

Avaya Solution & Interoperability Test Lab

Application Notes for eLoyalty Behavioral Analytics™ with Avaya Communication Manager and Avaya Application Enablement Services – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for eLoyalty Behavioral Analytics[™] to interoperate with Avaya Communication Manager and Avaya Application Enablement Services (AES).

eLoyalty Behavioral Analytics is an analytical tool that transforms the unstructured conversations of customer interactions into structured, actionable data that drives informed decision making and business actions. The Call Capture Service is a part of eLoyalty Behavioral Analytics that performs the recording solution.

The Call Capture Service utilizes the Device, Media and Call Control (DMCC) service of Avaya AES to register DMCC softphones that the Call Capture Service uses as recording ports. When recording of audio is desired, the Call Capture Service issues a Single Step Conference request through Avaya AES to bridge a DMCC softphone onto the call.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

eLoyalty Behavioral Analytics is an analytical tool that transforms the unstructured conversations of customer interactions into structured, actionable data that drives informed decision making and business actions. The Call Capture Service is a part of eLoyalty Behavioral Analytics that performs the recording solution.

The Call Capture Service utilizes the Device, Media and Call Control (DMCC) service of Avaya AES to register DMCC softphones that the Call Capture Service uses as recording ports. When recording of audio is desired, the Call Capture Service issues a Single Step Conference request through Avaya AES to bridge a DMCC softphone onto the call.

The overall objective of this testing was to verify the Call Capture Service can interoperate with Avaya Communication Manager and Avaya Application Enablement Services (AES). Serviceability and performance testing were also conducted to assess the reliability of the solution.

Figure 1 provides the test configuration used for the compliance testing.



Figure 1: Test Configuration for eLoyalty Behavioral AnalyticsTM with Avaya Communication Manager and Avaya AES

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2. Equipment and Software Validated

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

Equipment	Software/Firmware	
Avaya S8700 Servers	Avaya Communication Manager 4.0.1	
	(R014x.00.1.731.2 with patch 14300)	
Avaya G650 Media Gateway		
TN2312BP IP Server Interface	HW11 FW030	
TN799DP CLAN Interface	HW01 FW017	
TN2302AP IP Media Processor	HW20 FW108	
Avaya S8300 Server	Avaya Communication Manager 4.0.1	
	(R014x.00.1.731.2 with patch 14300)	
Avaya G700 Media Gateway	25.28.0	
Avaya Application Enablement Services	4.0 w/ Bundled Offer Build 47.3	
Avaya 4600 Series IP Telephones		
4620 (H.323)	2.8	
4625 (H.323)	2.8	
Avaya 9600 Series IP Telephones		
9630 (H.323)	1.5	
9650 (H.323)	1.5	
Avaya 6400D Series Digital Telephones	-	
eLoyalty Behavioral Analytics TM	2.1.0.4	

3. Configure Avaya Communication Manager

This section provides the procedures for configuring the recording ports and recording stations, recorded stations, an IP codec set, IP network region, and IP Services on Avaya Communication Manager. All the configuration steps are performed through the System Access Terminal (SAT) interface. The highlights in the following screens indicate the values used during the compliance testing. For the compliance testing, the following devices were used.

Device Type	Device Number/Extension
	IP Telephones: 22001, 22002, 22003
Recorded stations (IP Telephones)	DCP Telephone: 22007
	IP Agent: 22009
Recording stations (DMCC stations)	23001 - 23023

3.1. Recording Ports

The recording ports in this configuration are Avaya AES DMCC stations that appear as IP Softphones to Avaya Communication Manager. Each DMCC station requires an IP_API_A license. In the DMCC environment, the IP_API_A license is required for both the recorded and the recording stations.

