



DevConnect Program

Application Notes for OpenMethods Harmony 7.1 with Avaya Aura® Application Enablement Services 10.1 and Avaya Aura® Communication Manager 10.1 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for OpenMethods Harmony 7.1 to interoperate with Avaya Aura® Application Enablement Services (AES) 10.1 and Avaya Aura® Communication Manager 10.1.

The Harmony solution consists of Harmony Integration Server (HIS), Harmony Queue Adapter (QA), and with Harmony Media Bar and PopFlow on the Oracle Service Cloud. HIS integrates with AES via JTAPI, and QA integrates with AES via DMCC .Net. The Harmony solution is hosted in the AWS cloud and a site-to-site VPN was used between the solution and the DevConnect lab.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any 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 Avaya DevConnect Program.

1. Introduction

The Harmony solution consists of Harmony Integration Server (HIS), Harmony Queue Adapter (QA), and with Harmony Media Bar and PopFlow on the Oracle Service Cloud. HIS integrates with AES via JTAPI, and QA integrates with AES via DMCC .Net. The Harmony solution is hosted in the AWS cloud and a site-to-site VPN was used between the solution and the DevConnect lab.

The phantom call capabilities of Communication Manager are used to deliver non-voice work items to agents, including email and chat. Phantom calls for email and chat work items will be initiated by the QA component, with use of AWOH (Administration Without Hardware) stations as calling parties and the email and chat VDN/skills as destinations.

Harmony uses JTAPI/TSAPI to provide screen pop, agent states, and call control for voice work items, and uses DMCC with AWOH stations to provide screen pop and control for email and chat work items.

Harmony can support multiple work items at the agent, which is an optional feature on Harmony, and requires the Multiple Call Handling feature on Communication Manager.

2. General Test Approach and Test Results

The feature test cases were performed manually. Upon an agent log in, HIS used TSAPI to query and request monitoring on the agent station associated with the agent ID.

Incoming ACD calls were placed to available agents that were logged into the OpenMethods Web Portal to verify the usage of the events from TSAPI and Emails and Chats were placed via the OpenMethods Customer Support Portal and the multi-media items were delivered via DMCC with AWOH stations.

All test cases passed successfully but necessary workarounds are noted in **Section 2.2**.

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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya

products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and Harmony did not include use of any specific encryption features as requested by Open Methods.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on Harmony:

- Use of TSAPI query services to query device information, name, agent state, and call control.
- Use of TSAPI monitoring and event report services to monitor agent stations.
- Use of TSAPI snapshot services to obtain information on agent stations and existing calls.
- Use of DMCC to deliver multi-media work items with the use of AWOH stations.

2.2. Test Results

While all test cases passed, the following observations were noted:

- While changing agent states via the Harmony Agent Portal is successful (i.e., AuxWork, After Call Work, Ready) when an agent logout is imitated via the Harmony Agent Portal the logout event is not sent to from the application to AES/CM. The agent must manually log out on the softphone / desk phone.

2.3. Support

OpenMethods Technical Support can be reached via email or phone.

- **E-mail:** care@openmethods.com
- **Phone:** 1.816.283.8965 (ext. 1)
- **Web:** www.openmethods.com

3. Reference Configuration

The configuration used for the compliance testing is shown in **Figure 1**. The detailed administration of basic connectivity between Communication Manager and Application Enablement Services, and of call center devices are not the focus of these Application Notes and will not be described.

In the compliance testing, Harmony monitored agent stations associated with the agent IDs shown in the table below.

Device Type	Extension
Agent Station	65001 (H.323), 66006 (SIP)
Agent ID	65881, 65882
Agent Password	65881, 65882
DMCC Stations – Chat	64101, 64102
DMCC Stations – Email	64103, 64104
Skills – Voice	61001
Skills – Chat	61002
Skills – Email	61003
Hunt Groups – Chat	64900
Hunt Groups – Email	63900
VDNs – Voice	44301
VDNs – Chat	44302
VDNs - Email	44303

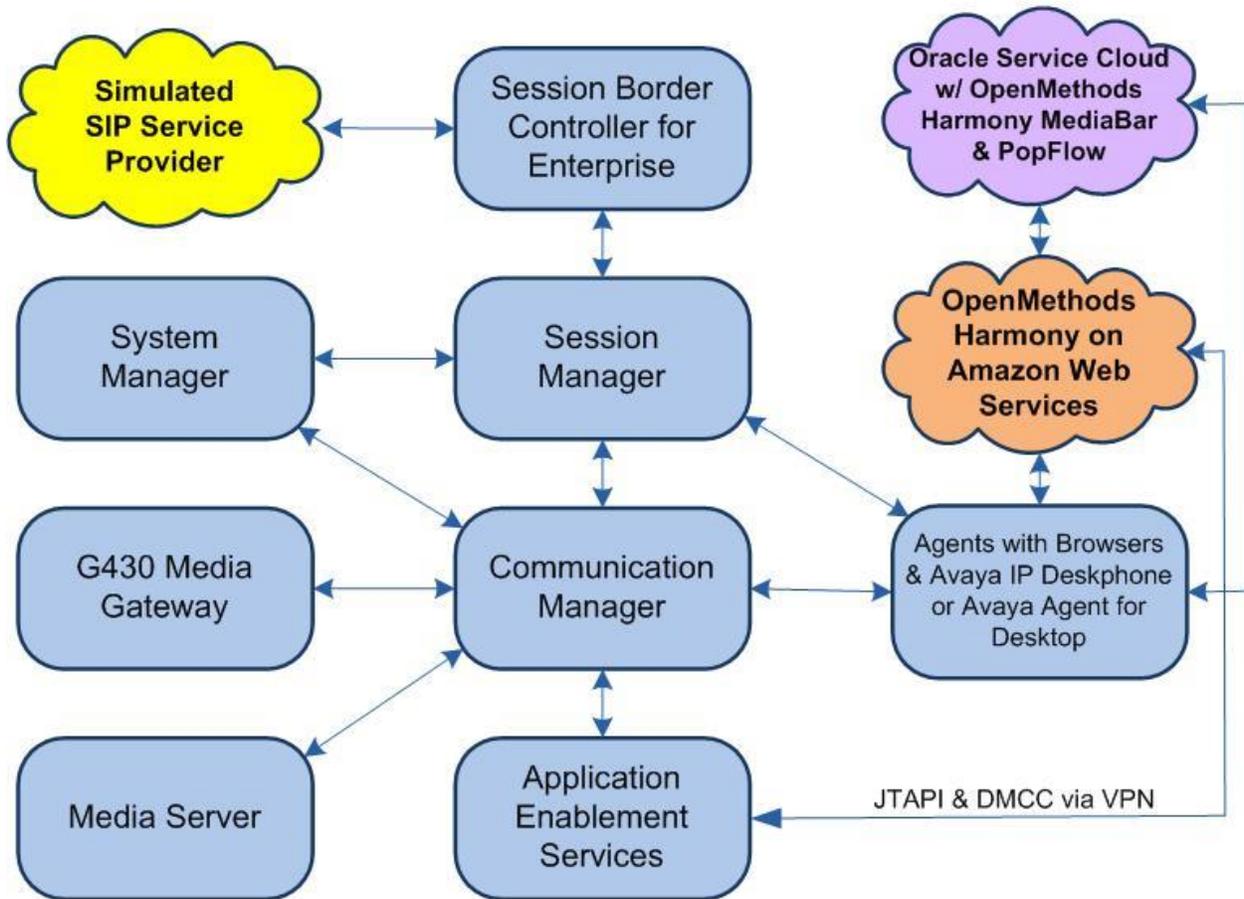


Figure 1: Test Configuration for Harmony and Avaya Aura® Environment

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager in Virtual Environment	10.1.3 (10.1.3.0.1.974.27893)
Avaya G430 Media Gateway	42.8.0
Avaya Aura® Media Server in Virtual Environment	10.1 (10.1.0.154)
Avaya Aura® Application Enablement Services in Virtual Environment	10.1. (10.1.3.0.0.11-0)
Avaya Aura® Session Manager in Virtual Environment	10.1.3 (10.1.3.0.1013007)
Avaya Aura® System Manager in Virtual Environment	10.1.3 (10.1.3.0.0715713)
Avaya Session Border Controller in Virtual Environment	10.1 (10.1.2.0-64-23285)
Avaya Agent for Desktop (H.323 & SIP)	2.0.6.0.10
Avaya 9611G IP Desk phone (H.323)	6.8.5.3.2
Avaya J169 IP Desk phone (SIP)	4.0.13.0.6
Avaya J179 IP Desk phone (H.323)	6.8.5.3.2
Harmony Integration Server	7.1.0.202309291202
Harmony QueueAdapter	7.0.1.202308311538

5. Configure Avaya Aura® Communication Manager

This section contains steps necessary to configure Harmony successfully with Communication Manager.

