



## Avaya DevConnect Program

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# Application Notes for Swampfox Intelligent Customer Experience (ICX) with Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services, and Avaya Experience Portal – Issue 1.0

## Abstract

These Application Notes describe the steps required to integrate Swampfox Intelligent Customer Experience (ICX) 4.0.1 with Avaya Aura® Communication Manager 10.1, Avaya Aura® Application Enablement Services 10.1, and Avaya Experience Portal 8.1.2. Swampfox ICX provides intelligent call center routing, connecting callers to the best agent based on business rules, and monitors contact center statistics and agents in real-time. Swampfox ICX provides a differentiated customer experience through dynamic voice (IVR) applications and managing to customers' service levels. Swampfox ICX interacts with Avaya Experience Portal via a CCXML application and Avaya Aura® Application Enablement Services via a TSAPI link.

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.

# 1. Introduction

These Application Notes describe the steps required to integrate Swampfox Intelligent Customer Experience (ICX) 4.0.1 with Avaya Aura® Communication Manager 10.1, Avaya Aura® Application Enablement Services 10.1, and Avaya Experience Portal 8.1.2. Swampfox ICX provides intelligent call center routing, connecting callers to the best agent based on business rules, and monitors contact center statistics and agents in real-time. Swampfox ICX provides a differentiated customer experience through dynamic voice (IVR) applications and managing to customers' service levels. Swampfox ICX interacts with Avaya Experience Portal via a CCXML application and Avaya Aura® Application Enablement Services via a TSAPI link.

For the compliance test, a sample CCXML application was configured on Avaya Experience Portal, hosted on the Swampfox ICX server, that greeted the customer, prompted the customer to enter the department to which to route the call (i.e., sales or support), and then based on the ANI or DNIS, routed the customer's call to the best agent/skill providing either "gold level" or "bronze level" service. While the customer waited to be connected to an agent, the customer received the appropriate Advanced Wait Treatment (e.g., Music on Hold). When the call was routed to an agent and answered, the agent received Whisper Treatment, which played a message to the agent. In this case, the agent heard the service level of the caller (i.e., "gold" or "bronze" customer). The customer was then connected to the agent. Swampfox ICX monitored the contact center statistics and agents using a TSAPI link on Avaya Aura® Application Enablement Services (AES). Swampfox ICX generated call reports and tracked agent status on the Web portal.

## 2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to an application on Experience Portal and verifying that Swampfox ICX routed the call to the appropriate agents based on ANI and DNIS.

Serviceability testing focused on verifying that Swampfox ICX returned to service after re-connecting the network or rebooting the 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 this DevConnect Application Note 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 Swampfox ICX used the following encryption features. Experience Portal used HTTPS to access the Swampfox ICX application server and Swampfox ICX used an encrypted TSAPI link to Application Enablement Services.

## 2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- Use of TSAPI query service to query agent state.
- Use of TSAPI snapshot and monitoring services to monitor calls.
- Use of TSAPI event report service to monitor VDNs and skill groups.
- Use of TSAPI service status service to receive changes in system status.
- Calls from PSTN and internal users to a CCXML application on Experience Portal. Based on the ANI, DNIS, and caller input, Swampfox ICX routed the call the appropriate agent/skill.
- Advanced Wait Treatment for the caller and Whisper Treatment for the agent prior to the customer being connected to agent.
- Proper system recovery after a restart of the Swampfox ICX server or loss of network connectivity.

## 2.2. Test Results

All test cases passed.

## 2.3. Support

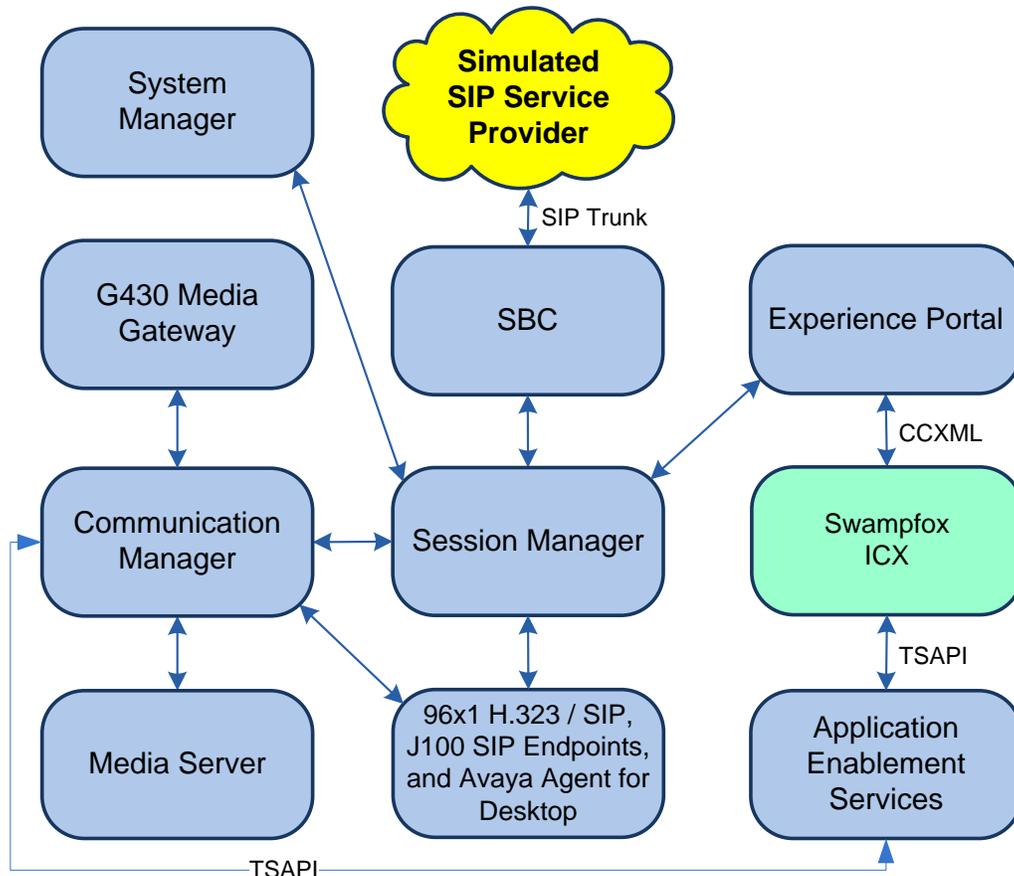
For Swampfox ICX technical support, contact Swampfox Support via phone or website.

- **Phone:** +1 (803) 451-4540
- **Web:** <https://swampfoxinc.com/support>

### 3. Reference Configuration

**Figure 1** illustrates a sample configuration with an Avaya Aura® Environment that includes the following products:

- Communication Manager with a G430 Media Gateway and Avaya Aura® Media Server providing media resources.
- Session Manager connected to Communication Manager via a SIP trunk.
- Session Manager connected to the PSTN via Avaya Session Border Controller (SBC).
- Avaya Aura® System Manager used to configure Session Manager and SIP stations on Communication Manager.
- Application Enablement Services configured to communicate with Avaya Aura® Communication Manager via TSAPI.
- Experience Portal configured to launch a sample CCXML application that routes callers to the appropriate agent/skill using the Swampfox ICX routing engine.
- Avaya H.323 / SIP Deskphones and Avaya Agent for Desktop serving as agents.
- Swampfox ICX with an encrypted TSAPI link to Application Enablement Services and hosting a sample CCXML application. HTTPS was used between Swampfox ICX application server and Experience Portal.



**Figure 1: Avaya Aura® Environment with Swampfox ICX**

## 4. Equipment and Software Validated

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

<b>Equipment/Software</b>	<b>Release/Version</b>
Avaya Aura® Communication Manager	10.1.3.1.0-FP3SP1
Avaya G430 Media Gateway	FW 42.2.0
Avaya Aura® Media Server	10.1.0.125
Avaya Experience Portal	8.1.2
Avaya Aura® Application Enablement Services	10.1.3.1.0.49-0
Avaya Aura® System Manager	10.1.3.1 Build No. – 10.1.0.0.537353 Software Update Revision No: 10.1.3.1.0716149 Service Pack 1
Avaya Aura® Session Manager	10.1.3.1.1013103
Avaya Session Border Controller	10.1.1.0-35-21872
Avaya 96x1 Series IP Deskphones	6.8.5.4.10 (H.323)
Avaya J100 Series SIP Phones	4.1.1.0.7 (SIP)
Avaya Agent for Desktop	2.0.6.25.3006
Swampfox Intelligent Customer Experience (ICX)	4.0.1.0.4

## 5. Configure Avaya Aura® Communication Manager

This section provides the steps for configuring Communication Manager. Administration of Communication Manager was performed using the System Access Terminal (SAT). This covers the following areas:

- Verify License
- Administer AES Connection
- Administer CTI Link
- Administer Vectors and VDNs

### 5.1. Verify License

Log into the System Access Terminal (SAT) 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. Navigate to **Page 4** and verify that the **Computer Telephony Adjunct Links** customer option is set to “y”.

The license file installed on the system controls the maximum permitted. If there is insufficient capacity, contact an authorized Avaya sales representative to make the appropriate changes.

```
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

(NOTE: You must logoff & login to effect the permission changes.)
```

Navigate to **Page 7** and verify that the **Vectoring (Basic)** customer option is set to “y”.

```

display system-parameters customer-options                               Page 7 of 12
                                CALL CENTER OPTIONAL FEATURES

                                Call Center Release: 8.0

                                ACD? y                                Reason Codes? y
                                BCMS (Basic)? y                      Service Level Maximizer? n
                                BCMS/VuStats Service Level? y      Service Observing (Basic)? y
BSR Local Treatment for IP & ISDN? y    Service Observing (Remote/By FAC)? y
                                Business Advocate? n              Service Observing (VDNs)? y
                                Call Work Codes? y                Timed ACW? y
                                DTMF Feedback Signals For VRU? y   Vectoring (Basic)? y
                                Dynamic Advocate? n                Vectoring (Prompting)? y
                                Expert Agent Selection (EAS)? y     Vectoring (G3V4 Enhanced)? y
                                EAS-PHD? y                        Vectoring (3.0 Enhanced)? y
                                Forced ACD Calls? n                Vectoring (ANI/II-Digits Routing)? y
                                Least Occupied Agent? y            Vectoring (G3V4 Advanced Routing)? y
                                Lookahead Interflow (LAI)? y       Vectoring (CINFO)? y
Multiple Call Handling (On Request)? y    Vectoring (Best Service Routing)? y
Multiple Call Handling (Forced)? y       Vectoring (Holidays)? y
PASTE (Display PBX Data on Phone)? y    Vectoring (Variables)? y
                                (NOTE: You must logoff & login to effect the permission changes.)

