**Avaya Solution & Interoperability Test Lab**

# Application Notes for InGenius Connector Enterprise 5.0 with Avaya Aura® Communication Manager 7.0.1 and Avaya Aura® Application Enablement Services 7.0.1 using Microsoft Dynamics CRM – Issue 1.0

## Abstract


These Application Notes describe the configuration steps required for InGenius Connector Enterprise 5.0 to interoperate with Avaya Aura® Communication Manager 7.0.1 and Avaya Aura® Application Enablement Services 7.0.1 using Microsoft Dynamics CRM. InGenius Connector Enterprise is a CRM-VoIP integration tool that sits between the customer's phone system and a CRM application.

In the compliance testing, InGenius Connector Enterprise used 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, call control, and click-to-dial features from the agent desktops connected to Microsoft Dynamics CRM.

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.

# 1. Introduction

These Application Notes describe the configuration steps required for InGenius Connector Enterprise (ICE) 5.0 to interoperate with Avaya Aura® Communication Manager 7.0.1 and Avaya Aura® Application Enablement Services 7.0.1 using Microsoft Dynamics CRM. ICE is a CRM-VoIP integration tool that sits between the customer's phone system and a CRM application.

In the compliance testing, ICE used the Device, Media, and Call Control (DMCC) XML interface from Avaya Aura® Application Enablement Services to monitor contact center agents on Avaya Aura® Communication Manager, to provide screen pop, call control, and click-to-dial features from the agent desktops. The agent desktop used a web browser to connect to the ICE server and to the InGenius Solution Plugin running on the Microsoft Dynamics CRM cloud.

# 2. General Test Approach and Test Results

The feature test cases were performed manually. Upon an agent log in, the application used DMCC to query device information and agent state, logged the agent into the ACD on Communication Manager if needed, and requested device monitoring.

For the manual part of the testing, incoming ACD calls were placed with available agents that have web browser connections to Microsoft Dynamics CRM. All necessary call actions were initiated from the agent desktops and/or telephones. The click-to-dial calls were initiated by clicking on the contact phone number displayed on the agent desktops.

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

## 2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on ICE:

- Use of DMCC logical device services to set agent states, including log in, log out, and work mode changes with support for reason codes and pending aux work.
- Use of DMCC snapshot services to obtain information on agent stations and existing calls.
- Use of DMCC monitoring services to monitor agent stations and existing calls.
- Use of DMCC call control services to support call control and click-to-dial features.
- 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, click-to-dial from contact phone number, pending aux work, and reason codes.

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

## 2.2. Test Results

All test cases were executed, and the following were observations on ICE:

- By design, the agent desktop does not support initiation of unattended conference.
- In general, mixed use of agent desktop and telephone to perform call control actions are supported. For the transfer and conference features, however, all actions need to start and complete from the same source.

## 2.3. Support

Technical support on ICE can be obtained through the following:

- **Phone:** +1 (613) 591-9002
- **Email:** icesupport@ingenius.com
- **Web :** http://ingenius.com/resources/support/

# 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, ICE monitored the agent stations shown in the table below.

| Device Type | Extension |
|---|---|
| VDNs | 60001, 60002 |
| Skill Groups | 61001, 61002 |
| Supervisor | 65000 |
| Agent Stations | 65001, 65002, 65003 |
| Agent IDs | 65881, 65882, 65883 |
| Agent Passwords | 65881, 65882, 65883 |

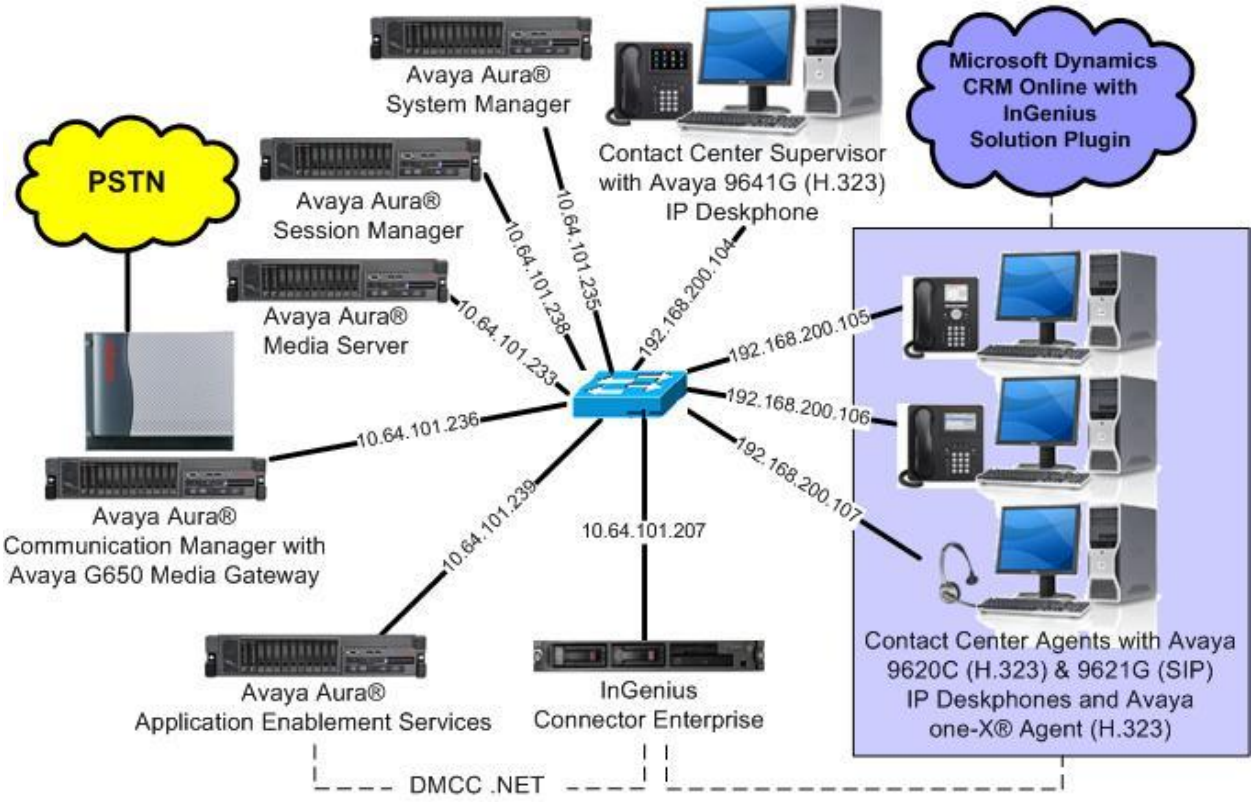



**Figure 1: Compliance Testing Configuration**

# 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 | 7.0.1.1 (7.0.1.1.0.441.23169) |
| Avaya G650 Media Gateway | NA |
| Avaya Aura® Media Server in Virtual Environment | 7.7.0.334 |
| Avaya Aura® Application Enablement Services in Virtual Environment | 7.0.1 (7.0.1.0.2.15-0) |
| Avaya one-X® Agent | 2.5.8 Patch 7 (2.5.58020.720) |
| Avaya 9641G IP Deskphone (H.323) | 6.6229 |
| Avaya 9620C IP Deskphones (H.323) | 3.250A |
| Avaya 9621G IP Deskphone (SIP) | 7.0.1.2.9 |
| InGenius Connector Enterprise on Windows Server 2012<br>• Avaya DMCC XML<br>• Configuration Tool | 5.0.0.15595<br>R2 Standard<br>6.1<br>5.0.0.15595 |
| InGenius Solution Plugin for Microsoft Dynamics CRM on Microsoft Dynamics CRM Online | 5.0.0<br>2015 Update (7.1.2.1153) |

# 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
- Administer system parameters features
- Obtain reason codes

## 5.1. Verify License

Log in to 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 to verify that the **Computer Telephony Adjunct Links** customer option is set to "y" on **Page 4**. 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
       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. 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. 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 ICE.

```
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? y
                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
```

## 5.4. 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 reason codes, which will be used later to configure ICE.

```
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
        Reason Code 8:                  /n
        Reason Code 9:                  /n

  Default Reason Code:
```

# 6. Configure Avaya Aura® Application Enablement Services

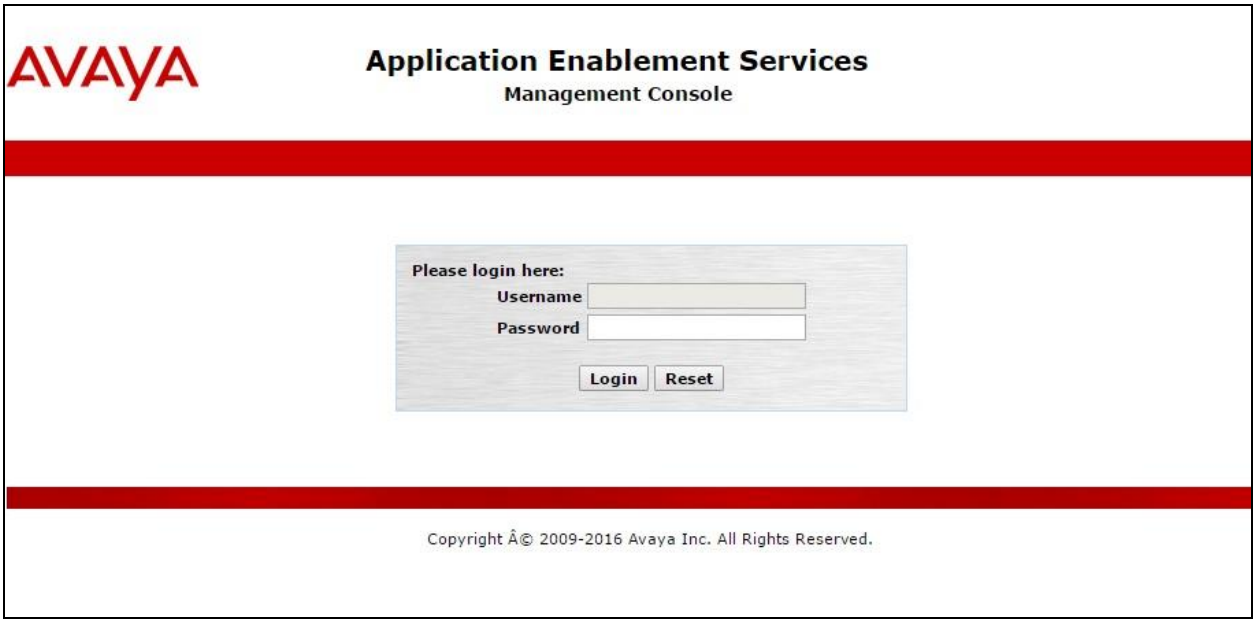
This section provides the procedures for configuring Application Enablement Services. The procedures include the following areas:

