



## Avaya Solution & Interoperability Test Lab

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# Application Notes for Spok Console, utilizing Spok CTI Layer, with Avaya Aura® Communication Manager and Avaya Aura® Application Enablement Services - Issue 1.0

### Abstract

These Application Notes describe a compliance-tested configuration comprised of Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services, Avaya IP and Digital Telephones, and Spok Console desktop applications.

Spok Console allows a user to operate a physical telephone and view call and telephone display information through a graphical user interface (GUI). Spok Console integrates with Spok CTI Layer, which is a middleware between Spok Console and Avaya Aura® Application Enablement Services, to control and monitor phone states.

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 a compliance-tested configuration comprised of Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services, Avaya IP and Digital Telephones, and Spok Console applications.

Spok Console is a Windows-based attendant console application. Spok Console allows a user to operate a physical telephone and view call and telephone display information through a graphical user interface (GUI). Spok Console integrates with Spok CTI Layer, which is a middleware between Spok Console and Application Enablement Services, to control and monitor phone states.

It is the Spok CTI Layer service that actually uses the Application Enablement Services Device and Media Call Control (DMCC) Application Programming Interface (API) to share control of and monitor a physical telephone and receive the same terminal and first party call information received by the physical telephone. Spok Console in turn uses the Spok CTI Layer service to control and monitor a physical telephone. The Smart Console applications regularly provide the Database server with call and lamp state information concerning the controlled telephones.

## 2. General Test Approach and Test Results

The general approach was to exercise basic telephone and call operations on Avaya IP and Digital telephones using the aforementioned Spok desktop application. The main objectives were to verify that:

- The user may successfully use Smart Console to perform off-hook, on-hook, dial, answer, hold, retrieve, transfer, conference, and release operations on the physical telephone.
- The agent user may successfully use Smart Console to log into and out of an ACD, and move between agent work modes.
- Manual operations performed on the physical telephone are correctly reflected in the Smart Console GUI.
- Smart Console and manual telephone operations may be used interchangeably; for example, go off-hook using Smart Console and manually dial digits.
- Display and call information on the physical telephone is accurately reflected in the Smart Console GUI.
- Call states are consistent between Smart Console and the physical telephone.

For serviceability testing, failures such as cable pulls and resets were applied. All test cases passed.

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 features and serviceability. The focus of the compliance test was primarily on verifying the interoperability between Spok Console, Application Enablement Services, and Communication Manager.

## **2.2. Test Results**

All test cases were executed and passed with the exception of the following observation.

During a scenario where the network connection from Spok Console is lost, the CTI service on Spok Console needed to be manually restarted to register the DMCC station again.

## **2.3. Support**

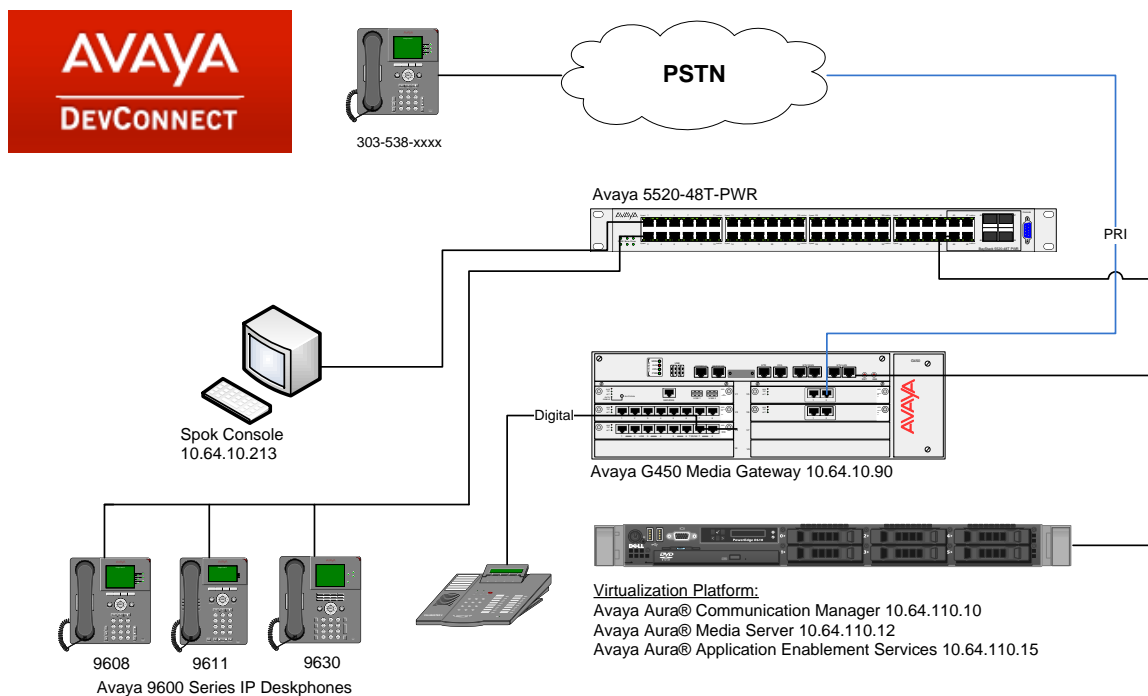
Technical support for the Spok Console solution can be obtained by contacting Spok:

