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Avaya Solution & Interoperability Test Lab

Application Notes for OpenMethods Harmony 4.0 with Avaya Aura® Communication Manager 7.1 and Avaya Aura® Application Enablement Services 7.1 using Oracle Service Cloud – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for OpenMethods Harmony 4.0 to interoperate with Avaya Aura® Communication Manager 7.1 and Avaya Aura® Application Enablement Services 7.1 using Oracle Service Cloud. OpenMethods Harmony is a CRM CTI connector that bridges the customer telephony system with the Oracle Service Cloud product suite.

In the compliance testing, OpenMethods Harmony used the Java Telephony Application Programming Interface and the Device, Media, and Call Control interface from Avaya Aura® Application Enablement Services to monitor contact center agents on Avaya Aura® Communication Manager, to provide screen pop and channel work item control features from the agent desktops connected to Oracle Service Cloud.

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 DevConnect Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

These Application Notes describe the configuration steps required for OpenMethods Harmony 4.0 to interoperate with Avaya Aura® Communication Manager 7.1 and Avaya Aura® Application Enablement Services 7.1 using Oracle Service Cloud. Harmony is a CRM CTI connector that bridges the customer telephony system with the Oracle Service Cloud product suite.

In the compliance testing, Harmony used the Java Telephony Application Programming Interface (JTAPI) and the Device, Media, and Call Control (DMCC) .Net interface from Application Enablement Services to monitor contact center agents on Communication Manager, to provide screen pop and channel work item control features from agent desktops connected to Oracle Service Cloud via the Oracle Service Cloud CX Desktop application.

JTAPI is a client-side interface to the Telephony Services Application Programmer Interface (TSAPI) on Application Enablement Services. As such, these Application Notes will describe the required configurations for creation and connectivity to the TSAPI service.

The Harmony solution consisted of the Integration Server, Queue Adapter, MediaBar, and PopFlow components. The MediaBar and PopFlow components resided on the Oracle Service Cloud, and interfaced with Oracle Service Cloud CX Desktop running on the agent desktops to facilitate screen pop and control of channel work items. The Integration Server and Queue Adapter components resided on the same Harmony server in the compliance testing.

The Integration Server component used JTAPI to integrate with Application Enablement Services, to monitor agent station extensions, support of screen pop, and control of voice, email, and chat work items from the agent desktops.

The Queue Adapter component used DMCC to integrate with Application Enablement Services, along with use of the Administration Without Hardware (AWOH) feature on Communication Manager for initiation of phantom calls for email and chat work items. Phantom calls were initiated from the applicable hunt group of email or chat AWOH stations as calling party and the applicable skill group for email or chat as destination.

The compliance testing used the basic default PopFlow, which supports one active work item at the agent at any time. In addition, the basic default PopFlow does not support population of DNIS at the answering agent desktop, nor population of original ANI, original DNIS, and original customer contact record at the transfer-to/conference-to agent desktops. The full PopFlow product was outside the scope of this compliance test.

2. General Test Approach and Test Results

The feature test cases were performed manually. Upon an agent logging into Harmony, the application used JTAPI/TSAPI to query agent state, logged the agent into the ACD on Communication Manager if needed, and requested device monitoring.

For manual part of the testing, incoming ACD calls were placed from the PSTN with available agents that have desktops running the Oracle Service Cloud CX Desktop application. All necessary call actions were initiated from the agent desktops and/or telephones. The email and chat work items were initiated from the Internet, via the URLs provided by OpenMethods.

The serviceability test cases were performed manually by disconnecting/reconnecting the Ethernet connection to the Harmony server.

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 Application Enablement Services and Harmony did not include use of any specific encryption features as requested by OpenMethods.

2.1. Interoperability Compliance Testing

The interoperability compliance testing included feature and serviceability testing.

The feature testing focused on verifying the following on Harmony:

- Use of DMCC device and call control services to support initiation and clearing of phantom calls and support of UUI data for email and chat work items.

- Handling of JTAPI/TSAPI messages in the areas of event notifications, value queries, and set agent states.

- Use of JTAPI/TSAPI call control services to support call control actions such as answer and transfer from agent desktops.

- Proper handling of call scenarios involving inbound, outbound, internal, external, ACD, non-ACD, screen pop, drop, hold/resume, multiple calls, multiple agents, conference, transfer, long duration, send DTMF, pending aux work, and reason codes.

- Proper handling of email and chat scenarios involving screen pop, accept, and close.

The serviceability testing focused on verifying the ability of Harmony to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to Harmony.

2.2. Test Results

All test cases were executed and verified. The following were observations on Harmony from the compliance testing.

- After an agent accepted the phantom call associated with an email or chat work item, Harmony automatically held the phantom call by design. This design did not appear to have any adverse impact other than flickering of the associated call appearance light at the agent telephone, and possible long hold reminder calls when configured on Communication Manager.

- Upon ending the call associated with a voice work item, the agent desktop showed **HandlingInteraction** despite agent considered to be available by Communication Manager. While in this state, subsequent calls can still be delivered and answered by agent. Per Harmony design, the agent needs to select the **Complete the current interaction** icon post handling of voice work item, in order for **Available** to be reflected.

- Upon selecting an aux work reason code such as **Lunch** from the agent desktop, the desktop reflected **Unavailable** per Harmony design.

2.3. Support

Technical support on Harmony can be obtained through the following:

- **Phone:** (816) 283-8965, extension 1
- **Email:** care@openmethods.com
- **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 contact center devices are not the focus of these Application Notes and will not be described.

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

Device Type	Number
Supervisor Station	65000
Agent Stations	65001, 66002
Agent IDs	65881, 65882
Agent Passwords	65881, 65882
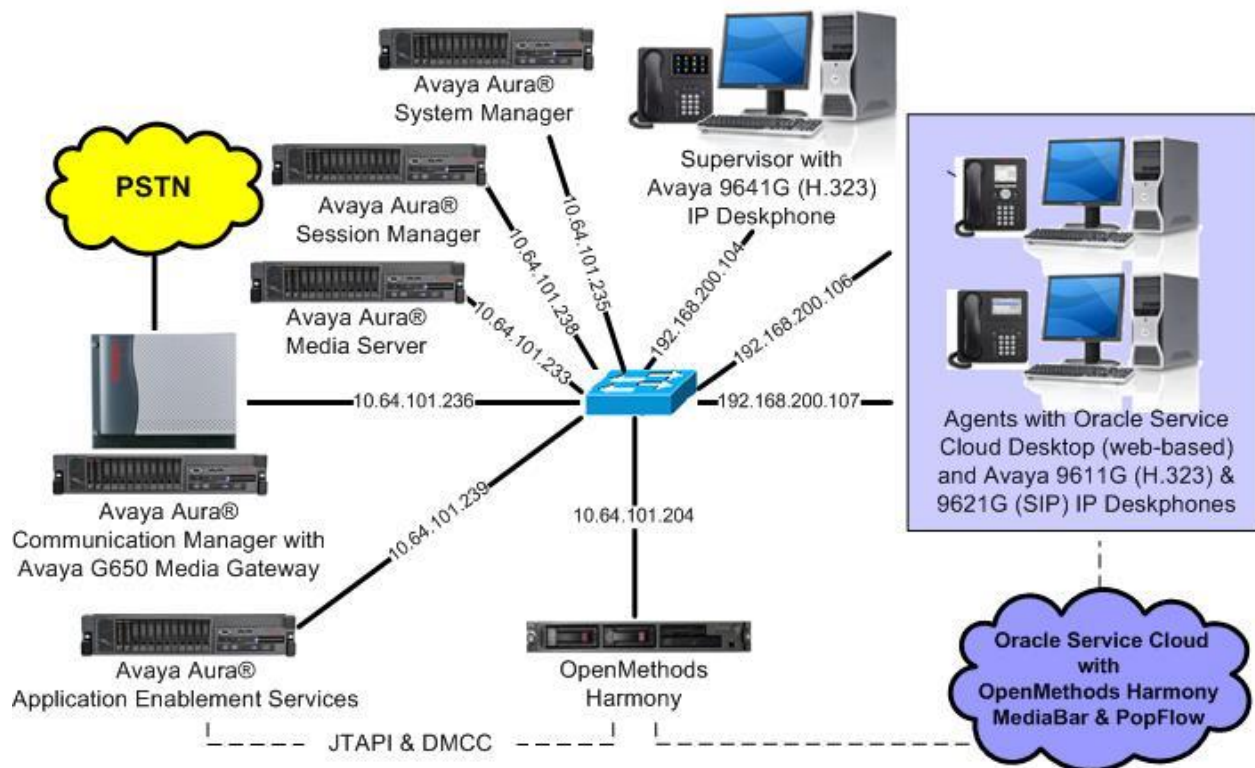
Figure 1: Compliance Testing Configuration

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	7.1.1 (7.1.1.0.0.532.23985)
Avaya G650 Media Gateway	NA
Avaya Aura® Media Server in Virtual Environment	7.8.0.333
Avaya Aura® Application Enablement Services in Virtual Environment	7.1.1 (7.1.1.0.0.5-0)
Avaya Aura® Session Manager in Virtual Environment	7.1.1 (7.1.1.0.711008)
Avaya Aura® System Manager in Virtual Environment	7.1 .1 (7.1.1.0.046931)
Avaya 9611G and 9641G IP Deskphones (H.323)	6.6506
Avaya 9621G IP Deskphone (SIP)	7.1.0.1.1
OpenMethods Harmony on Microsoft Windows Server 2012 • Integration Server • QueueAdapter • Avaya JTAPI SDK • DMCC .Net (ServiceProvider.dll)	4.0.164.0 R2 Standard 4.0.164.01.20171031729 Hot Fix 1 4.0.164.0 6.3.3.26 6.3.3.14
Oracle Service Cloud CX Desktop on Microsoft Windows 10 Pro	16.11.0.272
OpenMethods Harmony MediaBar and OpenMethods Harmony PopFlow on Oracle Service Cloud	4.0.164.0 4.0.164.0 16.11.0.272

5. Configure Avaya Aura® Communication Manager

This section provides the procedures for configuring Communication Manager. The procedures include the following areas:

- Verify license
- Administer CTI link
- Obtain reason codes
- Administer system parameters features
- Administer AWOH stations
- Administer AWOH hunt groups
- Administer email and chat skills
- Administer agent IDs

5.1. Verify License

Log into the System Access Terminal to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the "display system-parameters customer-options" command. On **Page 1**, verify that there is sufficient capacity for AWOH stations by comparing the **Maximum Stations** field value with the corresponding value in the **USED** column.

```
display system-parameters customer-options                      Page   1 of  12
                            OPTIONAL FEATURES

   G3 Version: V17                              Software Package: Enterprise
     Location: 2                                   System ID (SID): 1
     Platform: 28                                  Module ID (MID): 1

                                                                   USED
                              Platform Maximum Ports: 65000 197
                                  Maximum Stations: 41000 22
                              Maximum XMOBILE Stations: 41000 0
```

Navigate to **Page 4**, and verify that the **Computer Telephony Adjunct Links** customer option is set to "y". If this option is not set to "y", then contact the Avaya sales team or business partner for a proper license file.

```
display system-parameters customer-options                      Page   4 of  12
                            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? n                       DCS (Basic)? y
            ASAI Link Core Capabilities? y                DCS Call Coverage? y
            ASAI Link Plus Capabilities? y                DCS with Rerouting? y
```

5.2. Administer CTI Link

Add a CTI link using the "add cti-link n" command, where "n" is an available CTI link number. Enter an available extension number in the **Extension** field. Note that the CTI link number and extension number may vary. Enter "ADJ-IP" in the **Type** field, and a descriptive name in the **Name** field. Default values may be used in the remaining fields.

```
add cti-link 1                                             Page   1 of   3
                                CTI LINK
 CTI Link: 1
Extension: 60111
     Type: ADJ-IP
                                                                 COR: 1

     Name: AES CTI Link
```

5.3. Obtain Reason Codes

For contact centers that use reason codes, enter the "change reason-code-names" command to display the configured reason codes. Make a note of the **Aux Work** reason codes, which will be used later to configure Harmony.

```
change reason-code-names                                   Page   1 of   1

                        REASON CODE NAMES

                        Aux Work/          Logout
                     Interruptible?

     Reason Code 1: Lunch          /n  Finished Shift
     Reason Code 2: Coffee         /n
     Reason Code 3:                /n
     Reason Code 4:                /n
     Reason Code 5:                /n
     Reason Code 6:                /n
     Reason Code 7:                /n  Other
     Reason Code 8:                /n
     Reason Code 9:                /n


  Default Reason Code:
```