- Launch OAM interface
- Verify license
- Administer TSAPI link
- Administer InGenius user
- Administer security database
- Administer ports
- Restart services

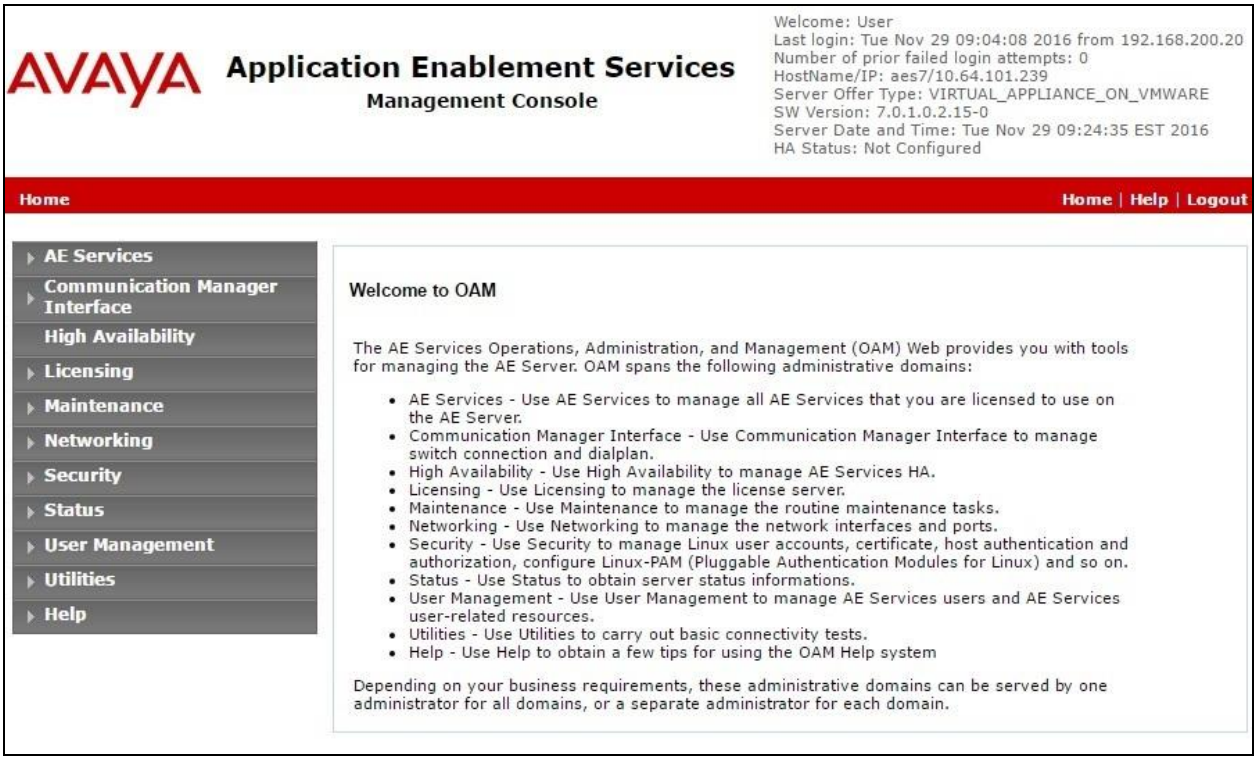
## 6.1. Launch OAM Interface

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

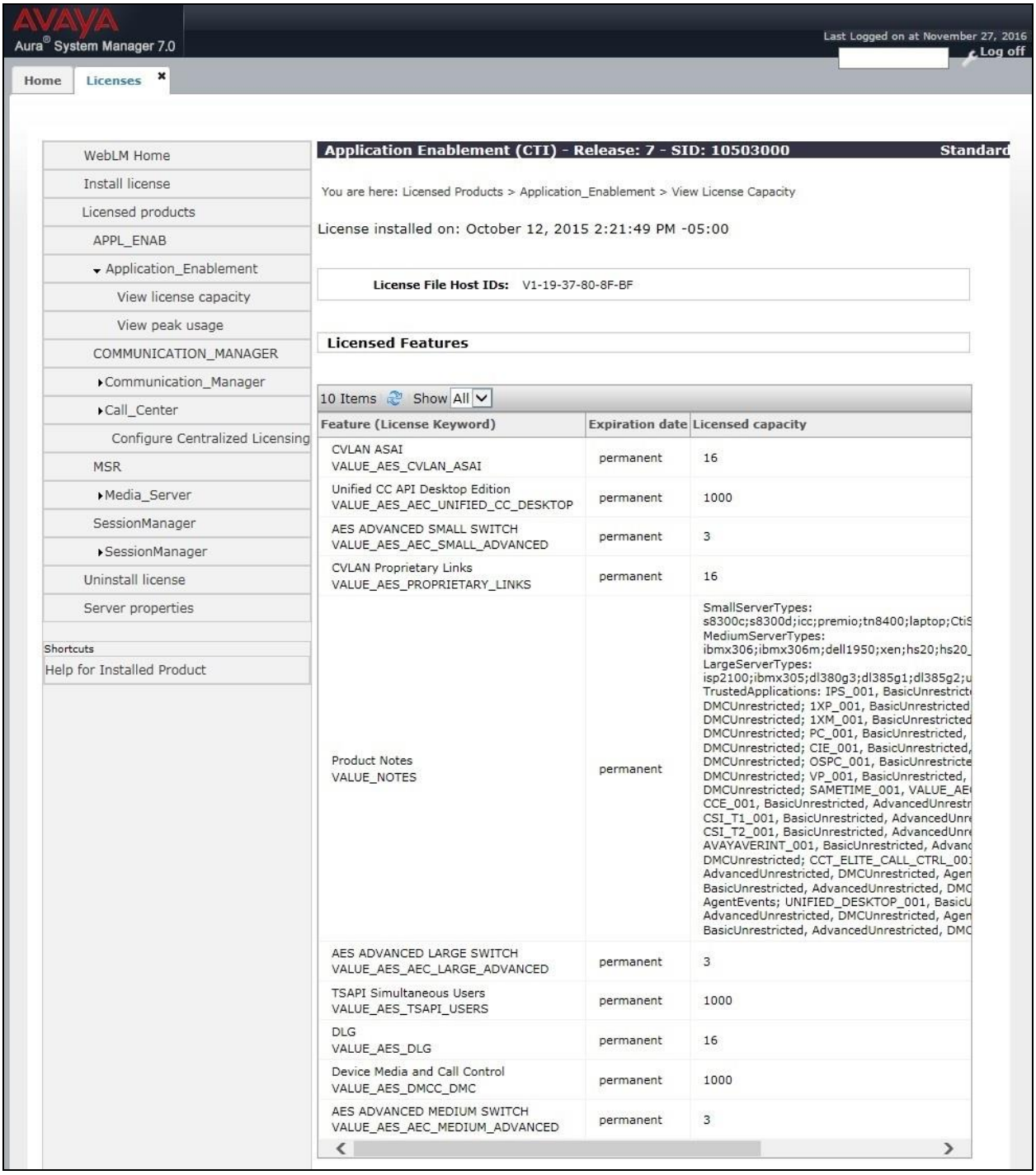



## 6.2. Verify License

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 the TSAPI license is used for device monitoring and call control via DMCC, and that no specific DMCC license is required for integration with ICE.