All configurations in Communication Manager were performed via SAT terminal.

Stations	Type	Description
65001	J179 H.323	Agent station
66006	J169 SIP	Agent Station
64101, 64102	AWOH X Port stations	Chat phantom call stations
64103, 64104	AWOH X Port stations	Email phantom call stations
Call Center Agents	Skills	
65881, 65882	1, 2, 3	
Vector Directory Numbers	Media	Vector
44301	Voice	101
44302	Chat	102
44303	Email	103
Hunt Groups (Skills)	Extension	Description
1	61001	Voice
2	61002	Chat
3	61003	Email
11	64900	Chat AWOH non-acd group
12	63900	Email AWOH non-acd group

5.1. Verify Feature and License

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

One **Page 4**, verify **Computer Telephone Adjunct Links** is set to **y**.

```
display system-parameters customer-options                               Page 4 of 12
                                OPTIONAL FEATURES

Abbreviated Dialing Enhanced List? y      Audible Message Waiting? y
Access Security Gateway (ASG)? y          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 – Call Center

Add stations for Call Center agents to answer calls. Use **add station *n*** command to add a station, where *n* is an available station extension. 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**

```

add station 65001                                     Page 1 of 5
                                                    STATION
Extension: 65001                                     Lock Messages? n          BCC: 0
  Type: 9611                                       Security Code: 123456    TN: 1
  Port: S000005                                     Coverage Path 1: 1        COR: 1
  Name: H323 Staff                               Coverage Path 2:          COS: 1
Unicode Name? n                                     Hunt-to Station:          Tests? y
STATION OPTIONS
    Loss Group: 19
    Speakerphone: 2-way
    Display Language: english
    Survivable GK Node Name:
    Survivable COR: internal
    Survivable Trunk Dest? y
    Time of Day Lock Table:
    Personalized Ringing Pattern: 1
    Message Lamp Ext: 30002
    Mute Button Enabled? y
    Button Modules: 0
    Media Complex Ext:
    IP SoftPhone? y
    IP Video Softphone? n
    Short/Prefixed Registration Allowed: default
  
```

On **Page 4**, under **BUTTON ASSIGNMENTS**, add **auto-in**, **after-call**, **release** and **aux-work** as shown below:

```

add station 30002                                     Page 4 of 5
                                                    STATION
SITE DATA
  Room:
  Jack:
  Cable:
  Floor:
  Building:
  Headset? n
  Speaker? n
  Mounting: d
  Cord Length: 0
  Set Color:
ABBREVIATED DIALING
  List1:
  List2:
  List3:
BUTTON ASSIGNMENTS
  1: call-appr
  2: call-appr
  3: call-appr
  4: send-calls Ext:
  5: after-call
  6: release
  7: auto-in
  8: aux-work
  Grp:
  Grp:
  Grp:
  RC:
  Grp:
  
```

5.3. Configure Stations – CTI

Add CTI stations that will be used to launch Chat and Email phantom calls. Use **add station *n*** command to add a station, where *n* is an available station extension. Configure the station as follows, on Page 1:

- In **Name** field, enter a descriptive name
- Set **Type** to **6408D+**
- Set **Port** to **X**

```
add station 64101                                     Page 1 of 5
                                                    STATION
Extension: 64101                                     Lock Messages? n          BCC: 0
  Type: 6408D+                                       Security Code: *          TN: 1
  Port: X                                           Coverage Path 1:         COR: 1
  Name: Harmony Chat Station                   Coverage Path 2:         COS: 1
Unicode Name? n                                     Hunt-to Station:
STATION OPTIONS
    Loss Group: 2                                     Time of Day Lock Table:
    Data Module? n                                   Personalized Ringing Pattern: 1
    Speakerphone: 2-way                             Message Lamp Ext: 30000
    Display Language: english                       Mute Button Enabled? y
    Survivable COR: internal                         Media Complex Ext:
    Survivable Trunk Dest? y                         IP SoftPhone? n
                                                    Remote Office Phone? n
                                                    IP Video? n
IP Video? n
```

5.4. Configure Hunt Group

Use **add hunt-group *n*** command to add a hunt group, where *n* is an available hunt group. On **Page 1**:

- In the **Group Name** field, enter a descriptive name
- Set **ACD, Queue, Vector** to **y**
- Enter an available **Group Extension**

```
add hunt-group 1                                     Page 1 of 4
                                                    HUNT GROUP

      Group Number: 1                                ACD? y
      Group Name: CM Voice                            Queue? y
      Group Extension: 61001                          Vector? y
      Group Type: ucd-mia
      TN: 1
      COR: 1
      Security Code:                                MM Early Answer? n
      ISDN/SIP Caller Display:                       Local Agent Preference? n

      Queue Limit: unlimited
      Calls Warning Threshold:      Port:
      Time Warning Threshold:      Port:
```

On **Page 2**, set **Skill** to **y** and **Measured** to **both**. Set **Multiple Call Handling** to either **one-per-skill** or **many-forced** to enable agents to handle more than one transaction at a time.

```
add hunt-group 1                                     Page 2 of 4
                                                    HUNT GROUP

      Skill? y                                         Expected Call Handling Time (sec): 180
      AAS? n
      Measured: both
      Supervisor Extension:

      Controlling Adjunct: none

      Multiple Call Handling: one-per-skill

      Timed ACW Interval (sec):                       After Xfer or Held Call Drops? n
```

Note: During compliance testing, 3 hunt groups were created to route email, chat and voice to agents.

In addition, two non-acd groups were created for Chat and Email AWOH stations to launch calls to the Chat and Email VDNs. These were administered with **ACD, Queue, and Vector** set to **n**,

and the AWOH stations were assigned to the respective group. The email group setup was similar to the chat group shown below.

```

add hunt-group 11                                     Page 1 of 4
                                                    HUNT GROUP

  Group Number: 11                                ACD? n
  Group Name: Harmony Chat AWOH                   Queue? n
  Group Extension: 64900                           Vector? n
  Group Type: ucd-mia
  TN: 1
  COR: 1                                           MM Early Answer? n
  Security Code:                                  Local Agent Preference? n
  ISDN/SIP Caller Display:

  Queue Limit: unlimited
  Calls Warning Threshold:      Port:
  Time Warning Threshold:      Port:
  
```

```

add hunt-group 7                                     Page 3 of 60
                                                    HUNT GROUP

  Group Number: 7      Group Extension: 31008      Group Type: ucd-mia
  Member Range Allowed: 1 - 1500      Administered Members (min/max): 1 /2
                                                    Total Administered Members: 2

GROUP MEMBER ASSIGNMENTS
  Ext      Name(16 characters)      Ext      Name(16 characters)
  1: 64101      Harmony CHAT Sta      14:
  2: 64102      Harmony CHAT Sta      15:
  
```

5.5. Configure Agents – Call Center

Use **add agent-loginID *n*** to add an agent that will be used by call center agents to log in, where *n* is an available agent id. On **Page 1**:

- In the **Name** field, type in a descriptive name
- Enter a **Password** and **Password (enter again)**
- Ensure **Auto Answer** is either **acd** or **all**

```

add agent-loginID 65881                                     Page 1 of 2
                                AGENT LOGINID

Login ID: 32000                                Unicode Name? n   AAS? n
      Name: CM Agent 1                                AUDIX? n
      TN: 1                                Check skill TNs to match agent TN? n
      COR: 1
Coverage Path:                                LWC Reception: spe
Security Code:                                LWC Log External Calls? n
Attribute:                                AUDIX Name for Messaging:

                                LoginID for ISDN/SIP Display? n
                                Password:
                                Password (enter again):
                                Auto Answer: all
AUX Agent Remains in LOA Queue: system        MIA Across Skills: system
AUX Agent Considered Idle (MIA): system      ACW Agent Considered Idle: system
      Work Mode on Login: system              Aux Work Reason Code Type: system
                                Logout Reason Code Type: system
                                Maximum time agent in ACW before logout (sec): system
                                Forced Agent Logout Time: :
WARNING: Agent must log in again before changes take effect  WARNING:
  
```

On **Page 2**, set skill number and skill level in **SN** and **SL** fields. Skill number is the hunt group that was added in previous section.