5.4. Administer System Parameters Features

Use the "change system-parameters features" command to enable **Create Universal Call ID (UCID)**, which is located on **Page 5**. For **UCID Network Node ID**, enter an available node ID.

```
change system-parameters features                             Page   5 of  19
                    FEATURE-RELATED SYSTEM PARAMETERS

SYSTEM PRINTER PARAMETERS
  Endpoint:                Lines Per Page: 60

SYSTEM-WIDE PARAMETERS
                                    Switch Name:
            Emergency Extension Forwarding (min): 10
         Enable Inter-Gateway Alternate Routing? n
Enable Dial Plan Transparency in Survivable Mode? n
                            COR to Use for DPT: station
              EC500 Routing in Survivable Mode: dpt-then-ec500
MALICIOUS CALL TRACE PARAMETERS
               Apply MCT Warning Tone? n   MCT Voice Recorder Trunk Group:
     Delay Sending RELease (seconds): 0
SEND ALL CALLS OPTIONS
     Send All Calls Applies to: station    Auto Inspect on Send All Calls? n
            Preserve previous AUX Work button states after deactivation? n
UNIVERSAL CALL ID
     Create Universal Call ID (UCID)? y    UCID Network Node ID: 27
```

Navigate to **Page 13**, and enable **Send UCID to ASAI**. This parameter allows for the universal call ID to be sent to Harmony.

```
change system-parameters features                             Page  13 of  19
                    FEATURE-RELATED SYSTEM PARAMETERS
 CALL CENTER MISCELLANEOUS
          Callr-info Display Timer (sec): 10
                      Clear Callr-info: next-call
       Allow Ringer-off with Auto-Answer? n

   Reporting for PC Non-Predictive Calls? n

          Agent/Caller Disconnect Tones? n
         Interruptible Aux Notification Timer (sec): 3
           Zip Tone Burst for Callmaster Endpoints: double

  ASAI
                 Copy ASAI UUI During Conference/Transfer? n
            Call Classification After Answer Supervision? y
                                      Send UCID to ASAI? y
             For ASAI Send DTMF Tone to Call Originator? y
        Send Connect Event to ASAI For Announcement Answer? n
 Prefer H.323 Over SIP For Dual-Reg Station 3PCC Make Call? n
```

5.5. Administer AWOH Stations

Add an AWOH station using the "add station n" command, where "n" is an available extension number. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Extension:** The available extension number.
- **Port:** "x"
- **Name:** A descriptive name.

```
add station 63991                                                  Page   1 of   5
                                   STATION

Extension: 63991                           Lock Messages? n               BCC: 0
    Type: 6408D+                           Security Code:                   TN: 1
    Port: x                             Coverage Path 1:                   COR: 1
    Name: Email AWOH 1                   Coverage Path 2:                   COS: 1
                                         Hunt-to Station:
STATION OPTIONS
                                             Time of Day Lock Table:
             Loss Group: 2          Personalized Ringing Pattern: 1
            Data Module? n                       Message Lamp Ext: 63991
            Speakerphone: 2-way              Mute Button Enabled? y
        Display Language: english

          Survivable COR: internal            Media Complex Ext:
    Survivable Trunk Dest? y                        IP SoftPhone? n
                                            Remote Office Phone? n
                                                      IP Video? n
```

Repeat this section to administer the desired number of AWOH stations, to be used as originators of phantom calls for email and chat work items. The number of AWOH stations configured should correspond to the desired number of simultaneous email and chat work items.

In the compliance testing, two AWOH stations with extensions 63991-63992 were configured as originators of phantom calls for email, two AWOH stations with extensions 64991-64992 were configured as originators of phantom calls for chat, as shown below.

```
list station 63991 count 4

                            STATIONS

Ext/           Port/  Name/                      Room/     Cv1/ COR/  Cable/
 Hunt-to       Type      Surv GK NN      Move   Data Ext   Cv2  COS TN Jack

63991          X      Email AWOH 1                           1
               6408D+                    no                     1
63992          X      Email AWOH 2                           1
               6408D+                    no                     1
64991          X      Chat AWOH 1                            1
               6408D+                    no                     1
64992          X      Chat AWOH 2                            1
               6408D+                    no                     1
```

5.6. Administer AWOH Hunt Groups

Administer a hunt group to be used for origination of phantom calls for email work items. Use the "add hunt-group n" command, where "n" is an available hunt group number. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Group Number:** The available group number.
- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.

```
add hunt-group 33                                              Page   1 of  60
                              HUNT GROUP

         Group Number: 33                               ACD? n
           Group Name: Email AWOH                      Queue? n
      Group Extension: 63333                          Vector? n
           Group Type: ucd-mia              Coverage Path:
                   TN: 1          Night Service Destination:
                  COR: 1                     MM Early Answer? n
        Security Code:               Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 3**, and enter the extensions of all AWOH station extensions for email from **Section 5.5** as members. Harmony will use this group as originator of phantom calls for email work items.

```
add hunt-group 33                                              Page   3 of  60
                              HUNT GROUP
        Group Number: 33   Group Extension: 63333      Group Type: ucd-mia
 Member Range Allowed: 1 - 1500     Administered Members (min/max): 0   /0
                                       Total Administered Members: 0
GROUP MEMBER ASSIGNMENTS
    Ext           Name(19 characters)      Ext           Name(19 characters)
  1: 63991                               14:
  2: 63992                               15:
  3:                                     16:
```

Repeat this section to administer another hunt group for origination of phantom calls for chat work items, with AWOH station extensions for chat from **Section 5.5** as members, as shown below.

```
add hunt-group 44                                              Page   3 of  60
                              HUNT GROUP
        Group Number: 44   Group Extension: 64444      Group Type: ucd-mia
 Member Range Allowed: 1 - 1500     Administered Members (min/max): 0   /0
                                       Total Administered Members: 0
GROUP MEMBER ASSIGNMENTS
    Ext           Name(19 characters)      Ext           Name(19 characters)
  1: 64991                               14:
  2: 64992                               15:
  3:                                     16:
```

5.7. Administer Email and Chat Skills

Administer a skill group to be used for routing of phantom calls for email work items to agents. Use the "add hunt-group n" command, where "n" is an available hunt group number. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Group Number:** The available group number.
- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.
- **ACD:** "y"
- **Queue:** "y"
- **Vector:** "y"

```
add hunt-group 3                                               Page   1 of  4
                              HUNT GROUP

          Group Number: 3                                 ACD? y
            Group Name: Email Skill                     Queue? y
        Group Extension: 63101                          Vector? y
             Group Type: ucd-mia
                     TN: 1
                    COR: 1                    MM Early Answer? n
          Security Code:                Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 2**, and set **Skill** to "y" as shown below.

```
add hunt-group 3                                               Page   2 of  4
                              HUNT GROUP

                    Skill? y     Expected Call Handling Time <sec>: 180
                     AAS? n
                 Measured: none
      Supervisor Extension:

       Controlling Adjunct: none
```

Repeat this section to administer another skill group for routing of phantom calls for chat work items to agents. In the compliance testing, two skill groups were created as shown below.

```
list hunt-group 3 count 2
                             HUNT GROUPS
Grp  Grp
No.  Name/          Grp     ACD/            No. Cov  Notif/ Dom  Message
     Ext            Type    MEAS Vec MCH  Que Mem Path Ctg Adj Ctrl  Center

3    Email Skill
     63101          ucd-mia y/I  SK  none y   0         n            n
4    Chat Skill
     64101          ucd-mia y/I  SK  none y   0         n            n
```

5.8. Administer Agent IDs

The newly created email and chat skills need to be added to the applicable agents. Use the "change agent-loginID n" command, where "n" is the first agent ID from **Section 3**. Navigate to **Page 2**, and add the desired email and/or chat skill group numbers from **Section 5.7** for the agent under **SN**, and set the desired skill level under **SL**, as shown below. Note that skills 1 and 2 were pre-existing skills for voice.

```
change agent-loginID 65881                                Page   2 of   3
                              AGENT LOGINID
     Direct Agent Skill:                            Service Objective? n
Call Handling Preference: skill-level               Local Call Preference? n

   SN   RL SL         SN   RL SL         SN  RL SL         SN   RL SL
 1: 1      1      16:              31:              46:
 2: 2      1      17:              32:              47:
 3: 3      1      18:              33:              48:
 4: 4      1      19:              34:              49:
 5:               20:              35:              50:
```

Repeat this section to add email and/or chat skills to all desired agents. In the compliance testing, email and chat skills were added to both agents from **Section 3**, as shown below.

```
list agent-loginID 65881 count 2
                           AGENT LOGINID
Login ID      Name           Extension    Dir Agt  AAS/AUD      COR Ag Pr SO
            Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

65881        CM Agent 1    unstaffed                            1   lvl
               1/01    2/01    3/01   4/01    /        /       /       /
65882        CM Agent 2    unstaffed                            1   lvl
               1/01    2/01    3/01   4/01    /        /       /       /
```

6. Configure Avaya Aura® Application Enablement Services
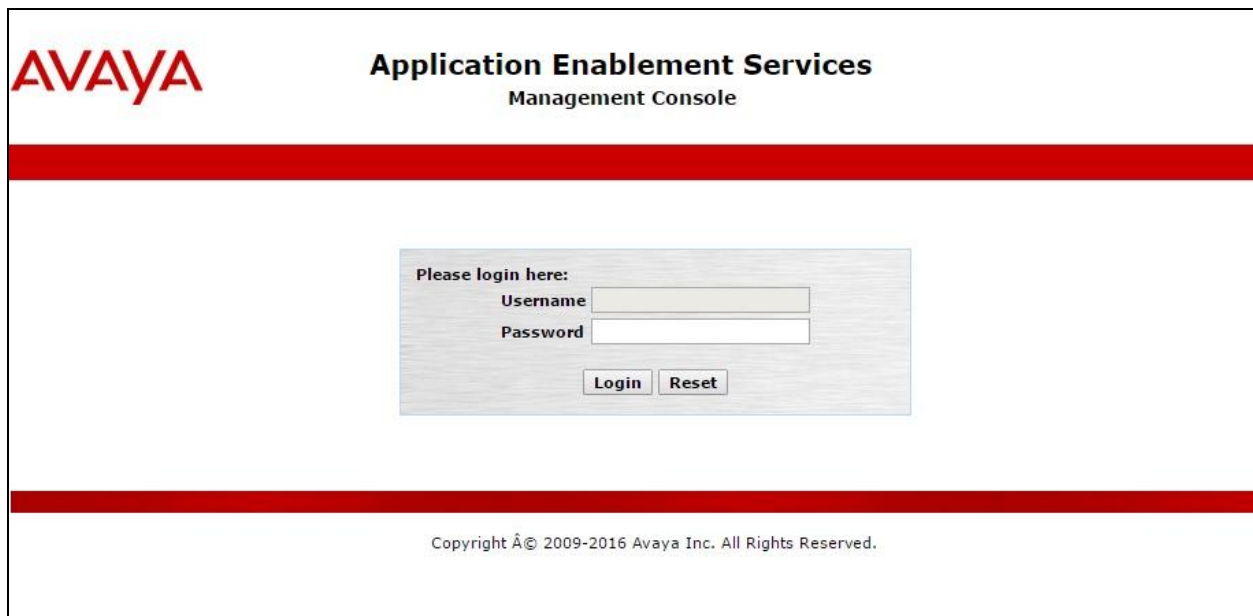
This section provides the procedures for configuring Application Enablement Services. The procedures include the following areas:

- Launch OAM interface
- Verify license
- Administer TSAPI link
- Administer Harmony user
- Administer security database
- Administer ports
- Restart services
- Obtain Tlink name

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.

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

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).

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 **TSAPI Simultaneous Users**, as shown below. Note that TSAPI licenses are needed for agent monitoring and call control, and for phantom calls via DMCC.

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.

The **Link** field is only local to the Application Enablement Services server, and may be set to any available number. For **Switch Connection**, select the relevant switch connection from the drop-down list. In this case, the existing switch connection "cm7" is selected. For **Switch CTI Link Number**, select the CTI link number from **Section 5.2**. For **ASAI Link Version**, select "7". Retain the default values in the remaining fields.

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6.4. Administer Harmony User

Select **User Management** → **User Admin** → **Add User** from the left pane, to display the **Add User** screen in the right pane.

Enter desired values for **User Id**, **Common Name**, **Surname**, **User Password**, and **Confirm Password**. For **CT User**, select "Yes" from the drop-down list. Retain the default value in the remaining fields.

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 event 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 6.4**.

6.6. Administer Ports

Select **Networking → Ports** from the left pane, to display the **Ports** screen in the right pane.

In the **DMCC Server Ports** section, select the radio button for **Unencrypted Port** under the **Enabled** column, as shown below. Retain the default values in the remaining fields.

