SES two-way	TRUNK GROUP Group Type: COR:	sip	Page 1 of 21 CDR Reports: y
-	two SIP trunks for the maximum per add trunk-group Group Number: 1 Group Name: 1 Direction: t Dial Access? m Queue Length: 0	for the duratio prmitted. p 1 fo ses two-way	TRUNK GROUP Group Type: COR: Outgoing Display?	sip n	Page 1 of 21 CDR Reports: y TN: 1 TAC: 101
-	two SIP trunks for the maximum per add trunk-group Group Number: 1 Group Name: 1 Direction: t Dial Access? r	for the duratio prmitted. p 1 fo ses two-way	TRUNK GROUP Group Type: COR:	sip n	Page 1 of 21 CDR Reports: y TN: 1 TAC: 101
-	two SIP trunks for the maximum per add trunk-group Group Number: 1 Group Name: 1 Direction: t Dial Access? m Queue Length: 0	for the duratio prmitted. p 1 fo ses two-way	TRUNK GROUP Group Type: COR: Outgoing Display?	sip n	Page 1 of 21 CDR Reports: y TN: 1 TAC: 101

3.6. Dial Plan/AAR/Route Pattern

This section describes the steps for setting the dial plan, AAR digit analysis and Route Pattern in Avaya Communication Manager for proper routing of calls from Avaya Communication Manager to Avaya SES. These calls are ultimately destined for the Nuance Hosted IVR.

Step		Description			
1.	Issue the command change dial	blan analysis and add the following entries:			
	• Dialed String – Set it to	a value for routing calls to Avaya SES for proper AAR			
	digit analysis. Set to 412				
	u	value equal to the length of the Dialed String .			
	• Call Type – Set to aar.	······································			
	change dialplan analysis	Page 1 of 12			
		DIAL PLAN ANALYSIS TABLE			
	Dialed Total Call	Percent Full: 2 Dialed Total Call Dialed Total Call			
	String Length Type	String Length Type String Length Type			
	0 1 fac				
	1 3 dac 41212 5 aar				
	2 4 ext				
	3 5 ext				
	4 5 ars 5 5 ext				
	5 5 ext 8 1 fac				
	9 1 fac				
	* 3 fac				
	# 3 fac				
2.	Issue the command change public-unknown-numbering < e >, where e is extension code				
	to be administered, and add an er				
		th of the calling party number for extensions that will be			
	calling the Nuance Hoste	d IVR.			
	• Ext Code – Prefix of the	calling party. Set to 5 in this example.			
	• Trk Grp<s></s> - Trunk Gro	pup(s) where calls from these extensions would be routed.			
	• Total CPN Len – Length	n of the outbound calling party number.			
	change public-unknown-numberi				
	NUMBERING	- PUBLIC/UNKNOWN FORMAT			
	Ext Ext Trk CPN	Total CPN			
	Len Code Grp <s> Pre</s>				
	F F 1	_			
	5 5 1	5			