```

add agent-loginID 32000                                     Page 2 of 2
                                AGENT LOGINID

Direct Agent Skill: 1                                Service Objective? n
Call Handling Preference: skill-level                Local Call Preference? n

SN  RL SL          SN  RL SL
1: 1          1    16:
2: 2          1    17:
3: 3          1    18:
  
```

5.6. Configure Vectors

Use **change vector *n*** to configure a Vector, where *n* is an available Vector number. These are the steps to route Voice, Email, and Chat transactions to agents.

Configure a simple vector to queue the call as follows:

```
change vector 101                                     Page 1 of 6
                                                    CALL VECTOR
Number: 1                                             Name: Harmony Voice
Multimedia? n      Attendant Vectoring? n      Meet-me Conf? n      Lock? n
Basic? y      EAS? y      G3V4 Enhanced? y      ANI/II-Digits? y      ASAI Routing? y
Prompting? y      LAI? y      G3V4 Adv Route? y      CINFO? y      BSR? y      Holidays? y
Variables? y      3.0 Enhanced? y
01 wait-time      0      secs hearing ringback
02 queue-to      skill 1      pri m
03 goto step      1      if unconditionally
04
```

Repeat this for Chat and Emails.

5.7. Configure Vector Directory Number (VDN)

Use **add vdn *n*** to add a vdn, where *n* is an available vdn extension. On **Page 1**:

- In the **Name** field, enter a descriptive name
- In the **Destination** field, set **Vector Number** to the vector configured earlier in this document. i.e., Vector Number 101

```
add vdn 44301                                     Page 1 of 3
          VECTOR DIRECTORY NUMBER
          Extension: 44301                          Unicode Name? n
          Name*: Harmony Voice
          Destination: Vector Number 101
          Attendant Vectoring? n
          Meet-me Conferencing? n
          Allow VDN Override? y
          COR: 1
          TN*: 1
          Measured: none      Report Adjunct Calls as ACD*? n

          VDN of Origin Annc. Extension*:
          1st Skill*:
          2nd Skill*:
          3rd Skill*:

STP URT:
```

Note: During compliance test 3 different VDNs were created to test a Voice, Email and Chat calls.

5.8. Configure AES connection

Use **change ip-services** command to add an entry for AES. 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 3

IP SERVICES						
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port	
AESVCS	y	procr	8765			

On **Page 3** of the IP Services form, enter the following values:

- In the **AE Services Server** field, type the name obtained from the Application Enablement Services server.
- In the **Password** field, type a password to be administered on the Application Enablement Services server.
- In the **Enabled** field, type **y**.