```

### 5.2. Administer AES Connection

In the **IP Services** form, add an entry for AES. On Page 1, configure the following fields:

- **Service Type:** Set to *AESVCS*.
- **Enabled:** Set to *y*.
- **Local Node:** Set to *procr* for the Processor Ethernet interface.
- **Local Port:** 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      TLS Encryption
AESVCS         y          procr         8765

```

On **Page 3** of the **IP Services** form, configure the following fields:

- **AE Services Server:** Set to the AES server hostname from the **IP Node Names** form (not shown).
- **Password:** Set to a password to be administered on AES in **Section 0**.
- **Enabled:** Set to *y*.

```
change ip-services                                     Page 3 of 3
                                     AE Services Administration
Server ID      AE Services      Password      Enabled      Status
Server
1:            devcon-aes      *              y            in use
```

### 5.3. Administer CTI Link

Add a CTI link using the **add cti-link** command. 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: 77700
Type: ADJ-IP
                                     COR: 1
Name: AES TSAPI Link
Unicode Name? n
```

## 5.4. Configure Call Center

To support the sample call center used in the compliance test, the following Hunt Groups, VDNs and Vectors were configured. The actual configuration screens will not be included in these Application Notes, because the configuration was basic and straightforward with the end result simply routing a call to a skill group. Customers should configure them to meet their business needs. They are being listed here to provide context for the Swampfox ICX configuration in **Section 8.4**.

### 5.4.1. Hunt Groups

Administer four Hunt Groups for Sales Gold, Sales Bronze, Support Gold and Support Bronze. Agents logged into each of the skill groups.

Hunt Group Number	Hunt Group Extension	Purpose
81	77801	Skill for Sales Gold Group.
82	77802	Skill for Support Bronze Group.
83	77803	Skill for Service Gold Group.
84	77804	Skill for Support Bronze Group.

### 5.4.2. Vectors and VDNs

Administer four VDNs and four Vectors for Sales Gold, Sales Bronze, Support Gold and Support Bronze. The Vectors queued the call to the appropriate skill in **Section 5.4.1**.

VDN	Vector	Purpose
77811	81	VDN & Vector for Sales Gold Group.
77812	82	VDN & Vector for Sales Bronze Group.
77813	83	VDN & Vector for Support Gold Group.
77814	84	VDN & Vector for Support Bronze Group.

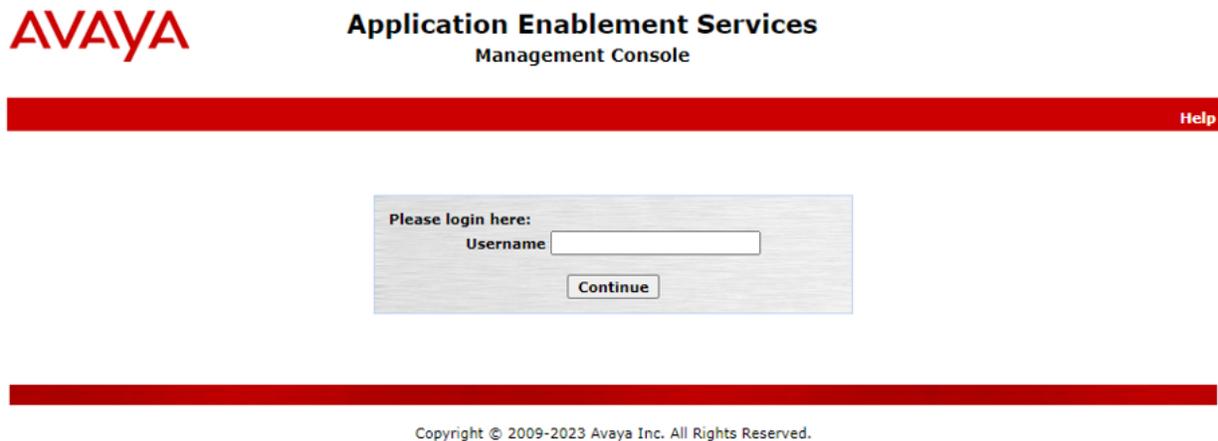
## 6. Configure Avaya Aura® Application Enablement Services

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

- Launch OAM Interface
- Verify License
- Administer Switch Connection
- Administer TSAPI Link
- Restart Service
- Obtain Tlink Name
- Administer User
- Verify Security Database

### 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 login screen is displayed. Log in using the appropriate credentials.



## 6.2. Verify License

Select **Licensing** → **WebLM Server Access** in the left pane to display the **Web License Manager** pop-up screen (not shown). Log in using the appropriate credentials.



Welcome: User cust  
Last login: Wed Sept 13 11:54:53 E.S.T. 2023 from 192.168.100.250  
Number of prior failed login attempts: 0  
HostName/IP: devcon-aes/10.64.102.119  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 10.1.3.1.0.49-0  
Server Date and Time: Fri Sep 15 11:14:27 EDT 2023  
HA Status: Not Configured

The screenshot shows the Avaya Management Console interface. At the top, there is a red navigation bar with "Licensing | WebLM Server Access" on the left and "Home | Help | Logout" on the right. Below this is a left-hand navigation pane with a dark grey background and white text. The menu items are: AE Services, Communication Manager Interface, High Availability, Licensing (expanded), WebLM Server Address, WebLM Server Access (highlighted in blue), Reserved Licenses, Maintenance, Networking, Security, Status, User Management, Utilities, and Help. The main content area on the right has a white background and a blue border. It is titled "WebLM Server Access" and contains a paragraph: "WebLM Server Access helps you to access the WebLM server specified on the WebLM Server Address page." Below this paragraph is a bulleted list: "• If you are using a local Avaya WebLM server, the AE Services management console redirects you to the Web License Manager page for WebLM configuration." and "• If you are using a standalone WebLM server, you must manually log in to the WebLM server for WebLM configuration." At the bottom of the page, there is a thin grey horizontal line and a copyright notice: "Copyright © 2009-2023 Avaya Inc. All Rights Reserved."

The **Web License Manager** screen below is displayed. 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 (VALUE\_AES\_TSAPI\_USERS)** as shown below.

**Application Enablement (CTI) - Release: 10 - SID: 10503000** Standard License file

You are here: Licensed Products > Application\_Enablement > View License Capacity

License installed on: May 31, 2022 10:32:15 AM -04:00

**License File Host IDs:** V9-DF-31-89-CD-2A-01

**Licensed Features**

13 Items Show All

Feature (License Keyword)	Expiration date	Licensed capacity
Device Media and Call Control VALUE_AES_DMCC_DMC	permanent	10000
AES ADVANCED LARGE SWITCH VALUE_AES_AEC_LARGE_ADVANCED	permanent	16
AES HA LARGE VALUE_AES_HA_LARGE	permanent	1
AES ADVANCED MEDIUM SWITCH VALUE_AES_AEC_MEDIUM_ADVANCED	permanent	16
Unified CC API Desktop Edition VALUE_AES_AEC_UNIFIED_CC_DESKTOP	permanent	10000
CVLAN ASAI VALUE_AES_CVLAN_ASAI	permanent	16
AES HA MEDIUM VALUE_AES_HA_MEDIUM	permanent	1
AES ADVANCED SMALL SWITCH VALUE_AES_AEC_SMALL_ADVANCED	permanent	16
DLG VALUE_AES_DLG	permanent	16
TSAPI Simultaneous Users VALUE_AES_TSAPI_USERS	permanent	10000
CVLAN Proprietary Links VALUE_AES_PROPRIETARY_LINKS	permanent	16

SmallServerTypes:  
s8300c;s8300d;icc;premio;tn8400;laptop;CtiS

Scroll down to see the rest of the licenses. Note that Swampfox ICX uses **VALUE\_AES\_TSAPI\_USERS** license as shown in the **Acquired Licenses** section below.

Product Notes VALUE_NOTES	permanent	AdvancedUnrestricted, DMCUnrestricted, AgentBasicUnrestricted, AdvancedUnrestricted, DMCUNIFIED_DESKTOP_001, BasicUnrestricted, AgentDMCUnrestricted, AgentEvents; AACC_001, BasicAdvancedUnrestricted, DMCUnrestricted; CE_ABasicUnrestricted, AdvancedUnrestricted, DMCUNIFIED_CLIENT_001, BasicUnrestricted, , , AgentEvents, AgentEvents; EXT_CLIENT_002, , , , AgentEvents, AgentEvents; EXT_CLIENT_004, , , , AgentEvents, AgentEvents; EXT_CLIENT_006, , , , AgentEvents, AgentEvents; EXT_CLIENT_008, , , , AgentEvents, AgentEvents; EXT_CLIENT_010, , , , AgentEvents; AAWFO_SELECT_001, BasicUnrestricted, AdvancedUnrestricted, DMCUnrestricted, AgentEvents; OFFICELINX_001, AdvancedUnrestricted, DMCUnrestricted, AgentBasicUnrestricted, , DMCUnrestricted, AgentEvents; BasicUnrestricted, AdvancedUnrestricted, DMCUNIFIED_ECD_001, , AdvancedUnrestricted, , AgentEvents; VERINT_ESSENTIAL_001, BasicUnrestricted, AgentDMCUnrestricted; ACI_001, BasicUnrestricted, AgentEvents; CALABRIO_001, BasicUnrestricted, DMCUnrestricted;
AES HA SMALL VALUE_AES_HA_SMALL	permanent	1

**Acquired Licenses**

1 Item  Show  

Feature	Acquired by	Acquirer ID	Count
VALUE_AES_TSAPI_USERS	TSAPI (devcon-aes)	devcon-aes:1694613592:1175291:140411028138112:0000	4

### 6.3. Administer Switch Connection

To administer a **Switch Connection** for Communication Manager, navigate to **Communication Manager Interface** → **Switch Connections** and enter a name for the new switch connection and click the **Add Connection** button. This was previously configured as *devcon* as shown below.