## 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**.

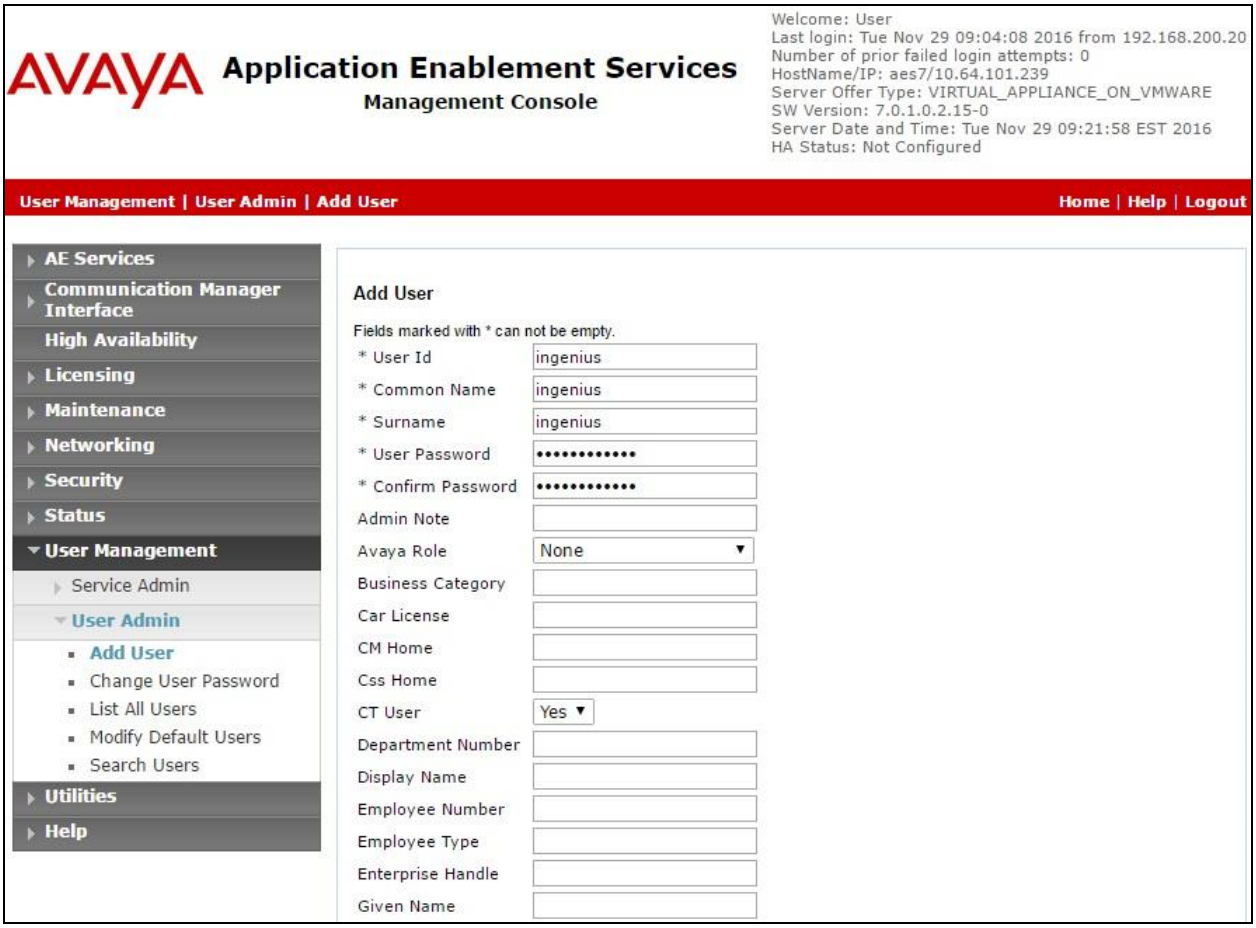

The **Add TSAPI Links** screen is displayed next.

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**. Retain the default values in the remaining fields.

## 6.4. Administer InGenius User

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

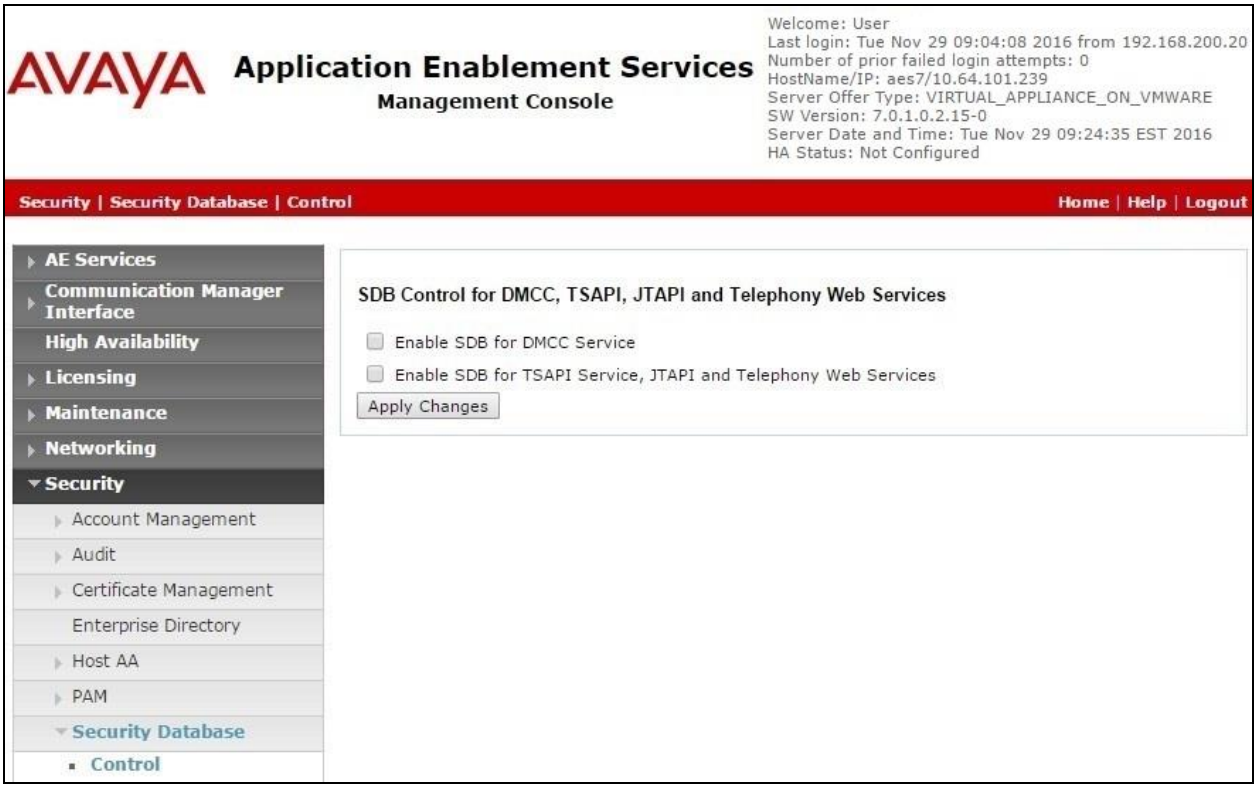
Enter desired values for **User Id**, **Common Name**, **Surname**, **User Password**, and **Confirm Password**. For **CT User**, select "Yes" from the drop-down list. Retain the default value in the remaining fields.



## 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.

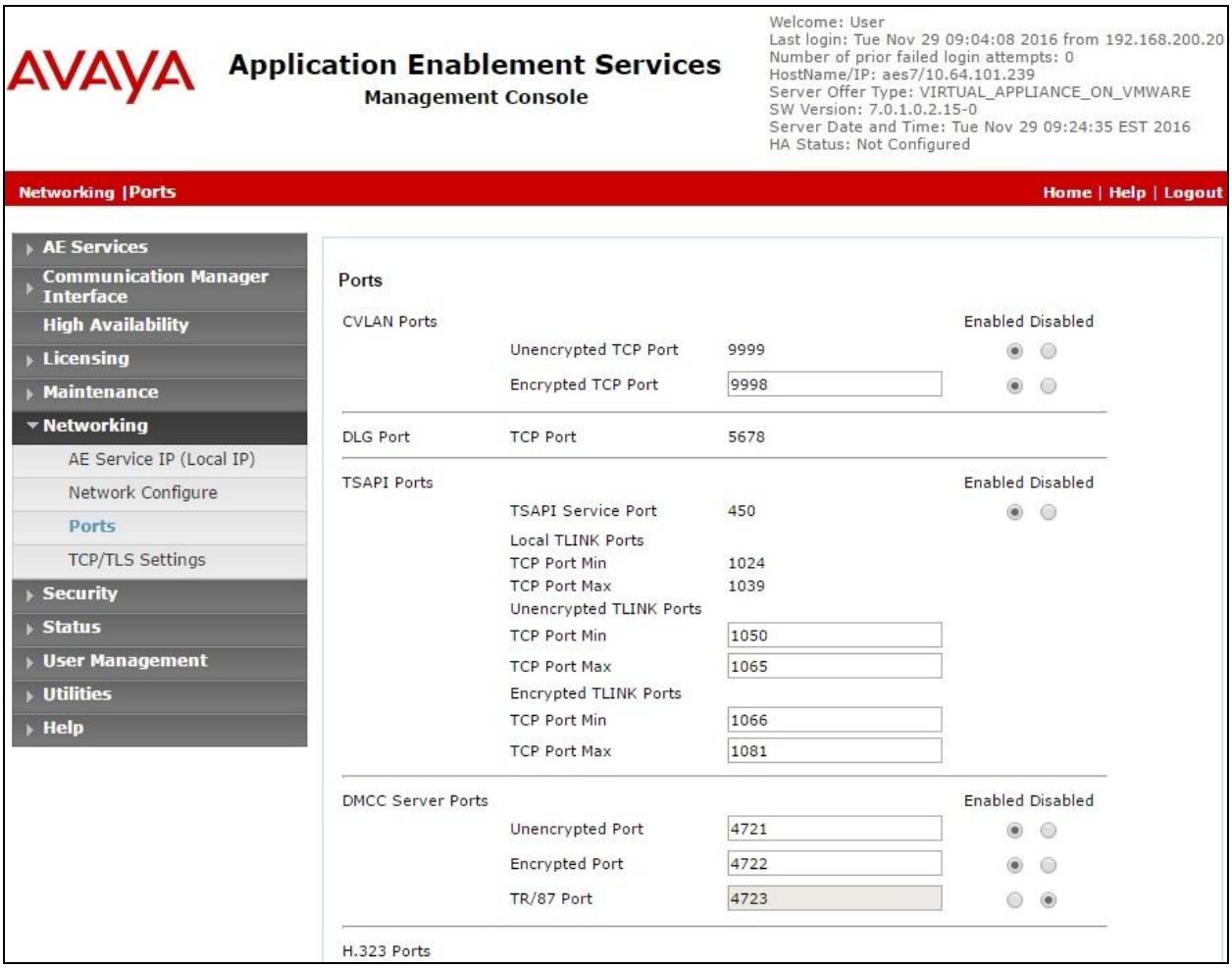
In the event that the security database is used by the customer with parameters already enabled, then follow reference [2] to configure access privileges for the InGenius user from **Section 6.4**.