Enter the **display system-parameters customer-options** command and verify that there are sufficient **IP_API_A** licenses. If not, contact an authorized Avaya account representative to obtain these licenses.

display system	m-parameters custo	mer-options	Page	10 of 11
	MAXIMUM IP	REGISTRATIONS BY PRODUCT ID		
Product ID R	el. Limit	Used		
IP_API_A	: 200	0		
IP_API_B	: 0	0		
IP_API_C	: 0	0		
IP_Agent	: 50	0		
IP_IR_A	: 0	0		
IP_Phone	: 12000	3		
IP_ROMax	: 12000	0		
IP_Soft	: 2	0		
IP_eCons	: 0	0		
	: 0	0		
	: 0	0		
(NOTE	: You must logoff	& login to effect the permission (change	s.)

Enter the **add station** <**s**> command, where <**s**> is an extension valid in the provisioned dial plan. On **Page 1** of the STATION form, set the Type field to an IP telephone set type, set the Port field to **ip**, enter a descriptive Name, specify a Security Code, and set the IP SoftPhone field to **y**.

Repeat this step as necessary, with the same Security Code, to configure additional DMCC stations.

add station 23001	P	age 1 of	5
	STATION		
Extension: 23001	Lock Messages? n	BCC:	0
Type: 4620	Security Code: 1234	TN:	1
Port: ip	Coverage Dath 1:	COR:	1
Name: DMCC-1	Coverage Path 2:	COS:	1
Maine + Driet I	Hunt-to Station:	0001	-
STATION OPTIONS			
	Time of Day Lock Table	:	
Loss Group: 19	Personalized Ringing Pattern	: 1	
	Message Lamp Ext	: 23001	
Speakerphone: 2-wa	Mute Button Enabled	? У	
Display Language: engl	Ish Expansion Module	? n	
Survivable GK Node Name:			
Survivable COR: inte	rnal Media Complex Ext	:	
Survivable Trunk Dest? y	IP SoftPhone	?у	
	IP Video Softphone	2 n	
		• ••	
	Customizable Labels?	У	

3.2. Recorded Stations

The stations that were recorded during the compliance testing include an Avaya Digital Telephone, Avaya IP Telephones (Avaya 4600 and 9600 Series), and an Avaya IP Agent. The extensions used were in the range 22001-22009.

Enter the **add station** <**s**> command, where <**s**> is an extension valid in the provisioned dial plan. On **Page 1** of the STATION form, set the Type field to the appropriate IP telephone set type (if the station is an Avaya IP telephone), set the Port field to **ip**, enter a descriptive Name, specify a Security Code, and set the IP SoftPhone field to **y**.

add station 22001		Dago	1 of	F
add Station 22001		Page	I OI	5
	STATION			
Extension: 22001	Lock Messages? n		BCC:	0
T_{2} Type: 4620	Security Code: 1234		י איד	1
1990. 4020	Security code: 1254		111.	-
Port: ip	Coverage Path 1:		COR:	1
Name: 22001	Coverage Path 2:		COS:	1
	Hunt-to Station:			
STATION OPTIONS				
	Time of Day Lock Tabl	e:		
Logg Crown: 10	Dergonalized Binging Datter			
LOSS Group: 19	Personalized kinging Patter	· · · · · · · · · · · · · · · · · · ·	0.1	
	Message Lamp Ex	t: 220	01	
Speakerphone: 2-way	Mute Button Enable	ed?y		
Display Language: english	Expansion Modul	.e? n		
Survivable GK Node Name:	-			
Survivable COP: interna	Media Complex Ex	-+ ·		
Survivable Trunk Dest? y	IP SoftPhon	ie? y		
	IP Video Softphon	le? n		
	Customizable Labels?	v		
	Customizable Labels?	v		

3.3. Codec Configuration

Enter the **change ip-codec-set** <**t**> command, where <**t**> is a number between 1 and 7, inclusive, and represents an unused IP codec set. Enter a list of audio codecs to be used, and their related parameters. For the compliance testing, G.711MU was used.

```
change ip-codec-set 1
                                                                 Page
                                                                        1 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:
3:
4:
    Media Encryption
1: none
2:
```