Welcome: User cust  
Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
Number of prior failed login attempts: 0  
HostName/IP: devcon-aes/10.64.102.119  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 10.1.3.1.0.49-0  
Server Date and Time: Fri Sep 15 11:20:05 EDT 2023  
HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

Switch Connections

Connection Name	Processor Ethernet	Msg Period	Number of Active Connections
devcon	Yes	30	1

Click **Edit Connection** button to configure the connection details. Enter the **Switch Password** and check the **Processor Ethernet** box, if using the **procr** interface, as shown below. The password must match the one configured when adding AESVCS connection in Communication Manager in **Section 5.2**. A secure switch connection was used as shown below.

Welcome: User cust  
Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
Number of prior failed login attempts: 0  
HostName/IP: devcon-aes/10.64.102.119  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 10.1.3.1.0.49-0  
Server Date and Time: Fri Sep 15 11:21:23 EDT 2023  
HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

Connection Details - devcon

Switch Password:

Confirm Switch Password:

Msg Period:  Minutes (1 - 72)

Provide AE Services certificate to switch:

Secure H323 Connection:

Processor Ethernet:

Enable TLS Certificate Validation:

Click **Edit PE/CLAN IPs** on the **Switch Connection** page and configure the **procr** or **CLAN IP** address of Communication Manager and click **Add/Edit Name or IP**.

Welcome: User cust  
 Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
 Number of prior failed login attempts: 0  
 HostName/IP: devcon-aes/10.64.102.119  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.3.1.0.49-0  
 Server Date and Time: Fri Sep 15 11:26:04 EDT 2023  
 HA Status: Not Configured

**AVAYA Application Enablement Services Management Console**

Communication Manager Interface | Switch Connections Home | Help | Logout

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

Edit Processor Ethernet IP - devcon

Name or IP Address	Status
10.64.102.115	In Use

## 6.4. 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**.

Welcome: User cust  
 Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
 Number of prior failed login attempts: 0  
 HostName/IP: devcon-aes/10.64.102.119  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.3.1.0.49-0  
 Server Date and Time: Fri Sep 15 11:27:20 EDT 2023  
 HA Status: Not Configured

**AVAYA Application Enablement Services Management Console**

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

- ▼ AE Services
  - ▶ CVLAN
  - ▶ DLG
  - ▶ DMCC
  - ▶ SMS
  - ▼ TSAPI
    - TSAPI Links
    - TSAPI Properties
  - ▶ TWS

TSAPI Links

Link	Switch Connection	Switch CTI Link #	ASAI Link Version	Security
<input checked="" type="radio"/> 1	devcon	1	12	Both

The **Add TSAPI Links** screen is displayed next. The **Link** field is only local to Application Enablement Services 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 *devcon* is selected. For **Switch CTI Link Number**, select the CTI link number from **Section 5.3. Security** was set to *Both* to allow secure and unsecure TSAPI links. For the compliance test, a secure TSAPI link was used. Retain the default values in the remaining fields.

The screenshot displays the Avaya Application Enablement Services Management Console. At the top right, a welcome message for user 'cust' is shown, including the last login time (Fri Sept 15 11:17:15 E.S.T. 2023), IP address (192.168.100.250), and system information like SW Version (10.1.3.1.0.49-0) and HA Status (Not Configured). The main navigation bar is red and contains 'AE Services | TSAPI | TSAPI Links' on the left and 'Home | Help | Logout' on the right. A left-hand sidebar lists various services under 'AE Services', with 'TSAPI Links' selected. The main content area is titled 'Edit TSAPI Links' and contains the following configuration fields: 'Link' (text input with value '1'), 'Switch Connection' (dropdown menu with 'devcon' selected), 'Switch CTI Link Number' (dropdown menu with '1' selected), 'ASAI Link Version' (dropdown menu with '12' selected), and 'Security' (dropdown menu with 'Both' selected). At the bottom of the form are three buttons: 'Apply Changes', 'Cancel Changes', and 'Advanced Settings'.

## 6.5. Restart Service

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

Welcome: User cust  
Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
Number of prior failed login attempts: 0  
HostName/IP: devcon-aes/10.64.102.119  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 10.1.3.1.0.49-0  
Server Date and Time: Fri Sep 15 11:30:37 EDT 2023  
HA Status: Not Configured

**AVAYA** Application Enablement Services  
Management Console

Maintenance | Service Controller Home | Help | Logout

Left Pane:

- AE Services
- Communication Manager Interface
- High Availability
- Licensing
- Maintenance**
  - Date Time/NTP Server
  - Security Database
  - Service Controller**
  - Server Data
- Networking
- Security
- Status

Service Controller

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	Running

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

Buttons: Start Stop Restart Service Restart AE Server Restart Linux Restart Web Server

## 6.6. Obtain Tlink Name

Select **Security** → **Security Database** → **Tlinks** from the left pane. The **Tlinks** screen shows a listing of 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 Swampfox ICX.

In this case, the associated Tlink name is “AVAYA#DEVCON#CSTA-S#DEVCON-AES” for the secure TSAPI link. Note the use of the switch connection “DEVCON” from **Section 0** as part of the Tlink name.

The screenshot displays the Avaya Application Enablement Services Management Console. At the top right, system information is shown: Welcome: User cust, Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250, Number of prior failed login attempts: 0, HostName/IP: devcon-aes/10.64.102.119, Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE, SW Version: 10.1.3.1.0.49-0, Server Date and Time: Fri Sep 15 11:31:34 EDT 2023, HA Status: Not Configured.

The main interface has a red header bar with "Security | Security Database | Tlinks" on the left and "Home | Help | Logout" on the right. A left-hand navigation pane shows a tree structure with "Security Database" expanded to "Tlinks".

The main content area, titled "Tlinks", contains a "Tlink Name" section with two radio button options: "AVAYA#DEVCON#CSTA#DEVCON-AES" (selected) and "AVAYA#DEVCON#CSTA-S#DEVCON-AES" (highlighted with a red box). Below these options is a "Delete Tlink" button.

## 6.7. Administer 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.

The screenshot displays the Avaya Application Enablement Services Management Console. At the top right, a welcome message reads: "Welcome: User cust. Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250. Number of prior failed login attempts: 0. HostName/IP: devcon-aes/10.64.102.119. Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE. SW Version: 10.1.3.1.0.49-0. Server Date and Time: Fri Sep 15 11:34:08 EDT 2023. HA Status: Not Configured".

The main navigation bar is red and contains "User Management | User Admin | Add User" on the left and "Home | Help | Logout" on the right. A left-hand navigation pane lists various services, with "User Management" expanded to show "User Admin" and "Add User" selected.

The "Add User" form is titled "Add User" and includes a note: "Fields marked with \* can not be empty." The form fields are as follows:

- \* 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:
- Employee Type:

## 6.8. Verify Security Database

Select **Security** → **Security Database** → **Control** from the left pane to display the **SDB Control for DMCC, WTI, TSAPI, JTAPI and Telephony Web Services** screen in the right pane.

Verify that **Enable SDB for TSAPI Service, JTAPI and Telephony Web Services** is unchecked. In the event that security database is used by the customer with this parameter already enabled, then follow [2] to configure access privileges for the user from **Section 6.7**.

The screenshot displays the Avaya Application Enablement Services Management Console. At the top right, system information is shown: Welcome: User cust, Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250, Number of prior failed login attempts: 0, HostName/IP: devcon-aes/10.64.102.119, Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE, SW Version: 10.1.3.1.0.49-0, Server Date and Time: Fri Sep 15 11:35:10 EDT 2023, HA Status: Not Configured.

The main header reads "AVAYA Application Enablement Services Management Console". A red navigation bar contains "Security | Security Database | Control" on the left and "Home | Help | Logout" on the right.

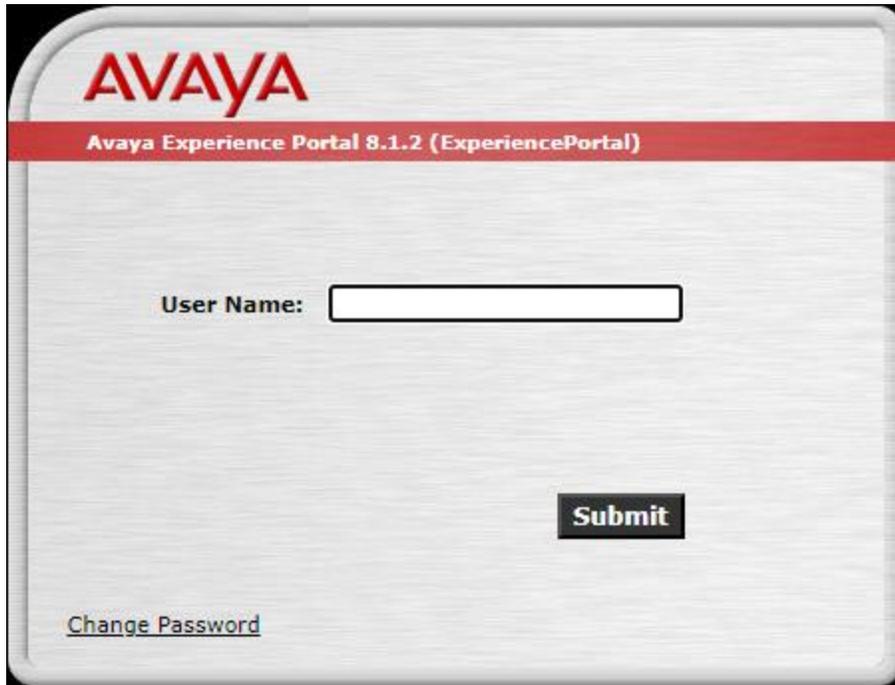
The left sidebar menu includes: AE Services, Communication Manager Interface, High Availability, Licensing, Maintenance, Networking, Security (expanded), Account Management, Audit, Certificate Management, Enterprise Directory, Host AA, PAM, Security Database (expanded), Control (selected), and CTI Users.

