



Avaya Solution & Interoperability Test Lab

Application Notes for Enghouse Quality Management Suite with Avaya Aura® Application Enablement Services and Avaya Aura® Communication Manager using DMCC – Issue 1.0

Abstract

These Application Notes contain instructions for Enghouse Quality Management Suite with Avaya Aura® Application Enablement Services and Avaya Aura® Communication Manager to successfully interoperate.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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

These Application Notes contain instructions for Enghouse Quality Management Suite (QMS) with Avaya Aura® Application Enablement Services and Avaya Aura® Communication Manager to successfully interoperate.

QMS is a call recording solution which utilizes the Device, Media and Call Control (DMCC) and TSAPI services on Avaya Aura® Application Enablement Services (AES) to record calls for Quality Monitoring and Compliance purposes.

2. General Test Approach and Test Results

The compliance test focused on the ability for calls to be recorded. Calls were manually placed from the public switched telephone network (PSTN) directly to and from recorded devices, and to Automatic Call Distributor (ACD) queues.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The compliance test validated the ability of QMS to successfully record various types of calls routed to and from Digital, IP and SIP endpoints. The feature testing included the following:

- Handling of call events from QMS
- Use of Application Enablement Services AES DMCC monitoring services and media control events to obtain the media from the virtual IP Softphones
- Proper recording, logging, and playback of calls for scenarios involving inbound, outbound, agent drop, customer drop, hold, reconnect, transfer and conference.

Additionally, testing confirmed the ability for QMS to recover from common outages such as network outages and server reboots.

2.2. Test Results

All planned test cases were passed with the exception of one test.

- In a scenario where call is blind transferred from a 96x1 IP Deskphone (SIP), call does not get recorded. An internal Avaya ticket has been opened to investigate the issue.

2.3. Support

Technical support for QMS can be obtained via the following means.

- **Phone:** 602-789-2800
- **Email:** usa.support.zeacom.com

3. Reference Configuration

Figure 1 illustrates a sample configuration that consists of Avaya Products and QMS.