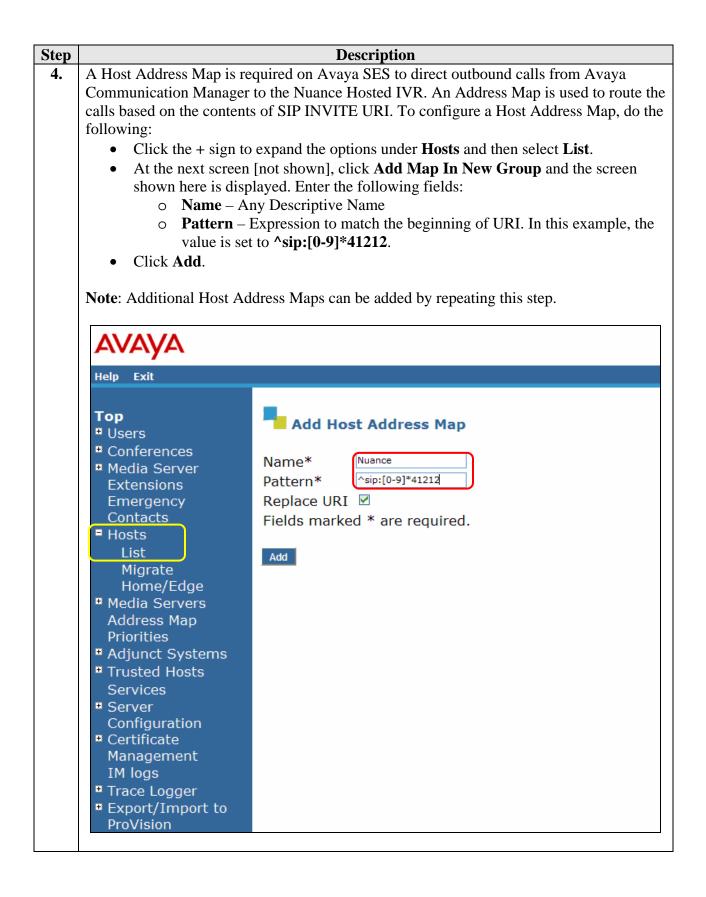
Step		Description				
3.	Issue the command change	route-pattern <r>, where <r> is the number</r></r>	r of an available			
	route pattern to be administe	ored.				
	• Grp No – Set to the	Trunk Group provisioned in Section 3.5.				
	• \mathbf{FRL} – Set to 0 .					
		Inserted Digits will be prepended to the ca	illed number.			
		inserved Digits will be prepended to the ed				
	change route-pattern 10		Page 1 of 3			
		rn Number: 1 Pattern Name: SES SIP	-			
		SCCAN? n Secure SIP? n				
	Grp FRL NPA Pfx Hop T No Mrk Lmt L	oll No. Inserted ist Del Digits	DCS/ IXC			
	NO MER LIUCT	Dgts	QSIG Intw			
	1: 1 0	0 33344	n user			
	2:		n user			
	3:		n user			
	4:		n user			
	5:		n user			
	6:		n user			
	BCC VALUE TSC CA-TS	C ITC BCIE Service/Feature PARM No.	Numbering LAR			
	0 1 2 3 4 W Reque		Format			
		Subaddre				
	l: yyyyyn n	rest	none			
	2: yyyyn n	rest	none			
	3: yyyyyn n	rest	none			
	4: yyyyyn n 5: yyyyyn n	rest rest	none			
	5: уууууп п 6: уууууп п	rest	none			
		1000				
4.	Issue the command change aar analysis 4 and add the following entries:					
	• Dialed String – Set	to match the digits dialed. Set to 41212 in th	is example.			
	_	– Set to the value of the dialed digits.				
		the value to the route pattern defined in Ste	n ?			
		-	р <i>2</i> .			
	• Call Type – Set to a	ar.				
	change aar analysis 4	AND DIGIT ANALYGIG TADI D	Page 1 of 2			
		AAR DIGIT ANALYSIS TABLE	ent Full: 2			
	Dialed	Total Route Call Node ANI				
	String	Min Max Pattern Type Num Reqd				
	41212	5 5 10 aar n				
	2	5 5 15 aar n				
	2	7 7 999 aar n				
	245	5 5 33 aar n				

4. Configure Avaya SIP Enablement Services

This section describes steps to verify that SIP trunking has been properly configured between Avaya Communication Manager and Avaya SES. Also, additional configuration is done to add the Nuance Hosted IVR as a trusted host in Avaya SES. Configuration in the following steps is only for the fields where a value needs to be entered or modified. Default values are used for all other fields. Refer to [3, 4] for additional details.

Step	Description				
1.		credentials. Click on the	a SES server>/admin for the URL, he Launch Administration Web		
2.	 Click System Properti Verify the SIP Domain 	and the options under Se ies. n matches the Far-end I	erver Configuration. Domain field value configured for Manager in Section 3.4.		
	Help Exit				
	Top Users Conferences Media Server Extensions Emergency Contacts Hosts Media Servers Address Map Priorities Adjunct Systems Trusted Hosts Services	domain should be the re example, for a DNS dor	SES-4.0.0.0-033.6 simplex home/edge devcon.com this field, most often the SIP oot level DNS domain. For		
	 Server Configuration System Properties Admin Accounts License IM Log Settings SNMP Configuration 	be configured to examp	ble.com. This allows SIP calls to users with handles of the		
	 Certificate Management IM logs Trace Logger Export/Import to ProVision 	Management System Access Login Management System Access Password			