The main content area is titled "SDB Control for DMCC, WTI, TSAPI, JTAPI and Telephony Web Services" and contains two unchecked checkboxes: "Enable SDB for DMCC and WTI Service" and "Enable SDB for TSAPI Service, JTAPI and Telephony Web Services". An "Apply Changes" button is located below the checkboxes.

## 7. Configure Avaya Experience Portal

This section covers the configuration of a sample CCXML application in Experience Portal using the Experience Portal Manager (EPM) web interface.

Experience Portal is configured via the Experience Portal Manager (EPM) web interface. To access the web interface, enter **https://<ip-addr>** as the URL in a web browser, where <ip-addr> is the IP address of EPM. Log in using the appropriate credentials.



The image shows a screenshot of the Avaya Experience Portal login interface. At the top, the Avaya logo is displayed in red. Below the logo, a red horizontal bar contains the text "Avaya Experience Portal 8.1.2 (ExperiencePortal)". The main area of the page is white and contains a "User Name:" label followed by a text input field. Below the input field is a black "Submit" button. At the bottom left of the page, there is a link labeled "Change Password".

The main page of the EPM web interface is displayed as shown below.

**AVAYA** Welcome, epadmin  
Last logged in Sep 13, 2023 at 1:48:12 PM MDT

**Avaya Experience Portal 8.1.2 (ExperiencePortal)** Home Help Logoff

Expand All | Collapse All

**User Management**  
Roles  
Users  
Login Options

**Real-time Monitoring**  
System Monitor  
Active Calls  
Port Distribution

**System Maintenance**  
Audit Log Viewer  
Trace Viewer  
Log Viewer  
Alarm Manager

**System Management**  
Application Server  
EPM Manager  
MPP Manager  
Software Upgrade  
System Backup

**System Configuration**  
Applications  
EPM Servers  
MPP Servers  
SNMP  
Speech Servers  
VoIP Connections  
Zones

**Security**  
Certificates  
Licensing

**Reports**  
Standard  
Custom  
Scheduled

**Multi-Media Configuration**  
Email  
HTML  
SMS

**Proactive Outreach**  
Manager  
Monitor  
Dashboard

You are here: Home

## Avaya Experience Portal Manager

Avaya Experience Portal Manager (EPM) is the consolidated web-based application for administering Experience Portal. Through the EPM interface you can configure Experience Portal, check the status of an Experience Portal component, and generate reports related to system operation.

### Installed Components

**Media Processing Platform**  
Media Processing Platform (MPP) is an Avaya media processing server. When an MPP receives a call from a PBX, it invokes a VoiceXML (or CCXML) application on an application server. It then communicates with ASR and TTS servers as necessary to process the call.

**Email Service**  
Email Service is an Experience Portal feature which provides e-mail capabilities.

**HTML Service**  
HTML Service is an Experience Portal feature which supports web applications with HTML5 capabilities. It includes support for browser based services for mobile devices.

**Proactive Outreach Manager**  
Avaya Proactive Outreach Manager (POM) provides a solution for unified, multichannel, inbound and outbound architecture, with the capability to communicate through different channels of interaction, from Short Message Service (SMS) to e-mail to the traditional voice.

**SMS Service**  
SMS Service is an Experience Portal feature which provides SMS capabilities.

### Legal Notice

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REVISED: June 1st, 2020

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On the left pane, navigate to **System Configuration → Applications**. The **Applications** page is displayed (not shown). Click **Add**. In the **Add Application** page shown below, configure the application. For the compliance test, a CCXML applications was configured as shown below.

- **Name:** Provide a descriptive name (e.g., *Swampfox Test*).
- **Enable:** Set to **Yes** to enable the application.
- **Type:** Set to *CCXML*.
- **CCXML URL:** Specify the CCXML application URL. Click **Verify** to check application accessibility.
- **ASR Speech Servers:** Not required.
- **TTS Speech Servers:** Select TTS Speech Server. Required as tested.
- **Application Launch:** Set the **Called Number** (e.g., *78560*) associated with the application and click **Add**.

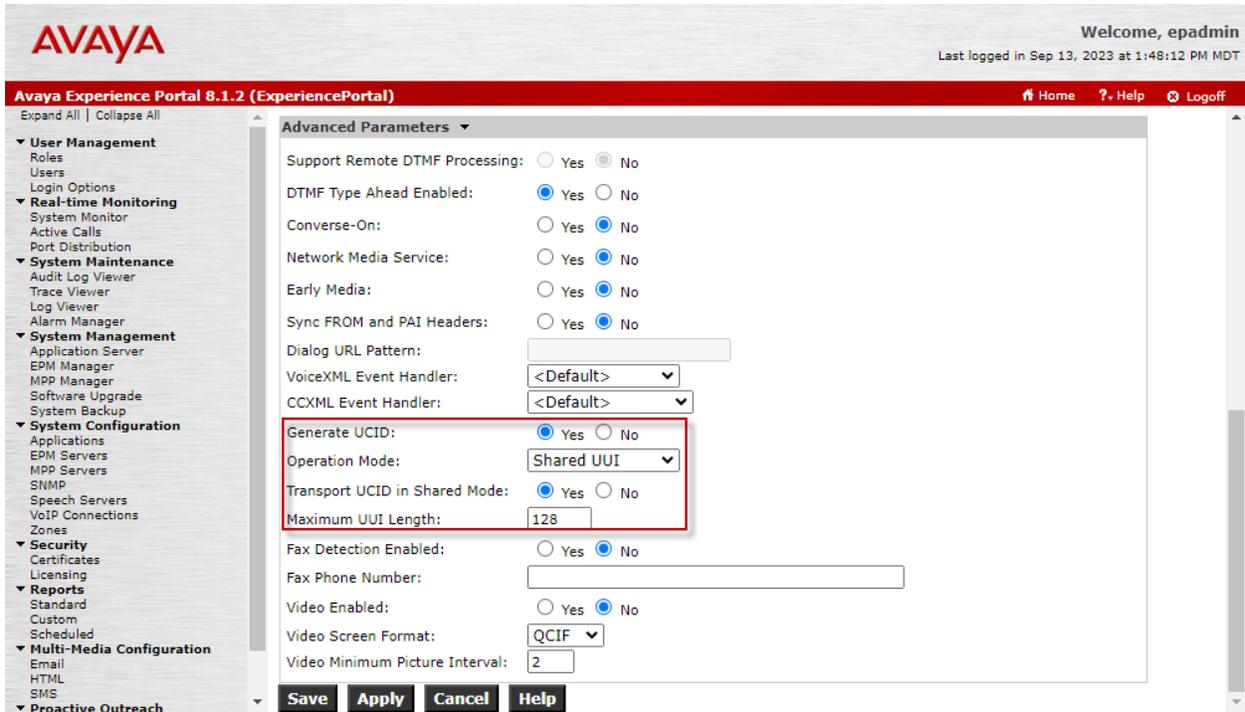
The screenshot displays the 'Change Application' configuration page in the Avaya Experience Portal. The page is titled 'Change Application' and includes a breadcrumb trail: 'Home > System Configuration > Applications > Change Application'. The main content area is divided into several sections:

- General Settings:** Name: Swampfox Test; Enable: Yes (selected); Type: CCXML (dropdown); Reserved SIP Calls: None (selected); Requested: (empty field).
- URI:** Single (selected), Fail Over, Load Balance; CCXML URL: https://10.64.102.104:9443/DRMServer/StartCallFlow.jsp?avp\_core=DevConnect; Verify button.
- Authentication:** Mutual Certificate Authentication: No (selected); Basic Authentication: No (selected).
- ASR Speech Servers:** Engine Types: Nuance; Selected Engine Types: <None>.
- TTS Speech Servers:** TTS: Nuance; Voices: <None>; Selected Voices: English(USA) en-US Jennifer F.
- Application Launch:** Inbound (selected), Inbound Default, Outbound; Number (selected), Number Range, URI; Called Number: 78560; Add button.

A left-hand navigation pane shows the 'System Configuration' menu expanded to 'Applications'. The top right corner of the page displays 'Welcome, epadmin' and 'Last logged in Sep 13, 2023 at 1:48:12 PM MDT'.