```
change ip-services
```

Page 3 of 3

AE Services Administration					
Server ID	AE Services Server	Password	Enabled	Status	
1:	aes	*	y	in use	

5.9. Add CTI Link

Use **add cti-link n** command, where **n** is an available CTI link number.

- In the **Extension** field, type **<station extension>**, where **<station extension>** is 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: 60111	
Type: ADJ-IP	
Name: AES CTI Link	COR: 1
Unicode Name? n	

6. Configure Avaya Aura® Application Enablement Services

- Launch OAM interface
- Verify license
- Administer TSAPI link
- Administer Harmony user
- Administer security database
- Restart service
- Obtain Tlink name
- Export CA certificate

6.1. Launch OAM Interface

Access the OAM web-based interface by using the URL “**https://ip-address**” in an Internet browser window, where “**ip-address**” is the IP address of the Application Enablement Services server.

The **Please login here** screen is displayed. Log in using the appropriate credentials.



The screenshot shows the Avaya Application Enablement Services Management Console login interface. At the top left is the AVAYA logo. To its right, the text reads "Application Enablement Services" and "Management Console". A red horizontal bar spans the width of the page, with the word "Help" in the top right corner. In the center of the page is a light gray login box containing the text "Please login here:", a "Username" label, a text input field, and a "Continue" button.

The **Welcome to OAM** screen is displayed next.

The screenshot shows the Avaya Application Enablement Services Management Console. The top right corner displays user information: "Welcome: User cust", "Last login: Tue Oct 31 14:14:44 E.S.T. 2023 from 192.168.120.35", "Number of prior failed login attempts: 0", "HostName/IP: aes/10.64.101.239", "Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE", "SW Version: 10.1.3.0.0.11-0", "Server Date and Time: Wed Nov 01 15:21:03 EDT 2023", and "HA Status: Not Configured". The main content area is titled "Welcome to OAM" and contains the following text: "The AE Services Operations, Administration, and Management (OAM) Web provides you with tools for managing the AE Server. OAM spans the following administrative domains:" followed by a bulleted list of domains and their uses. A note at the bottom states: "Depending on your business requirements, these administrative domains can be served by one administrator for all domains, or a separate administrator for each domain." The left sidebar lists various menu items, and the bottom of the page has the copyright notice: "Copyright © 2009-2023 Avaya Inc. All Rights Reserved."

6.2. Verify License

Select **Licensing** → **WebLM Server Access** in the left pane, to display the applicable WebLM server log in screen (not shown). Log in using the appropriate credentials and navigate to display installed licenses (not shown).

The screenshot shows the Avaya Application Enablement Services Management Console with the "Licensing" section selected in the left sidebar. The top right corner displays user information: "Welcome: User cust", "Last login: Tue Oct 31 14:14:44 E.S.T. 2023 from 192.168.120.35", "Number of prior failed login attempts: 0", "HostName/IP: aes/10.64.101.239", "Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE", "SW Version: 10.1.3.0.0.11-0", "Server Date and Time: Wed Nov 01 15:22:34 EDT 2023", and "HA Status: Not Configured". The main content area is titled "Licensing" and contains the following text: "If you are setting up and maintaining the WebLM, you need to use the following:" followed by a bulleted list of "WebLM Server Address". "If you are importing, setting up and maintaining the license, you need to use the following:" followed by a bulleted list of "WebLM Server Access". "If you want to administer TSAPI Reserved Licenses or DMCC Reserved Licenses, you need to use the following:" followed by a bulleted list of "Reserved Licenses". A red note at the bottom states: "NOTE: Please disable your pop-up blocker if you are having difficulty with opening this page". The left sidebar lists various menu items, and the bottom of the page has the copyright notice: "Copyright © 2009-2023 Avaya Inc. All Rights Reserved."

Select **Licensed products** → **APPL_ENAB** → **Application_Enablement** in the left pane, to display the **Application Enablement (CTI)** screen in the right pane.

Verify that there are sufficient licenses for **DMCC** and **TSAPI Simultaneous Users**, as shown below.

Application Enablement (CTI) - Release: 10 - SID: 10503000(Enterprise license file)

You are here: Licensed Products > Application_Enablement > View by Feature

License installed on: June 10, 2022 9:09:46 PM -04:00

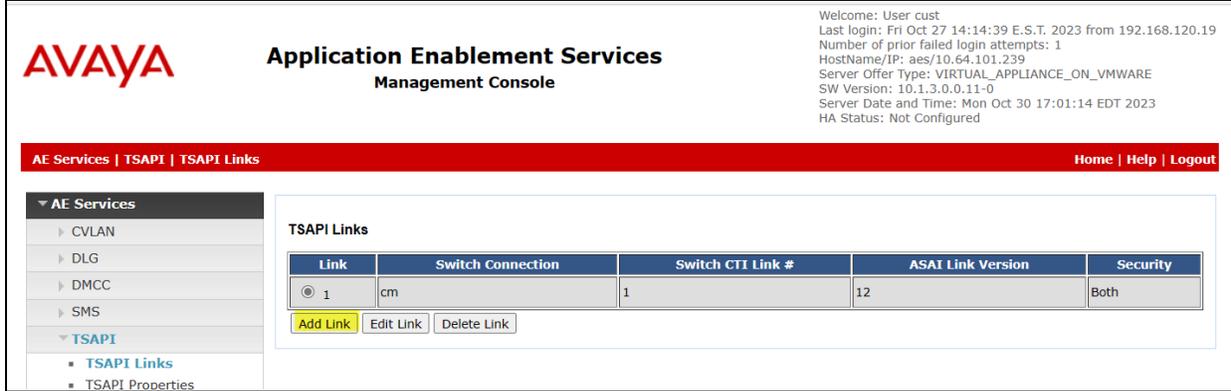
License File Host IDs: V5-E1-B3-74-2B-9E-01

Feature (License Keyword)	Expiration date	License Capacity	Currently available
Unified CC API Desktop Edition (VALUE_AES_AEC_UNIFIED_CC_DESKTOP)	permanent	1000	1000
CVLAN ASAI (VALUE_AES_CVLAN_ASAI)	permanent	16	16