- URL – <http://www.spok.com>
- Phone – (888) 797-7487

### 3. Reference Configuration

**Figure 1** illustrates the configuration used in these Application Notes. The sample configuration shows an enterprise with an Application Enablement Services, Communication Manager, Media Server with an Avaya G450 Media Gateway. Spok Console is configured to be in the same network as the enterprise. Endpoints include Avaya 9600 Series H.323 IP and Digital Telephones.

**Note:** Basic administration of Communication Manager and Application Enablement Services server is assumed. For details, see [1] and [2].



**Figure 1: Spok Console Test Configuration**

## 4. Equipment and Software Validated

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

| Equipment                                   |                        | Software/Firmware        |
|---|------------------------|--------------------------|
| Avaya Aura® Communication Manager           |                        | R017x.00.0.441.0 – 23012 |
| Avaya Aura® Application Enablement Services |                        | 7.0.1.0.2.15-0           |
| Avaya Aura® Media Server                    |                        | 7.7.0.334 A15            |
| Avaya G450 Media Gateway                    |                        | 37.19.0                  |
| Avaya 9600 Series IP Telephones             |                        |                          |
|   | 9641/9611/9608 (H.323) | 6.6.2                    |
|   | 9630 (H.323)           | 3.2.6                    |
| Spok CTI Layer                              |                        | 5.9.112.112              |
| Spok Console                                |                        | 7.8.100                  |

## 5. Configure Avaya Aura® Communication Manager

This section describes the procedures for configuring IP Services, Feature Access Codes, Abbreviated Dialing, and controlled telephones.

### 5.1. Configure IP Services

Enter the **change node-names ip** command. In the compliance-tested configuration, the **procr** IP address was used for registering H.323 endpoints, and for connectivity to Application Enablement Services.

| change node-names ip |                     | Page 1 of 2 |
|----------------------|---------------------|-------------|
| IP NODE NAMES        |                     |             |
| Name                 | IP Address          |             |
| acms                 | 10.64.110.18        |             |
| aes                  | 10.64.110.15        |             |
| ams                  | 10.64.110.16        |             |
| asm                  | 10.64.110.13        |             |
| biscom               | 10.64.101.152       |             |
| cms17                | 10.64.10.85         |             |
| default              | 0.0.0.0             |             |
| egw1                 | 10.64.110.200       |             |
| egw2                 | 10.64.110.201       |             |
| <b>procr</b>         | <b>10.64.110.10</b> |             |
| procr6               | ::                  |             |

Enter the **change ip-services** command. On **Page 1**, configure the Service Type field to **AESVCS** and the Enabled field to **y**. The Local Node field should be pointed to the **procr** that was configured previously in the IP NODE NAMES form in this section. During the compliance test, the default port was used for the Local Port field.

| change ip-services |             | Page 1 of 3  |
|--------------------|-------------|--------------|
| IP SERVICES        |             |              |
| Service Type       | Enabled     | Local Node   |
| <b>AESVCS</b>      | <b>y</b>    | <b>procr</b> |
| Local Port         | Remote Node | Remote Port  |
| <b>8765</b>        |             |              |