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3.4. IP Network Regions

This section describes the steps for administering an IP network region in Avaya Communication Manager. Enter the **change ip-network-region** $\langle n \rangle$ command, where $\langle n \rangle$ is a number between 1 and 250 inclusive, and represents an available IP network region. For Codec Set, enter the IP codec set number provisioned in Section 3.3.

```
change ip-network-region 1
                                                                          1 of 19
                                                                   Page
                                TP NETWORK REGION
  Region: 1
Location:
                  Authoritative Domain:
   Name:
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: 46
Audio PHB Value: 46
RTCP MONITOR SERVER PARAMETERS
Use Default Server Parameters? y
        Video PHB Value: 26
802.1P/O 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 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
  Keep-Alive Interval (sec): 5
            Keep-Alive Count: 5
```

3.5. Configure IP-Services

Enter the **change node-names ip** command. In the compliance-tested configuration, the **CLAN** IP address was utilized for registering H.323 endpoints (Avaya IP Telephones, Avaya IP Softphones, and DMCC stations). The **CLAN-AES** IP address was used for connectivity to Avaya AES.

change node-names i	.p		Page	1 of	2
		IP NODE NAMES			
Name	IP Address				
MEDPRO	192.45.80.88				
S8300G700	192.45.87.11				
default	0.0.0.0				
CLAN	192.45.80.87				
CLAN-AES	192.45.80.89				

Enter the **change ip-services** command. On **Page 1**, configure the Service Type field to **AESVCS** and the Enabled field to **y**. The Local Node field should be pointed to the **CLAN-AES** board that was configured previously in the IP NODE NAMES form. During the compliance test, the default port was utilized for the Local Port field.

change ip-s	ervices				Page	1 of	4	
Service	Enabled	Local	IP SERVICES Local	Remote	Remote			
AESVCS	У	CLAN-AES	8765	Noue	FOLC			

On **Page 4**, enter the hostname of the Avaya AES server for the AE Services Server field. The server name may be obtained by logging in to the Avaya AES server using ssh, and running **uname –a**. Enter an alphanumeric password for the Password field. (The same password will be configured in Avaya AES in **Section 4.1**.) Set the Enabled field to **y**.

		Page	4 of	4	
AE Services Administra	tion				
s Password	Enabled	Status			
xxxxxxxxxxxxxxxx	У	idle			
	AE Services Administra s Password xxxxxxxxxxxxxxxxx	AE Services Administration s Password Enabled xxxxxxxxxxx y	Page AE Services Administration Page Services Administration Services Administ	Page 4 of AE Services Administration Page 4 of Enabled Status Enabled Status Enabled Status Enabled Status	Page 4 of 4 AE Services Administration rs Password Enabled Status xxxxxxxxxxxx y idle

4. Configure Avaya Application Enablement Services

Avaya AES enables Computer Telephony Interface (CTI) applications to control and monitor telephony resources on Avaya Communication Manager. Avaya AES receives requests from CTI applications, and forwards them to Avaya Communication Manager. Conversely, Avaya AES receives responses and events from Avaya Communication Manager and forwards them to the appropriate CTI applications.

Steps in this section describe configuring a Switch Connection and creating a CTI user. This section assumes that installation and basic administration of Avaya AES has been performed. See reference [2] for further details.

4.1. Configure Switch Connection

Launch a Web browser, enter <u>https://<IP address of AES server>:8443/MVAP</u> in the URL, and log in with the appropriate credentials for accessing the AES CTI OAM pages.

At the Welcome to OAM screen, select the **CTI OAM Admin** link from the left pane of the screen.



Click on Administration \rightarrow Switch Connections in the left pane to invoke the Switch Connections page. A Switch Connection defines a connection between the Avaya AES and Avaya Communication Manager. Enter a descriptive name for the switch connection and click on Add Connection.