6.7. Restart Services

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

6.8. 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 associated Tlink name, to be used later for configuring Harmony.

In this case, the associated Tlink name is "AVAYA#CM7#CSTA#AES7".

7. Configure Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager. The procedures include the following areas:

- Launch System Manager
- Administer users

7.1. Launch System Manager

Access the System Manager web interface by using the URL "https://ip-address" in an Internet browser window, where "ip-address" is the IP address of System Manager. Log in using the appropriate credentials.

7.2. Administer Users

In the subsequent screen (not shown), select **Users → User Management**. Select **User Management → Manage Users** from the left pane to display the **User Management** screen below. Select the entry associated with the first SIP agent station from **Section 3**, in this case "66002", and click **Edit**.

The **User Profile Edit** screen is displayed. Select the **Communication Profile** tab to display the screen below.

Navigate to the **CM Endpoint Profile** sub-section, and click **Endpoint Editor**.

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The **Edit Endpoint** screen is displayed next. For **Type of 3PCC Enabled**, select "Avaya" from the drop-down list as shown below. Retain the default values in the remaining fields.

Repeat this section for all SIP agent users.

8. Configure OpenMethods Harmony
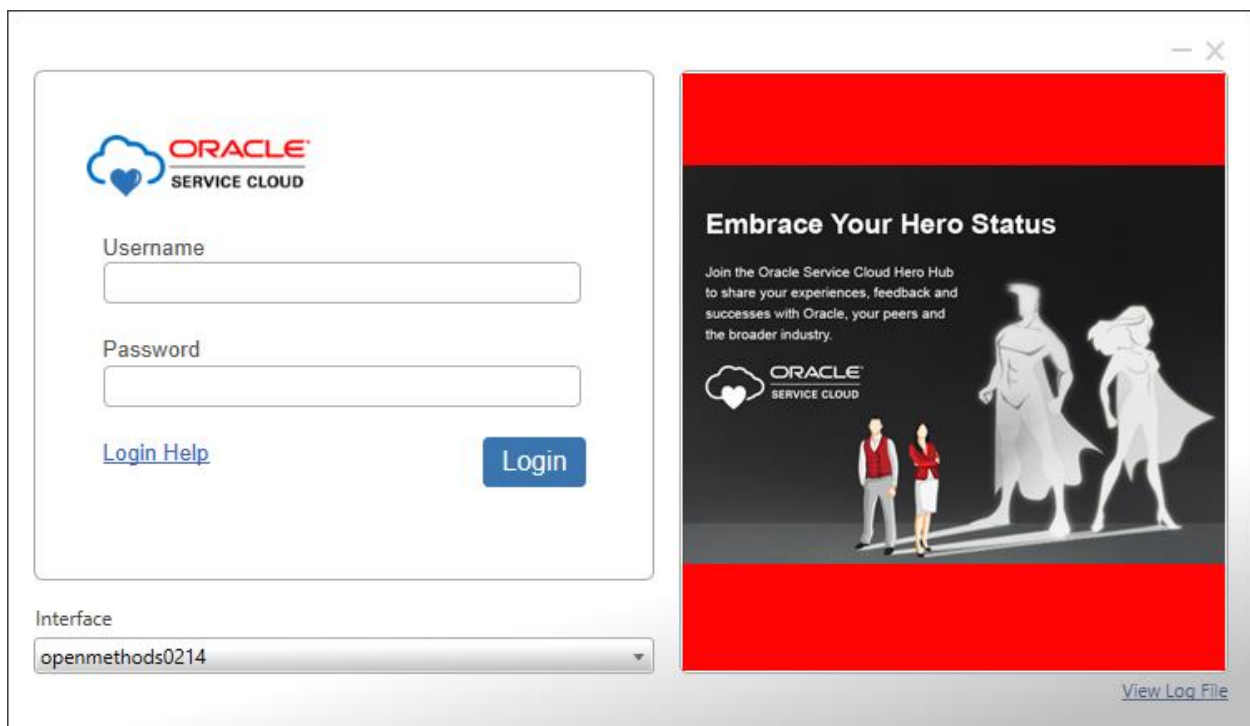
This section provides the procedures for configuring Harmony. The procedures include the following areas:

- Launch Oracle Service Cloud CX Desktop
- Administer add-ins
- Administer agent info
- Administer agent states
- Administer queue adapter
- Administer servers
- Administer omis.json
- Install as service
- Administer registry
- Start services

The configuration of Harmony is performed by the OpenMethods installation engineers. The procedural steps are presented in these Application Notes for informational purposes.

8.1. Launch Oracle Service Cloud CX Desktop

From a PC running the Oracle Service Cloud CX Desktop application, select **All Apps →
RightNow → RightNow (openmethods0214)** to launch the application. The screen below is displayed. Log in using the administrator credentials.

8.2. Administer Add-Ins

The **openmethods0214 – Oracle Service Cloud** screen is displayed. In the left **Navigation** pane, expand and double click on **Site Configuration → Add-In Manager** to display the **Add-In Manager** tab in the middle pane. Follow reference [3] to add all four add-ins shown below.
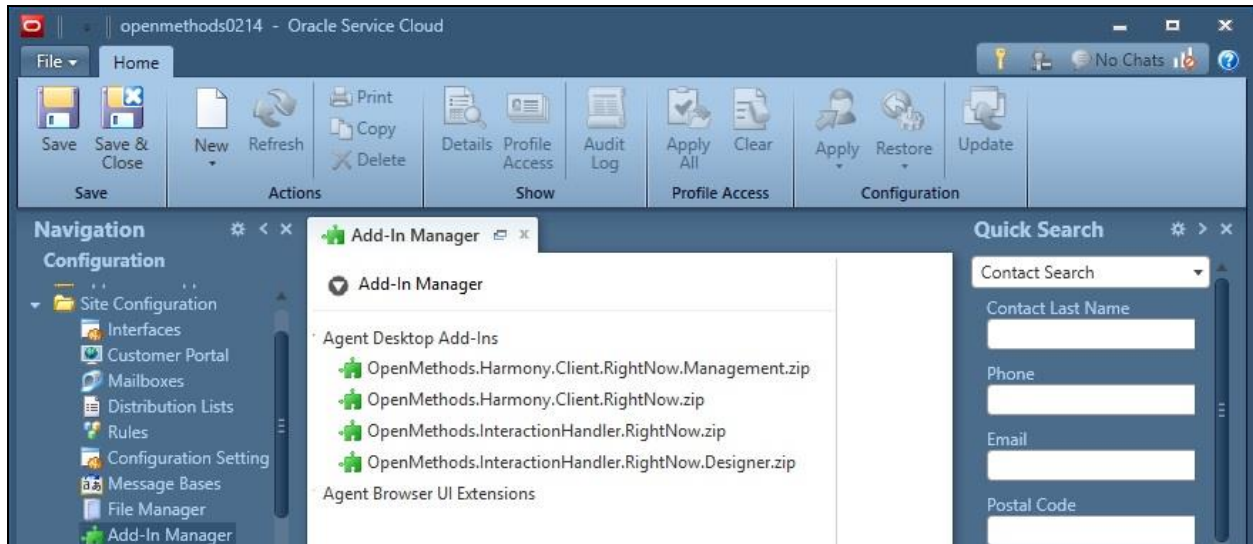
8.3. Administer Agent Info

In the left **Navigation** pane, double click on **Site Configuration → Harmony Client Settings** to display the **Harmony Client Settings** tab in the middle pane. Select **Agent Info** in the middle pane, to display **Agent Info** in the right pane. Click **Edit Configuration** in the right pane.

TLT; Reviewed:
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OpenMthds-AES7
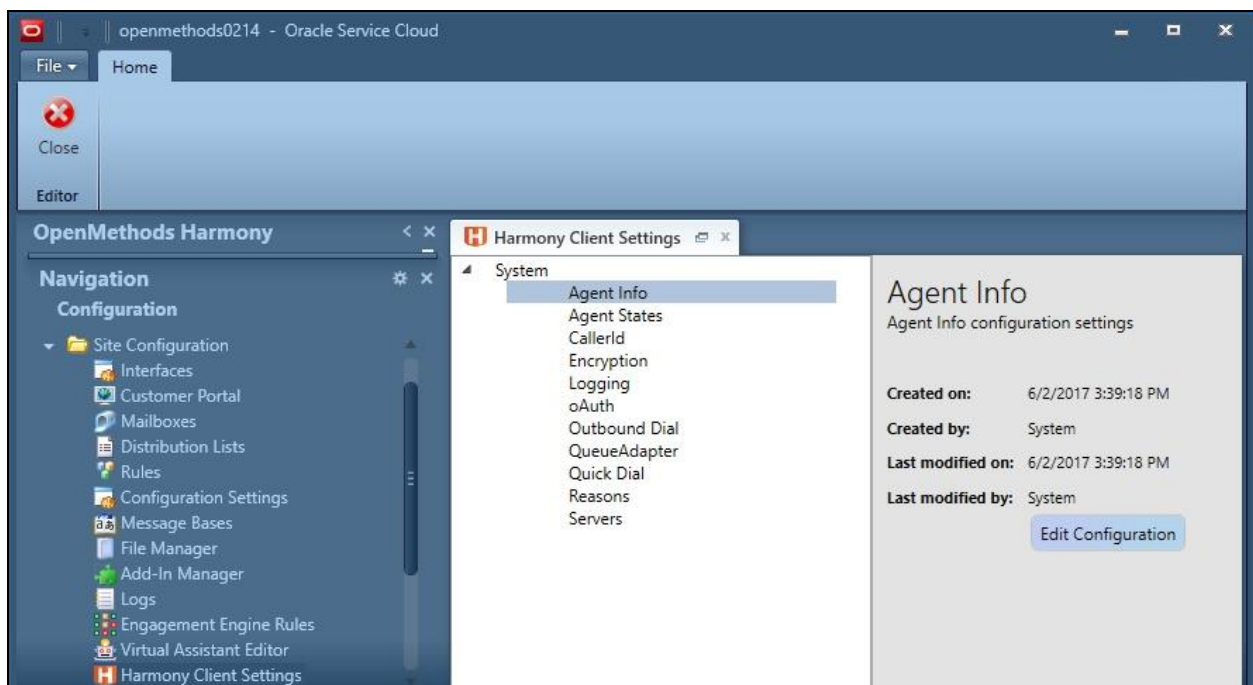
The **Agent Info Configuration** screen is displayed. Select the first pre-created agent from the left pane, in this case "Avaya Cert1". Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Username:**   The first agent login ID from **Section 3**.
- **Password:**   The first agent login password from **Section 3**.
- **Client Defined Channels:** Check this field.

In the **Client Defined Channels** sub-section, follow reference [3] to add the applicable **Telephony**, **Email**, and **Chat** channels, with the first agent station extension from **Section 3**.

Repeat this section to update all applicable agents with proper agent login and station information. In the compliance testing, both agents shown in the left pane below were updated. **Save** and **Close** the screen when done.

8.4. Administer Agent States

The **openmethods0214 – Oracle Service Cloud** screen is displayed again. For contact centers that use reason codes, select **Agent States** in the middle pane, to display **Agent States** in the right pane. Click **Edit Configuration** in the right pane.
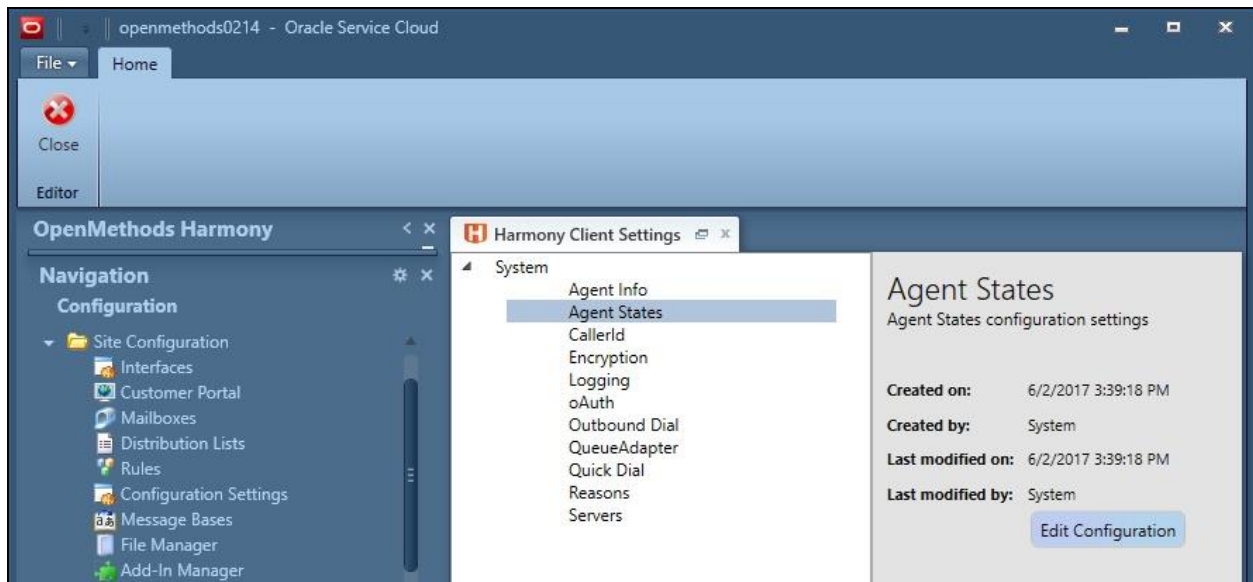
The **Agent States Configuration** screen is displayed. Click **Add Agent State** and add an entry for each reason code from **Section 5.3**. Enter the following values for the specified fields, and retain the default values for the remaining fields. **Save** and **Close** the screen when done.