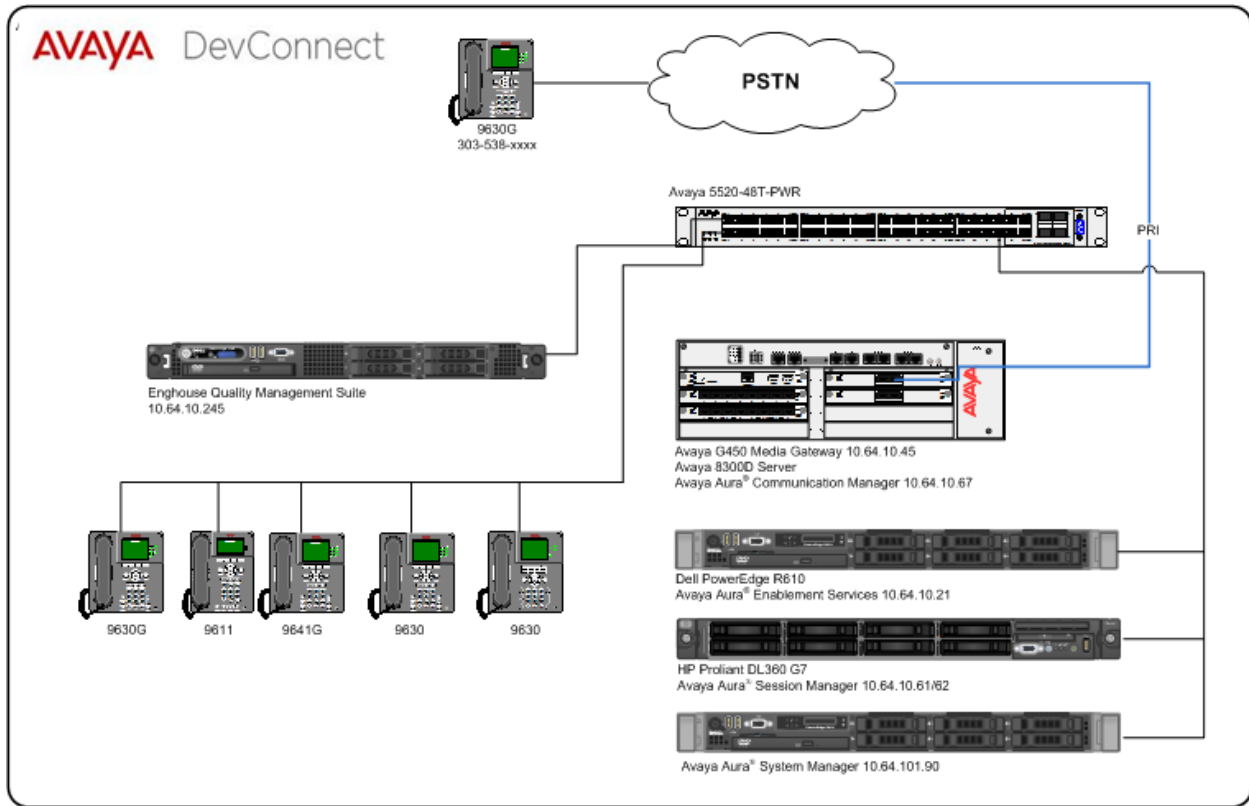


Figure 1: Test Configuration for QMS

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya S8300D Server	6.3 SP8
Avaya Aura [®] Communication Manager	6.3 SP6
Avaya Aura [®] Session Manager	6.3 SP6
Avaya Aura [®] System Manager	6.3 SP6
Avaya G450 Media Gateway	31.20.0
Avaya Aura [®] Application Enablement Services	6.3
Avaya TSAPI Client	6.3
Enghouse Quality Management Suite	5.2.0.12316

5. Configure Avaya Aura® Communication Manager

This section contains steps necessary to configure QMS successfully with Avaya Aura® Communication Manager.

All configurations in Communication Manager were performed via SAT terminal.

5.1. Verify Feature and License

Enter the **display system-parameters customer-options** command and ensure that the following features are enabled.

One Page 3, verify **Computer Telephony Adjunct Links** is set to **y**.

```
display system-parameters customer-options                               Page 3 of 11
                                OPTIONAL FEATURES

    Abbreviated Dialing Enhanced List? y          Audible Message Waiting? y
      Access Security Gateway (ASG)? n          Authorization Codes? y
      Analog Trunk Incoming Call ID? y          CAS Branch? n
    A/D Grp/Sys List Dialing Start at 01? y      CAS Main? n
    Answer Supervision by Call Classifier? y      Change COR by FAC? n
      ARS? y          Computer Telephony Adjunct Links? y
      ARS/AAR Partitioning? y          Cvg Of Calls Redirected Off-net? y
      ARS/AAR Dialing without FAC? y      DCS (Basic)? y
      ASAI Link Core Capabilities? y      DCS Call Coverage? y
      ASAI Link Plus Capabilities? y      DCS with Rerouting? y
    Async. Transfer Mode (ATM) PNC? n
    Async. Transfer Mode (ATM) Trunking? n      Digital Loss Plan Modification? y
      ATM WAN Spare Processor? n          DS1 MSP? y
      ATMS? y          DS1 Echo Cancellation? y
      Attendant Vectoring? y
```

5.2. Configure Stations

Use **add station *n*** command to add a station, where *n* is an available station extension. This station will be monitored by QMS. Configure the station as follows, on Page 1:

- In **Name** field, enter a descriptive name
- Set **Type** to the type of the telephones
- Enter a **Security Code**
- Set **IP SoftPhone** to **y**

```
add station 25002                                     Page 1 of 5
                                                    STATION
Extension: 25002                                     Lock Messages? n          BCC: 0
  Type: 9630                                         Security Code: 123456     TN: 1
  Port: IP                                           Coverage Path 1: 1       COR: 1
  Name: IP Station 1                                Coverage Path 2:         COS: 1
                                                    Hunt-to Station:
STATION OPTIONS
Loss Group: 19                                       Time of Day Lock Table:
Speakerphone: 2-way                                  Personalized Ringing Pattern: 1
Display Language: english                            Message Lamp Ext: 25001
Survivable GK Node Name:                             Mute Button Enabled? y
Survivable COR: internal                             Button Modules: 0
Survivable Trunk Dest? y                            Media Complex Ext:
                                                    IP SoftPhone? y
                                                    IP Video Softphone? n
Short/Prefixed Registration Allowed: default
                                                    Customizable Labels? y
```