## 6.6. Administer Ports

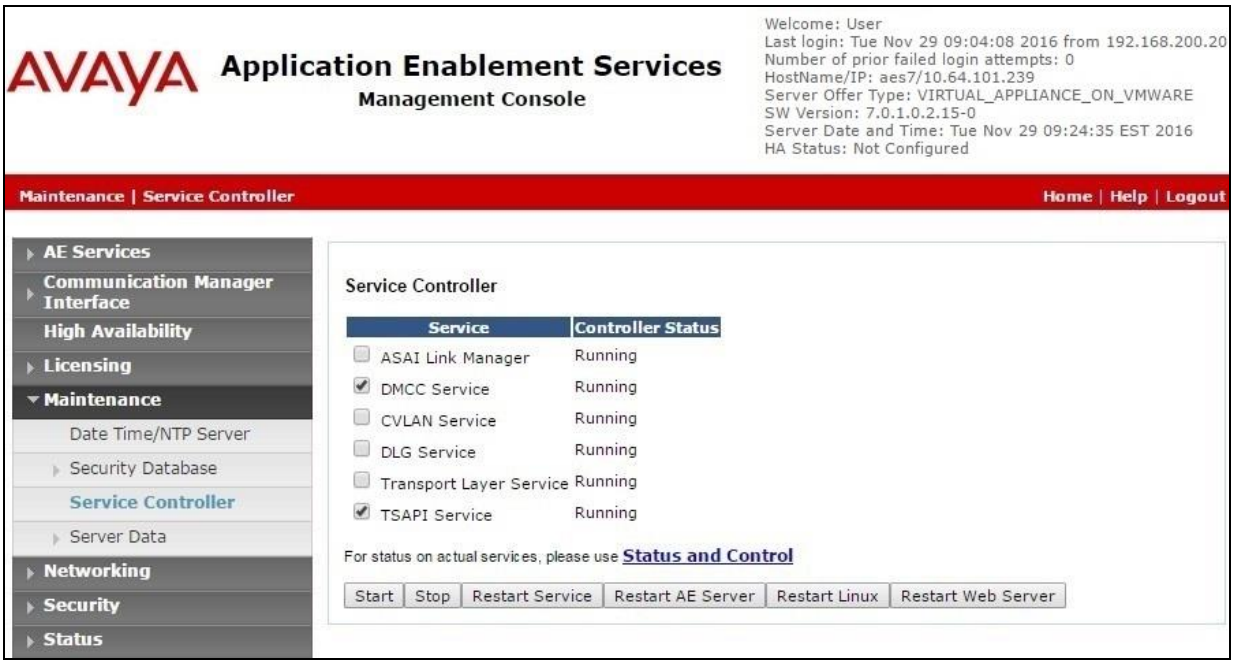
Select **Networking → Ports** from the left pane, to display the **Ports** screen in the right pane.

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**.



# 7. Configure InGenius Connector Enterprise

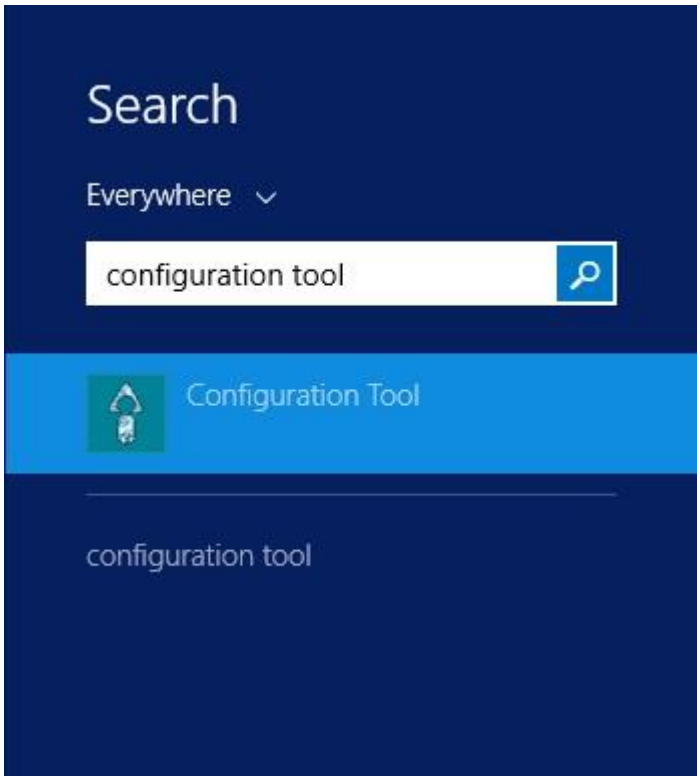
This section provides the procedures for configuring ICE. The procedures include the following areas:

- Launch configuration tool
- Administer dialing and number formatting
- Administer telephony
- Start service

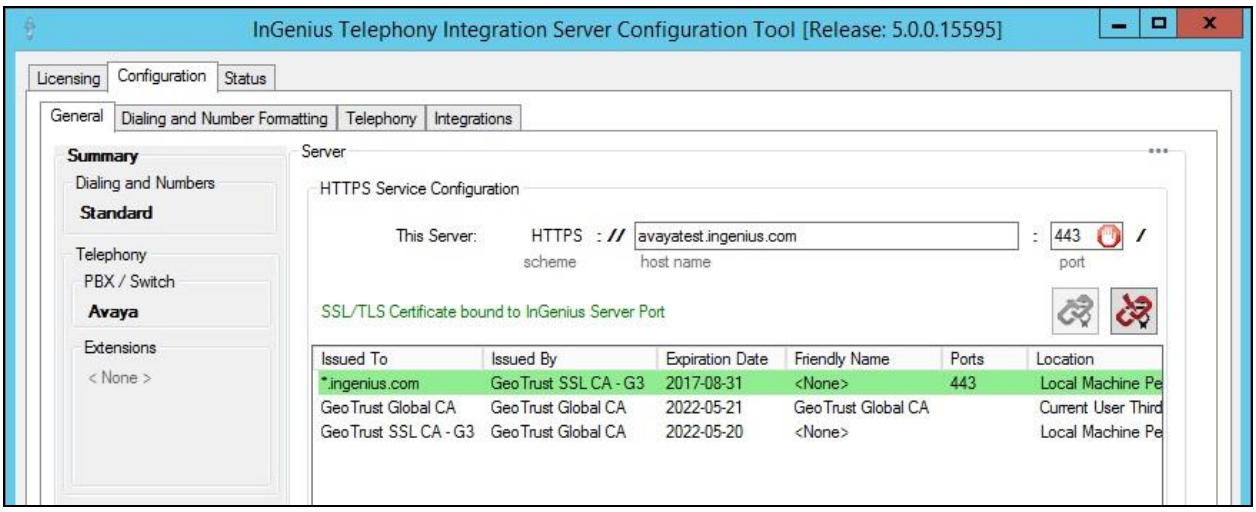
This section assumes the Connector Enterprise package has been imported and published, with the appropriate Security Role created, and users created and assigned to the Security Role. Refer to reference [3] for more details.

## 7.1. Launch Configuration Tool

From the ICE server system tray, select the Windows icon (not shown) and enter "configuration tool" anywhere on the desktop to locate the **Configuration Tool** application. Click on the pertinent entry from the result to launch the application.

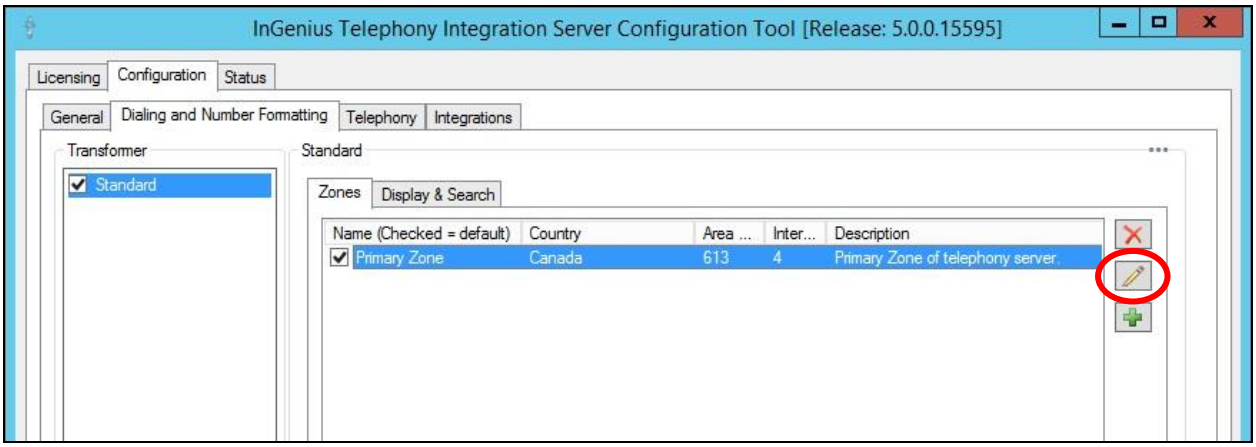


The **InGenius Telephony Integration Server Configuration Tool** screen is displayed.



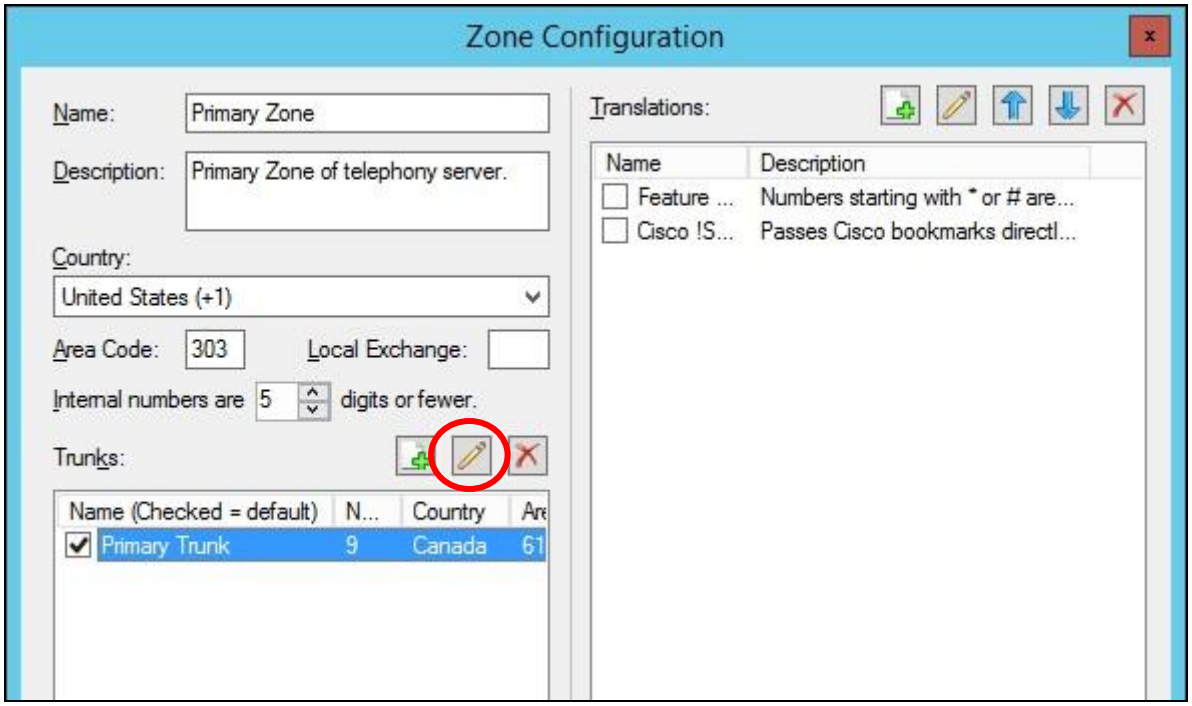

## 7.2. Administer Dialing and Number Formatting

Select **Configuration → Dialing and Number Formatting** from the top menu, followed by the **Zones** tab in the right pane. Select the default entry, and click the **Edit translation** icon shown below.