- **Name:** The reason code name from **Section 5.3**.
- **Description:** A desired description.
- **Code:** The reason code value from **Section 5.3**.
- **IsAgentSelectable:** Check this field.

8.5. Administer Queue Adapter

The **openmethods0214 – Oracle Service Cloud** screen is displayed again. Select **QueueAdapter** in the middle pane, to display **QueueAdapter** in the right pane. Click **Edit Configuration** in the right pane.
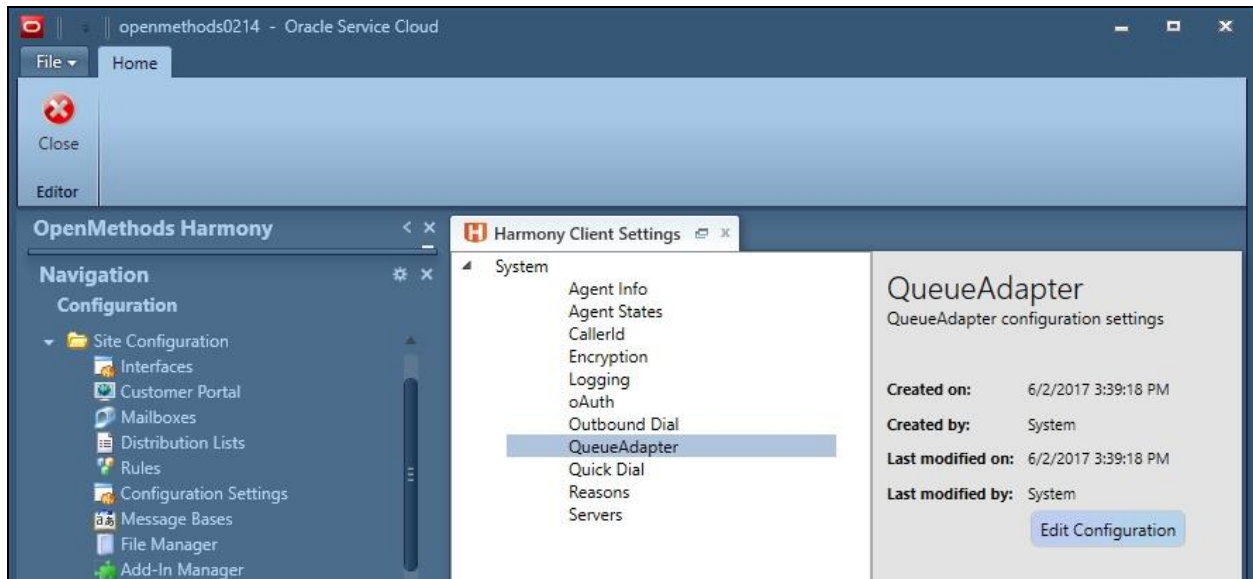
The **QueueAdapter Configuration** screen is displayed. Click **Add**. Enter the following values for the specified fields, and retain the default values for the remaining fields. **Save** and **Close** the screen when done.

- **QueueAdapter Uri:** Replace "0.0.0.0" with IP address of the Harmony server.
- **Enabled:** Check this field.
- **Description:** A desired description.
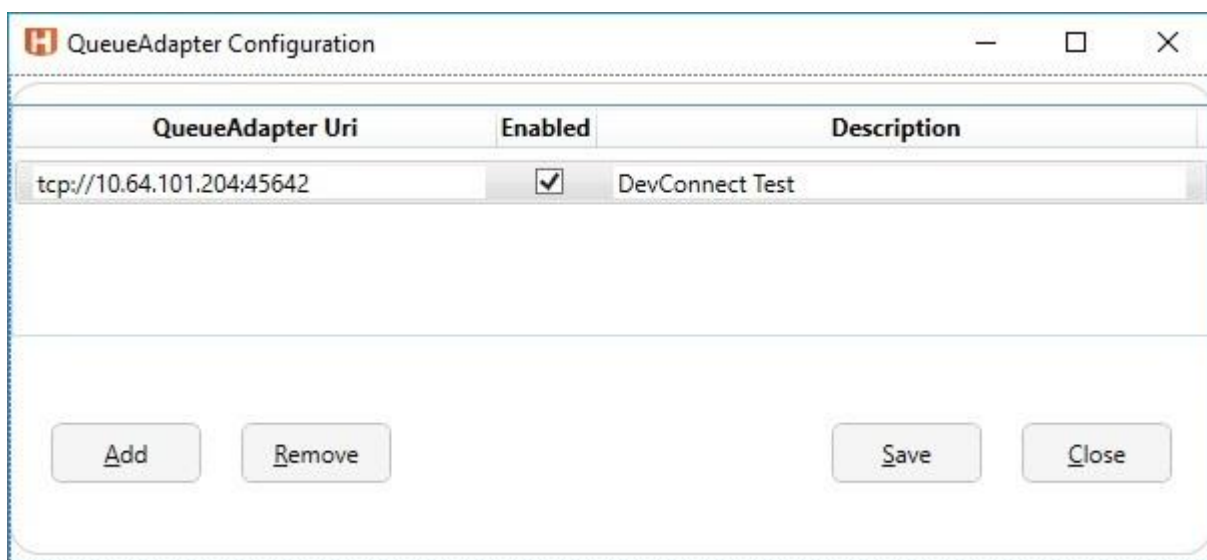
8.6. Administer Servers

The **openmethods0214 – Oracle Service Cloud** screen is displayed again. Select **Servers** in the middle pane, to display **Servers** in the right pane. Click **Edit Configuration** in the right pane.
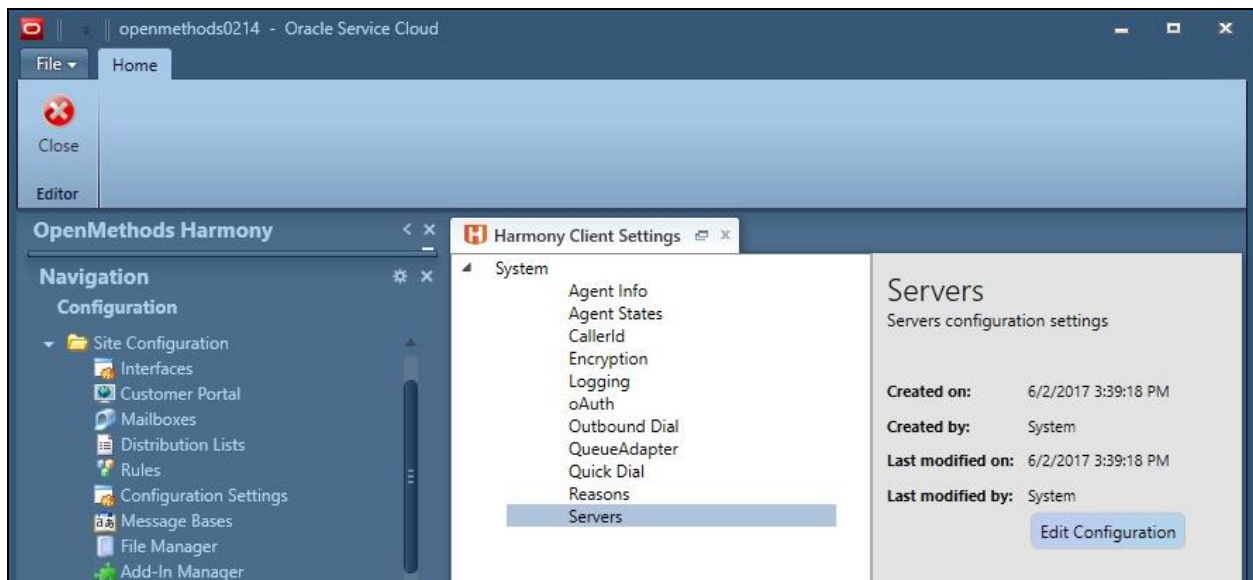
The **Servers Configuration** screen is displayed. Click **Add New** (not shown). Enter the following values for the specified fields, and retain the default values for the remaining fields. **Save** and **Close** the screen when done.

- **Server Name:**   A desired server name.
- **Description:**   A desired description.
- **Integration Server Uri:** Replace "0.0.0.0" with IP address of the Harmony server.
- **Model:**   "RNA-Avaya"
- **Enabled:**   Check this field.
- **Processor Name:**   "avaya_om"
- **Timeout:**   "10000"
- **Extension:**   Check this field.
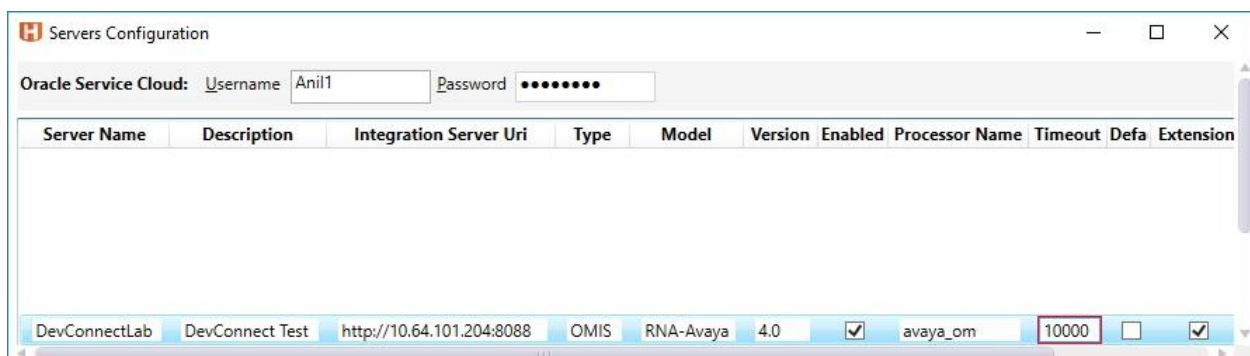
8.7. Administer omis.json