Αναγα		Applicati Operati	on Enablement Services
	Vou pro horou a Administration a C	witch Connections	OAM Home OHelp OLogout
CTI OAM Home	You are here: > <u>Auministration</u> > <u>s</u>	witch connections	
Administration Network Configuration	Switch Connections		
Switch Connections			
CTI Link Admin	S8700	Add Connection	
DMCC Configuration	Connection Name	Number of Active	Connection Type
TSAPI Configuration	Connection Name	Connections	connection Type
Security Database	Edit Connection Edit CLAN IPs	Edit H 323 Gatekeeper	Delete Connection
<u>Certificate Management</u>			
 TR87 Configuration 			
<u>Status and Control</u>			
<u>Maintenance</u>			
<u>Alarms</u>			
▶ <u>Logs</u>			
• <u>Utilities</u>			
▶ <u>Help</u>			

The next window that appears prompts for the switch connection password. Select **H323 Gatekeeper** using the drop down menu on the Switch Connection Type field. Enter into the Switch Password and Confirm Switch Password fields the same password that was administered in Avaya Communication Manager in **Section 3.5**. Default values may be used in the remaining fields. Click **Apply**.

AVAYA		Application Enablement Serv Operations Administration and Mainte				
CTI OAM Home	You are here: > <u>Administration</u> >	Switch Connections				
 Administration Network Configuration Switch Connections CTI Link Admin DMCC Configuration TSAPI Configuration 	Set Password - S8700 Please note the following: * A password is not required for a H323 Gatekeeper Connection. * Changing the password affects only new connections, not open connections.					
Security Database	Switch Connection Type	H323 Gatekeeper 💌				
Certificate Management TR87 Configuration	Switch Password	****				
Status and Control	Confirm Switch Password	******				
 <u>Maintenance</u> <u>Alarms</u> <u>Logs</u> 	SSL Apply Cancel					

After returning to the Switch Connections page, select the radio button corresponding to the switch connection added above, and click **Edit H.323 Gatekeeper**.

Αναγα		Applicati Operati	on Enablement Serv
CTI OAM Home	You are here: > <u>Administration</u> > :	Switch Connections	😡 OAM Home 🕜 Help
Administration Network Configuration	Switch Connections		
Switch Connections CTI Link Admin		Add Connection	
 <u>DMCC Configuration</u> TSAPI Configuration 	Connection Name	Number of Active Connections	Connection Type
Security Database	O \$8300G700	1	CTI/Call Information
<u>Certificate Management</u>		1	H323 Gatekeeper
TR87 Configuration Status and Control	Edit Connection Edit CLAN IPs	Edit H.323 Gatekeeper	Delete Connection

Enter the IP address of the CLAN used for AES connectivity from Section 3.5, and click Add Name or IP.

AVALYA Operations Administration and	Services Maintenance
CTI OAM Home You are here: > Administration > Switch Connections Administration Network Configuration Switch Connections Switch Connections Edit H.323 Gatekeeper - S8700 Image: Status Admining Security Database Add Name or IP Certificate Management Name or IP Address Status and Control Maintenance Adarms Logs	Help OLogout

4.2. Configure CTI User

The steps in this section describe the configuration of a CTI user. Launch a Web browser, enter <u>https://<IP address of AES server>:8443/MVAP</u> in the URL, and log in with the appropriate credentials for accessing the OAM Home page.

The Welcome to OAM screen is displayed next. Select **User Management** from the left pane. NOTE: A second login screen will be presented greater access permissions are required.

Αναγα	Application Enablement Services Operations Administration and Maintenance
Home	Coam Home CHelp OLogout
CTI OAM Admin User Management	Welcome to OAM
	The AE Services Operations, Administration, and Management (OAM) Web provides you with tools for managing the AE Server. OAM spans the following administrative domains:
	 CTI OAM Admin - Use CTI OAM Admin to manage all AE Services that you are licensed to use on the AE Server. User Management - Use User Management to manage AE Services users and AE Services
	user-related resources.
	Depending on your business requirements, these adminstrative domains can be served by one administrator for both domains, or a separate administrator for each domain.

From the Welcome to the User Management Home page, navigate to the User Management \rightarrow Add User page to add a CTI user.