5.3. Configure IP Services

Add an IP-Services entry, using the **change ip-services** command, for Application Enablement Services as described below. On Page 1:

- In the **Service Type** field, type **AESVCS**.
- In the **Enabled** field, type **y**.
- In the **Local Node** field, type the Node name **procr** for the Processor Ethernet Interface.
- In the **Local Port** field, use the default of **8765**.

```
change ip-services Page 1 of 4
```

IP SERVICES					
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port
AESVCS	y	procr	8765		
CDR1		procr	0		
CDR2		procr	0		
PMS		procr	0		

On Page 4 of the IP Services form, enter the following values:

- In the **AE Services Server** field, type the host name of the Application Enablement Services server.
- In the **Password** field, type the same password to be administered on the Application Enablement Services server in **Section 6, Step 1**.
- In the **Enabled** field, type **y**.

```
change ip-services Page 4 of 4
```

AE Services Administration				
Server ID	AE Services Server	Password	Enabled	Status
1:	aes6_tr1	devconnect123	y	in use
2:	AES2146	devconnect123	y	in use

5.4. Configure CTI Link

Enter the **add cti-link <link number>** command, where **<link number>** is an available CTI link number.

- In the **Extension** field, type a valid station extension.
- In the **Type** field, type **ADJ-IP**.
- In the **Name** field, type a descriptive name.

```
add cti-link 1                                     Page 1 of 3
                                                CTI LINK
CTI Link: 1
Extension: 6201
  Type: ADJ-IP
                                                COR: 1
  Name: TSAPI
```

Please note that, to save all the changes made in this section, enter the **save translations** command.

```
save translation
                                                SAVE TRANSLATION
Command Completion Status                    Error Code
Success                                     0
```


6. Configure Avaya Aura® Application Enablement Services

Configuration of Avaya Aura® Application Enablement Services requires a user account be configured for QMS and CTI/TSAPI configuration for Communication Manager.

All administration is performed by web browser, <https://<aes-ip-address>>

6.1. Configure Communication Manager Switch Connections

To add links to Communication Manager, navigate to the **Communication Manager Interface** → **Switch Connections** page and enter a name for the new switch connection (e.g. **TR18300**) and click the **Add Connection** button (not shown). The **Connection Details** screen is shown. Enter the **Switch Password** configured in **Section 5.3** and check the **Processor Ethernet** box if using the **procr** interface. Click **Apply**.

The screenshot shows the Avaya Application Enablement Services Management Console. The top right corner displays system information: Welcome: User craft, Last login: Thu Aug 28 11:59:42 2014 from 10.64.10.48, Number of prior failed login attempts: 0, HostName/IP: aes6_tr1/10.64.10.21, Server Offer Type: VIRTUAL_APPLIANCE_ON_SP, SW Version: 6.3.0.0.212-0, and Server Date and Time: Wed Sep 24 15:18:02 MDT 2014. The main navigation menu on the left includes AE Services, Communication Manager Interface, Switch Connections, Dial Plan, Licensing, Maintenance, Networking, Security, Status, User Management, Utilities, and Help. The 'Switch Connections' page is active, showing a form titled 'Connection Details - TR18300'. The form contains fields for Switch Password, Confirm Switch Password, Msg Period (30 Minutes), SSL (checked), and Processor Ethernet (checked). There are 'Apply' and 'Cancel' buttons at the bottom of the form.

The display returns to the **Switch Connections** screen which shows that the **CM3010** switch connection has been added.

Switch Connections

The screenshot shows the 'Switch Connections' screen. At the top, there is an input field and an 'Add Connection' button. Below this is a table with the following data:

Connection Name	Processor Ethernet	Msg Period	Number of Active Connections
<input checked="" type="radio"/> CM2141	Yes	30	0
<input type="radio"/> CM3010	Yes	30	0
<input type="radio"/> TR18300	Yes	30	1

Below the table are several control buttons: 'Edit Connection', 'Edit PE/CLAN IPs', 'Edit H.323 Gatekeeper', 'Delete Connection', and 'Survivability Hierarchy'.