From the Harmony server, navigate to **C:\OpenMethods\omis4\configuration** to locate the **omis.json** file shown below. Replace the default **omis.json** file with the Avaya version from OpenMethods, which contained relevant parameters and default values for integration with Avaya.
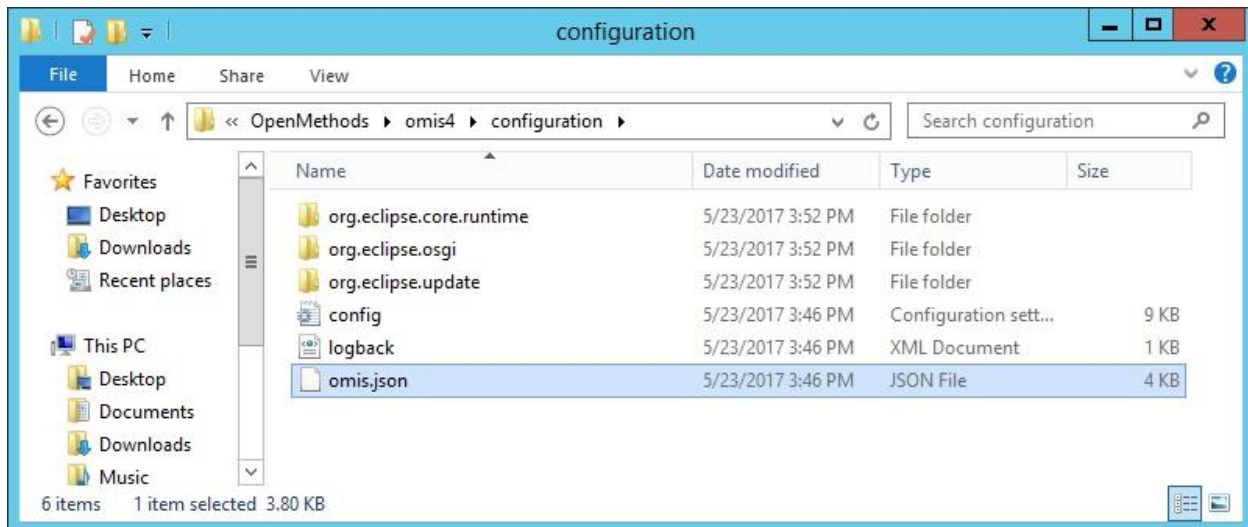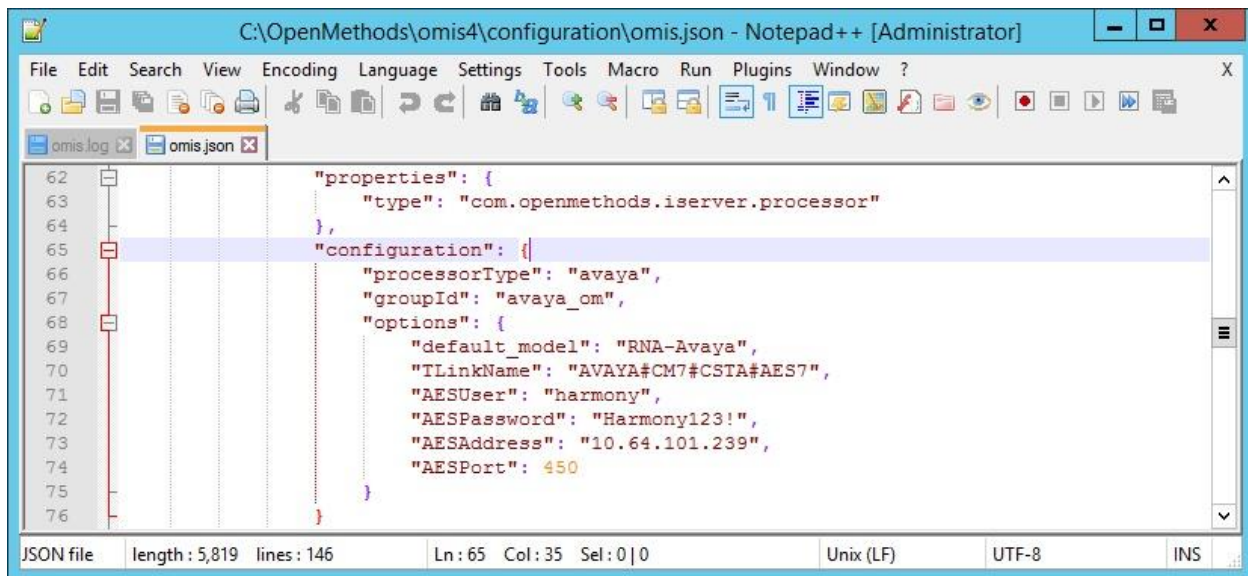
Open the **omis.json** file with an application such as Notepad++, and navigate to the **configuration** sub-section for endpoint network shown below. Update the first **port** value to "8088", which matches to the default port value in the server URI from **Section 8.6**.
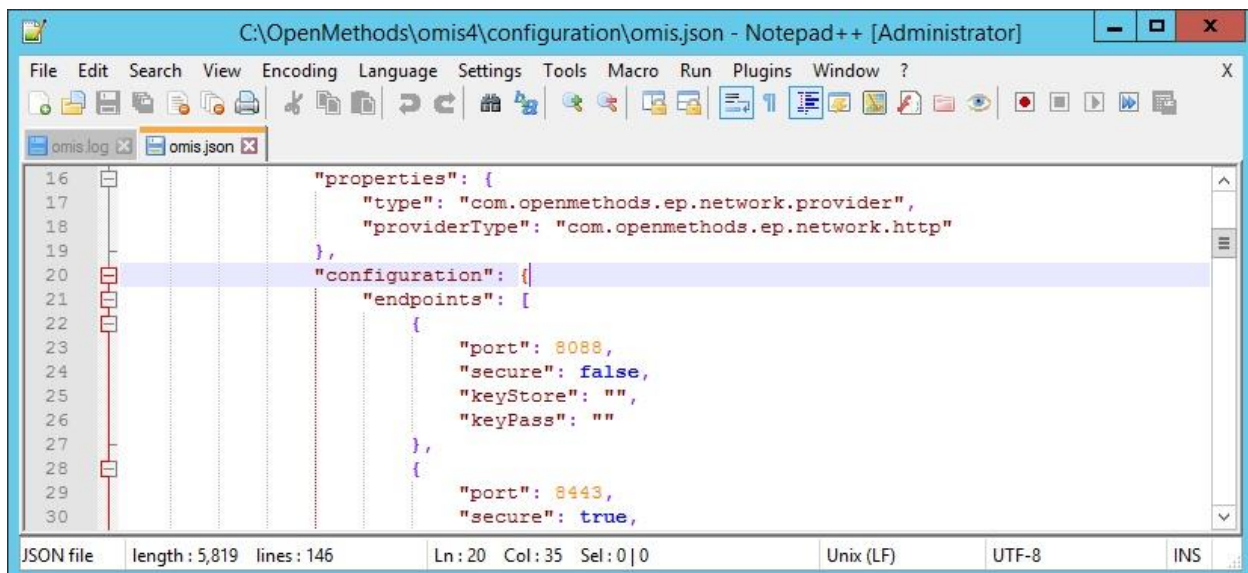
Navigate to the **configuration** sub-section for server processor shown below. Enter the following values for the specified fields, and retain the default values in the remaining fields.

- **TLinkName:** The Tlink name from **Section 6.8**.
- **AESUser:** The Harmony user credentials from **Section 6.4**.
- **AESPassword:** The Harmony user credentials from **Section 6.4**.
- **AESAddress:** IP address of Application Enablement Services.

8.8. Install as Service

From the Harmony server, open a command prompt window, and navigate to the **C:\OpenMethods\omis4** directory. Enter "install_service.bat" to install the application as a service, as shown below.

```
Administrator: Command Prompt                                _  □  x

 Directory of C:\OpenMethods\omis4

05/23/2017  03:53 PM    <DIR>          .
05/23/2017  03:53 PM    <DIR>          ..
05/23/2017  03:46 PM            34,854 artifacts.xml
05/23/2017  09:06 PM    <DIR>          configuration
05/23/2017  03:52 PM    <DIR>          director
05/23/2017  03:46 PM             3,162 DONOTUSEinstall-noservice.bat
05/23/2017  03:46 PM             3,005 DONOTUSEinstall.bat
05/23/2017  03:46 PM             1,255 DONOTUSEinstall.sh
05/23/2017  03:47 PM    <DIR>          features
05/23/2017  03:46 PM             3,045 install_service.bat
05/23/2017  03:47 PM    <DIR>          logs
05/23/2017  03:47 PM    <DIR>          p2
05/23/2017  03:53 PM    <DIR>          plugins
05/23/2017  03:46 PM            11,358 prunsrv-LICENSE.txt
05/23/2017  03:46 PM               175 prunsrv-NOTICE.txt
05/23/2017  03:46 PM           103,936 prunsrv.exe
05/23/2017  03:52 PM    <DIR>          Rt.app
05/23/2017  03:46 PM               249 startomis.bat
05/23/2017  03:46 PM               472 startomis.sh
05/23/2017  03:46 PM               100 stopomis.sh
05/23/2017  03:46 PM               299 uninstall.bat
05/23/2017  03:53 PM    <DIR>          workflows
              12 File(s)        161,910 bytes
              10 Dir(s)  50,612,887,552 bytes free

C:\OpenMethods\omis4>install_service.bat
"Launcher location: "com.openmethods.iserver.launcher_4.0.0.201702090106.jar
[SC] EnumQueryServicesStatus:OpenService FAILED 1060:

The specified service does not exist as an installed service.

Installing service
JAVA_HOME : C:\Program Files\Java\jre1.8.0_131
Jvm : C:\Program Files\Java\jre1.8.0_131\bin\server\jvm.dll

C:\OpenMethods\omis4>_
```

8.9. Administer Registry

From the Harmony server, select **Start → Run**, and enter "regedit" to display the **Registry Editor** screen. Navigate to **Computer → HKEY_LOCAL_MACHINE → SOFTWARE → OpenMethods → QueueAdapter → Settings**.

Enter the following values for the specified fields, which are referenced below without the common **OMQueueAdapterAvaya** prefix, and retain the default values in the remaining fields.

- **AvayaSwitchName:** The switch connection name from **Section 6.3**.
- **AWOHHuntGroupsExtChat:** AWOH hunt group extension for email from **Section 5.6**.
- **AWOHHuntGroupExtEmail:** AWOH hunt group extension for chat from **Section 5.6**.
- **IPAddressToServer:** IP address of Application Enablement Services.
- **LoginName:** The Harmony user credentials from **Section 6.4**.
- **LoginPassword:** The Harmony user credentials from **Section 6.4**.

For **Queue2VDNMapping**, replace the extensions for **OMDefaultRoute** and **Tier 1** with the skill group extension for email from **Section 5.7**, and replace the extension for **Product Support** with the skill group extension for chat from **Section 5.7**, as shown below.
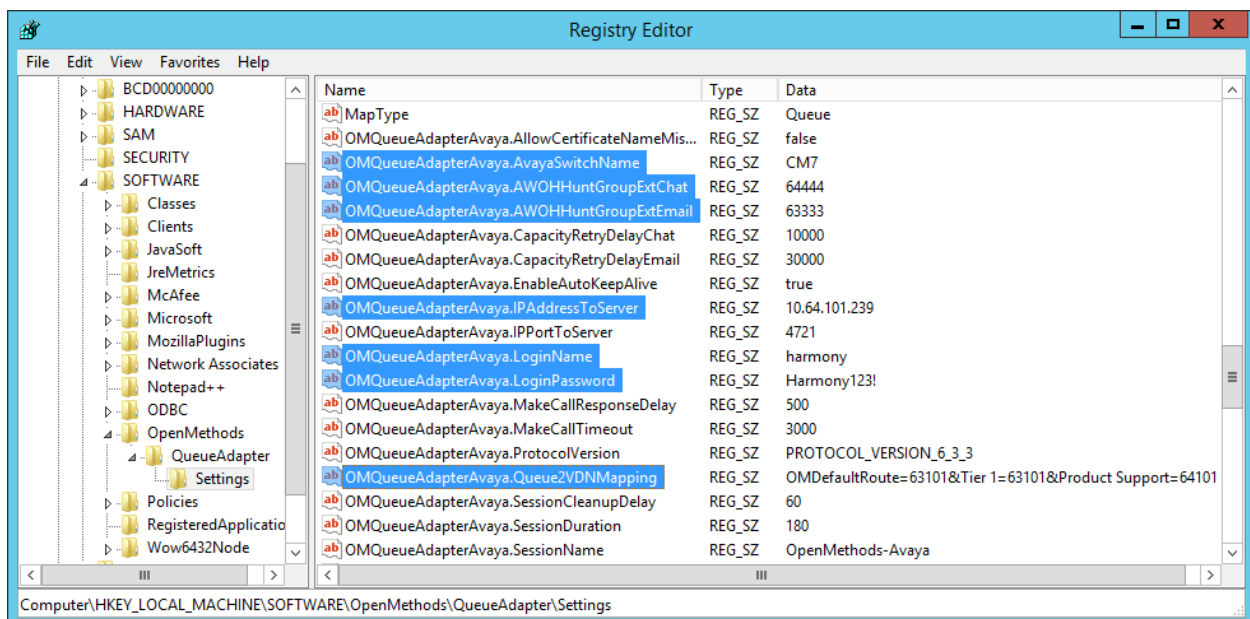
8.10. Start Services