Αναγα	Application Enablement Service: Operations Administration and Maintenanc
User Management Home	You are here: > <u>User Management</u>
✓ <u>User Management</u> List All Users	Welcome to User Management
Add User Search Users	User Management provides you with the following tools for managing AE Services users:
Modify Default User Change User Password Service Management Help	 List All Users Add User Search Users Modify Default User Change User Password

On the Add User page, provide the following information:

- User Id
- Common Name
- Surname
- User Password
- Confirm Password

Select **Yes** using the drop down menu on the CT User field. This enables the user as a CTI user. Default values may be used in the remaining fields. Click the **Apply** button (not shown here) at the bottom of the screen to complete the process.

AVAYA		Application Enablement Services Operations Administration and Maintenance
User Management Home • User Management List All Users Add User Search Users Modify Default User Change User Password • Service Management • Help	You are here: > User Management > Add User Fields marked with * can not be empty. * User Id eloyalty * User Id eloyalty * Surname eloyalty * User Password * Confirm Password Admin Note	Application Enablement Services Operations Administration and Maintenance OAM Home CHelp Ologout
	CM Home CSS Home CT User Yes	

Once the user is created, select **OAM Home** in upper right and navigate to the **Administration** \rightarrow **Security Database** \rightarrow **CTI Users** \rightarrow **List All Users** page. Select the User ID created previously, and click the **Edit** button to set the permission of the user.

AVAYA					Application Enablement Servi Operations Administration and Mainter	i ces nance
<u>CTI OAM Home</u>	You are here	: > <u>Adminis</u>	<u>stration</u> > <u>Se</u>	curity Databa	ISE > CTI Users > List Aii Users	ogout
<u>Network Configuration</u> <u>Switch Connections</u>	CTI User	S				
CTI Link Admin DMCC Configuration		<u>User ID</u>	Common Na	<u>ime Worktop N</u>	Name Device ID	
TSAPL Configuration	0	access	access	NONE	NONE	
 Security Database 	0	cmapi	cmapi	NONE	NONE	
SDB Control	0	craft	craft	NONE	NONE	
	0	crkim	crkim	NONE	NONE	
List All Users	0	ctiuser	ctiuser	NONE	NONE	
Search Users	0	dssi	dssi	NONE	NONE	
Devices	©	eloyalty	eloyalty	NONE	NONE	
Device Groups						
Tlinks	Edit List A	II				
Tlink Groups						

Provide the user with unrestricted access privileges by clicking the **Enable** button on the Unrestricted Access field. Click the **Apply Changes** button.

AVAYA	Application Enablement Ser Operations Administration and Maint
CTI OAM Home • Administration • Network Configuration Switch Connections • CTI Link Admin • DMCC Configuration TSAPI Configuration TSAPI Configuration • Security Database • CTI Users List All Users Search Users Worktops Devices Device Groups	Call Origination and Termination None Call / Device None
Tlinks Tlink Groups <u>Certificate Management</u> <u>TR87 Configuration</u> <u>Status and Control</u>	Call / Call Allow Routing on Listed Device None Apply Changes Cancel

5. Configure eLoyalty Behavioral Analytics

In order to set up recording server for the Avaya AES recording solution, the following three files must be properly configured in eLoyalty Behavioral Analytics. These files are located in the C:\Program f\Files\eLoyalty\eLoyalty\cLoyalty Call Recording Service directory.

- configStations.csv must contain the list of recorded stations.
- configTDM.csv must contain list of recording devices configured.
- **configMaster_DMCC.xml** must be updated to contain the Avaya AES connection information as shown below.

<pre>«AudioStreamSource></pre>	rceId> me> treamSources.AvayaDMCC amSources.AvayaDMCC.Av	.dll √ayaDMCCAudioStreamSource
<pre><args> AesServer=192.45.85.102; SwitchName=58700; AesPort=4721; SecureConnection=false; AesUser=AESUserID; AesPW=AESPassword; ApplicationID=eLoyaltyCRS; DetereDiversion=2.1.</args></pre>	Standard Avaya connection details are entered here.	AES Support Avaya AES version 3.1
		only at this time.