On **Page 4**, enter the hostname of the Application Enablement Services server for the AE Services Server field. The server name may be obtained by logging in to the Application Enablement Services server using ssh, and running the command **uname -a**. Enter an alphanumeric password for the Password field. Set the Enabled field to **y**. The same password will be configured on the Application Enablement Services server in **Section 6.2**.

| change ip-services         |                    | Page 3 of 3 |
|----------------------------|--------------------|-------------|
| AE Services Administration |                    |             |
| Server ID                  | AE Services Server | Password    |
| <b>1:</b>                  | <b>aes</b>         | <b>*</b>    |
| <b>2:</b>                  |                    |             |
| Enabled                    | Status             |             |
| <b>y</b>                   | <b>idle</b>        |             |

## 5.2. Configure Feature Access Codes (FAC)

Enter the **change feature-access-codes** command. On **Page 1** of the FEATURE ACCESS CODE (FAC) form, verify the Auto Route Selection (ARS) – Access Code 1 field is set to **9**.

| change feature-access-codes                      |  |  | Page 1 of 11      |  |  |
|--|--|--|-------------------|--|--|
| FEATURE ACCESS CODE (FAC)                        |  |  |                   |  |  |
| Abbreviated Dialing List1 Access Code:           |  |  |                   |  |  |
| Abbreviated Dialing List2 Access Code:           |  |  |                   |  |  |
| Abbreviated Dialing List3 Access Code:           |  |  |                   |  |  |
| Abbreviated Dial - Prgm Group List Access Code:  |  |  |                   |  |  |
| Announcement Access Code:                        |  |  |                   |  |  |
| Answer Back Access Code: #25                     |  |  |                   |  |  |
| Attendant Access Code:                           |  |  |                   |  |  |
| Auto Alternate Routing (AAR) Access Code: 8      |  |  |                   |  |  |
| Auto Route Selection (ARS) - Access Code 1: 9    |  |  | Access Code 2:    |  |  |
| Automatic Callback Activation:                   |  |  | Deactivation:     |  |  |
| Call Forwarding Activation Busy/DA: *97 All: *99 |  |  | Deactivation: *98 |  |  |

## 5.3. Configure Dialplan

Enter the **change dialplan analysis** command. Create a single digit dial string with 9 and associate it with **Feature Access Code (fac)**.

| change dialplan analysis |              |           |               |              |           | Page 1 of 12    |              |           |
|--------------------------|--------------|-----------|---------------|--------------|-----------|-----------------|--------------|-----------|
| DIAL PLAN ANALYSIS TABLE |              |           |               |              |           |                 |              |           |
| Location: all            |              |           |               |              |           | Percent Full: 1 |              |           |
| Dialed String            | Total Length | Call Type | Dialed String | Total Length | Call Type | Dialed String   | Total Length | Call Type |
| 1                        | 3            | dac       |               |              |           |                 |              |           |
| 1                        | 4            | ext       |               |              |           |                 |              |           |
| 1                        | 5            | ext       |               |              |           |                 |              |           |
| 3                        | 10           | ext       |               |              |           |                 |              |           |
| 8                        | 1            | fac       |               |              |           |                 |              |           |
| 9                        | 1            | fac       |               |              |           |                 |              |           |
| *                        | 3            | dac       |               |              |           |                 |              |           |
| #                        | 3            | dac       |               |              |           |                 |              |           |

## 5.4. Configure Hunt Group

Enter the **add hunt-group n** command, where **n** is an unused hunt group number. On **Page 1** of the HUNT GROUP form, assign a descriptive Group Name and Group Extension valid in the provisioned dial plan.

|                          |       |                           |  |
|--------------------------|-------|---------------------------|--|
| add hunt-group 1         |       | Page 1 of 4               |  |
| HUNT GROUP               |       |                           |  |
| Group Number: 1          |       | ACD? y                    |  |
| Group Name: Hunt Group 1 |       | Queue? y                  |  |
| Group Extension: 12001   |       | Vector? y                 |  |
| Group Type: ucd-mia      |       |                           |  |
| TN: 1                    |       |                           |  |
| COR: 1                   |       | MM Early Answer? n        |  |
| Security Code:           |       | Local Agent Preference? n |  |
| ISDN/SIP Caller Display: |       |                           |  |
| Queue Limit: unlimited   |       |                           |  |
| Calls Warning Threshold: | Port: |                           |  |
| Time Warning Threshold:  | Port: |                           |  |