From the Harmony server, select **Start → Administrative Tools → Services** to display the **Services** screen. Start the **OM QueueAdapter** and **OpenMethods Harmony Integration Server** services, as shown below.
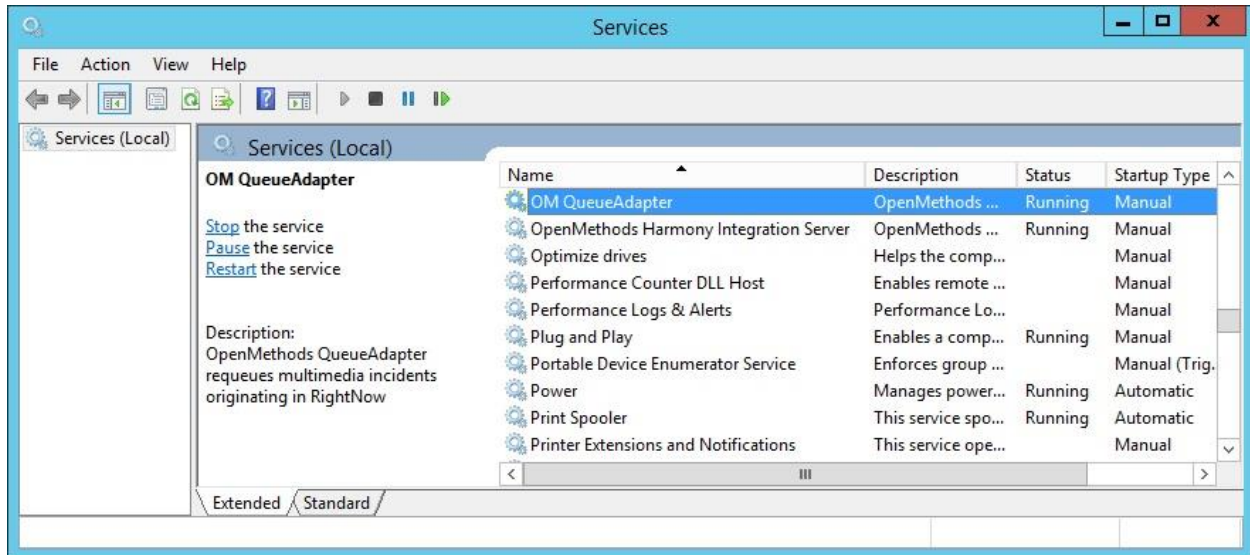
9. Verification Steps

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

9.1. Verify Avaya Aura® Communication Manager

On Communication Manager, verify the 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 5.2**, as shown below.

```
status aesvcs cti-link

                    AE SERVICES CTI LINK STATUS

CTI     Version  Mnt   AE Services       Service      Msgs    Msgs
Link             Busy  Server            State        Sent    Rcvd

1       7        no    aes7              established  203     163
```

9.2. 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 6.3**, and that the **Associations** column reflects the number of agents from **Section 3** that are currently logged into Harmony and therefore monitored, in this case "2".

Verify status of the DMCC connection by selecting **Status → Status and Control → DMCC Service Summary** from the left pane. The **DMCC Service Summary – Session Summary** screen is displayed.

Verify there is an active session with "OpenMethods-Avaya" as **Application**, and with the Harmony user name from **Section 6.4** as **User**, as shown below.

9.3. Verify OpenMethods Harmony

From an agent PC, follow the procedures in **Section 8.1** to launch the Oracle Service Cloud CX Desktop application, and log in with the relevant user credentials provided by the customer.

The screen below is displayed. In the **OpenMethods Harmony** sub-section in the left pane, enter the following values for the specified fields.

- **Login:** The relevant agent ID from **Section 3**.
- **Password:** The relevant agent password from **Section 3**.
- **Extension:** The relevant agent station from **Section 3**.
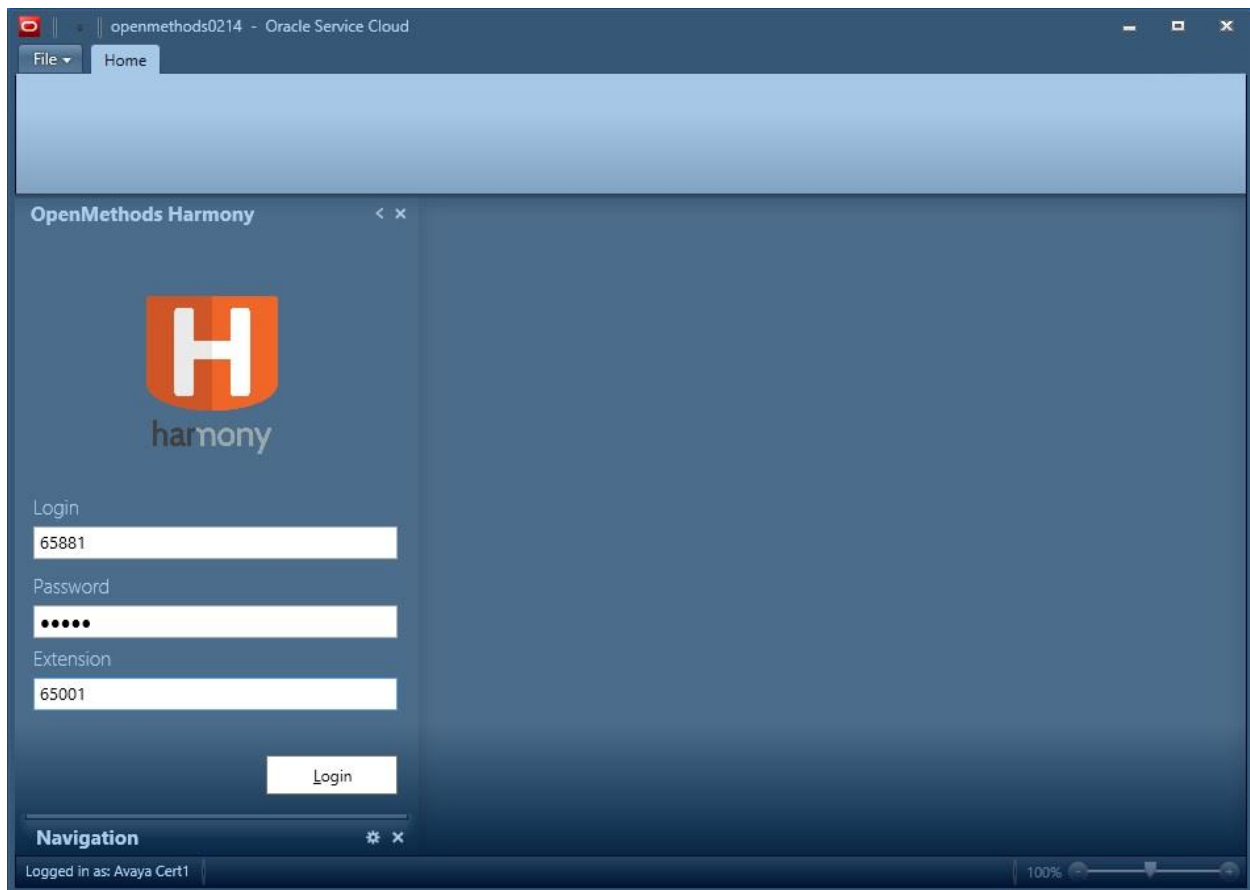
The left pane is updated, with a listing of all configured channels for the agent. Select the **Activate all channels** icon shown below.
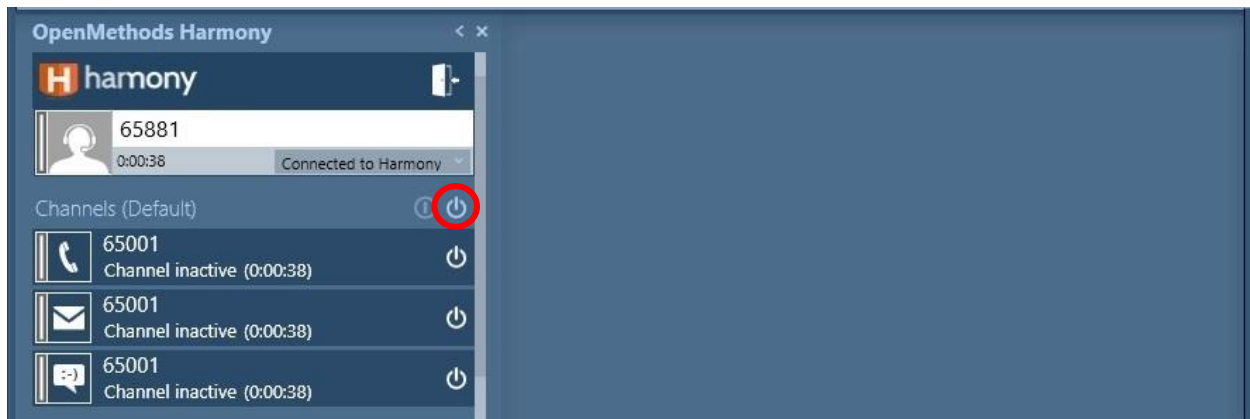
Verify that the left pane is updated, showing the agent in the **Unavailable** state. Click on the agent state field show below and select **Available** from the drop-down list.
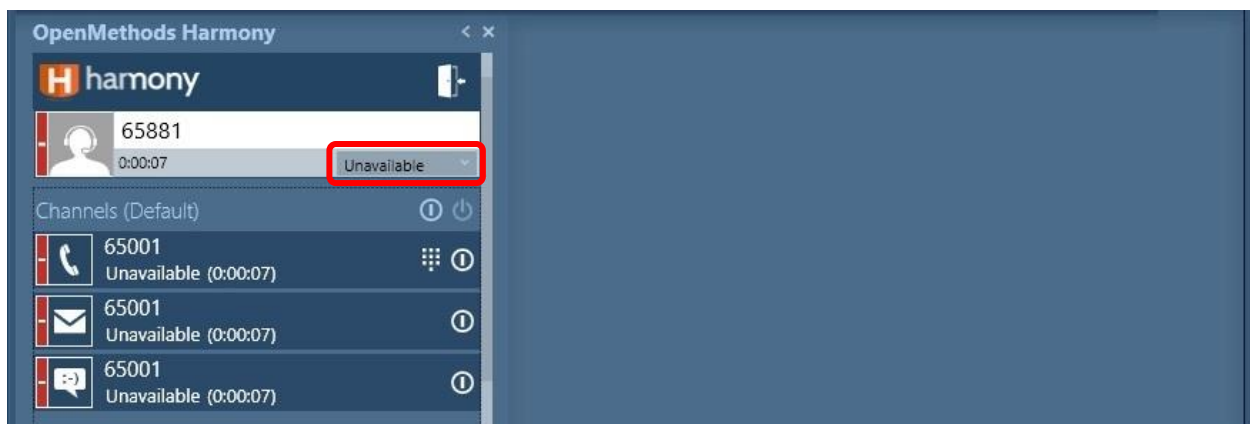
Verify that the left pane is updated to reflect agent in the **Available** state for all channels, as shown below.
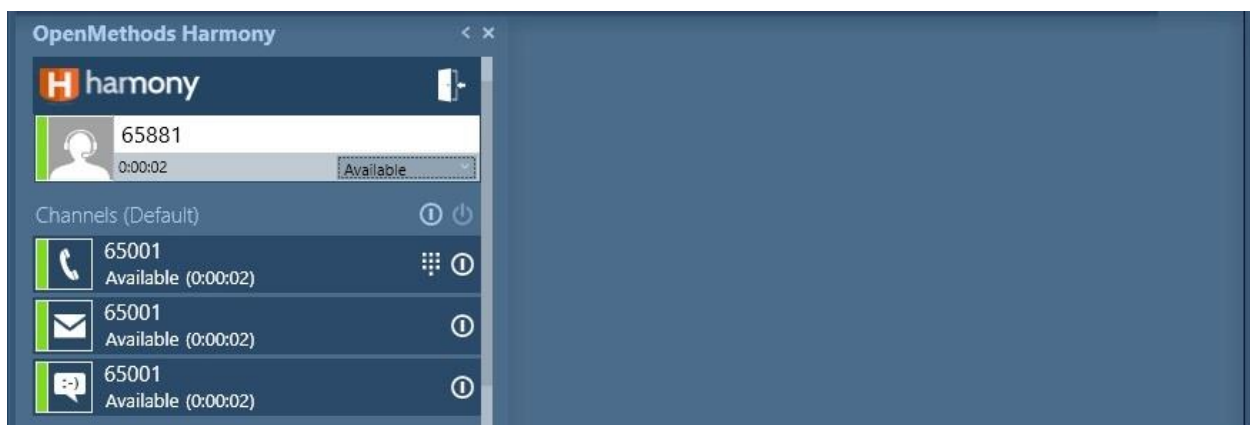
9.3.1. Verify Voice