Click the **Edit PE/CLAN IPs** button on the **Switch Connections** screen to configure the **procr** or **CLAN IP** Address(es) for TSAPI message traffic. The **Edit Processor Ethernet IP** screen is displayed. Enter the IP address of the **procr** interface and click the **Add/Edit Name or IP** button.



- ▶ AE Services
- ▼ Communication Manager Interface
 - Switch Connections
 - ▶ Dial Plan
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▶ Status
- ▶ User Management
- ▶ Utilities
- ▶ Help

Edit Processor Ethernet IP - TR18300

Name or IP Address	Status
10.64.10.67	In Use

Click the **Edit H.323 Gatekeeper** button on the **Switch Connections** screen to configure the **procr** or **CLAN IP** Address(es) for DMCC registrations. The **Edit H.323 Gatekeeper** screen is displayed. Enter the IP address of the **procr** interface and click the **Add Name or IP** button.



- ▶ AE Services
- ▼ Communication Manager Interface
 - Switch Connections
 - ▶ Dial Plan
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking

Edit H.323 Gatekeeper - TR18300

Name or IP Address

10.64.10.67

6.2. Add TSAPI Link

Navigate to the **AE Services** → **TSAPI** → **TSAPI Links** page to add a TSAPI CTI Link. Click **Add Link** (not shown).

Select a **Switch Connection** using the drop down menu. Select the **Switch CTI Link Number** using the drop down menu. The **Switch CTI Link Number** must match the number configured in the **cti-link** form in **Section 5. 4**. Select **Both** in the **Security** field.

Click **Apply Changes**.



AE Services | TSAPI | TSAPI Links
Home | Help | Logout

- ▼ AE Services
 - ▶ CVLAN
 - ▶ DLG
 - ▶ DMCC
 - ▶ SMS
 - ▼ TSAPI
 - TSAPI Links
 - TSAPI Properties
 - ▶ TWS
- ▶ Communication Manager Interface
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▶ Status
- ▶ User Management
- ▶ Utilities
- ▶ Help

Edit TSAPI Links

Link: 1

Switch Connection: TR18300 ▼

Switch CTI Link Number: 1 ▼

ASAI Link Version: 5 ▼

Security: Both ▼

It returns to the **TSAPI Links** screen which shows that the **TR18300** link has been added.

TSAPI Links

Link	Switch Connection	Switch CTI Link #	ASAI Link Version	Security
<input checked="" type="radio"/> 1	TR18300	1	5	Both
<input type="radio"/> 2	CM3010	1	UNKNOWN	Unencrypted
<input type="radio"/> 3	CM2141	2	UNKNOWN	Both

6.3. Configure User

A user needs to be created for QMS to communicate with AES. Navigate to **User Management** → **User Admin** → **Add User**.

Fill in **User Id**, **Common Name**, **Surname**, **User Password** and **Confirm Password**. Set the **CT User** to **Yes**, and **Apply**.



<ul style="list-style-type: none">› AE Services› Communication Manager Interface› Licensing› Maintenance› Networking› Security› Status▼ User Management<ul style="list-style-type: none">› Service Admin▼ User Admin<ul style="list-style-type: none">▪ Add User▪ Change User Password▪ List All Users▪ Modify Default Users▪ Search Users› Utilities› Help	<h4>Add User</h4> <p>Fields marked with * can not be empty.</p> <p>* User Id <input type="text"/></p> <p>* Common Name <input type="text"/></p> <p>* Surname <input type="text"/></p> <p>* User Password <input type="password"/></p> <p>* Confirm Password <input type="password"/></p> <p>Admin Note <input type="text"/></p> <p>Avaya Role <input type="text" value="None"/></p> <p>Business Category <input type="text"/></p> <p>Car License <input type="text"/></p> <p>CM Home <input type="text"/></p> <p>Css Home <input type="text"/></p> <p>CT User <input type="text" value="No"/></p> <p>Department Number <input type="text"/></p>
--	---

Navigate to **Security** → **Security Database** → **CTI Users** → **List All Users**.