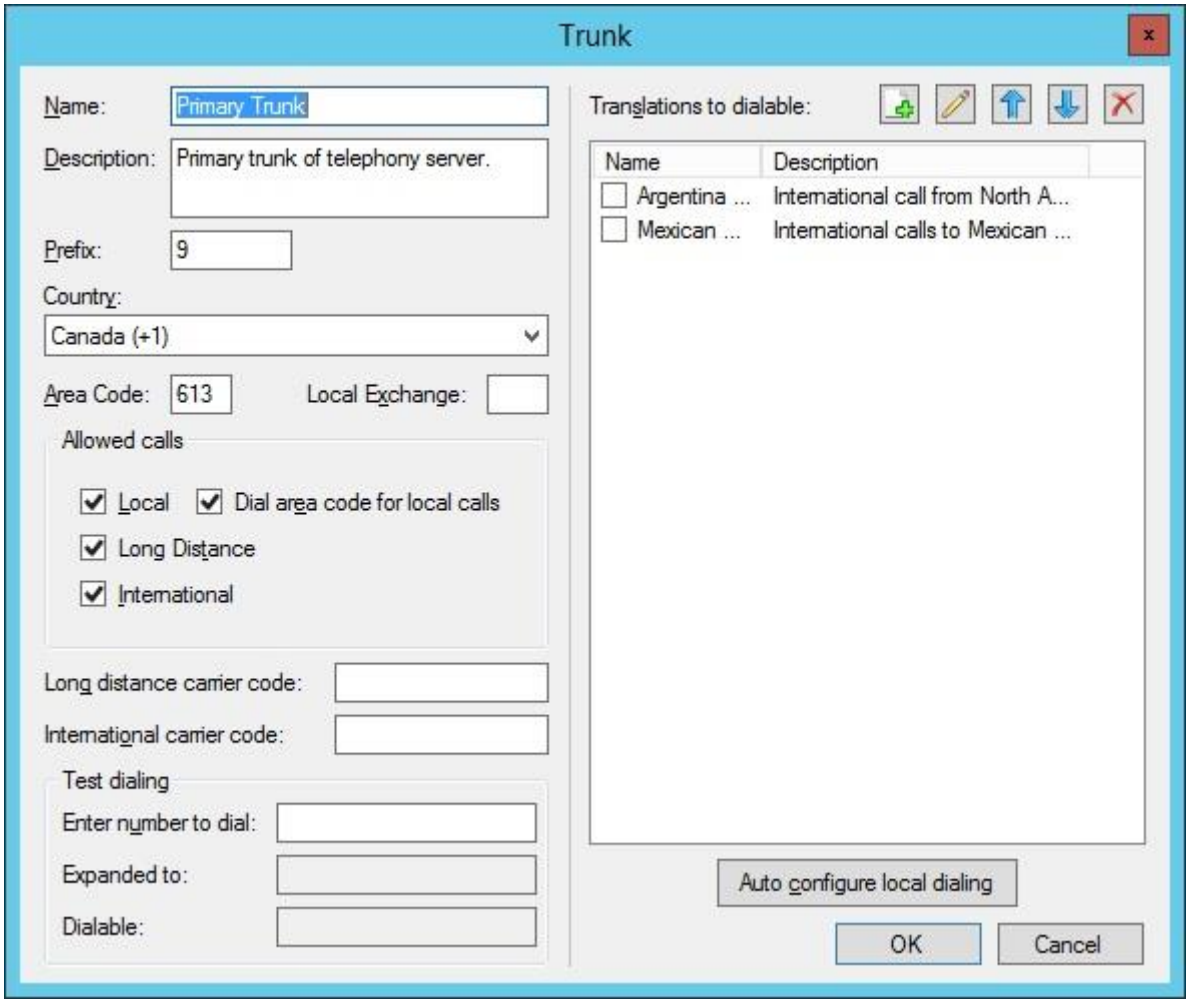


The **Zone Configuration** screen is displayed next. For **Country**, **Area Code**, and **Internal numbers are**, select and enter values to match the network configuration. Retain the default values in the remaining fields.

Select the default entry in the **Trunks** sub-section, and click on the **Edit Trunk** icon shown below.



The **Trunk** screen is displayed. Follow reference [4] to update trunk parameter values to match the network configuration. The screenshot below shows the values used in the compliance testing.

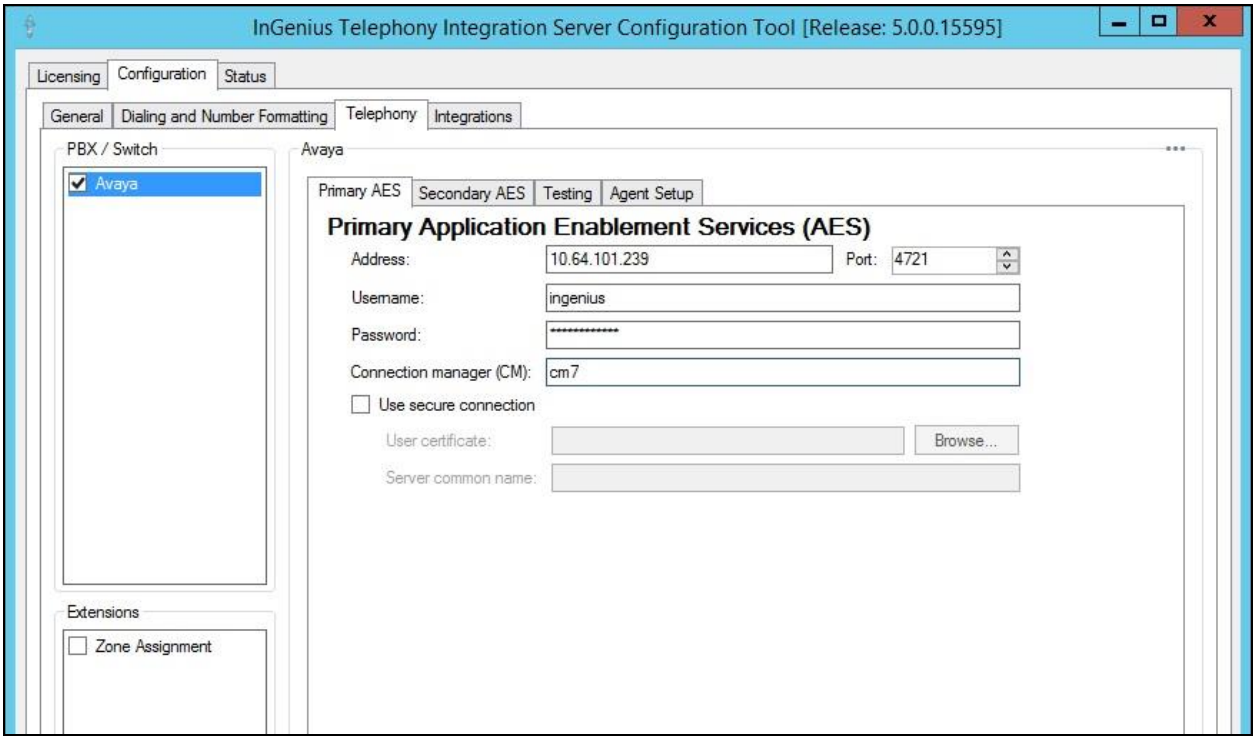


## 7.3. Administer Telephony

The **InGenius Telephony Integration Server Configuration Tool** screen is displayed again. Select **Configuration → Telephony** from the top menu, followed by the **Primary AES** tab in the right pane to display the screen below.

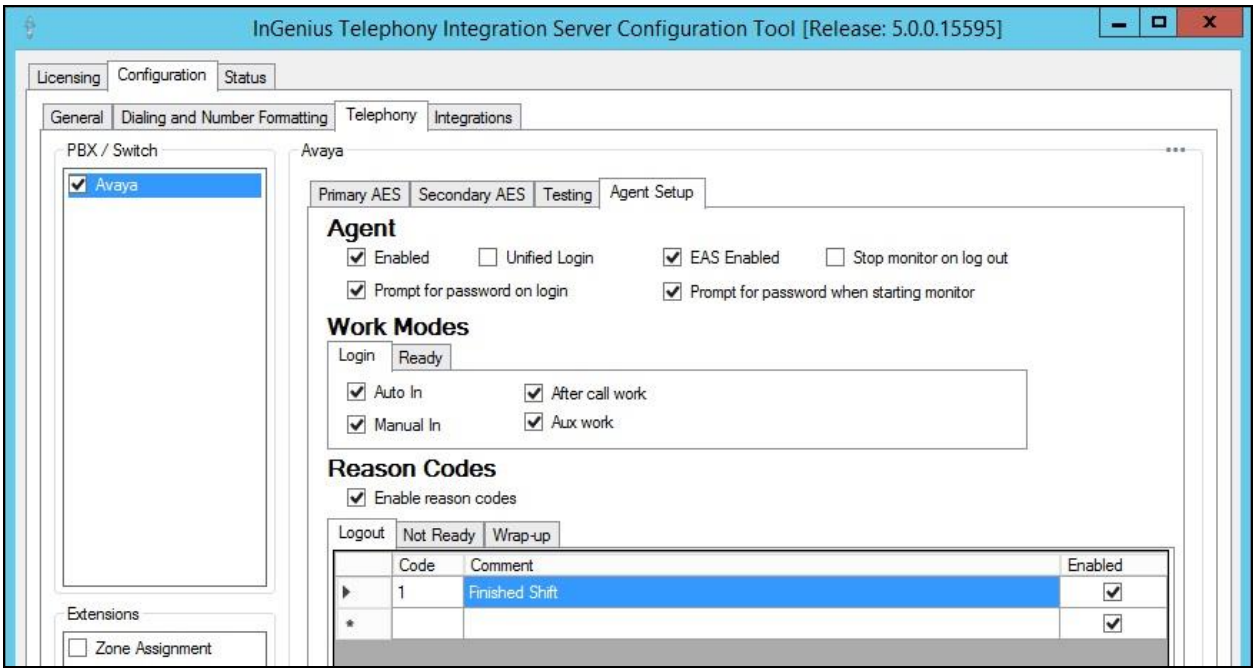
Enter the following values for the specified fields, and retain the default values in the remaining fields.