ep	Description				
3.	 verify Media Server Interfa Click the + sign to e Click List and the f Verify that the Host 3.3. Verify that the SIP in Section 3.4. 	ing between Avaya SES and Avaya Communication Manager, ace is properly configured: expand the options under Media Servers ollowing screen appears. t matches the Avaya SES IP Address configured in Section Trunk Link Type matches the Transport Method configured ink IP Address matches the IP Address of procr shown in			
	AVAYA				
	Help Exit				
	 Top Users Conferences Media Server Extensions List Add Search Emergency Contacts Hosts Media Servers List Add Address Map Priorities Adjunct Systems Trusted Hosts Services Server Configuration Certificate Management IM logs Trace Logger Export/Import to ProVision 	Edit Media Server Interface Name* Name* Host 141.150.155.76 SIP Trunk Link Type SIP Trunk IP Address* I1.150.155.74 Media Server Admin Media Server A			



ep	Description				
5.	 below), make the following Contact – Enter the transport protocol In this example, signaddress correspondent Click on Add. 	own), click Add Host Contact. On the screen that follows (see			
	AVAYA Help Exit Update				
	 Top Users Conferences Media Server Extensions Emergency Contacts Hosts Update All List Migrate Home/Edge Media Servers Address Map Priorities Adjunct Systems Trusted Hosts Services Server Configuration Certificate Management IM logs Trace Logger Export/Import to ProVision Update 	Add Host Contact Handle Nuance Contact pirst(user)@209.233.189.177:5060;transpot Telds marked * are required. Mod			

Step	Description					
6.	This is the confir Nuance SIP Prox		creen after	adding host conta	ects for both the primary an	d backur
	AVAYA Help Exit Update					
	Help Exit Update Top " Users " Conferences " Media Server Extensions Emergency Contacts Hosts Update All List Migrate Home/Edge " Media Servers Address Map Priorities a Adjunct Systems " Trusted Hosts Services Server Configuration " Certificate Management IM logs " Trace Logger " Export/Import to " Top	Host <u>Commands</u>	Nuance Iop Map Tap	Commands Edit Delete sip:\$(user)@ Add Another Contact Edit Delete sip:\$(user)@	Contact 67.102.42.100:5060;transport=udp 209.233.189.177:5060;transport=ud 66.77.14.238:5060;transport=udp	P Delete Group Delete Group Delete Group

		Description
	 are configured as trusted Click the + sign the following scr IP Addressing IP Addressing Host - Secondary 	to expand options under Trusted Hosts and select Add to display reen. Enter the following fields: ess – IP Address of the Nuance SIP Proxy or the Nuance rver. elect the IP Address of the Avaya SES server where the trusted
]	in Sectio o Commer • Click Add.	be configured. In this configuration, it should match the value set n 3.3 . nt – Any Descriptive Information.
	AVAYA	
	Help Exit Update	~
	 Top Users Conferences Media Server Extensions Emergency Contacts Hosts Update All List Migrate Home/Edge Media Servers Address Map Priorities Adjunct Systems Trusted Hosts List Add Services Server Configuration Certificate Management IM logs Trace Logger Export/Import to ProVision 	Add Trusted Host IP Address*: 209.233.189.177 141.150.155.76 Uwance ME Telos market * are required. Idd

ep			Descripti				
8.					osts associated with b t configuration in Av		
	Help Exit Update						
	Top " Users	List Trusted Hosts					
	Conferences	Commands	IP Address	Trusted by Host	Comment		
	Media Server Extensions	Edit Delete	209.233.189.168		Nuance MS		
	Emergency	Edit Delete	209.233.189.177		Nuance Proxy		
	Contacts	Edit Delete	66.77.14.229	141.150.155.76	Backup Nuance MS		
	Hosts		66.77.14.238	141.150.155.76	Backup Nuance Proxy		
	Update All		67.102.42.100	141.150.155.76			
	List Migrate Home/Edge Media Servers Address Map Priorities	Add Another Tr	usted Host				
	 Adjunct Systems Trusted Hosts List 						
	Add Services						
	 Server Configuration Certificate 						
	Management IM logs						
	 Trace Logger Export/Import to 						
	Update						

5. Configure the Nuance Hosted IVR

This section describes the steps for configuring the Nuance Hosted IVR. This section assumes that the Nuance SIP Proxy and the Nuance MediaServer software at each site (Primary and Backup) are already installed and their IP addresses are set. Additionally, the Nuance solution is a hosted solution and it is assumed is that the Nuance SIP Proxy and the Nuance MediaServer are properly configured. Voice applications hosted by the Nuance Hosted IVR can be accessed by valid DID numbers. This document provides configuration steps for associating a DID with a voice application. Configuration steps described in this section apply only to the fields where a value needs to be modified or entered. Default values are used for all other fields. Refer to [5] for additional details.