Scroll down and expand the **Advanced Parameters** section and configure the following parameters:

- **Generate UCID:** Set to *Yes*.
- **Operation Mode:** Set to *Shared UUI*.
- **Transport UCID in Shared Mode:** Set to *Yes*.
- **Maximum UUI Length:** Use default value of *128.z*



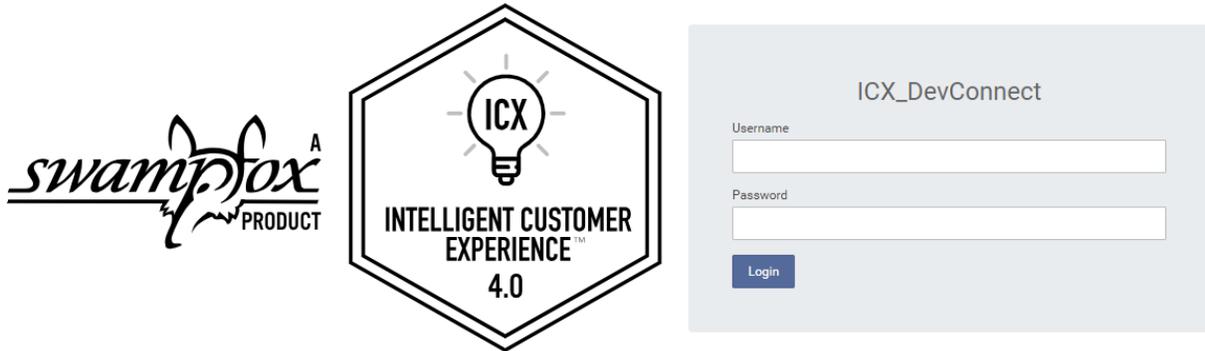
## 8. Configure Swampfox ICX

This section provides steps for configuring Swampfox ICX. Configuration of Swampfox ICX is performed via Swampfox ICX web interface and covers the following areas:

- Log into Swampfox ICX Web Interface
- Administer CTI Connection
- Create Snapshots
- Administer Transfer VDNs and Skills
- Administer Call Routing based on ANI or DNIS
- Promote Changes

### 8.1. Log into Swampfox ICX Web Interface

Access the Swampfox ICX web interface by using the URL “<https://<ip-address>:8443/icx>” in an Internet browser, where <ip-address> is the IP address of the Swampfox IXC server. Log in using appropriate credentials.



The **System Dashboard** is displayed as shown below.

The screenshot displays the **System Dashboard** for the environment **ICX\_DevConnect**. The interface includes a top navigation bar with the logo, environment name, and search/user icons. A sidebar on the left lists various management options. The main content area features four monitoring cards (Monitor Errors, Routing Errors, Database Errors, Active Alarms), a Monitor Summary table, Routing Servers Summary, Management Servers Summary, and an Active Alarms section.

**System Dashboard** Last Refresh: 9/13/2023, 3:35:00 PM EDT [Download Diagnostic Data](#)

**Monitoring Metrics:**

- Monitor Errors: 0
- Routing Errors: 0
- Database Errors: 0
- Active Alarms: 0

**Monitor Summary**

Source	Status	% OK
AES DevConnect E	OK	100%

**Routing Servers Summary**

SWAMPFOX

- Running
- Healthy
- Synchronized

[Detailed Server Report](#)

**Management Servers Summary**

SWAMPFOX - Primary

- Running
- Healthy

[Detailed Server Report](#)

**Active Alarms** | Recent Alarms

No Active Alarms

## 8.2. Administer CTI Connection

From the ICX web interface, navigate to **CTI Connections**. Click **New** to add a new CTI Connection. The CTI Connection used for the compliance test will be reviewed.

The screenshot displays the 'CTI Connections' page in the ICX web interface. The header shows 'SWAMPFOX TECHNOLOGIES Intelligent Customer Experience' and 'ENVIRONMENT ICX\_DevConnect'. The sidebar on the left contains various navigation options, with 'CTI Connections' highlighted. The main content area shows a table of CTI connections. The table has the following columns: Name, Route Point/ICX ACD, Description, CTI Server, and CTI/TLINK Service. There are four rows of data, each with a checkbox for selection. The page also includes a 'New' button, 'Duplicate', and 'Delete' buttons, and a pagination control at the bottom.

<input type="checkbox"/>	Name ↓	Route Point/ICX ACD	Description	CTI Server	CTI/TLINK Service
<input type="checkbox"/>	<a href="#">AES_CM_6</a>	1	---	10.91.2.90	AVAYA#CM633#CSTA#FOX-LAB-AES633
<input type="checkbox"/>	<a href="#">AES_CM_8</a>	2	---	10.91.10.94	AVAYA#CM10#CSTA#AES10
<input type="checkbox"/>	<a href="#">AES_DevConnect</a>	2	---	10.64.102.119	AVAYA#DEVCON#CSTA#DEVCON-AES
<input type="checkbox"/>	<a href="#">AES_DevConnect E</a>	2	---	10.64.102.119	AVAYA#DEVCON#CSTA-S#DEVCON-AES

In **CTI Connection Properties**, configure the following parameters:

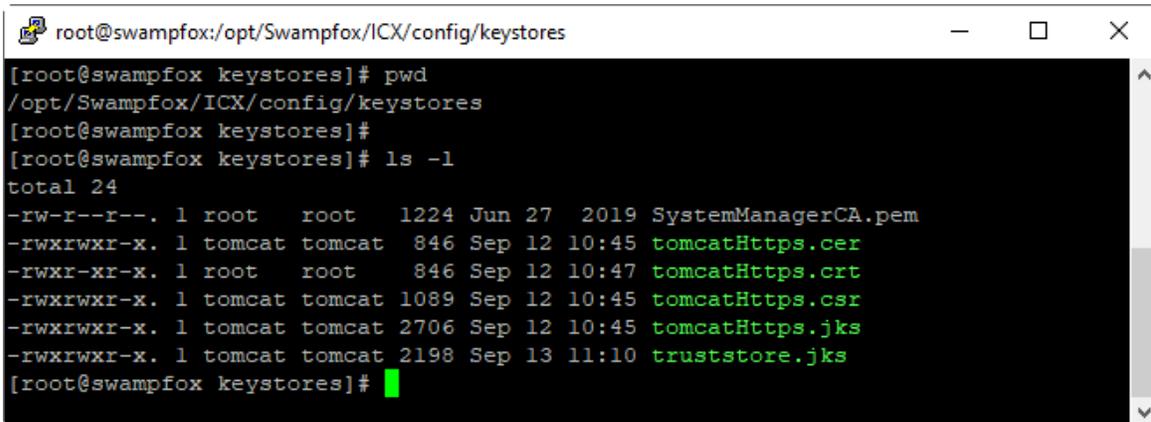
- **CTI Connection Name:** Provide a descriptive name (e.g., *AES DevConnect E*).
- **Enable CTI Connection:** Select the checkbox.
- **Route Point/ACD:** Set to available route point/ACD identifier (e.g., 2).
- **CTI Server Address:** Set to AES IP address (e.g., *10.64.102.119*).
- **CTI/TLINK String:** Set to the TLINK name from **Section 6.6** (e.g., *AVAYA#DEVCON#CSTA-S#DEVCON-AES*).
- **CTI Login:** Set to the AES user configured in **Section 6.7** (e.g., *swampfox*).
- **CTI Password:** Set to the AES user password configured in **Section 6.7**.

The screenshot displays the 'CTI Connection Properties' configuration page for 'AES DevConnect E' in the Avaya DevConnect application. The interface includes a sidebar with navigation options like 'Dashboard and Reports', 'Business Parameter Management', and 'CTI Connections'. The main content area is divided into 'General' and 'Vector Variables' tabs. The 'Details' section contains fields for 'CTI Connection Name' (AES DevConnect E), 'Enable CTI Connection' (checked), 'Route Point/ACD' (2), and a 'Description' field. The 'CTI Settings' section includes 'CTI Server Address' (10.64.102.119), 'CTI/TLINK String' (AVAYA#DEVCON#CSTA-S#DEVCON-AES), 'CTI Username' (swampfox), and 'CTI Password'. An 'Advanced Integration Credentials' section has fields for 'Route Point Server Address', 'Route Point/ACD Login', and 'Route Point/ACD Password'. A 'Save' button is visible at the bottom.

## 8.2.1. Import Certificate

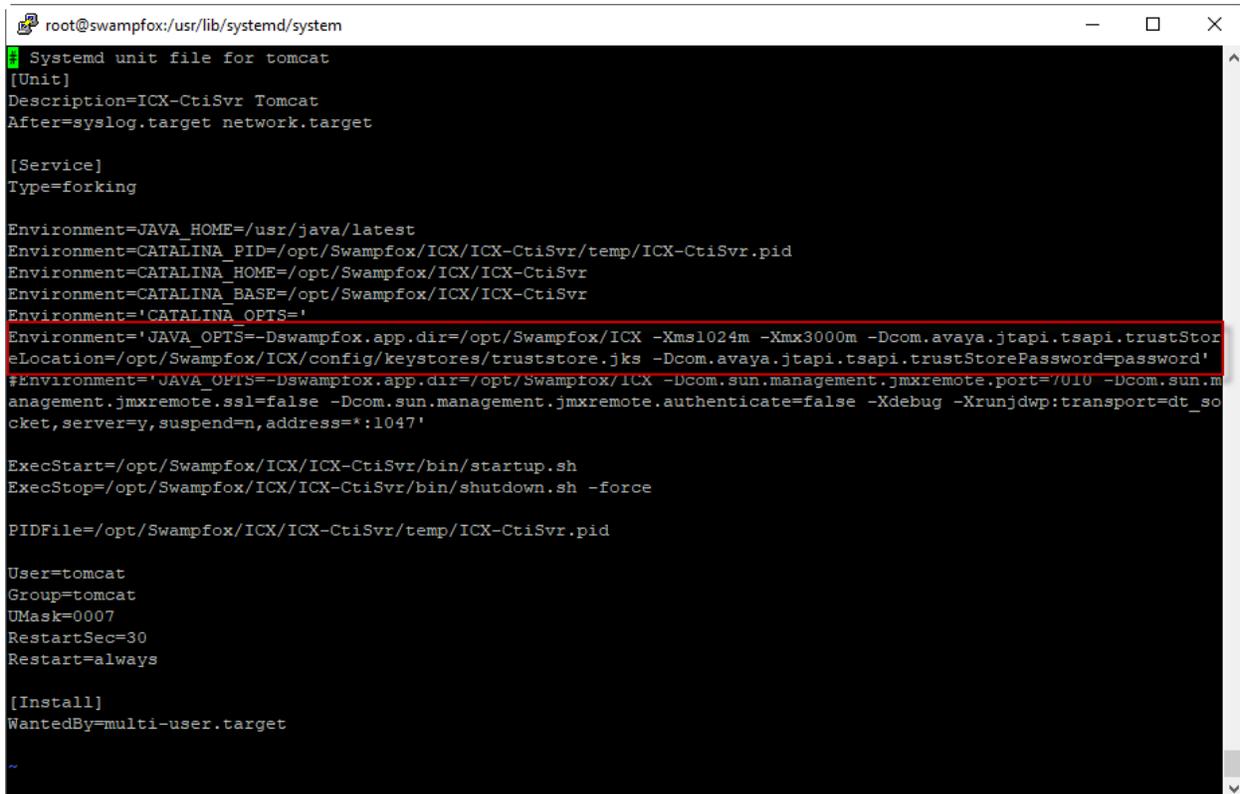
Swampfox ICX used an encrypted TSAPI link to Application Enablement Services. This required storing the root CA certificate in the keystores directory on the Swampfox ICX server as shown below. The keystores directory was