- **Address:** The IP address of Application Enablement Services.
- **Username:** The InGenius user credentials from **Section 6.4**.
- **Password:** The InGenius user credentials from **Section 6.4**.
- **Connection manager:** The relevant switch connection name from **Section 6.3**.

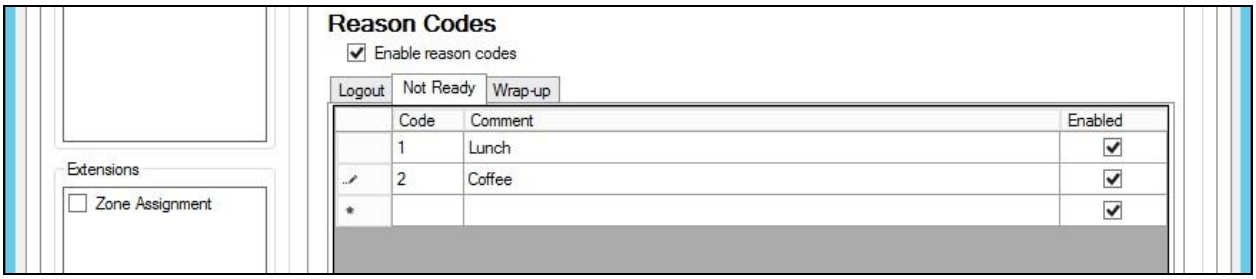


Select the **Agent Setup** tab in the right pane to display the screen below. Follow reference [4] to update parameters in the **Agent** and **Work Modes** sub-sections to the proper settings. The screenshot below shows the values used in the compliance testing.

For contact centers that use reason codes, check **Enable reason codes** in the **Reason Codes** sub-section, and follow reference [4] to create reason code entries to match **Section 5.4**. In the compliance testing, one reason code was created under the **Logout** tab.

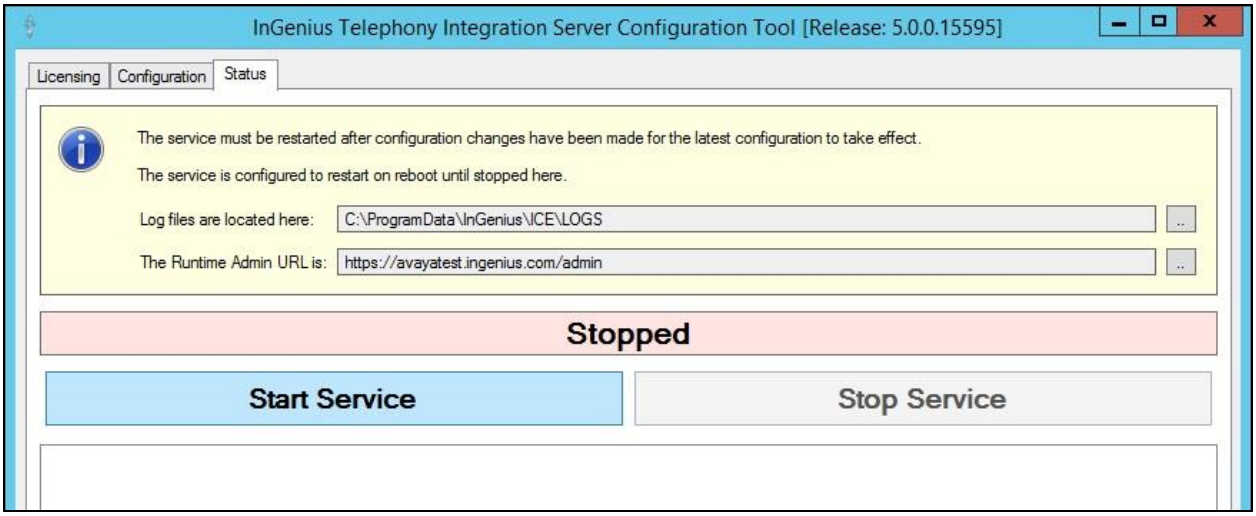



Two reason codes were created under the **Not Ready** tab.

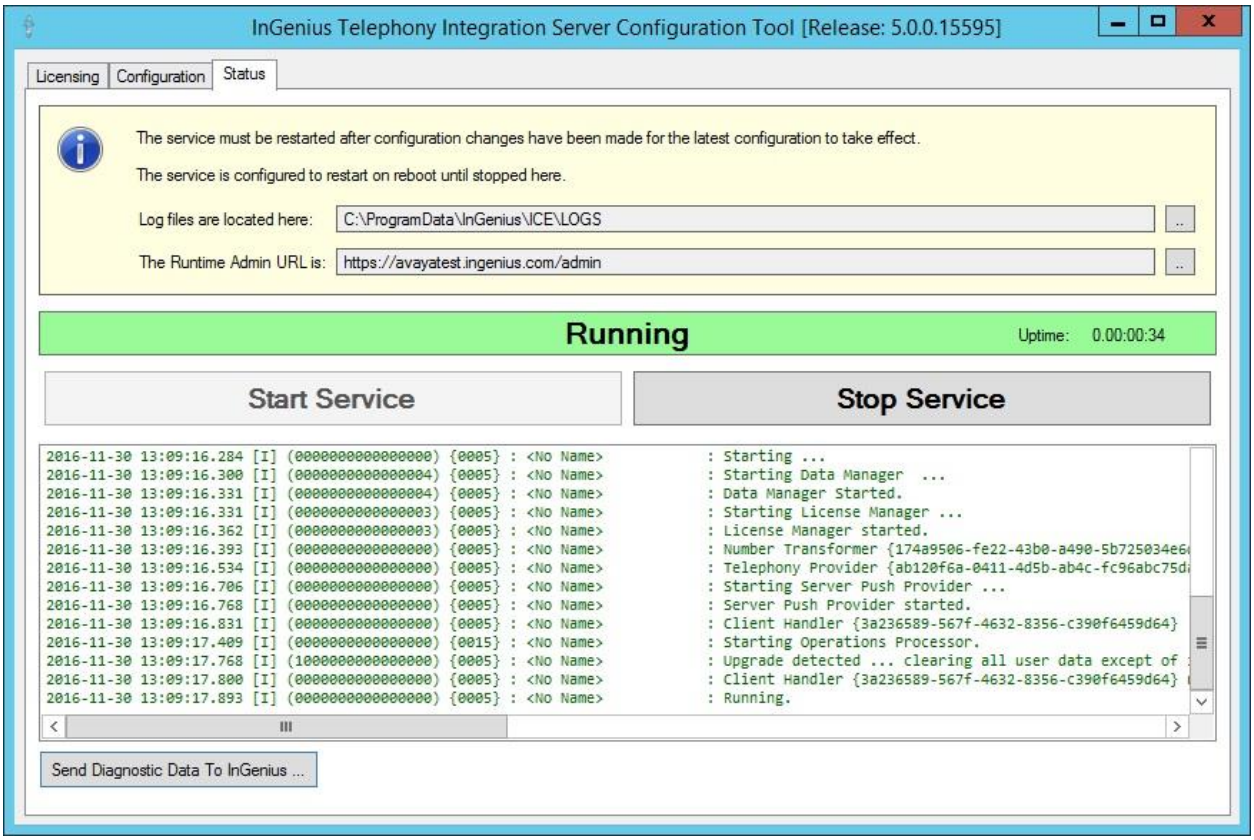


## 7.4. Start Service

Select **Status** from the top menu to display the screen below, and click **Start Service**.




The screen is updated, as shown below.



# 8. Verification Steps

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

## 8.1. Verify Avaya Aura® Communication Manager

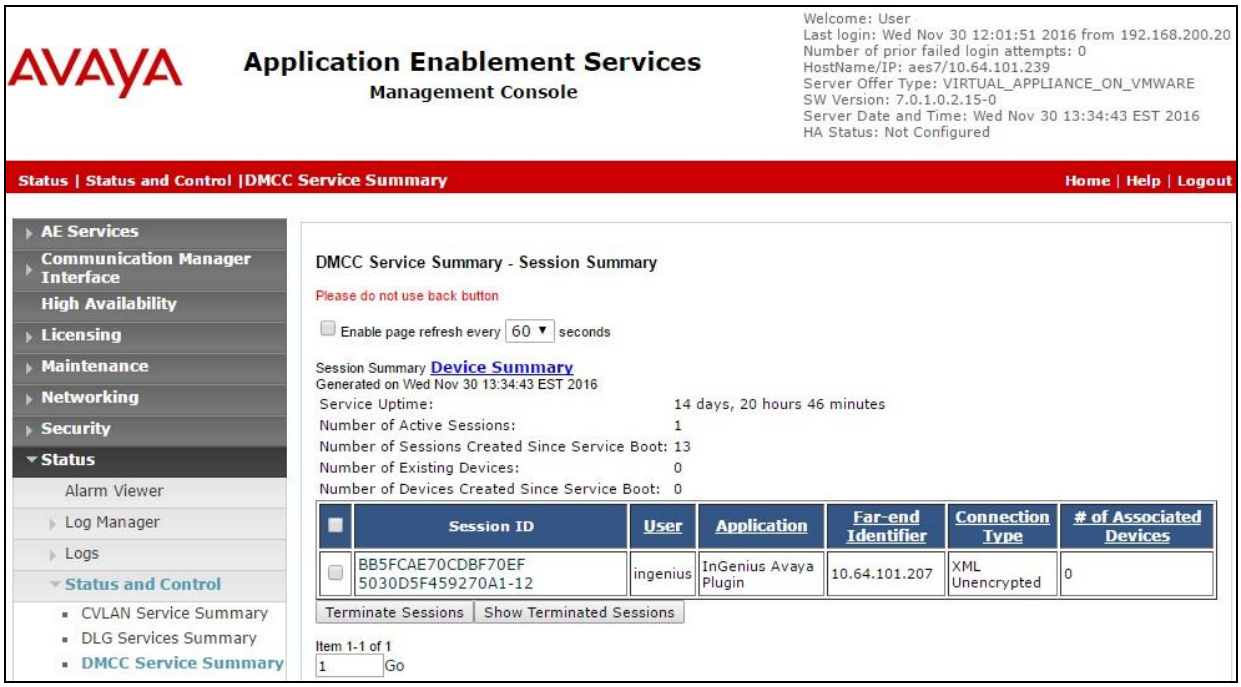
On Communication Manager, verify the status of the administered CTI link by using the "status aesvcs cti-link" command. Verify that the **Service State** is "established" for the CTI link number administered in **Section 5.2**, as shown below.

```
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   707      698
```