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▼ **Security**
 - ▶ Account Management
 - ▶ Audit
 - ▶ Certificate Management
 - ▶ Enterprise Directory
 - ▶ Host AA
 - ▶ PAM
 - ▼ **Security Database**
 - Control
 - ▣ **CTI Users**
 - **List All Users**
 - Search Users
 - Devices
 - Device Groups

CTI Users

User ID	Common Name	Worktop Name	Device ID
<input type="radio"/> amcom	amcom	NONE	NONE
<input checked="" type="radio"/> ctlog	ctlog	NONE	NONE
<input type="radio"/> devcon	devcon	NONE	NONE
<input type="radio"/> devconn	Developer	NONE	NONE
<input type="radio"/> DevConnect	DevConnect	NONE	NONE
<input type="radio"/> interop	interop	NONE	NONE
<input type="radio"/> mattersight	mattersight	NONE	NONE
<input type="radio"/> rtirouter1	rtirouter1	NONE	NONE
<input type="radio"/> rritele1	rritele1	NONE	NONE
<input type="radio"/> vhtaes	vhtaes	NONE	NONE

Select the recently added user and click **Edit**. Check the box for **Unrestricted Access** and click **Apply Changes**.

Edit CTI User

User Profile:

User ID	ctlog
Common Name	ctlog
Worktop Name	NONE ▼
Unrestricted Access	<input checked="" type="checkbox"/>

Call and Device Control:

Call Origination/Termination and Device Status	None ▼
--	--------

Call and Device Monitoring:

Device Monitoring	None ▼
Calls On A Device Monitoring	None ▼
Call Monitoring	<input type="checkbox"/>

Routing Control:

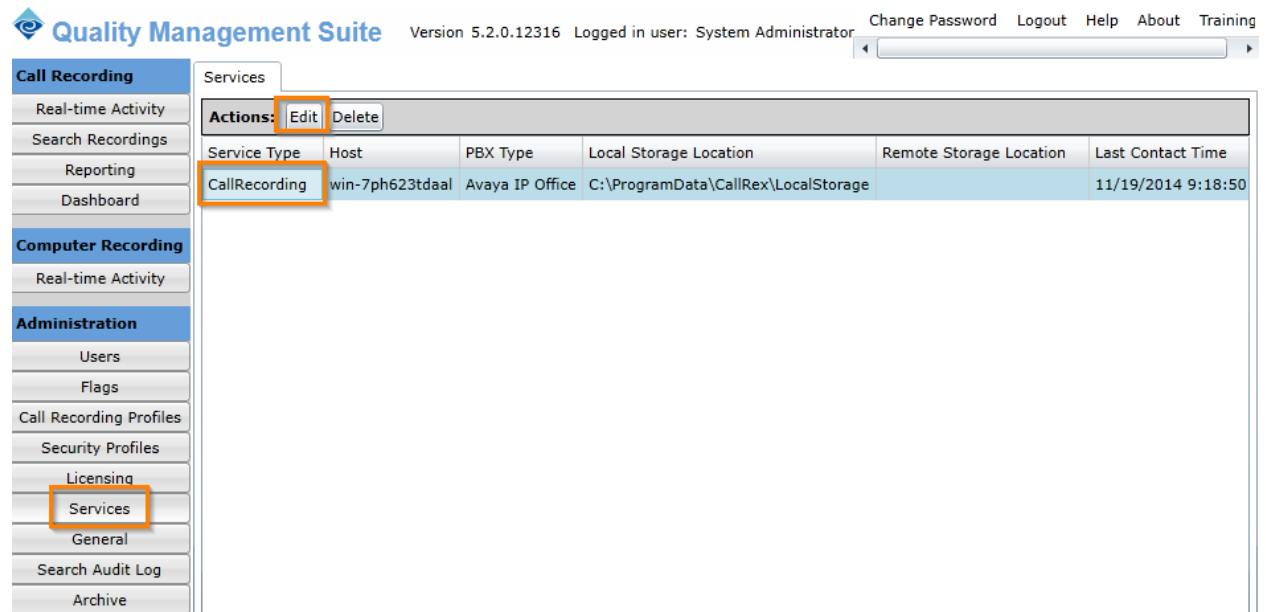
Allow Routing on Listed Devices	None ▼
---------------------------------	--------

7. Configure Enghouse Quality Management Suite

This section provides the procedures for configuring Enghouse Quality Management Suite.