Device Media and Call Control (VALUE_AES_DMCC_DMCC)	permanent	1000	1000
AES ADVANCED SMALL SWITCH (VALUE_AES_AEC_SMALL_ADVANCED)	permanent	3	3
DLG (VALUE_AES_DLG)	permanent	16	16
TSAPI Simultaneous Users (VALUE_AES_TSAPI_USERS)	permanent	1000	1000
AES ADVANCED LARGE SWITCH (VALUE_AES_AEC_LARGE_ADVANCED)	permanent	3	3
CVLAN Proprietary Links (VALUE_AES_PROPRIETARY_LINKS)	permanent	16	16
Product Notes (VALUE_NOTES)	permanent		Not counted

Note: The 'Product Notes' feature has a 'Not counted' status in the 'Currently available' column.

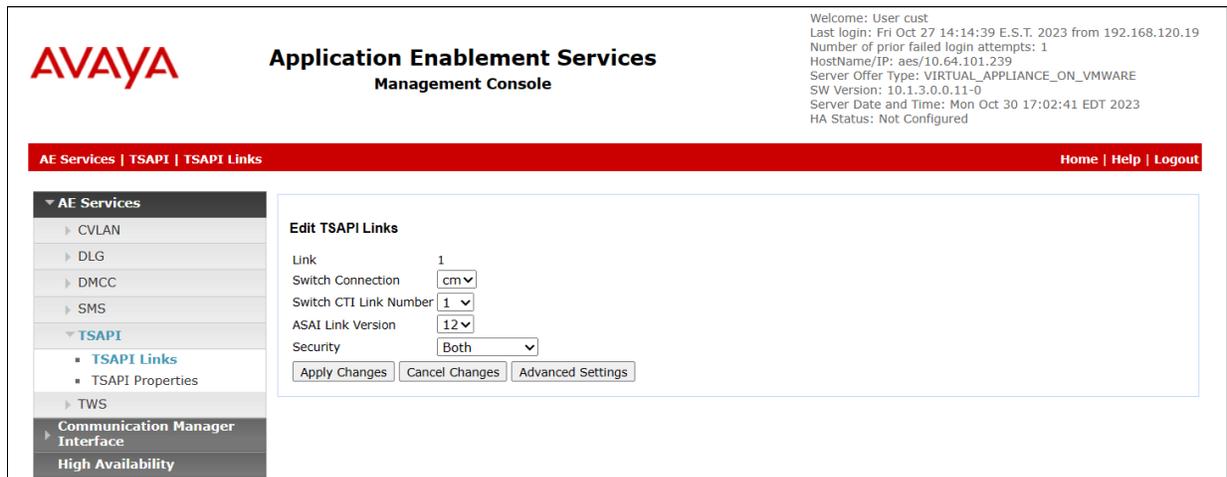
6.3. Administer TSAPI Link

Select **AE Services** → **TSAPI** → **TSAPI Links** from the left pane of the **Management Console**, to administer a TSAPI link. The **TSAPI Links** screen is displayed, as shown below. Click **Add Link**.



The **Add TSAPI Links** screen is displayed next. Set the following values for the specified fields and retain the default values for the remaining fields.

- **Link:** An available link number.
- **Switch Connection:** The relevant switch connection, in this case “cm.”
- **Switch CTI Link Number:** The CTI link number from **Section Error! Reference source not found.**
- **ASAI Link Version:** 12
- **Security:** “Encrypted” or “Both” to allow for encrypted connection.



6.4. Configure User

A user was created for Harmony 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**.

The screenshot shows the Avaya Application Enablement Services Management Console interface. At the top left is the Avaya logo. The main title is "Application Enablement Services Management Console". On the right, there is a system status block with the following text: "Welcome: User cust", "Last login: Tue Oct 31 13:19:34 E.S.T. 2023 from 192.168.120.35", "Number of prior failed login attempts: 0", "HostName/IP: aes/10.64.101.239", "Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE", "SW Version: 10.1.3.0.0.11-0", "Server Date and Time: Tue Oct 31 14:15:26 EDT 2023", and "HA Status: Not Configured".

Below the header is a red navigation bar with "User Management | User Admin | List All Users" on the left and "Home | Help | Logout" on the right. A left-hand navigation menu is visible, with "User Management" expanded to show "User Admin" and "Add User" selected.

The main content area is titled "Edit User" and contains the following form fields:

- * User Id:
- * Common Name:
- * Surname:
- User Password:
- Confirm Password:
- Admin Note:
- Avaya Role:
- Business Category:
- Car License:
- CM Home:
- Css Home:
- CT User:
- Department Number:
- Display Name:
- Employee Number:

6.5. Administer Security Database

Select **Security** → **Security Database** → **Control** from the left pane, to display the **SDB Control for DMCC, TSAPI, JTAPI and Telephony Web Services** screen in the right pane. Make certain that both parameters are unchecked, as shown below.

In the case that the security database is used by the customer with parameters already enabled, then follow **reference [2]** to configure access privileges for the Harmony user from **Section Error! Reference source not found.**

The screenshot displays the Avaya Application Enablement Services Management Console. The top left features the Avaya logo and the title "Application Enablement Services Management Console". The top right shows system information: "Welcome: User cust", "Last login: Fri Oct 27 14:14:39 E.S.T. 2023 from 192.168.120.19", "Number of prior failed login attempts: 1", "HostName/IP: aes/10.64.101.239", "Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE", "SW Version: 10.1.3.0.0.11-0", "Server Date and Time: Mon Oct 30 17:07:15 EDT 2023", and "HA Status: Not Configured".

The main content area is titled "Security | Security Database | Control" and includes a navigation menu on the left. The menu items are: AE Services, Communication Manager Interface, High Availability, Licensing, Maintenance, Networking, Security (expanded), Account Management, Audit, Certificate Management, Enterprise Directory, Host AA, PAM, Security Database (expanded), Control (selected), and CTI Users.

The main content area displays the "SDB Control for DMCC, WTI, TSAPI, JTAPI and Telephony Web Services" configuration page. It contains two unchecked checkboxes: "Enable SDB for DMCC and WTI Service" and "Enable SDB for TSAPI Service, JTAPI and Telephony Web Services". Below these checkboxes is an "Apply Changes" button.

6.6. Restart Service

Select **Maintenance** → **Service Controller** from the left pane, to display the **Service Controller** screen in the right pane. Check **TSAPI Service** and click **Restart Service**.

The screenshot shows the Avaya Application Enablement Services Management Console. The top right corner displays user information: "Welcome: User: cust", "Last login: Fri Oct 27 14:14:39 E.S.T. 2023 from 192.168.120.19", "Number of prior failed login attempts: 1", "HostName/IP: aes/10.64.101.239", "Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE", "SW Version: 10.1.3.0.0.11-0", "Server Date and Time: Mon Oct 30 17:08:27 EDT 2023", and "HA Status: Not Configured".