`/opt/Swampfox/ICX/config/keystores` and the certificate was `SystemManagerCA.pem`. For the compliance test, System Manager was the Certificate Authority.



```
root@swampfox:/opt/Swampfox/ICX/config/keystores
[root@swampfox keystores]# pwd
/opt/Swampfox/ICX/config/keystores
[root@swampfox keystores]#
[root@swampfox keystores]# ls -l
total 24
-rw-r--r--. 1 root  root  1224 Jun 27  2019 SystemManagerCA.pem
-rwxrwxr-x. 1 tomcat tomcat  846 Sep 12 10:45 tomcatHttps.cer
-rwxr-xr-x. 1 root  root    846 Sep 12 10:47 tomcatHttps.crt
-rwxrwxr-x. 1 tomcat tomcat 1089 Sep 12 10:45 tomcatHttps.csr
-rwxrwxr-x. 1 tomcat tomcat 2706 Sep 12 10:45 tomcatHttps.jks
-rwxrwxr-x. 1 tomcat tomcat 2198 Sep 13 11:10 truststore.jks
[root@swampfox keystores]#
```

The `/usr/lib/systemd/system/ICX-CtiSrv.service` file had to be modified to point to the keystore location of the certificate as shown below.



```
root@swampfox:/usr/lib/systemd/system
Systemd unit file for tomcat
[Unit]
Description=ICX-CtiSvr Tomcat
After=syslog.target network.target

[Service]
Type=forking

Environment=JAVA_HOME=/usr/java/latest
Environment=CATALINA_PID=/opt/Swampfox/ICX/ICX-CtiSvr/temp/ICX-CtiSvr.pid
Environment=CATALINA_HOME=/opt/Swampfox/ICX/ICX-CtiSvr
Environment=CATALINA_BASE=/opt/Swampfox/ICX/ICX-CtiSvr
Environment='CATALINA_OPTS='
Environment='JAVA_OPTS=-Dswampfox.app.dir=/opt/Swampfox/ICX -Xms1024m -Xmx3000m -Dcom.avaya.jtapi.tsapi.trustStoreLocation=/opt/Swampfox/ICX/config/keystores/truststore.jks -Dcom.avaya.jtapi.tsapi.trustStorePassword=password'
#Environment='JAVA_OPTS=-Dswampfox.app.dir=/opt/Swampfox/ICX -Dcom.sun.management.jmxremote.port=7010 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false -Xdebug -Xrunjdwp:transport=dt_socket,server=y,suspend=n,address=:1047'

ExecStart=/opt/Swampfox/ICX/ICX-CtiSvr/bin/startup.sh
ExecStop=/opt/Swampfox/ICX/ICX-CtiSvr/bin/shutdown.sh -force

PIDFile=/opt/Swampfox/ICX/ICX-CtiSvr/temp/ICX-CtiSvr.pid

User=tomcat
Group=tomcat
UMask=0007
RestartSec=30
Restart=always

[Install]
WantedBy=multi-user.target
~
```

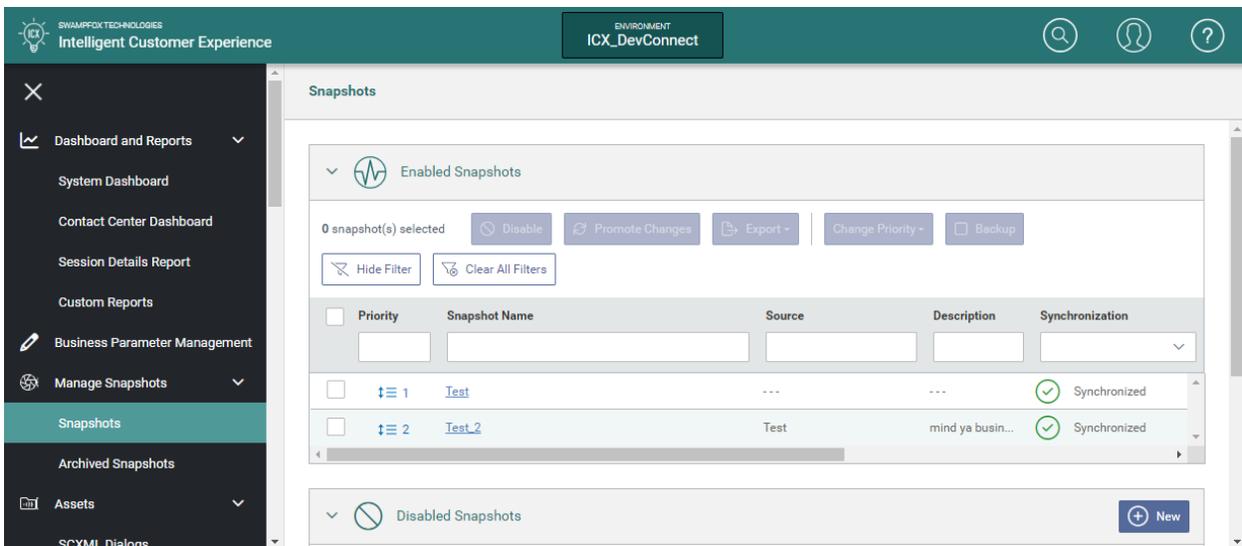
Lastly, for the changes to take effect, restart the following services.

```
root@swampfox:/opt/Swampfox/ICX/config/keystores
[root@swampfox keystores]# systemctl restart ICX-DrmSvr
[root@swampfox keystores]# systemctl restart ICX-CtiSvr
[root@swampfox keystores]#
```

### 8.3. Create Snapshots

A **Snapshot** contains its own Application Rules, Interaction Flows, and Functions, including Entries/Intents and Exits. Functions are the key collection of routing elements. The Function **Exit** specifies to which VDN and skill group to route the call and will be covered in **Section 8.4**.

From the ICX web interface, navigate to **Snapshots**. The configuration of the Snapshots is outside the scope of these Application Notes. For details on configuring Snapshots, refer to [4]. Click on an existing Snapshot (e.g., *Test*) to configure the VDNs and skill groups.



In **Managing Snapshot: Test**, select the **Functions** tab. For the compliance test, two functions were created for *sales* and *support*. To configure the VDNs and skills for Sales, click on the *sales* function.

The screenshot shows the Avaya DevConnect interface for managing a snapshot named 'Test'. The 'Functions' tab is selected under the 'CUSTOMER JOURNEY' section. The synchronization status is 'Synchronized'. A table lists the functions:

Function	Description	Function Group	Region
<a href="#">sales</a>	It's selling time	herebeFunctionGroup	South Carolina
<a href="#">support</a>	---	herebeFunctionGroup	South Carolina

Navigation and control elements include: '0 Functions selected', 'Duplicate', 'Delete', 'Hide Filter', 'Clear All Filters', 'New', and pagination '(Page 1 of 1) 1 25 rows/page'. 'Save' and 'Cancel' buttons are at the bottom.

## 8.4. Administer Transfer VDNs and Skills

This section covers the configuration of the transfer VDNs and skills used for this sample contact center and call flows. From the ICX web interface, navigate to **Snapshots** and click on a snapshot as mentioned above. In **Managing Snapshot**, select the **Functions** tab. For the compliance test, two functions were created for *sales* and *support*. To configure the VDNs and skills for Sales, click on the *sales* function. The same procedure would be performed for the *support* Function, except that the transfer VDNs and skills would be different.

The screenshot shows the ICX web interface for managing a snapshot named 'Test'. The interface includes a navigation menu on the left, a top header with the environment 'ICX\_DevConnect', and a main content area. The 'Functions' tab is selected under the 'CUSTOMER JOURNEY' section. The synchronization status is 'Synchronized'. A table lists the functions:

Function	Description	Function Group	Region
<input type="checkbox"/>			
<input type="checkbox"/> sales	It's selling time	herebeFunctionGroup	South Carolina
<input type="checkbox"/> support	---	herebeFunctionGroup	South Carolina

At the bottom of the page, there are 'Save' and 'Cancel' buttons.

In the **Function Properties** for *sales*, select the **Exits** tab. Exits specify where to route the call in a contact center. In this example, **Exits** are used to route calls to a transfer VDN that will connect the caller to a sales agent serving “Bronze” or “Gold” customers. The Exit for *salesBronze* is reviewed below.

The screenshot displays the 'Function Properties: Test > sales' interface. The 'Exits' tab is active, showing a table with the following data:

Exit	Description	Channel	Request Type
<a href="#">salesBronze</a>	---	CALL	Generic
<a href="#">salesGold</a>	---	CALL	Generic

Additional interface elements include a sidebar with navigation options like 'Dashboard and Reports', 'Business Parameter Management', and 'Snapshots'. The top header shows 'SWAMPFOX TECHNOLOGIES Intelligent Customer Experience' and 'ENVIRONMENT ICX\_DevConnect'. The main content area includes a 'New +' button, 'Duplicate' and 'Delete' actions, and a table with columns for 'Exit', 'Description', 'Channel', and 'Request Type'. The page number is 1 of 1, and the row count is 25 rows/page.

The Exit for “Bronze” customers was configured as follows. In the **Routing** section, configure the following parameters:

- **Transfer VDN/Service:** Set to the transfer VDN associated with “Bronze” customers (e.g., 77812) contacting sales. Refer to **Section 5.4.2** for the VDN list relevant to this example call flow.
- **Route Point:** Specify the route point configured for the CTI connection in **Section 8.2**.