Step	Description	
1.	Using a Web browser, navigate to <u>http://www.bevocal.com</u> and login with proper credentials to add a new VXML application.	r
2.	Select Config Manager in the left pane. On the Config Manager screen, enter a name in the Config Name field and click Create Config .	valid
	🕲 BeVocal Command Center - Mozilla Firefox	
	Eile Edit View Higtory Bookmarks Tools Help	
	🖗 Getting Started 🔂 Latest Headlines 🗋 Main.jsp	
	buser Manager key Manager Audit Log Change Passwoid DID Manager Audit Manager Config Mamager Cong BeVocal Inc.	
	🔀 Find: Incamed001 🖉 Next 🎓 Previous 🗁 Highlight all 🗌 Match case Done	

		Description		
At the next scr	een, set the INITIA	AL_URL field to the voice	e application URL, the	en so
	x Add (not shown).		11 /	
🕲 BeVocal Command Cente	er - Mozilla Firefox			
<u>File E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> i	ookmarks <u>T</u> ools <u>H</u> elp			
🗣 • 📄 • 🕑 😢 (1 http://ctl001/cc/cc_new.htm		🔹 🕨 💽 🖌 Google	
🐢 Getting Started 🔂 Latest He	leadlines 🗋 Main.jsp			
Le contraction de la contracti				
BEVOCAL	dyang:Administrator			
> User Manager				
> Key Manager	Config Manager			
 Audit Log Change Password 	Coning List. More coning			
> DID Manager > Alarm Manager	Edit Config Change properties of the specified Co	nfiguration.		
 Cafe Account Manager Config Manager 	To change the value of a single prope	rty, enter the new value in the Property Value text box and clicl values and then click <i>Updat</i> e All at the bottom of the list of prop	<i>Updat</i> e. To change	
> Log Manager	property and its value, click Delete on			
 Outbound Tool CDR Report Tool 	Add Property.		inc propercies and crick	
 Port Manager Property Manager 	Config Name horoscope	Last Change 19 Sep 2007 18:31		
> URL Manager	Config Properties			
> Logout	Property Name INITIAL_OBJECT_CLASS	Property Value	Actions Update • Delete	
@ 2003 BeVocal Inc.	INITIAL_URL	http://harley/dana/transfer/avaya.vxml	Update • Delete	
	bevocal.cafe.error_prompts	true	Update • Delete	
	bevocal.calllog.logevent	true	Update • Delete	
	bevocal.calllog.perfevent	false	Update • Delete	
	bevocal.calllog.realtimetrace	true	Update • Delete	
Find: incamed001 Done Select DID Ma	anager in the left p	ane. Enter the number to r	each the application	
Select DID Ma		ane. Enter the number to r	each the application	
Select DID Ma configured in S	anager in the left p Step 2 and click Up	ane. Enter the number to r	each the application	
Select DID Ma	anager in the left p Step 2 and click Up	ane. Enter the number to r	each the application	
Select DID Ma configured in S	anager in the left p Step 2 and click Up er - Mozilla Firefox gookmarks Tools Help	ane. Enter the number to r		
Done Select DID Ma configured in S BeVocal Command Cente Ele Edit View Higtory Br (anager in the left p Step 2 and click Up er - Mozilla Firefox cookmarks Tools Help Thttp://ctl001/cc/cc_new.htm	ane. Enter the number to r	each the application	
Select DID Ma configured in S	anager in the left p Step 2 and click Up er - Mozilla Firefox cookmarks Tools Help Thttp://ctl001/cc/cc_new.htm	ane. Enter the number to r		
Done Select DID Ma configured in S BeVocal Command Cente Ele Edit View Higtory Br (anager in the left p Step 2 and click Up er - Mozilla Firefox cookmarks Tools Help Thttp://ctl001/cc/cc_new.htm	ane. Enter the number to r		
Done Select DID Ma configured in S BeVocal Command Center Ele Edt Yew Higtory Be Configured Scatter Higtory Be Getting Started Scatter Higtory Be Getting Started Scatter Higtory Be	anager in the left p Step 2 and click Up er - Mozilla Firefox cokmarks Iools Help fr http://ct001/cc/cc_new.htm eadlines Main.jsp	ane. Enter the number to r		
Done Select DID Ma configured in S BeVocal Command Cente Ele Edit View History B Configured Content Ele Edit View History B Configured Content Ele Edit View History B Configured Content Ele Edit View History B Configured Content Configured Content Content Configured Content	anager in the left p Step 2 and click Up er - Mozilla Firefox cookmarks Tools Help Cook Help C	ane. Enter the number to r		(
Done Select DID Ma configured in S BeVocal Command Cente Ele Edt View History Be Getting Started & Latest Hi BEVOCAL > User Manager > Key Manager > Audit Log > Change Password	anager in the left p Step 2 and click Up er - Mozilla Firefox cokmarks Tools Help Colored to the firefox cokmarks Tools Help cokmarks Tools Help cokm	ane. Enter the number to r		
Done Select DID Ma configured in S BeVocal Command Center Ele Edt View Higtory Be Cetting Started Context He Getting Started Context He EVOCAL > User Manager > Key Manager > Audit Log > Change Password > DiD Manager > Aludit Log	anager in the left p Step 2 and click Up er - Mozilla Firefox cookmarks Tools Help Cook Help C	ane. Enter the number to rodate DID.		
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6. Interoperability Compliance Testing