## 8.2. Verify Avaya Aura® Application Enablement Services

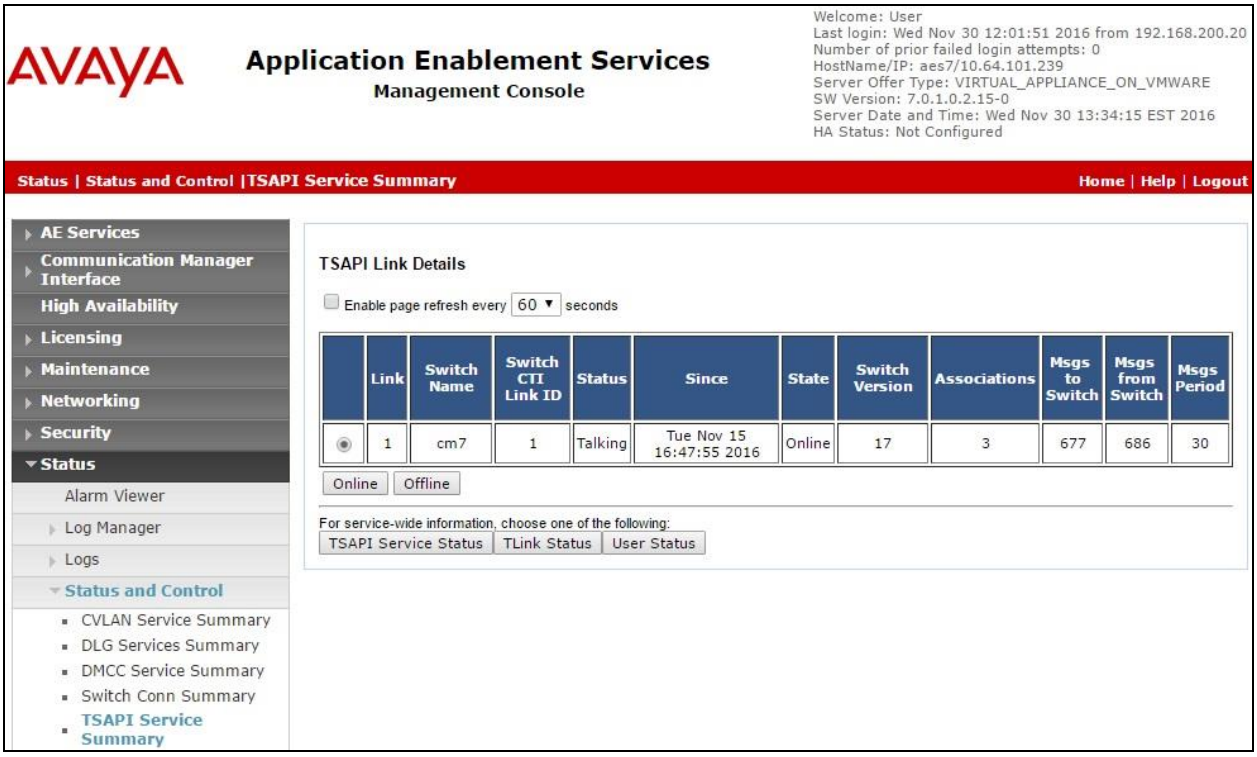
On Application Enablement Services, verify the status of the DMCC service by selecting **Status → Status and Control → DMCC Service Summary** from the left pane. The **DMCC Service Summary – Session Summary** screen is displayed.

Verify the **User** column shows an active session with the InGenius user name from **Section 6.4**.



Verify the status of the TSAPI service by selecting **Status → Status and Control → TSAPI Service Summary** from the left pane. The **TSAPI Link Details** screen is displayed.

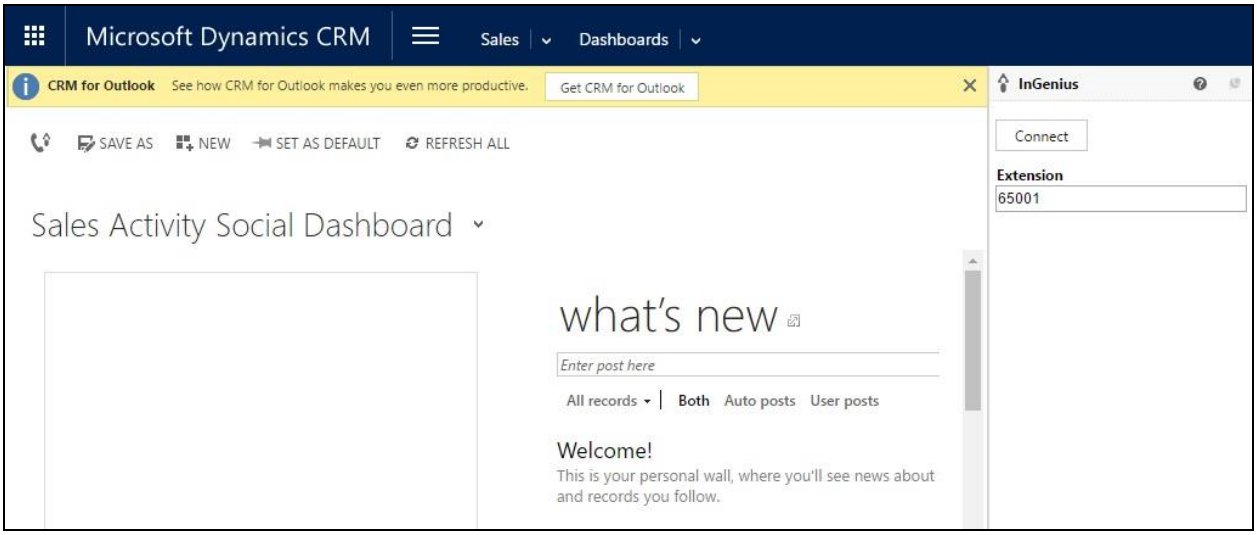
Verify that the **Status** is "Talking" for the TSAPI link administered in **Section 6.3**, and that the **Associations** column reflects the number of agents from **Section 3** that are currently logged into ICE and therefore monitored, in this case "3".



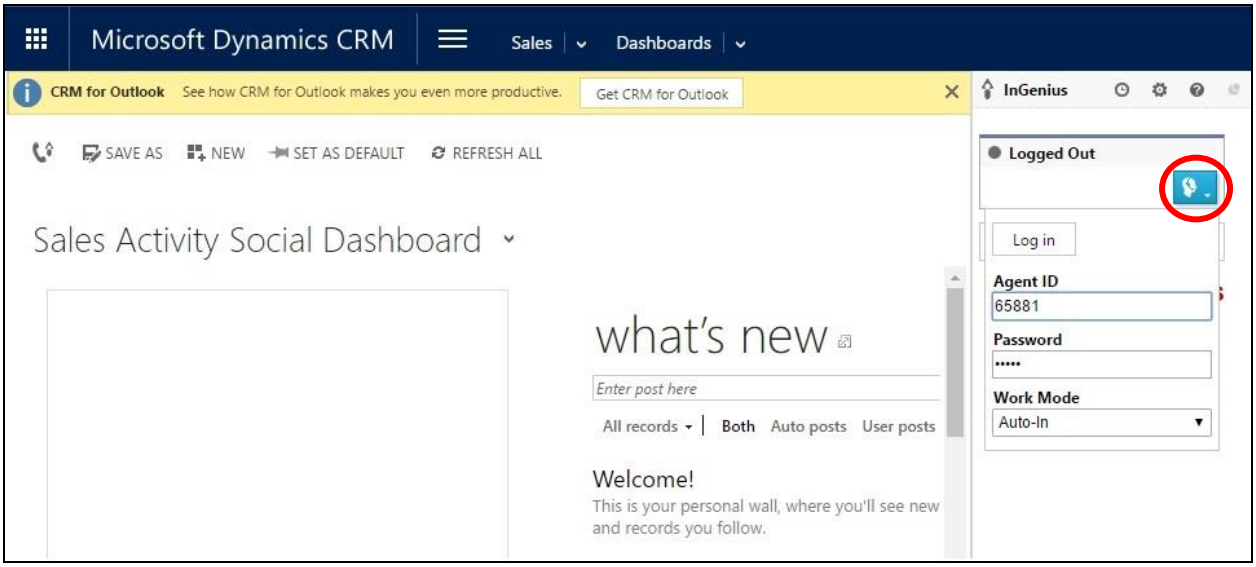
## 8.3. Verify InGenius Connector Enterprise

From an agent PC, launch an Internet browser window and enter the URL provided by the end customer for Microsoft Dynamics CRM. Log in with the relevant user credentials provided by InGenius.