In the **Skills and DRM-to-DRM Stats** section, configure the following parameters:

- **Identifier:** Specify skill group number for the Sales Bronze group (i.e., 82) in **Section 5.4.1**.
- **Skill Extension:** Specify skill group extension for the Sales Bronze group (i.e., 77802) in **Section 5.4.1**.

The screenshot shows the Avaya DevConnect application interface. The top header includes the logo for SwampFox Technologies and the environment name 'ICX\_DevConnect'. The main content area is titled 'Exit Properties: Test > sales > salesBronze' and has three tabs: 'General', 'Routing', and 'Overrides'. The 'Routing' tab is active, showing the following configuration:

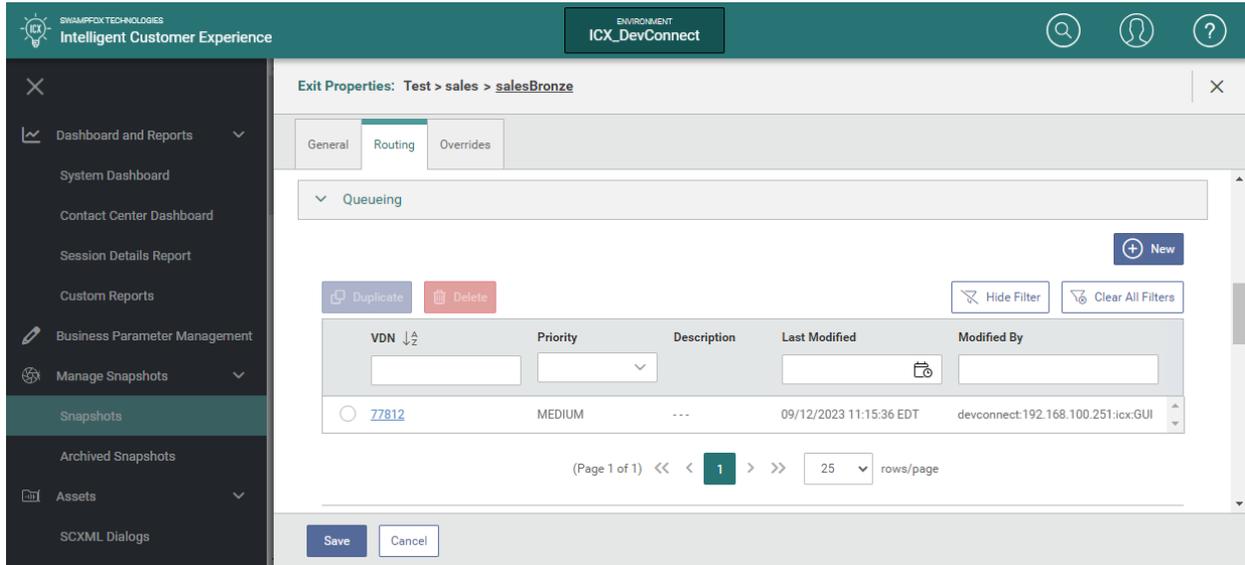
- Transfer VDN/Service:** 77812
- Route Point:** 2
- Callback Queue for Route Point:** None

Below the routing configuration, there is a section for 'Skills and DRM-to-DRM Stats'. The 'Enable DRM-to-DRM' checkbox is currently disabled. There are buttons for 'Duplicate', 'Delete', 'New', 'Hide Filter', and 'Clear All Filters'. A table displays the configuration for the skill group:

Identifier	Skill Extension	Description	Last Modified	Modified By
82	77802	...	09/12/2023 11:15:36 EDT	devconnect:192.168.100.251:icx:GUI

At the bottom of the table, there is a pagination control showing '(Page 1 of 1)' and '25 rows/page'. There are also 'Save' and 'Cancel' buttons at the bottom of the configuration area.

Scroll down to the **Queuing** section and configure the VDN for “Bronze” customers contacting Sales (i.e., 77812) in **Section 5.4.2**.



Repeat the procedure above to add an exit for “Gold” customers contacting Sales, but specify the appropriate **Transfer VDN** and **Skill Extension** for Sales “Gold” customers.

## 8.5. Administer Call Routing based on ANI or DNIS

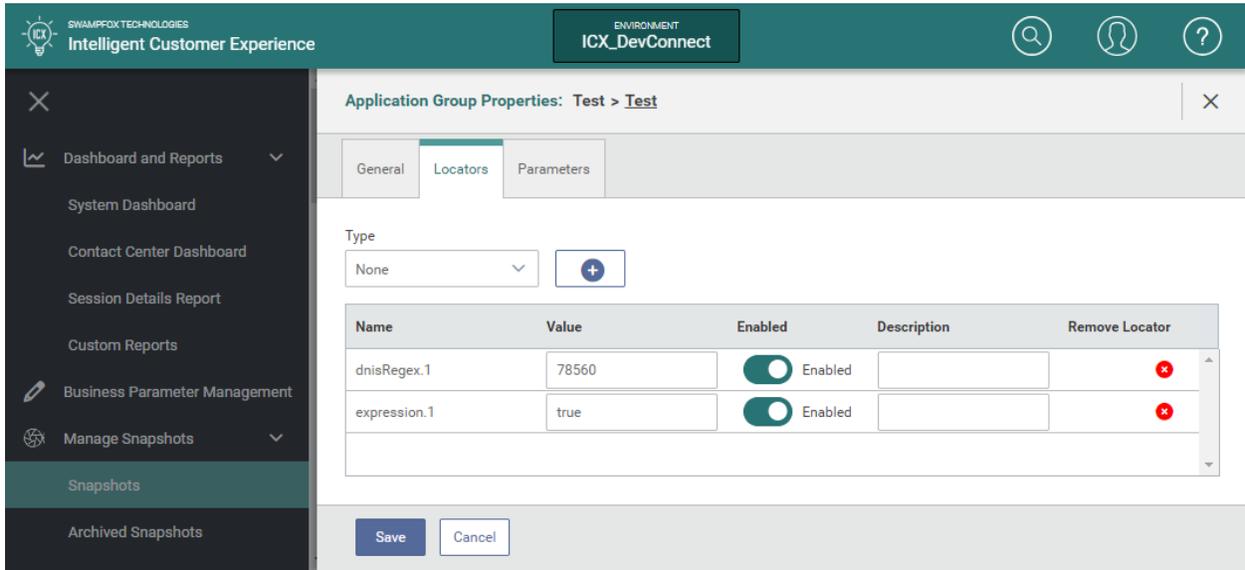
Incoming customer calls can be routed to appropriate agents/skills based on ANI or DNIS. For the compliance test, DNIS was used to route calls to specific snapshot. ANI was used to route calls to agents serving “Bronze” or “Gold” customers.

In the **Application Groups** tab within a **Snapshot** shown below, create a new Application Group (e.g., *Test*) and then click on it to specify whether to route calls based on ANI or DNIS.

The screenshot displays the Avaya DevConnect interface for managing a snapshot named "Test". The interface includes a sidebar with navigation options such as "Dashboard and Reports", "System Dashboard", "Contact Center Dashboard", "Session Details Report", "Custom Reports", "Business Parameter Management", "Manage Snapshots", "Snapshots", "Archived Snapshots", "Assets", "SCXML Dialogs", and "Global Announcement Sets". The main content area shows the "Application Groups" tab selected under the "CUSTOMER JOURNEY" section. The "Synchronization Status" is "Synchronized". A table lists application groups, with one group named "Test" visible. The table has columns for "Priority", "Application Group", "Enabled", "Locators", and "Resource". The "Test" group is enabled and has a locator expression "DNIS: 78560 Expression: true". The interface also includes a "New" button, "Duplicate", "Delete", "Hide Filter", and "Clear All Filters" buttons. The pagination shows "(Page 1 of 1)" and "25 rows/page".

Priority	Application Group	Enabled	Locators	Resource
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<a href="#">Test</a>	<input checked="" type="checkbox"/>	DNIS: 78560 Expression: true	

In **Application Groups Properties**, select the **Locators** tab as shown below. Add an entry that routes based on DNIS. In this example, the **Name** would be set to *dnisRegex.1* and **Value** would be set to match the dialed number (e.g., 78560). This would allow incoming calls with a matching DNIS to use this Snapshot. Alternatively, routing could also be based on ANI. For example, the **Name** would be set to *aniRegex.1* and **Value** would be an ANI, such as *17324441000*. For the compliance test, routing based on ANI was handled in one of the application scripts.



## 8.6. Promote Changes

Not all configuration changes take effect immediately. To push new data to Swampfox ICX server, promote the changes by clicking the **Promote Changes** button shown below.

The screenshot shows the Swampfox ICX DevConnect interface. The top navigation bar includes the Swampfox logo, the text 'Intelligent Customer Experience', and the environment name 'ENVIRONMENT ICX\_DevConnect'. A sidebar on the left contains navigation items such as 'Dashboard and Reports', 'System Dashboard', 'Contact Center Dashboard', 'Session Details Report', 'Custom Reports', 'Business Parameter Management', 'Manage Snapshots', 'Snapshots', 'Archived Snapshots', 'Assets', 'SCXML Dialogs', and 'Global Announcement Sets'. The main content area is titled 'Managing Snapshot: Test' and shows a 'Synchronization Status: Synchronized' with a 'Promote Changes' button. Below this, there are tabs for 'General', 'Ingress Rules', 'Application Groups', 'Interaction Flows', 'Modules', 'Entries/Intents', 'Functions', and 'Exits'. The 'Application Groups' tab is active, displaying a table with columns for 'Priority', 'Application Group', 'Enabled', and 'Locators'. A single row is visible with 'Test' as the Application Group and 'DNIS: 78560' as the Locator. A 'Promote Changes' button is located at the top right of the main content area.