Make an incoming ACD call from the PSTN. Verify that the left pane of the available agent is updated to reflect **HandlingInteraction** for the voice channel. Also verify that the **Interactions** sub-section reflects an "Inbound call" along with the calling party number, in this case "9089532103". Click on the **Answer incoming call** icon below to answer the call.
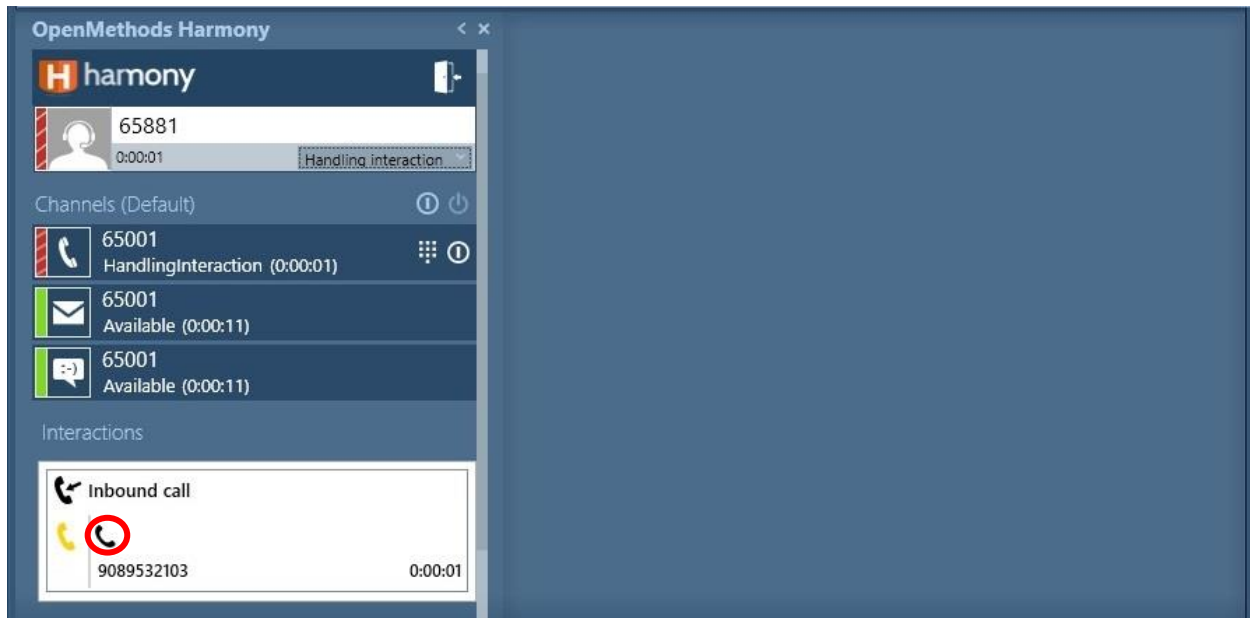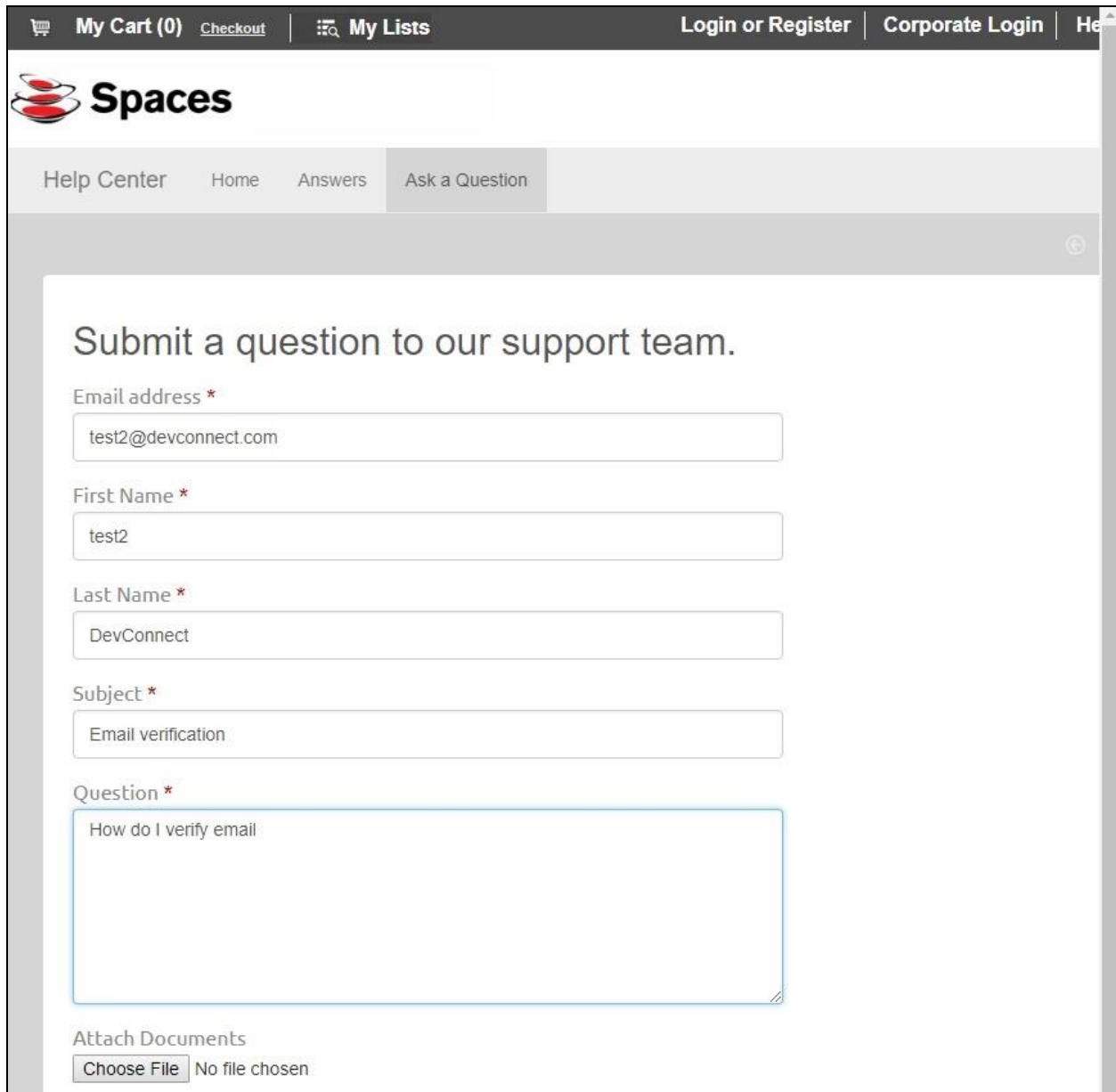
Verify that the agent is connected to the PSTN caller with two-way talk path, and that the left pane is updated to reflect the connected call. Also verify that a tab with a case number is automatically populated in the right pane, along with the matching customer record in the **Contact Details** sub-section.
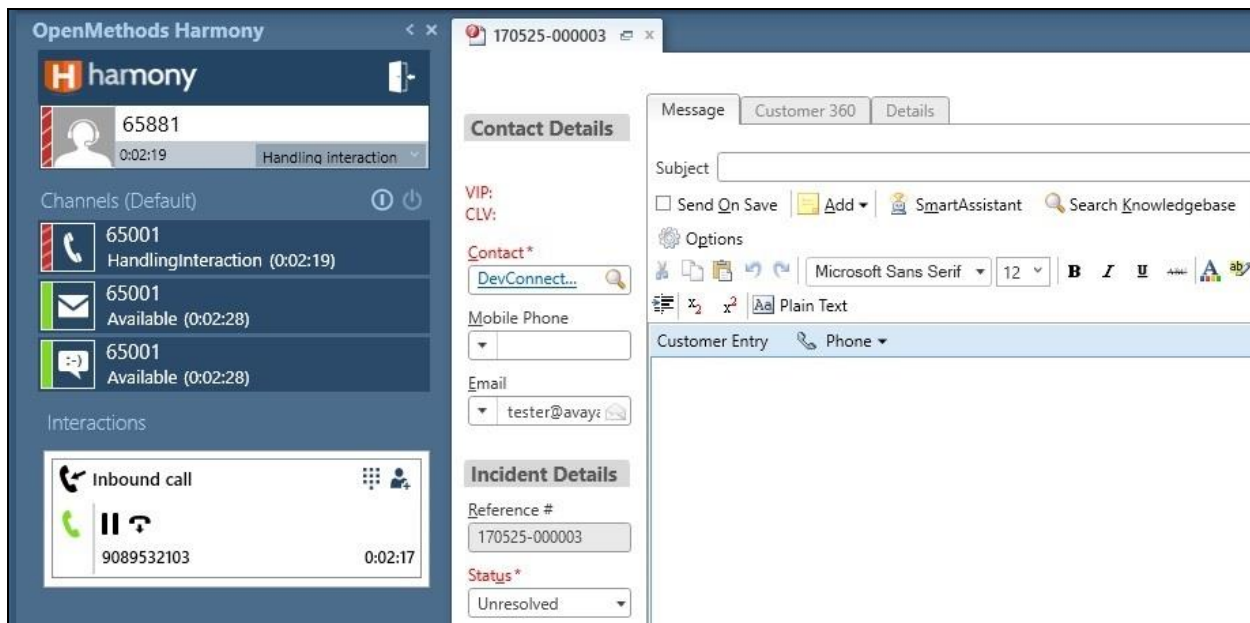
9.3.2. Verify Email

Use the URL provided by the customer to initiate an email from the Internet.

Verify that up to 60 seconds later, the left pane of an available agent is updated to reflect **HandlingInteraction** for the email channel. Also verify that the **Interactions** sub-section reflects "Incoming email" along with an incident ID. Click on the **Accept email** icon below to accept the email.
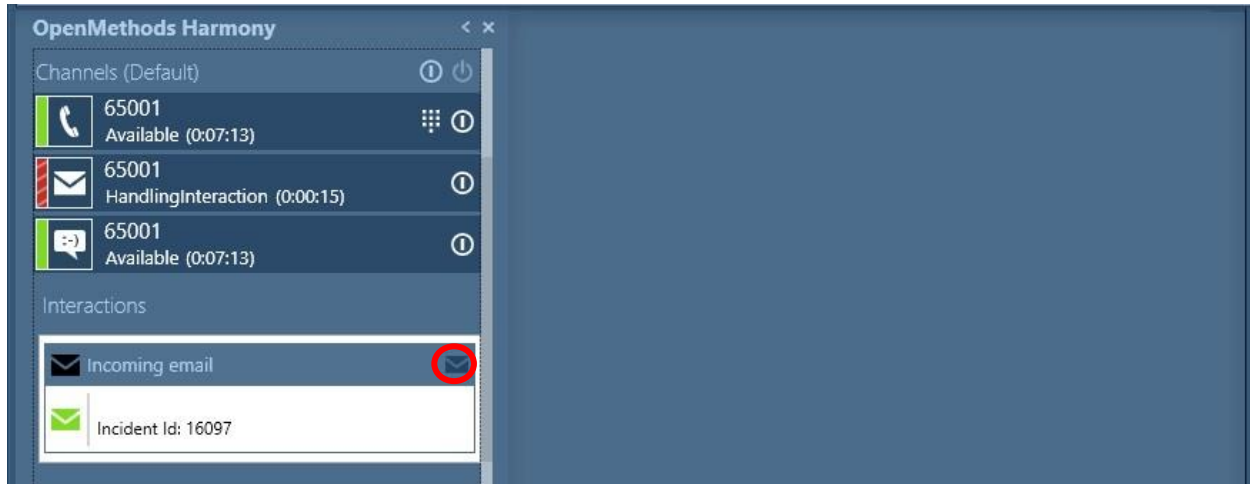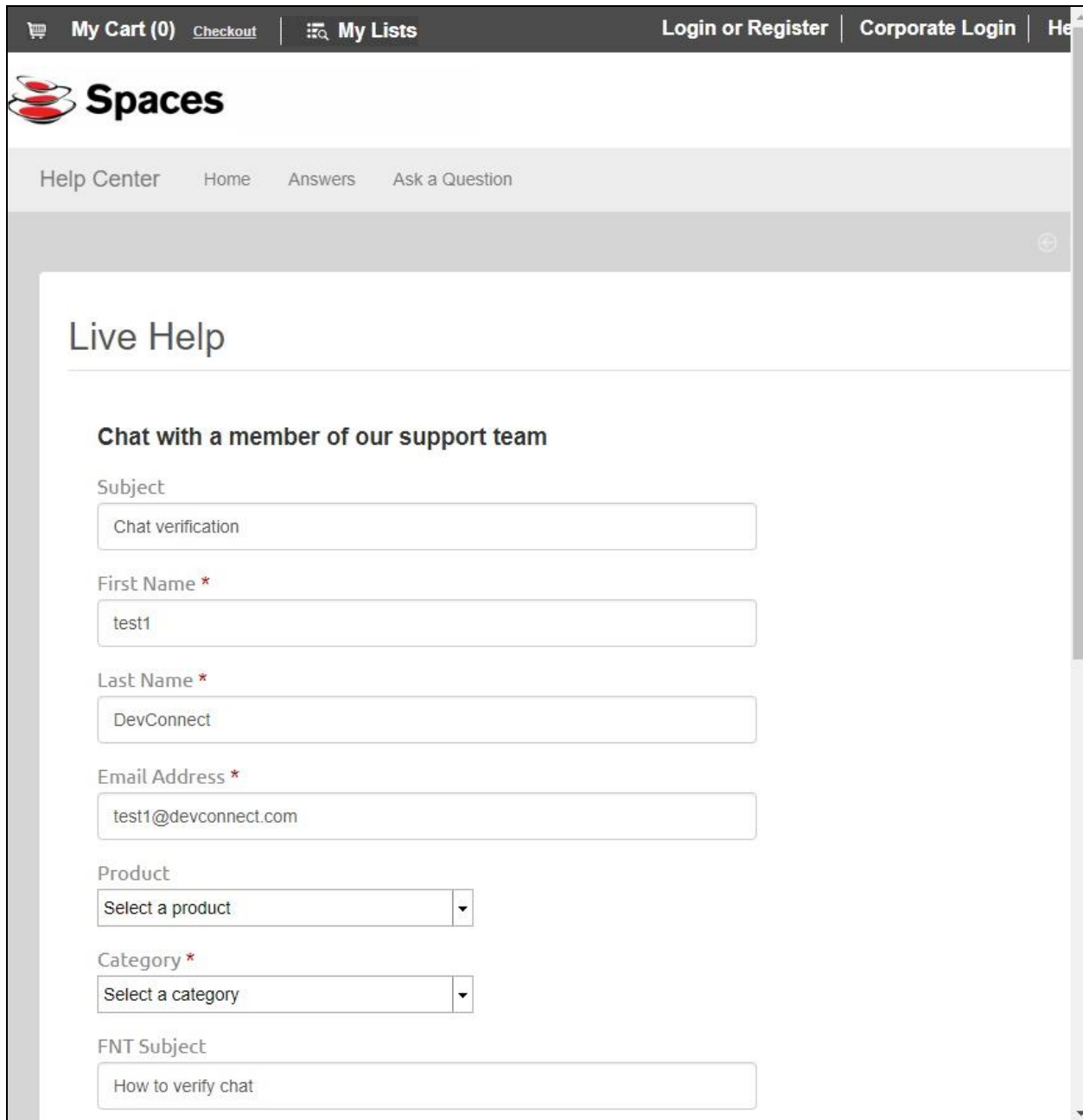