## 5.5. Configure Abbreviated Dialing

Enter the **add abbreviated-dialing system** command. In the **DIAL CODE** list, enter the Feature Access Codes for ACD Login and Logout.

|                                   |  |                        |         |
|-----------------------------------|--|------------------------|---------|
| change abbreviated-dialing system |  | Page 1 of 1            |         |
| ABBREVIATED DIALING LIST          |  |                        |         |
| SYSTEM LIST                       |  |                        |         |
| Size (multiple of 5): 5           | Privileged? n                              | Label Language:english |         |
| DIAL CODE                         | LABELS (FOR STATIONS THAT DOWNLOAD LABELS) |                        |         |
| 01: *01                           |  | 01:                    | Log-in  |
| 02: *06                           |  | 02:                    | Log-out |
| 03:                               |  | 03:                    | *****   |
| 04:                               |  | 04:                    | *****   |
| 05:                               |  | 05:                    | *****   |



## 5.6. Configure Controlled Telephones

Enter the **change station r** command, where **r** is the extension of a registered, physical Avaya IP or Digital telephone. On **Page 1** of the **station** form, enter a phone Type, descriptive name, Security Code and set IP SoftPhone field to **y** to allow the physical station to be controlled by a softphone such as the Spok Console application.

|                             |  |                    |
|-----------------------------|--|--------------------|
| <b>change station 11054</b> |  | <b>Page 1 of 5</b> |
| STATION                     |  |                    |
| Extension: 11054            | Lock Messages? n                             | BCC: 0             |
| <b>Type: 9630</b>           | <b>Security Code: 123456</b>                 | TN: 1              |
| Port: S00088                | Coverage Path 1:                             | COR: 1             |
| <b>Name: Spok Console</b>   | Coverage Path 2:                             | COS: 1             |
|                             | Hunt-to Station:                             | Tests? y           |
| STATION OPTIONS             |  |                    |
| Location:                   | Time of Day Lock Table:                      |                    |
| Loss Group: 19              | Personalized Ringing Pattern: 1              |                    |
|                             | Message Lamp Ext: 11054                      |                    |
| Speakerphone: 2-way         | Mute Button Enabled? y                       |                    |
| Display Language: english   | Button Modules: 0                            |                    |
| Survivable GK Node Name:    |  |                    |
| Survivable COR: internal    | Media Complex Ext:                           |                    |
| Survivable Trunk Dest? y    | IP SoftPhone? y                              |                    |
|                             | IP Video Softphone? n                        |                    |
|                             | Short/Prefixed Registration Allowed: default |                    |
|                             | Customizable Labels? y                       |                    |

On **Page 4** of the station form, for **ABBREVIATED DIALING List 1**, enter the abbreviated dialing group configured in previous section. On **Pages 4** and **5** of the station forms, configure the following **BUTTON ASSIGNMENTS** in addition to the call-appr (call appearance) buttons as shown below:

|                              |                |                    |
|------------------------------|----------------|--------------------|
| <b>change station 11054</b>  | <b>STATION</b> | <b>Page 4 of 5</b> |
| <b>SITE DATA</b>             |                |                    |
| Room:                        |                | Headset? n         |
| Jack:                        |                | Speaker? n         |
| Cable:                       |                | Mounting: d        |
| Floor:                       |                | Cord Length: 0     |
| Building:                    |                | Set Color:         |
| <b>ABBREVIATED DIALING</b>   |                |                    |
| <b>List1: system</b>         | List2:         | List3:             |
| <b>BUTTON ASSIGNMENTS</b>    |                |                    |
| 1: call-appr                 | 5: brdg-appr   | B:1 E:11011        |
| 2:                           | 6: brdg-appr   | B:2 E:11011        |
| 3: brdg-appr B:1 E:11010     | 7: auto-in     | Grp:               |
| 4: brdg-appr B:2 E:11010     | 8: aux-work    | RC: Grp:           |
| voice-mail                   |                |                    |
| <b>change station 11054</b>  | <b>STATION</b> | <b>Page 5 of 5</b> |
| <b>BUTTON ASSIGNMENTS</b>    |                |                    |
| 9: abrv-dial List: 1 DC: 01  |                |                    |
| 10: abrv-dial List: 1 DC: 02 |                |                    |
| 11:                          |                |                    |
| 12:                          |                |                    |
| 13:                          |                |                    |
| 14:                          |                |                    |
| 15:                          |                |                    |
| 16:                          |                |                    |
| 17:                          |                |                    |
| 18:                          |                |                    |
| 19:                          |                |                    |
| 20:                          |                |                    |
| 21:                          |                |                    |
| 22:                          |                |                    |
| 23: togle-swap               |                |                    |
| 24: release                  |                |                    |