The main navigation bar includes "Maintenance | Service Controller" and "Home | Help | Logout". The left sidebar lists various service categories, with "Maintenance" expanded to show "Service Controller" selected.

The "Service Controller" section contains a table of services and their statuses:

Service	Controller Status
<input type="checkbox"/> ASAI Link Manager	Running
<input type="checkbox"/> DMCC Service	Running
<input type="checkbox"/> CVLAN Service	Running
<input type="checkbox"/> DLG Service	Running
<input type="checkbox"/> Transport Layer Service	Running
<input checked="" type="checkbox"/> TSAPI Service	Running
<input type="checkbox"/> WTI Service	Stopped

Below the table, a note states: "Note: DMCC Service must be restarted for WTI service changes to take effect. For status on actual services, please use [Status and Control](#)".

At the bottom, there are several buttons: "Start", "Stop", "Restart Service" (highlighted in yellow), "Restart AE Server", "Restart Linux", and "Restart Web Server".

6.7. Obtain Tlink Name

Select **Security** → **Security Database** → **Tlinks** from the left pane. The **Tlinks** screen shows a listing of the Tlink names. A new Tlink name is automatically generated for the TSAPI service. Locate the Tlink name associated with the relevant switch connection, which would use the name of the switch connection as part of the Tlink name.

Make a note of the pertinent Tlink name, to be used later to share with Event Intelligence. In this case, the pertinent Tlink name for encrypted connection is “**AVAYA#CM#CSTA-S#AES**” as shown below.

The screenshot displays the Avaya Application Enablement Services Management Console. The top right corner shows system information: Welcome: User cust, Last login: Fri Oct 27 14:14:39 E.S.T. 2023 from 192.168.120.19, Number of prior failed login attempts: 1, HostName/IP: aes/10.64.101.239, Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE, SW Version: 10.1.3.0.0.11-0, Server Date and Time: Mon Oct 30 17:10:26 EDT 2023, HA Status: Not Configured.

The main interface features a red navigation bar with "Security | Security Database | Tlinks" on the left and "Home | Help | Logout" on the right. A left-hand sidebar menu lists various services, with "Security Database" expanded to show "Tlinks" selected.

The main content area, titled "Tlinks", displays a "Tlink Name" section with two radio button options: "AVAYA#CM#CSTA#AES" (unselected) and "AVAYA#CM#CSTA-S#AES" (selected). A "Delete Tlink" button is located below the options.

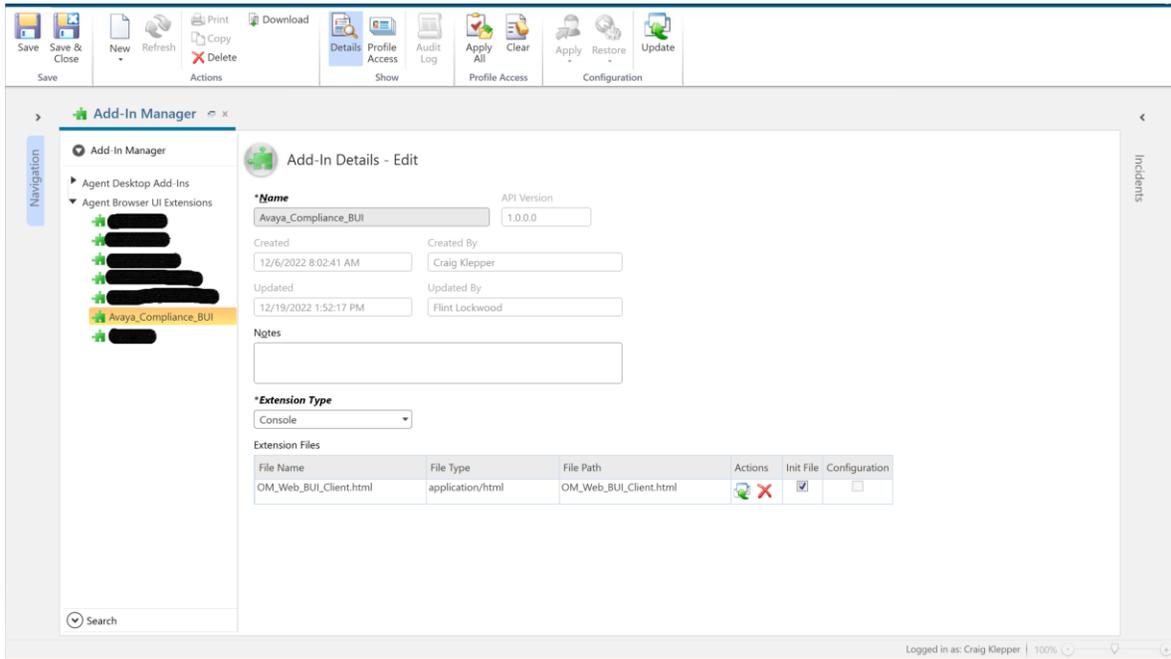
7. Configure Harmony

There are multiple OpenMethods components used in the integration with Avaya.

- **Harmony Client Browser UI Extension**– An Add-In into Oracle Service Cloud. Provides a GUI toolbar for call control functionality.
- **PopFlow** – These are Cloud Edge Services that are provided by OM and is utilized with the Oracle API(s). This includes Experience Designer (Workflow editor) and ScreenPop execution engine components.
- **Experience Cloud** - Cloud browser application that allows for the configuration of resources to be utilized for the integration with OM with Avaya
- **Harmony Integration Server** – Service that provides CTI connectivity to Avaya and communicates back to Harmony Client Add-In.
- **Harmony Queue Adapter** - Services that communicates with Oracle Service Cloud to detect new Chat and Email requests, and then submits these requests back to Avaya for routing to agents.

7.1. Harmony Client Browser UI Extension

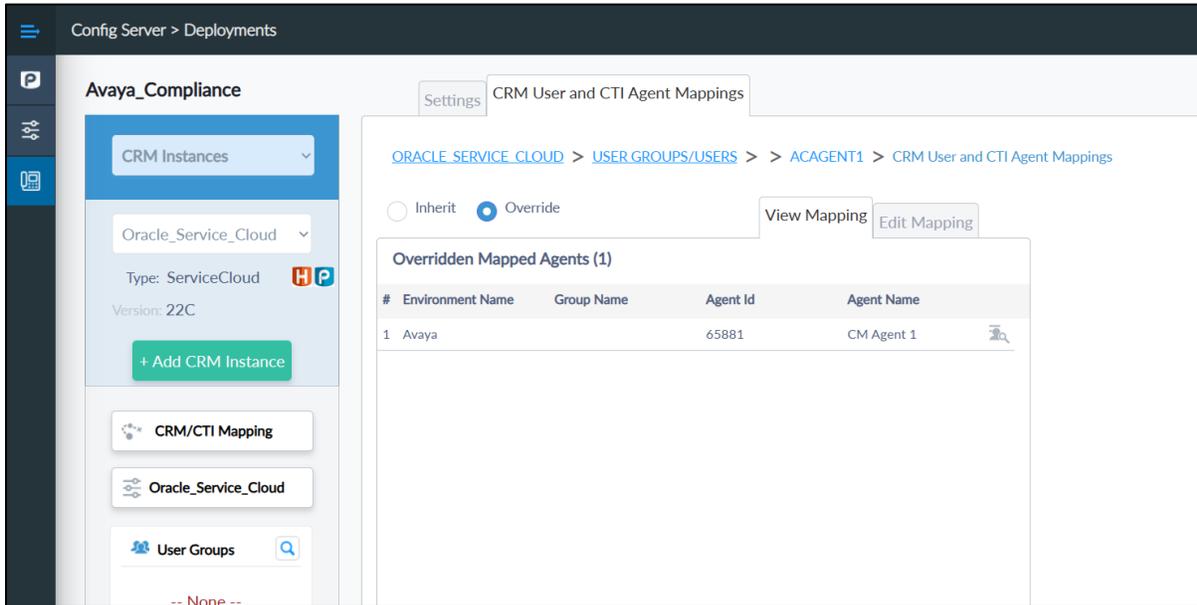
The Harmony Client Browser UI Extension is configured and uploaded into Oracle Service Cloud. The extension allows the client to connect to the correct site in Experience Cloud and utilize the BUI Media Bar for OpenMethods. This is something the integrator would set up in advance for the entire site.



7.1.1. Harmony Client - Agent Settings

For compliance testing, two users were created using the Experience Cloud application to interact with the OpenMethods Configuration Server.

Below is the setup for an Oracle Service Cloud User “ACAgent1”, repeat for additional agents. Normally, the “Agents Available to this User” would only associate one ACD Agent ID rather than both as shown below.



Config Server > Deployments ljgizzi@avaya.com

Settings
User Groups and Users
CRM User and CTI Agent Mappings

Avaya_Compliance

CRM Instances

Oracle_Service_Cloud

Type: ServiceCloud H P

Version: 22C

+ Add CRM Instance

CRM/CTI Mapping

Oracle_Service_Cloud

User Groups 🔍

-- None --

ORACLE_SERVICE_CLOUD > User Groups and Users [ADVANCED USER SEARCH](#)

🔍 Search CRM User Groups

CRM USER GROUPS

User Group Name	Actions
no items	

Total: 0

🔍 Search CRM Users

CRM USERS

	Username	Full Name	Actions
<input type="checkbox"/>	ACAgent1	AC Agent 1	✎ 🗑
<input type="checkbox"/>	ACAgent2	AC Agent 2	✎ 🗑

Total: 2 🔍 1 25

Add User
Add User Group
Import Users
Export Users
Delete All Users

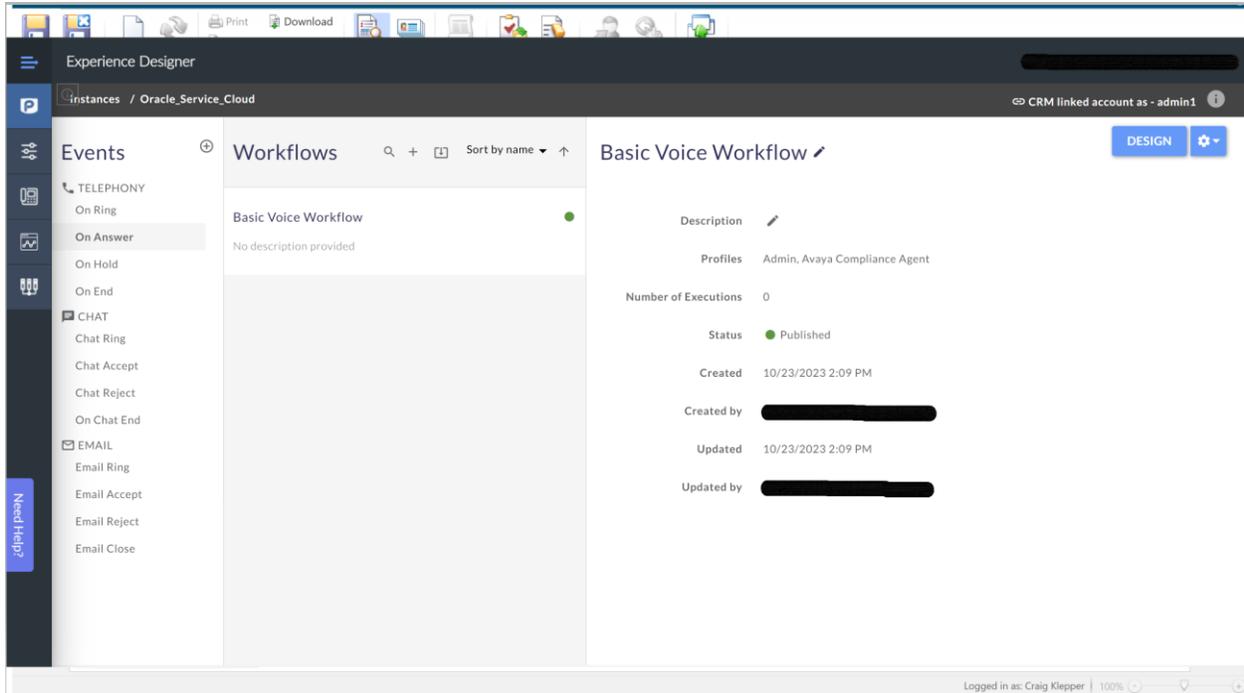