NOTE: The recording server is configured by eLoyalty personnel only and servers are always managed by eLoyalty.

6. Interoperability Compliance Testing

The interoperability compliance testing included feature, serviceability, and performance testing. The feature testing evaluated the ability of eLoyalty Behavioral Analytics to record calls placed to and from stations. The serviceability testing introduced failure conditions to verify that eLoyalty Behavioral Analytics can resume recording after failure recovery. The performance testing stressed eLoyalty Behavioral Analytics by continuously placing calls over extended periods of time.

6.1. General Test Approach

The general approach was to place various types of calls to and from both ACD stations (i.e. with EAS agents logged in) and non-ACD stations. These calls were recorded using the Call Capture Service, and the recordings verified. For feature testing, the types of calls included inbound and outbound trunk calls, transferred calls, and conferenced calls. Performance tests verified that the Call Capture Service could record calls during a sustained high volume of calls. The Call Capture Service is designed to record the first call appearance, and successfully recorded this appearance during transferring and conferencing testing. Serviceability failures were simulated by disconnecting cables and circuit packs as well as resetting the Avaya S8700 Server. The Call Capture Service required a restart, and reacted as expected during these failures. All test cases were performed manually.

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6.2. Test Results

All test cases were executed and passed.

7. Verification Steps

This section provides the steps that can be performed to verify proper configuration of Avaya Communication Manager and Avaya AES.

7.1. Verify Avaya Communication Manager

Verify the status of the administered link to Avaya AES by using the **status aesvcs link** command. The presence of an entry of the type shown below indicates that the link is up.

status	aesvcs link					
		AE SERVICES	LINK ST	ATUS		
Srvr/ Link	AE Services Server	Remote IP	Remote Port	Local Node	Msgs Sent	Msgs Rcvd
01/01	serverl	192. 45. 80.102	36538	CLAN-AES	17	18

7.2. Verify Avaya Application Enablement Services

From the AES CTI OAM Admin web pages, verify that the status of the DMCC Service is ONLINE by selecting **Status and Control** \rightarrow **Services Summary** from the left pane.

AVAYA				A	Operation	Enablement Services
CTI OAM Home	You	are here: > <u>Sta</u>	tus and Co	ntrol > <u>Services Sumr</u>	nary	GOAM Home OHelp OLogout
<u>Auministration</u> <u>Status and Control</u>	Services Summary					
Switch Conn Summary		Service	Status	Since	Cause	
Maintenance	0	CVLAN Service	ONLINE	2007-12-12 20:47:41	NORMAL	
<u>Alarms</u>	0	DLG Service	ONLINE	2007-12-12 20:47:36	NORMAL	
+ Logs	0	TSAPI Service	ONLINE	2007-12-12 20:47:43	NORMAL	
• <u>Utilities</u>	•	DMCC Service	ONLINE	2007-12-12 20:47:44	NORMAL	
• <u>Help</u>	De	tails				

8. Support

Technical support on eLoyalty Behavioral Analytics can be obtained through the following:

- **Phone:** (877) 615-6925
- Email: <u>BAServiceDesk@eLoyalty.com</u>
- Web: <u>https://servicedesk.eloyalty.net</u>

9. Conclusion

These Application Notes describe the configuration steps required for eLoyalty Behavioral Analytics to interoperate with Avaya Communication Manager and Avaya Application Enablement Services. All feature and serviceability test cases were completed.

10. Additional References

This section references the Avaya and eLoyalty product documentation that are relevant to these Application Notes.

 [1] Administrator Guide for Avaya Communication Manager, Document 03-300509, Issue 3.1, February 2007
 [2] Application Enablement Services Installation and Upgrade Guide for a Bundled Server, Issue 4.0, July 2007

[3] *eLoyalty Call Capture Service Test Plan, Avaya VoIP Integration*, November 2007.

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