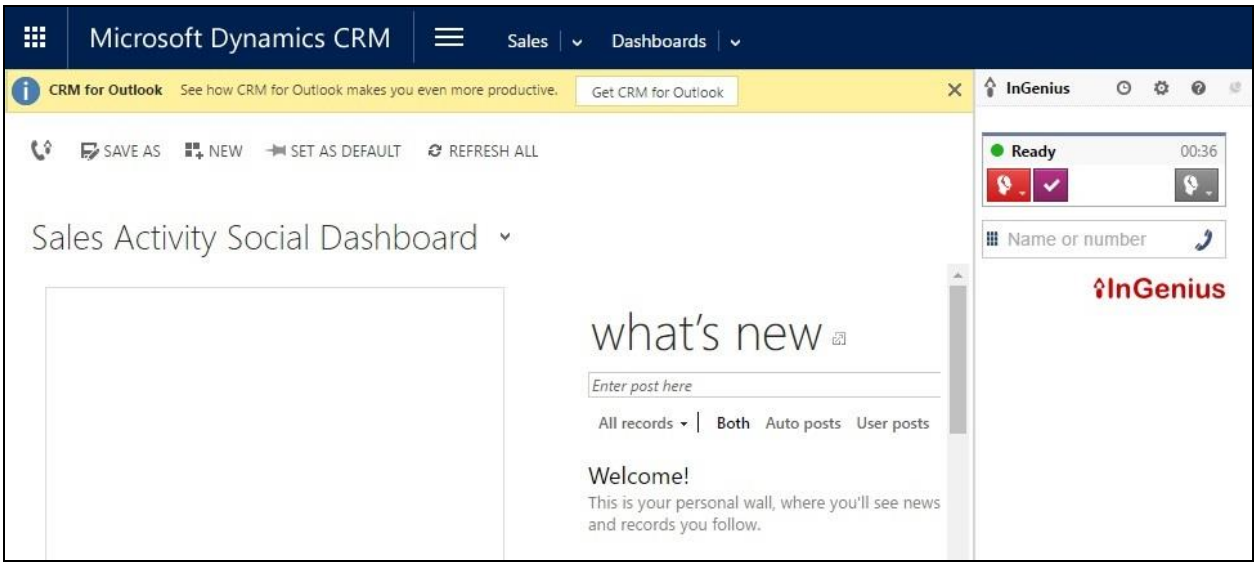

The screen below is displayed next. In the right pane, enter the relevant agent station extension from **Section 3**, and click **Connect**.



The right pane is updated, as shown below. Click on the **Log in** drop-down to display additional parameters. For **Agent ID** and **Password**, enter the relevant credentials from **Section 3**. For **Work Mode**, select the desired work mode, in this case "Auto-In". Click **Log in**.



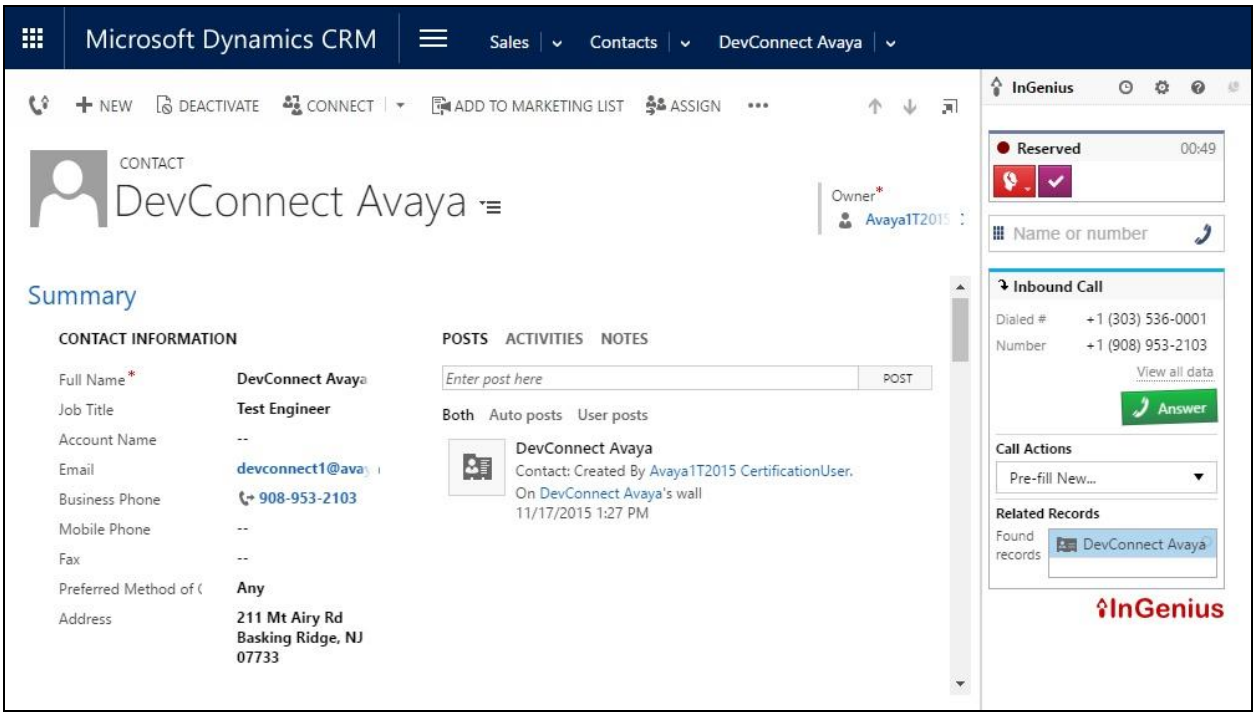

Verify that the right pane is updated, showing the agent in the **Ready** state.



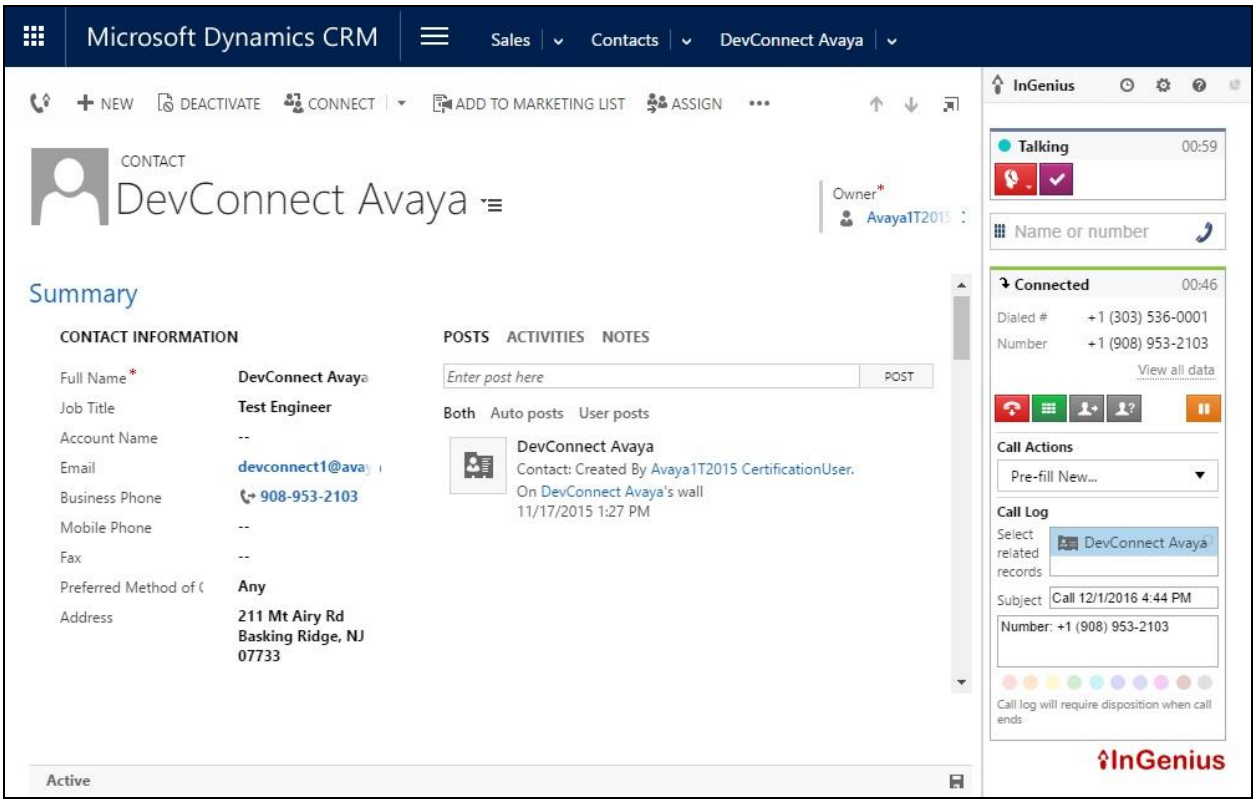
Make an incoming ACD call. Verify that the right pane of the available agent is updated to reflect **Reserved** and **Inbound Call**, along with proper call information. Also verify that the left pane is populated with the uniquely matching contact record associated with the PSTN caller number, as shown below.

In the event that there is more than one contact record matching to the PSTN caller number, then all records will be presented in the **Related Records** sub-section in the right pane, and the agent will need to manually select the pertinent one to populate in the left pane.

Click **Answer** in the right pane.



Verify that the agent is connected to the PSTN caller with two-way talk path, and that the right pane is updated to reflect **Talking** and **Connected**, as shown below.



# 9. Conclusion

These Application Notes describe the configuration steps required for InGenius Connector Enterprise 5.0 to successfully interoperate with Avaya Aura® Communication Manager 7.0.1 and Avaya Aura® Application Enablement Services 7.0.1 using Microsoft Dynamics CRM. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

# 10. Additional References

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


**1.** *Administering Avaya Aura® Communication Manager*, Release 7.0.1, Issue 2.1, August 2016, available at http://support.avaya.com.

**2.** *Administering and Maintaining Aura® Application Enablement Services*, Release 7.0.1, Issue 2, August 2016, available at http://support.avaya.com.

**3.** *InGenius Connector Enterprise for Microsoft Dynamics CRM Server Installation Guide for IT Administrator*, Version 5.0, available upon request to InGenius Support.

**4.** *InGenius Connector Enterprise for Microsoft Dynamics CRM and Avaya Aura Communications Manager User Guide*, Version 5.0, available upon request to InGenius Support.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.