"Bulk Delete Users" will delete all the CRM Users from the list provided in the csv file. [Click here to download the template csv file.](#)

Bulk Delete Users

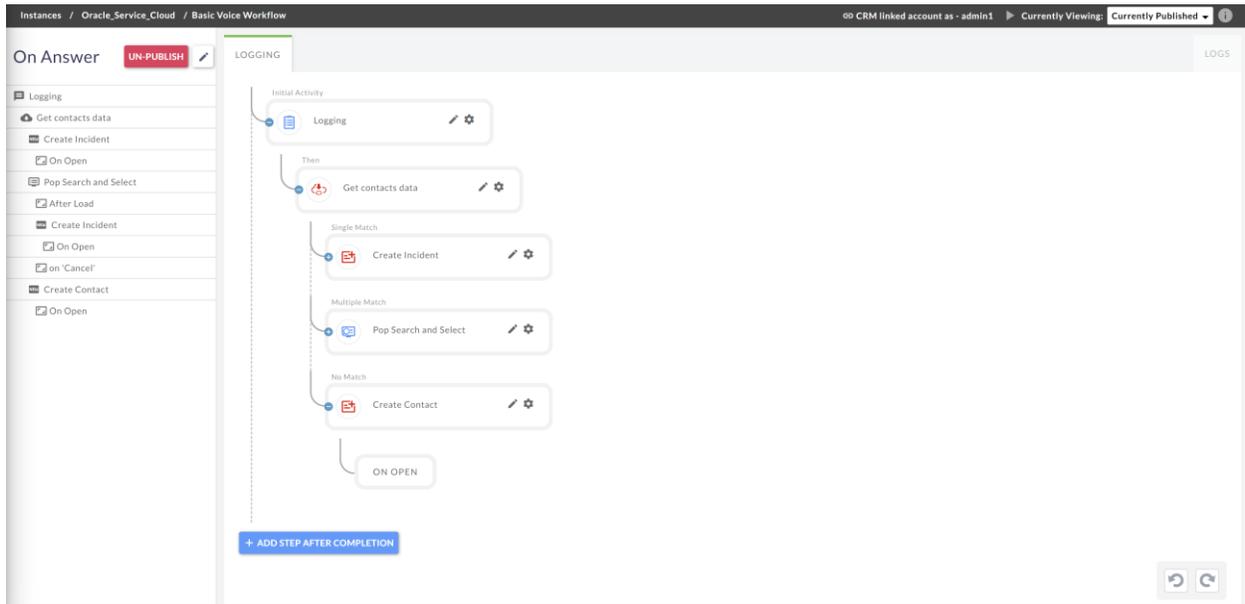
7.1.2. Harmony PopFlow – Voice

The Harmony PopFlow Workflow for voice is configured via the OpenMethods Experience Designer.

The PopFlow workflow needs to be configured and mapped to a profile against Oracle Service Cloud. For this certification, we used the "Avaya Compliance Agent" profile and the “Basic Voice Workflow” PopFlow workflow. Here is the PopFlow script published and the profiles that utilize it.



The “Basic Voice Workflow” workflow configuration is below.



7.1.3. Harmony PopFlow - Email

The Harmony PopFlow Workflow for email is configured via the OpenMethods Experience Designer.

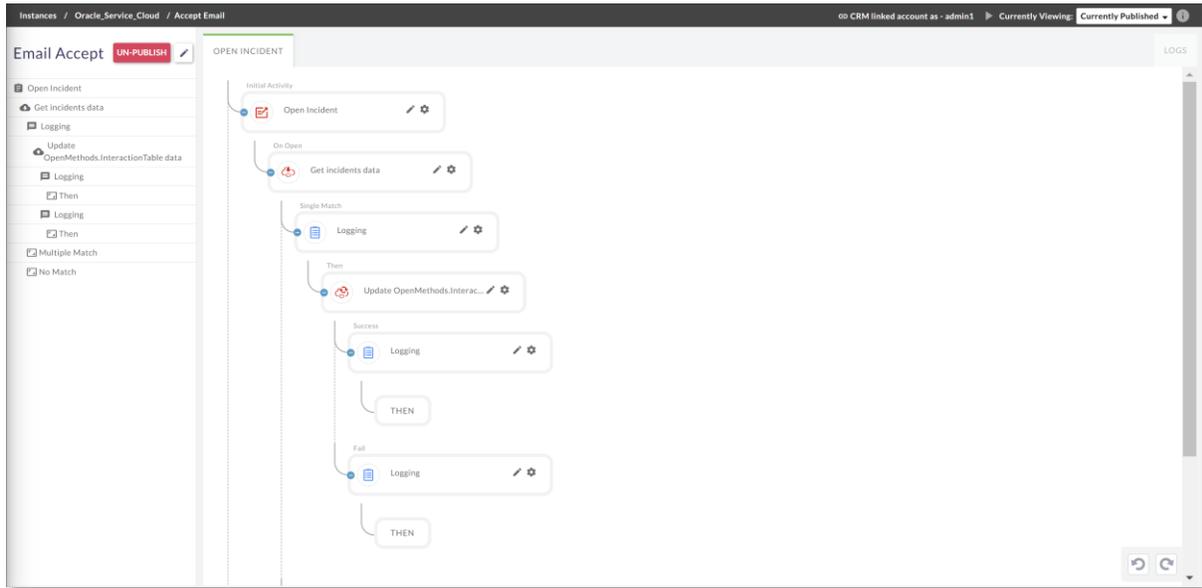
The PopFlow workflow needs to be configured and mapped to a profile against Oracle Service Cloud. For this certification, we used the "Avaya Compliance Agent" profile and the “Accept Email” PopFlow workflow. Here is the PopFlow script published and the profiles that utilize it.

The screenshot shows the 'Experience Designer' interface for the 'Accept Email' workflow. The workflow is currently in 'DESIGN' mode. The configuration details are as follows:

- Description: No description provided
- Profiles: Admin, Avaya Compliance Agent
- Number of Executions: 0
- Status: Published
- Created: 10/23/2023 8:38 AM
- Created by: [Redacted]
- Updated: 10/23/2023 8:38 AM
- Updated by: [Redacted]

The interface also shows a list of events on the left, including TELEPHONY, CHAT, and EMAIL events. The 'EMAIL' section is expanded, showing 'Email Accept' as the selected workflow.

The “Email Accept” workflow configuration is below..



7.2. Queue Adapter

Below is the master configuration for the Harmony Queue Adapter that is configured and maintained in Experience Cloud in the Network Hosts section of the site.

The screenshot shows the configuration page for the Harmony Queue Adapter in Avaya Studio Alliance. The page is titled 'AVAYA-HIS1-QA > AVAYA-HIS1-QA > AVAYA-HIS1-QA-AVAYA-HIS1-QA > Telephony Platforms'. The configuration is for an 'Avaya Processor'. The settings are as follows:

SETTING NAME	CURRENT VALUE
Is Enabled	<input checked="" type="checkbox"/>
Target Name *	AvayaProcessor
Display Name *	Avaya Processor
Server	
Address To Server *	10.64.101.239
Port To Server *	4721
Login Name *	harmony
Login Password *
Protocol Version *	PROTOCOL_VERSION_6_3_3
Use Secure Sockets	<input type="checkbox"/>
Enable Auto Keep Alive	<input checked="" type="checkbox"/>
Allow Certificate Name Mismatch	<input type="checkbox"/>

Left Navigation. Avaya_Compliance

Settings Site Interfaces Chat/Email Processors Data Filters/Rules Engine **Telephony Platforms**

AVAYA-HIS1-QA > AVAYA-HIS1-QA > AVAYA-HIS1-QA-AVAYA-HIS1-QA > Telephony Platforms

Processor Type: Avaya Processor

SETTING NAME	CURRENT VALUE
Enable Auto Keep Alive	<input checked="" type="checkbox"/>
Allow Certificate Name Mismatch	<input type="checkbox"/>
UI Delimiter *	&
Avaya Switch Name *	CM
Make Call Timeout *	60000
Make Call Response Delay *	500
Session	
Session Name *	OpenMethods-Avaya
Session Cleanup Delay *	60
Session Duration *	180
Queue	
Queue To VDN Mapping	OMDefaultRoute=60102&Default Chat Queue=60102&Order Support=60103

Avaya-HIS1-QA

Queue

Queue To VDN Mapping: OMDefaultRoute=60102&Default Chat Queue=60102&Order Support=60103

Chat

AWOH Hunt Group Ext Chat *: 64900

Capacity Retry Delay Chat *: 10000

Email

AWOH Hunt Group Ext Email *: 63900

Capacity Retry Delay Email *: 30000

7.2.1. Reason Codes

Using Experience Cloud, configure Aux reason codes which will appear in the Agent toolbar. Note that this solution relies on agents using Auto login, and initially will log agents into aux state. For consistent call center reporting, AUX and ACW codes are mapped to labels in the following interface:

The screenshot shows the 'Reason Codes' configuration page in the Avaya Compliance interface. The breadcrumb path is 'AVAYA > Not Ready Reason Codes'. The page features a navigation menu on the left with options like 'Telephony Platforms', 'Agent Groups', and 'Avaya'. The main content area displays a table of reason codes with columns for 'Code', 'Name', 'Selectable', and 'Actions'. Three codes are listed: '1' (Meeting), '2' (Lunch), and 'ACW' (ACW). A search bar and pagination controls are also visible.

	Code	Name	Selectable	Actions
<input type="checkbox"/>	1	Meeting	true	
<input type="checkbox"/>	2	Lunch	true	
<input type="checkbox"/>	ACW	ACW	true	

Total: 3

Buttons: Add Reason Code, Delete All Reason Codes

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, Application Enablement Services, and Harmony.

8.1. Verify Avaya Aura® Communication Manager

On Communication Manager, verify status of the administered CTI link by using the “**status aesvcs cti-link**” command. Verify that the **Service State** is “**established**” for the CTI link number administered in **Section 5**, as shown below.