Verify that the agent telephone is connected to the phantom call for the email work item. Also verify that a case tab is automatically populated in the right pane, along with contents of the email, as shown below.
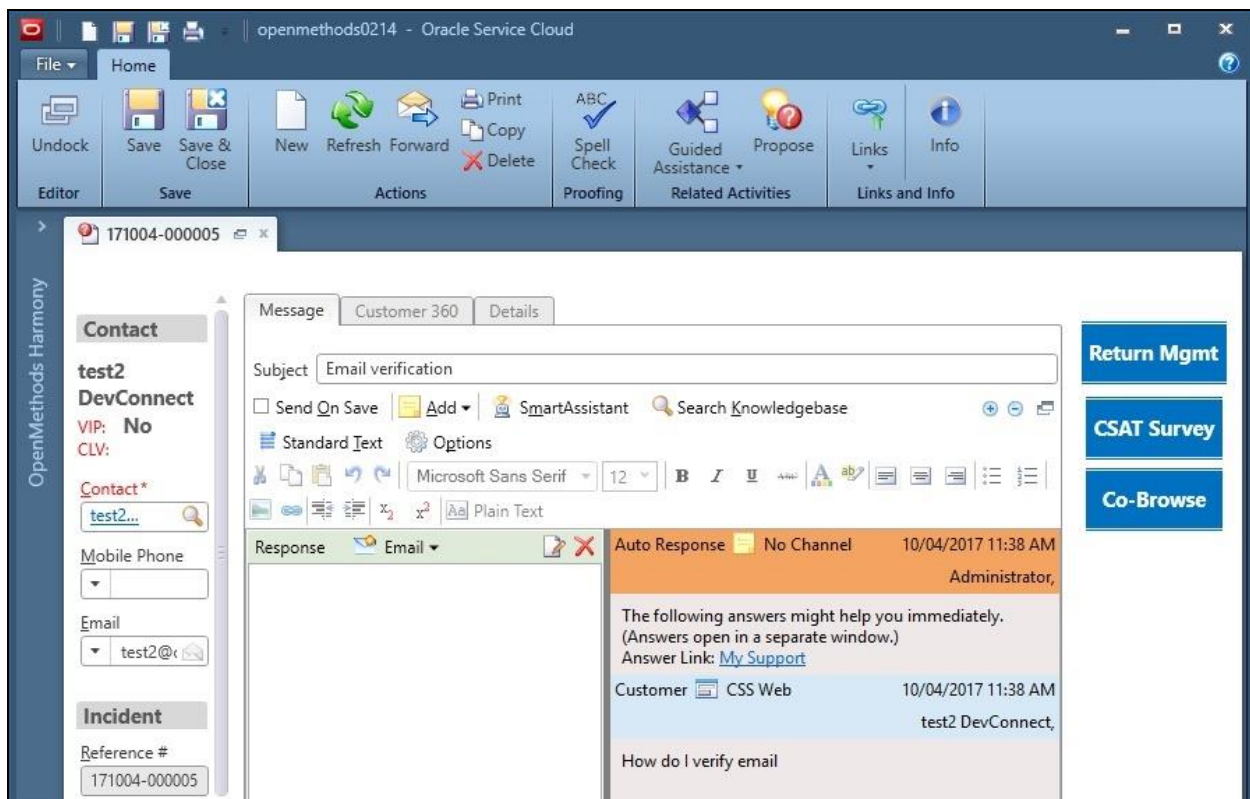
9.3.3. Verify Chat

Use the URL provided by the customer to initiate a chat from the Internet.

Verify that the left pane of an available agent is updated to reflect **HandlingInteraction** for the chat channel. Also verify that the **Interactions** sub-section reflects "Incoming chat" along with an incident ID. Click on the **Accept chat** icon below to accept the chat.
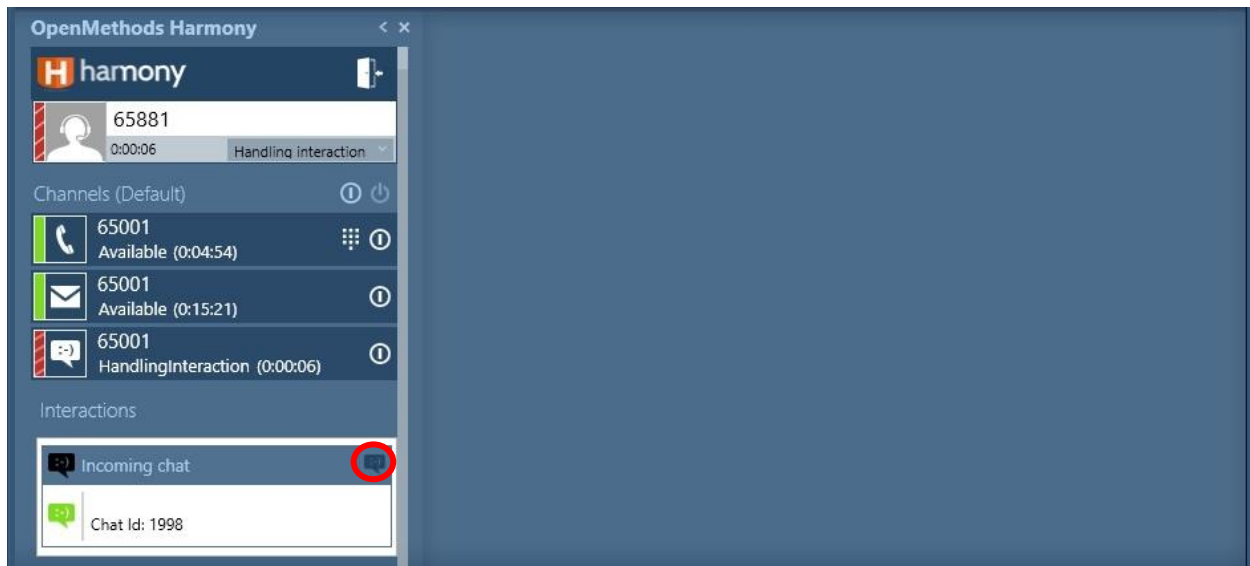
Verify that the agent telephone is connected to the phantom call for the chat work item. Also verify that a case tab is automatically populated in the right pane, along with content of the chat, as shown below.

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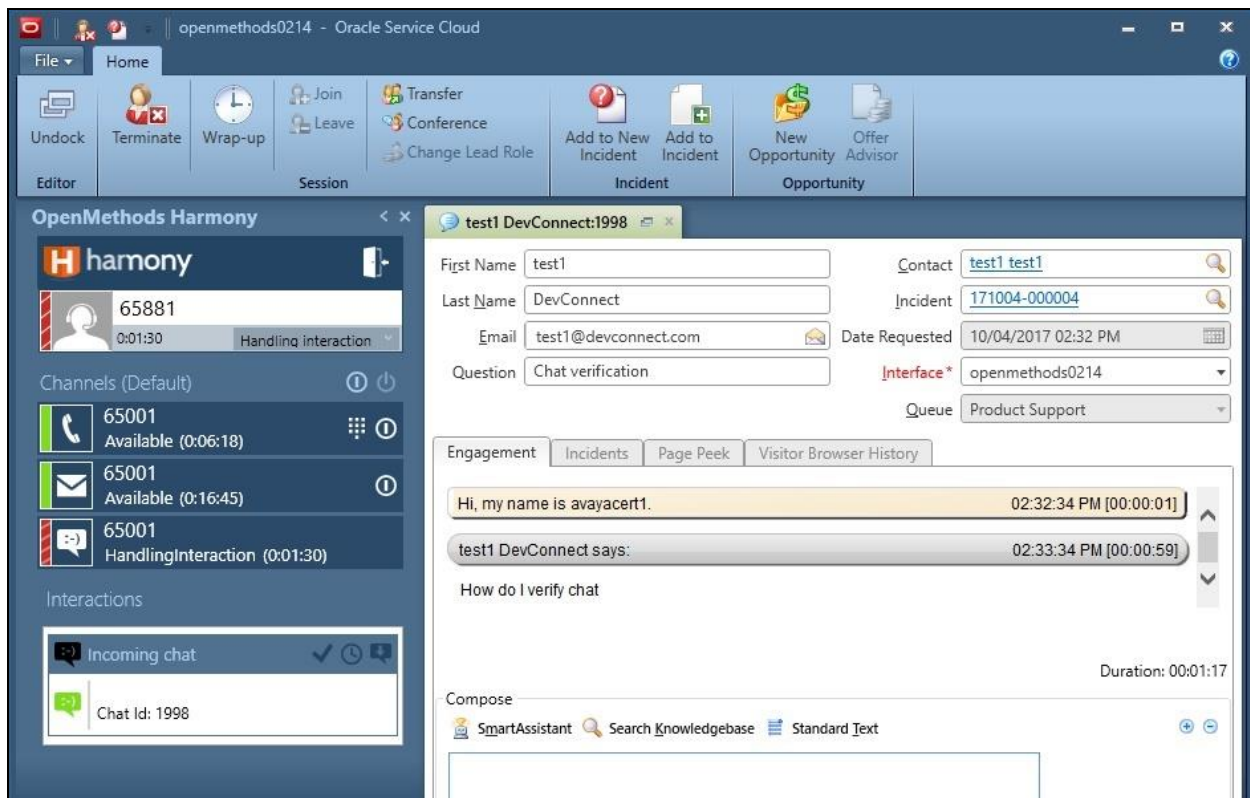
10. Conclusion

These Application Notes describe the configuration steps required for OpenMethods Harmony 4.0 to successfully interoperate with Avaya Aura® Communication Manager 7.1 and Avaya Aura® Application Enablement Services 7.1 using Oracle Service Cloud. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

11. Additional References

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

1. *Administering Avaya Aura® Communication Manager*, Release 7.1.1, Issue 2, August 2017, available at http://support.avaya.com.

2. *Administering and Maintaining Aura® Application Enablement Services*, Release 7.1.1, Issue 3, September 2017, available at http://support.avaya.com.

3. *OpenMethods Harmony Avaya Administrator Configuration Notes*, V0.0.0, available upon request to OpenMethods support at care@openmethods.com.

4. *Harmony Configuration User Guide for Avaya 2016 Q4*, V0.0.0, January 2017, available upon request to OpenMethods support at care@openmethods.com.

5. *Harmony User Guide for Avaya 2016 Q4*, V4.0.124, January 2017, available upon request to OpenMethods support at care@openmethods.com.