From the server running QMS, open an internet browser and type in <http://localhost/qms> to administer QMS. Log in using appropriate credentials.

To configure Call Recording service, select **Administration** → **Service** and select **CallRecording** and click **Edit**.



The screenshot shows the Quality Management Suite web interface. The top navigation bar includes the logo, version (5.2.0.12316), user (System Administrator), and links for Change Password, Logout, Help, About, and Training. The left sidebar contains a menu with categories: Call Recording (Real-time Activity, Search Recordings, Reporting, Dashboard), Computer Recording (Real-time Activity), Administration (Users, Flags, Call Recording Profiles, Security Profiles, Licensing, Services, General, Search Audit Log, Archive), and Services. The main content area displays a table of services. The 'CallRecording' service is highlighted, and the 'Edit' button in the Actions column is also highlighted. The table has the following data:

Service Type	Host	PBX Type	Local Storage Location	Remote Storage Location	Last Contact Time
CallRecording	win-7ph623tdaal	Avaya IP Office	C:\ProgramData\CallRex\LocalStorage		11/19/2014 9:18:50

Configure as follows:

- From the drop down menu for **PBX Type**, select **Avaya DMCC**
- Type in Communication Manager IP Address in **PBX IP Address**.
- Type in AES IP Address in **AES/DMCC IP Address**
- Type in username and password as configured in **Section 6.3** in **User name and Password**
- Type in Communication Manager host name in **Switch Name**
- Type in **4721** in **Api Port**

Quality Management Suite Version 5.2.0.12316 Logged in user: System Administrator Change Password Logout Help About Training

Services CallRecording win-7ph623tdaal x

Actions: Save

Service Details

Service Type:	CallRecording	Address:	win-7ph623tdaal
PBX Type:	Avaya DMCC	Address override:	10.64.10.245
PBX IP Address:	10.64.10.67	Switch Name:	TR18300
AES/DMCC IP Address:	10.64.10.21	Api Port:	4721
User name:	interop	Password:	••••••••
<input type="checkbox"/> Use Secure Socket		Starting Audio Port:	35000

To add a recording extension, navigate to **Administrations** → **Users**; click **Add**.

Quality Management Suite Version 5.2.0.12316 Logged in user: System Administrator

Change Password Logout Help About Training

Call Recording

Real-time Activity

Search Recordings

Reporting

Dashboard

Computer Recording

Real-time Activity

Administration

Users

Flags

Users

Actions: **Add** Edit Delete Filters: Department Location Active Users Only

Import Export

First Name	Last Name	Department	Location	Extension	Licenses
System	Administrator			1	
TestSIP	Client1			25211	
TestSIP	Client2			25004	
TestIP	Client3			25002	
TestIP	Client4			25001	

Configure as follows:

- Type in **First Name** and **Last Name**
- Type in **tc3** as **Username** and type in associated **Password**
- Select **Agent** form **Security Profile** drop down menu
- Set **Account State** to **Active**
- Check box for **Call Recording**
- Type in **Primary Extension** and **Extension Password** as configured in Communication Manager

Quality Management Suite Version 5.2.0.12316 Logged in user: System Administrator