```
status aesvcs cti-link
```

AE SERVICES CTI LINK STATUS						
CTI Link	Version	Mnt Busy	AE Services Server	Service State	Msgs Sent	Rcvd
1	12	no	aes	established	49	49

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

```
list monitored-station
```

MONITORED STATION																	
Associations:		1		2		3		4		5		6		7		8	
Station	Ext	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV	CTI Lnk	CRV
65001		1	0004														
		1	0009														

8.2. Verify Avaya Aura® Application Enablement Services

On Application Enablement Services, verify status of the TSAPI service by selecting **Status** → **Status and Control** → **TSAPI Service Summary** (not shown) from the left pane. The **TSAPI Link Details** screen is displayed.

Verify that the **Status** is “**Talking**” for the TSAPI link administered in **Section 6**, and that the **Associations** column reflects the number of logged in agents from **Section Error!** Reference source not found..



Application Enablement Services

Management Console

Welcome: User cust
 Last login: Fri Oct 27 14:14:39 E.S.T. 2023 from 192.168.120.19
 Number of prior failed login attempts: 1
 HostName/IP: aes/10.64.101.239
 Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
 SW Version: 10.113.0.0.11-0
 Server Date and Time: Mon Oct 30 17:22:53 EDT 2023
 HA Status: Not Configured

Status | Status and Control | TSAPI Service Summary
Home | Help | Logout

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ High Availability
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▼ Status
 - Alarm Viewer
 - ▶ Logs
 - ▶ Log Manager
 - ▼ Status and Control
 - CVLAN Service Summary
 - DLG Services Summary
 - DMCC Service Summary
 - Switch Conn Summary
 - **TSAPI Service Summary**
- ▶ User Management

TSAPI Link Details

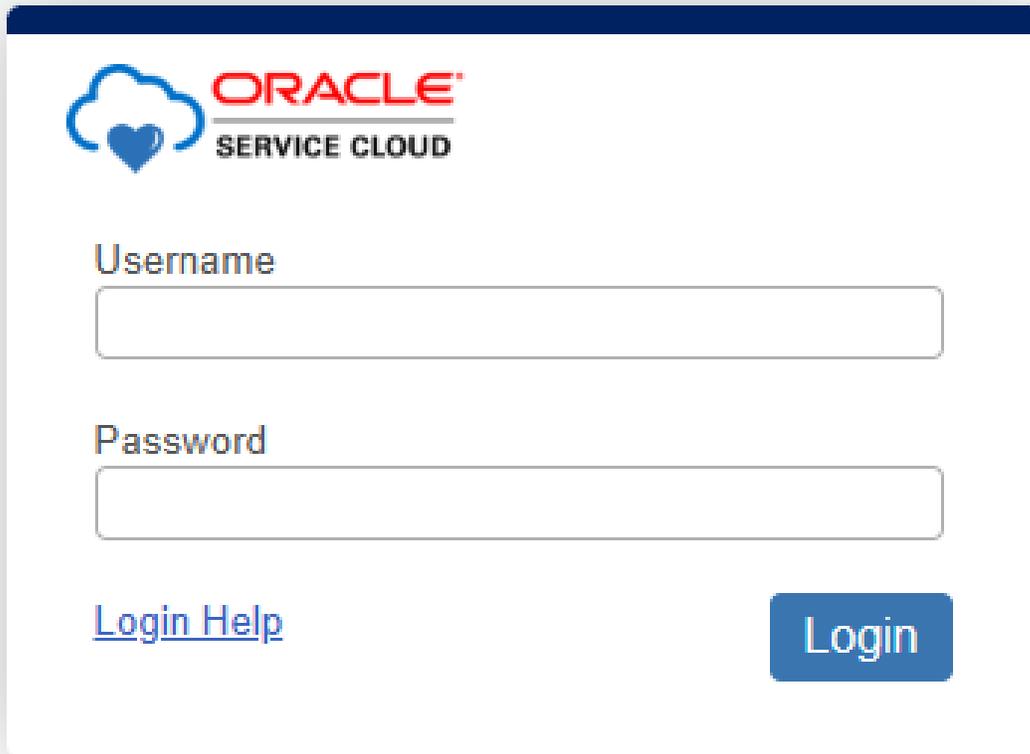
Enable page refresh every seconds

	Link	Switch Name	Switch CTI Link ID	Status	Since	State	Switch Version	Associations	Msgs to Switch	Msgs from Switch	Msgs Period
<input checked="" type="radio"/>	1	cm	1	Talking	Mon Oct 23 16:03:06 2023	Online	20	0	14	14	30

For service-wide information, choose one of the following:

8.3. Verify Harmony

To verify the agent can successfully log in from one of the Agent Desktops, launch the Oracle Service Cloud BUI browser window. Log in using appropriate credentials.



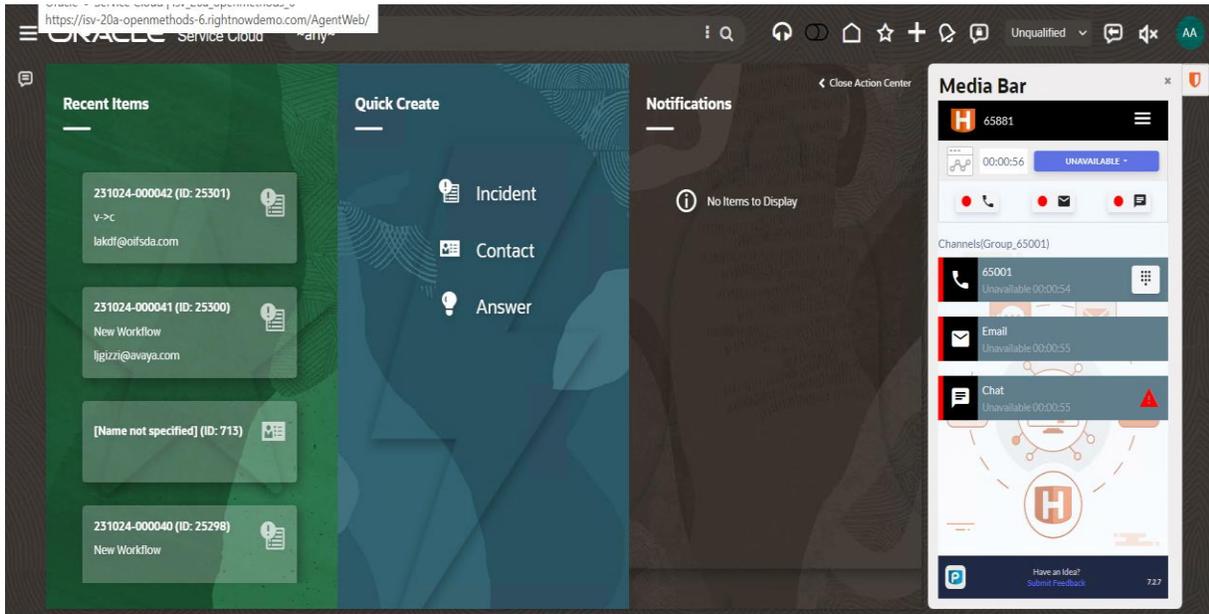
 **ORACLE**
SERVICE CLOUD

Username

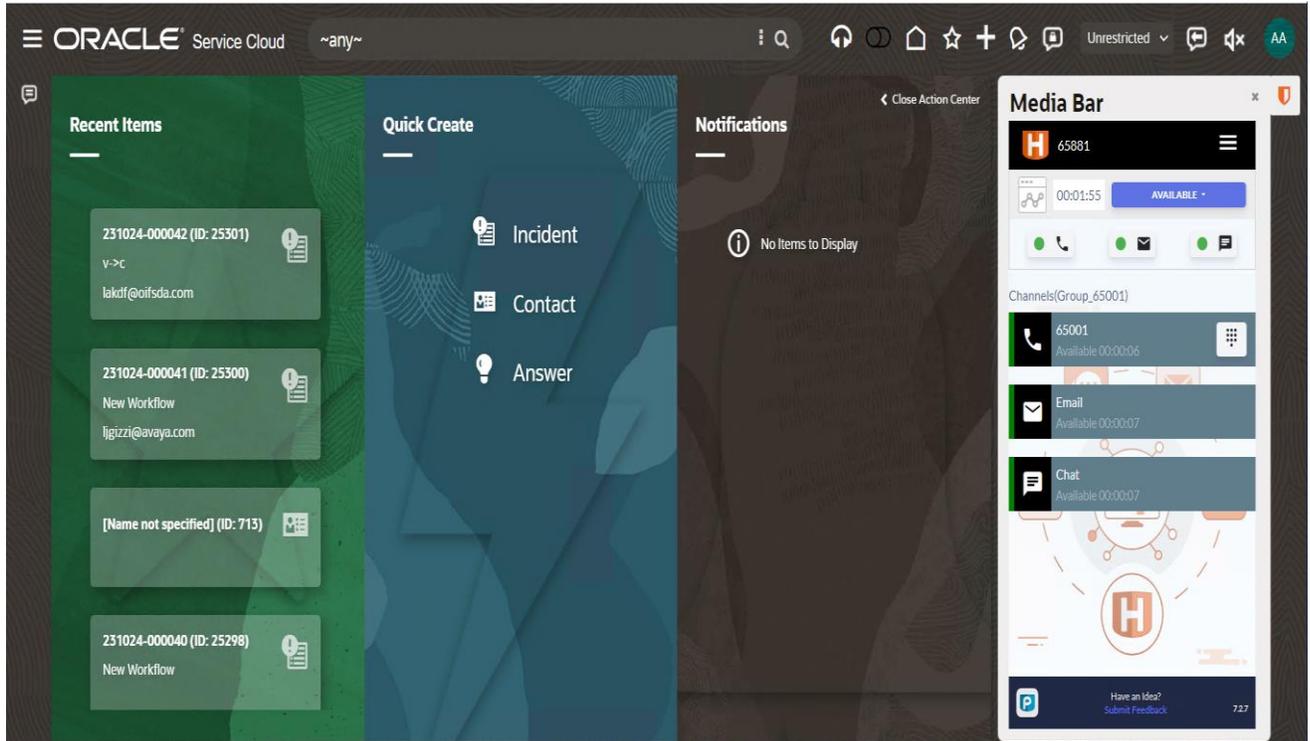
Password

[Login Help](#)

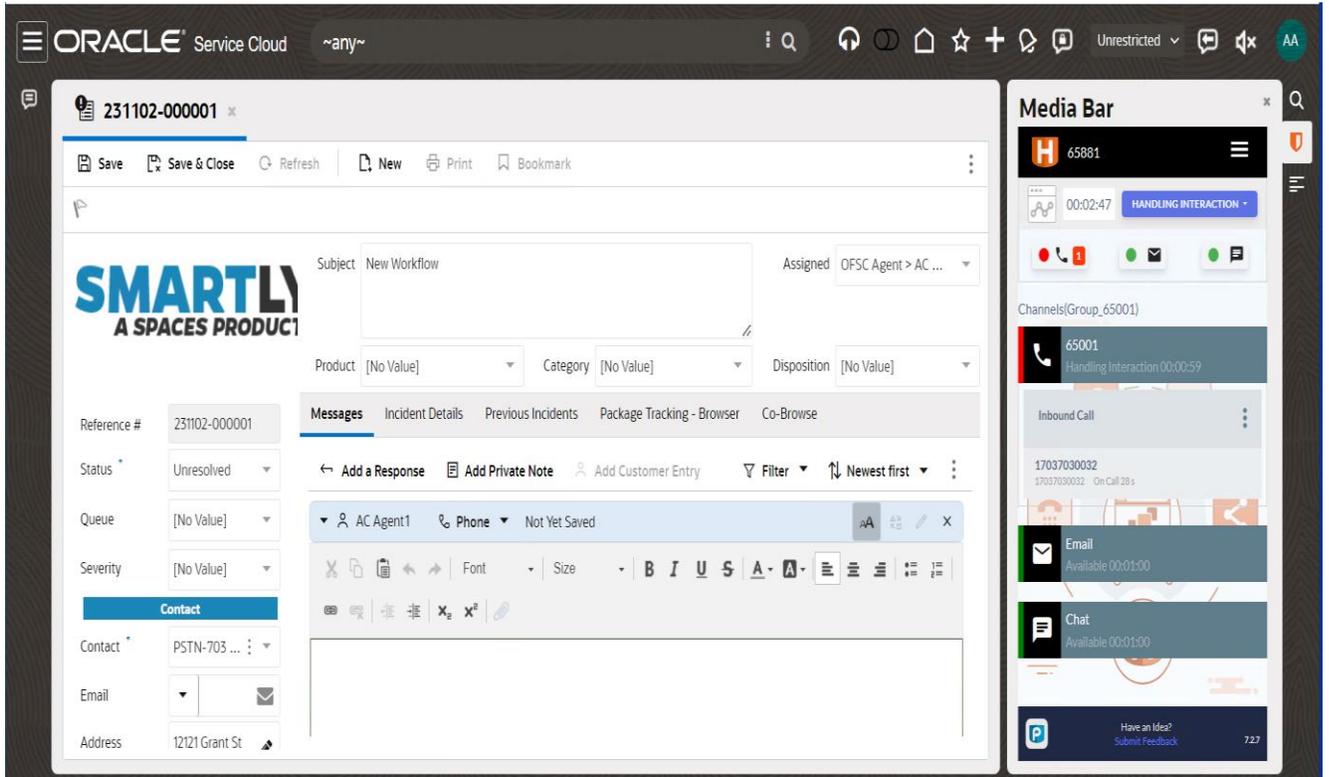
The agent will log in automatically once successfully logged into Oracle Service Cloud.



Once logged in, click on the agent state and make it Available. The following screen shows up.



Place a call to one of the VDNs configured in **Section 5.7**. Once the agent receives the call, answer it. A customer record will pop up in the workspace to the left of the media toolbar.



9. Conclusion

OpenMethods Harmony 7.1 was able to successfully interoperate with Avaya Aura® Communication Manager 10.1 and Avaya Aura® Application Enablement Services 10.1. All executed test cases were passed.

10. Additional References

This section references the product documentation relevant to these Application Notes.

1. *Administering Avaya Aura® Communication Manager*, Release 10.1.x, Issue 6, May 2023, available at <http://support.avaya.com>.
2. *Administering Avaya Aura® Application Enablement Services*, Release 10.1.x, Issue 7, May 2023, available at <http://support.avaya.com>.
3. *Administering Avaya Aura® Session Manager*, Release 10.1.x, Issue 6, May 2023, available at <http://support.avaya.com>.

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