## Swampfox Dynamic Route Manager



The screenshot shows the Swampfox Dynamic Route Manager interface. The top navigation bar includes 'Dashboard', 'Routing Rules', 'Scripting Resources', 'Recordings', 'Vectors', 'Staging', and 'Settings'. The main area shows a 'DRM Server Status' table and a 'Snapshot Status' table. The 'DRM Server Status' table has columns for 'Server', 'State', 'Health', 'Active Calls', 'Holding Calls', 'Rates (per minute)', 'WS Request', 'DRM Routing', and 'Databases'. The 'Snapshot Status' table has columns for 'Name', 'Regions', 'Entries', 'Functions', 'Exits', 'Call Rate (per minute)', 'Calls Today', and 'Status'. A 'Sync' button is highlighted for the 'DevConnect' snapshot, which is currently 'Out of sync!'.

DRM Server Status												
	Server	State	Health	Active Calls	Holding Calls	Rates (per minute)				WS Request	DRM Routing	Databases
						Received	Routed	Delivered	Other			
II	SWAMPFOX	RUNNING	HEALTHY	0.000	0.000	0.049	0.171	0.099	0.000	0.000	17.178	1.68

Last Updated 03/29/2021 12:14:26 PM

Snapshot Status									
		Name	Regions	Entries	Functions	Exits	Call Rate (per minute)	Calls Today	Status
Manage	Sync	DevConnect	1	4	2	4	0.000	7	Out of sync!
Manage	Sync	DevConnectAcme	1	4	2	4	0.000	0	Synchronized

## 9. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services, Avaya Experience Portal, and Swampfox ICX.

### 9.1. Verify Avaya Aura® Communication Manager

On Communication Manager, verify the status of the AES connection using the **status aesvcs interface** command.

```
status aesvcs interface
```

AE SERVICES INTERFACE STATUS			
Local Node	Enabled?	Number of Connections	Status
procr	yes	1	<b>listening</b>

Verify communication between Communication Manager and AES using the **status aesvcs link** command.

```
status aesvcs link
```

AE SERVICES LINK STATUS						
Srvr/ Link	AE Services Server	Remote IP	Remote Port	Local Node	Msgs Sent	Msgs Rcvd
01/01	devcon-aes	10.64.102.119	61830	procr	<b>2007</b>	<b>2564</b>

Verify the status of the CTI link between Communication Manager and AES using the **status aesvcs cti-link** command. Verify the **Service State** is *established*.

```
status aesvcs cti-link
```

AE SERVICES CTI LINK STATUS						
CTI Link	Version	Mnt Busy	AE Services Server	Service State	Msgs Sent	Msgs Rcvd
1	12	no	devcon-aes	<b>established</b>	1850	1850

## 9.2. Verify Avaya Aura® Application Enablement Services

On Application Enablement Services Management Console, navigate to **Status** → **Status and Control** → **Switch Conn Summary**. Verify the Switch Connection to Communication Manager is *Talking* and *Online*.



### Application Enablement Services

Management Console

Welcome: User cust  
 Last login: Fri Sep 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
 Number of prior failed login attempts: 0  
 HostName/IP: devcon-aes/10.64.102.119  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.3.1.0.49-0  
 Server Date and Time: Fri Sep 15 11:37:09 EDT 2023  
 HA Status: Not Configured

Status | Status and Control | Switch Conn 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

#### Switch Connections Summary

Enable page refresh every  seconds

	Switch Conn	Conn State	Processor Ethernet	Since	Online/Offline	Active/Standby/Admin'd AEP Conns	Num of TCI Conns	SSL	Msgs To Switch	Msgs From Switch	Msg Period
<input checked="" type="radio"/>	devcon	Talking	Yes	Wed Sep 13 09:59:47 2023	Online	1 / 0 / 1	2	Enabled	2603	2042	30

Navigate to **Status** → **Status and Control** → **TSAPI Service Summary** in the left pane. Verify the TSAPI link is *Talking* and *Online*.

Welcome: User cust  
 Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
 Number of prior failed login attempts: 0  
 HostName/IP: devcon-aes/10.64.102.119  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.3.1.0.49-0  
 Server Date and Time: Fri Sep 15 11:38:17 EDT 2023  
 HA Status: Not Configured

**AVAYA Application Enablement Services Management Console**

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

Left Pane: Status and Control → TSAPI Service Summary

TSAPI Link Details

Enable page refresh every 60 seconds

Link	Switch Name	Switch CTI Link ID	Status	Since	State	Switch Version	Associations	Msgs to Switch	Msgs from Switch	Msgs Period
1	devcon	1	Talking	Wed Sep 13 09:59:48 2023	Online	20	8	1847	1847	30

Online Offline

For service-wide information, choose one of the following:  
 TSAPI Service Status TLink Status User Status

Continuing from above, select **User Status**. Verify the swampfox user is connected to Application Enablement Services.

Welcome: User cust  
 Last login: Fri Sept 15 11:17:15 E.S.T. 2023 from 192.168.100.250  
 Number of prior failed login attempts: 0  
 HostName/IP: devcon-aes/10.64.102.119  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.3.1.0.49-0  
 Server Date and Time: Fri Sep 15 11:39:19 EDT 2023  
 HA Status: Not Configured

**AVAYA Application Enablement Services Management Console**

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

Left Pane: Status and Control → TSAPI Service Summary

CTI User Status

Enable page refresh every 60 seconds

CTI Users: All Users Submit

Open Streams 3  
 Closed Streams 5

Open Streams

Name	Time Opened	Time Closed	Tlink Name
swampfox	Thu 14 Sep 2023 03:24:38 PM EDT		AVAYA#DEVCON#CSTA-S#DEVCON-AES
DMCCLCSUserDoNotModify	Wed 13 Sep 2023 10:01:15 AM EDT		AVAYA#DEVCON#CSTA#DEVCON-AES
DMCCLCSUserDoNotModify	Wed 13 Sep 2023 10:01:15 AM EDT		AVAYA#DEVCON#CSTA#DEVCON-AES

Show Closed Streams Close All Opened Streams Back

### 9.3. Verify Swampfox ICX

Verify that **Contact Center Dashboard** reflects the accurate agent states as shown below.

The screenshot displays the 'Contact Center Dashboard' interface. The top navigation bar includes the logo 'SWAMPFOX TECHNOLOGIES Intelligent Customer Experience' and the environment 'ENVIRONMENT ICX\_DevConnect'. A left sidebar contains various menu items, with 'Contact Center Dashboard' selected. The main content area shows the 'Realtime Function Summary' tab. It includes a 'Last Refresh' timestamp of '9/13/2023, 4:04:48 PM EDT' and a 'Freeze' checkbox. Below this is a 'Filter By' section with input fields for Function Group, Function, Region, Exit, and Channel, along with an 'Action' field and a 'Transfer Point' field. A 'Clear Filters' button is also present. The main data is presented in a table with the following structure:

Region	Exits	Status	EWT	Agents Avail.	Staffed	In Queue	Serviced	Action
SC	2		0:00	0	2	1	0	
SC	salesBronze	OPEN	0:08	0	1	1	0	77812
SC	salesGold	OPEN	0:00	0	1	0	0	77811

At the bottom of the table, there is a pagination control showing '(Page 1 of 1)' and '25 rows/page'.

Place a call to the Swampfox ICX application on Experience Portal and route the call to an agent. Verify in the Swampfox ICX reports that the call was handled as expected. Navigate to **Session Details Report** and then click **Build Report** to generate a report with recent call log.

The screenshot displays the Swampfox ICX application interface. The top header shows 'SWAMPFOX TECHNOLOGIES Intelligent Customer Experience' and 'ENVIRONMENT ICX\_DevConnect'. The left sidebar contains navigation options such as 'Dashboard and Reports', 'System Dashboard', 'Contact Center Dashboard', 'Session Details Report', 'Custom Reports', 'Business Parameter Management', 'Manage Snapshots', 'Snapshots', 'Archived Snapshots', 'Assets', 'SCXML Dialogs', 'Global Announcement Sets', 'Recordings', 'Scripts', 'Contact Center Management', and 'Route Points'. The main content area is titled 'Session Details Report' and features filters for 'Time' (Last 15 Minutes), 'Only Completed Calls' (Disabled), 'Snapshot' (-Select One or More), and 'More Filters...'. Below the filters are 'Build Report' and 'Reset Filters' buttons. The 'Search Results' section shows '19 Records Found' and includes 'Export' and 'Columns' buttons. A table displays the following data:

	Receive Time	UCID	Entry/Intent	DNIS	ANI	Function	Request Type
Details	09/13/2023 16:18:22 EDT	00027141361694 657902	supportEntry	78560	17324441000	support	Generic
Details	09/13/2023 16:17:44 EDT	000271413331694 657864	supportEntry	78560	17324441001	support	Generic
Details	09/13/2023 16:17:03 EDT	00027141301694 657822	supportEntry	78560	78002	support	Generic
Details	09/13/2023 16:15:24 EDT	00027141101694 657723	salesEntry	78560	17324441000	sales	Generic
Details	09/13/2023 16:11:10 EDT	00027140921694 657469	salesEntry	78560	78002	sales	Generic
Details	09/13/2023 16:10:39 EDT	00027140911694 657439		78560	17324441000		

## 10. Conclusion

These Application Notes describe the steps required to integrate Swampfox ICX with Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services, and Avaya Experience Portal. Customer calls were routed to the appropriate agents/skill groups based on the ANI or DNIS by Swampfox ICX. All tests passed.

## 11. Additional References

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

- [1] *Administering Avaya Aura® Communication Manager*, Release 10.1.x, Issue 6, June 2023, available at <http://support.avaya.com>.
- [2] *Administering Avaya Aura® Application Enablement Services*, Release 10.1.x, Issue 8, August 2023, available at <http://support.avaya.com>.
- [3] *Administering Avaya Experience Portal*, Release 8.1.2, Issue 1, October 2022, available at <http://support.avaya.com>.
- [4] *Swampfox Intelligent Customer Experience User Support Manual*, Version 4.0, available from Swampfox.

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