Change Password Logout Help About Training

Call Recording

Real-time Activity

Search Recordings

Reporting

Dashboard

Computer Recording

Real-time Activity

Administration

Users

Flags

Call Recording Profiles

Security Profiles

Licensing

Services

General

Search Audit Log

Archive

Users Client4, TestIP x

Actions: Save Edit Managed Users

Personal Information

First Name TestIP Last Name Client4

Department Location

Account Information

Username tc4 Password Password Change

Security Profile Agent Account State Active

Windows Login

Licenses

Call Recording

Call Recording Settings

Recording Server win-7ph623tdaal Primary Extension 25001

Endpoint IP Address 0.0.0.0 Extension Password 123456

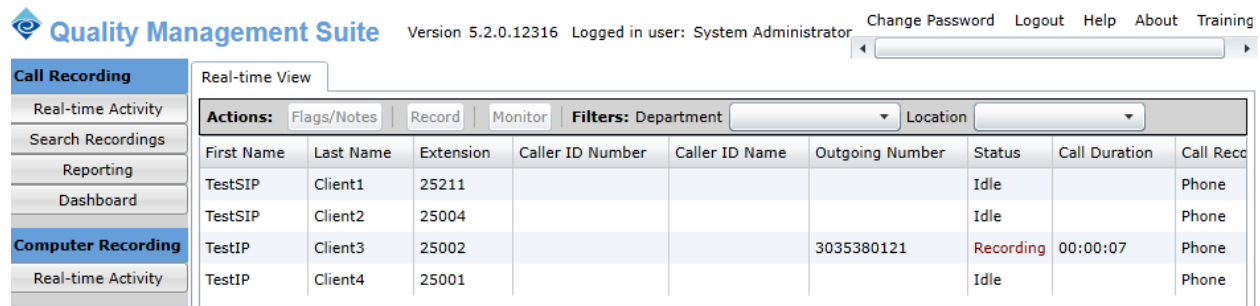
Privacy Enabled Lookback Recording Enabled

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager and Enghouse Quality Management Suite.

From the server running QMS, open an internet browser and type in <http://localhost/qms> to administer QMS. Log in using appropriate credentials.

Select **Call Recording** → **Real-time Activity**. Place a call from a configured phone. Once the call is connected, the **Status** should change to **Recording**, which represents that the call is getting recorded.



The screenshot displays the Quality Management Suite interface. At the top, it shows the logo, version (5.2.0.12316), and the logged-in user (System Administrator). There are navigation links for Change Password, Logout, Help, About, and Training. The main content area is titled "Real-time View" and contains a table of call recordings. The table has columns for First Name, Last Name, Extension, Caller ID Number, Caller ID Name, Outgoing Number, Status, Call Duration, and Call Recd. The status of the call from TestIP Client3 is "Recording".

First Name	Last Name	Extension	Caller ID Number	Caller ID Name	Outgoing Number	Status	Call Duration	Call Recd
TestSIP	Client1	25211				Idle		Phone
TestSIP	Client2	25004				Idle		Phone
TestIP	Client3	25002			3035380121	Recording	00:00:07	Phone
TestIP	Client4	25001				Idle		Phone

To verify the status CTI Links to AES , via SAT, use the **status aesvcs cti-link**. The **Service State** of **established** indicates that the trunk is in an operational state.

```
status aesvcs cti-link
```

AE SERVICES CTI LINK STATUS						
CTI Link	Version	Mnt Busy	AE Services Server	Service State	Msgs Sent	Msgs Rcvd
1	5	no	aes6_tr1	established	15	15
2		no		down	0	0
3	4	no	AES2146	established	15	15

To verify QMS is able to monitor the stations correctly, use the **list monitored-station** command. All the stations that are being monitored by QMS are as shown below:

```
list monitored-station
```

MONITORED STATION								
Station Ext	Association 1		Association 2		Association 3		Association 4	
-----	CTI Link	CRV	CTI Link	CRV	CTI Link	CRV	CTI Link	CRV
-----	-----	-----	-----	-----	-----	-----	-----	-----
25001	1	27						
25002	1	25						
25003	1	22						
25004	1	15						
25005	1	13						
25051	1	17						
25101	1	11						
25551	1	8						
25552	1	4						

Place a call from an Avaya Station and verify that the audio for the call was retrieved and saved by QMS.

9. Conclusion

QMS was able to successfully interoperate with Avaya Aura® Communication Manager and Avaya Aura® Application Enablement Services with the exception mentioned in **Section 2.2**.

10. Additional References

Documentation related to Avaya can be obtained from <https://support.avaya.com>.

[1] *Administering Avaya Aura® Communication Manager, Release 6.3, Issue 3, October 2014*

[2] *Avaya Aura® Application Enablement Service Administration and Maintenance Guide, Issue 2, Release 6.3, October 2014*

Documentation related to QMS may directly be obtained from Enghouse.

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