The focus of the interoperability compliance testing was primarily to exercise the Nuance Hosted IVR solution using speech and DTMF. Tests were done to verify that the Nuance Hosted IVR is able to recognize speech and DTMF commands and take appropriate action for calls originating from Avaya SIP, H.323, digital, analog and PSTN telephones using Avaya SES and Avaya Communication Manager.

6.1. General Test Approach

The general test approach was to place calls from any phone to establish a call into the Nuance Hosted IVR and exercise the supported features. The main objectives were to verify that:

- The Nuance Hosted IVR recognizes DTMF tones and takes appropriate action based upon the option entered.
- The Nuance Hosted IVR recognizes speech and takes appropriate action based upon the option entered.
- The Nuance Hosted IVR successfully executes a blind transfer.
- The Nuance Hosted IVR successfully terminates the call.

For serviceability testing, failures such as cable disconnections and hardware resets were applied. For redundancy testing, failures of the Primary Nuance SIP Proxy and Primary Nuance MediaServer were created to verify that calls failed over to the Backup Nuance SIP Proxy/MediaServer pair.

6.2. Test Results

The test objectives of **Section 6.1** were verified. For serviceability testing, the Nuance Hosted IVR operated properly after recovering from failures such as cable disconnects, and resets of the Nuance Hosted IVR, Avaya SES server, and Avaya Communication Manager. For redundancy testing, the calls were successfully handled by the redundant Nuance SIP Proxy/MediaServer pair. Calls placed into the Nuance Hosted IVR completed successfully.

The following observation was made during testing:

• The Nuance MediaServer needs to be rebooted after its Ethernet cable is disconnected and re-connected.

Nuance Communications expects to resolve the above issue in a future release. Contact Nuance Communications (<u>www.bevocal.com</u>) for further updates.

7. Support

For technical support on the Nuance Hosted IVR solution, consult the support pages at <u>http://www.bevocal.com</u> or contact Nuance Communications technical support at:

- Phone: (650) 210-8600
- E-mail: support@bevocal.com

8. Conclusion

These Application Notes describe a solution comprised of Avaya Communication Manager 4.0.1, Avaya SIP Enablement Services 4.0, and Nuance Communications MediaServer 9.1.1 and SIP Proxy 0.8.14. The Nuance Communications SIP Proxy handles all the SIP-related signaling and the Nuance Communications MediaServer is VoIP software for executing Voice Extensible Markup Language (VXML) applications in a hosted environment. The function of VXML is application-specific and provides an IVR-driven menu for access to these applications. For the purpose of compliance testing, several VXML IVR applications provided by Nuance Communications were used to exercise SIP call flows with SIP and non-SIP telephones. The compliance testing was successful with the exception of one minor issue noted in **Section 6.2**.

9. Additional References

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

[1] *Administrator Guide for Avaya Communication Manager*, Issue 3.1, February 2007, Document Number 03-300509.

[2] *Administration for Network Connectivity for Avaya Communication Manager*, Issue 12, February 2007, Document Number 555-233-504.

[3] SIP Support in Avaya Communication Manager Running on the Avaya S8300, S8400, S8500 series, and S8700 Series Media Server, Issue 7, May 2007, Document Number 555-245-206.
[4] Installing and Administering SIP Enablement Services, Issue 4, May 2007, Document Number 03-600768.

[5] Nuance On-Demand Hosting Service Overview, Version 9.1.1.

Additional product documentation for Nuance Communications products may be found at <u>http://www.bevocal.com/</u>.

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