**Note:** For Spok Console customers, the Toggle Swap Feature is not supported on Avaya 9621G and Avaya 9641G Deskphones.

Repeat the instructions provided in this section for each physical station that is to be controlled / monitored by the Spok CTI Layer.

## 6. Configure Application Enablement Services

The Application Enablement Services server enables Computer Telephony Interface (CTI) applications to control and monitor telephony resources on Communication Manager.

This section assumes that installation and basic administration of the Application Enablement Services server has been performed. The steps in this section describe the configuration of a Switch Connection, a CTI user, a DMCC port.

### 6.1. Device and Media Call Control API Station Licenses

The Spok Console Service instances appear as “virtual” stations/softphones to Communication Manager. Each of these virtual stations, hereafter called Device and Media Call Control API station, requires a license. Note that this is separate and independent of Avaya IP Softphone licenses, which are required for Avaya IP Softphones but not required for Device and Media Call Control API stations. To check and verify that there are sufficient DMCC licenses, log in to <https://<IP address of the Application Enablement Services server>/index.jsp>, and enter appropriate login credentials to access the Application Enablement Services Management Console page.

Select the **Licensing → WebLM Server Access** link from the left pane of the window (not shown). During the compliance testing, Avaya Aura System Manager was used as a license server.

Provide appropriate login credentials and log in.

AVAYA  
Aura System Manager 7.0

Recommended access to System Manager is via FQDN.  
[Go to central login for Single Sign-On](#)

If IP address access is your only option, then note that authentication will fail in the following cases:

- First time login with "admin" account
- Expired/Reset passwords

Use the "Change Password" hyperlink on this page to change the password manually, and then login.

Also note that single sign-on between servers in

User ID:

Password:

[Change Password](#)

**Supported Browsers:** Internet Explorer 9.x, 10.x or 11.x or Firefox 36.0, 37.0 and 38.0.

Navigate to **Home → Licenses**. On the WebLM Home page, select **License Products → Application\_Enablement** link from the left pane of the window.

On the Licensed Features page, verify that there are sufficient DMCC licenses.

**Note:** TSAPI licenses (1 per agent station) are also required if calls routed to agent stations via ACD. Without TSAPI licenses, the agents will not see the First Party Call Control (1PCC) calling party information. i.e., Calling Party Number.

**Application Enablement (CTI) - Release: 7 - SID: 10503000** Standard

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

License installed on: November 6, 2015 10:28:17 AM -06:00

**License File Host IDs:** V8-8F-D4-3A-49-C6

**Licensed Features**

13 Items Show All

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

## 6.2. Configure Switch Connection

Launch a web browser, enter <https://<IP address of the Application Enablement Services server>> in the address field, and log in with the appropriate credentials for accessing the Application Enablement Services Management Console pages.

The screenshot shows the login page of the Application Enablement Services Management Console. At the top left is the AVAYA logo. To its right is the text "Application Enablement Services Management Console". A red horizontal bar at the top right contains a "Help" link. In the center, there is a login box with the text "Please login here:" followed by a "Username" label and a text input field. Below the input field is a "Continue" button. At the bottom, a red horizontal bar contains the copyright notice: "Copyright © 2009-2016 Avaya Inc. All Rights Reserved."

Click on **Communication Manager Interface** → **Switch Connection** in the left pane to invoke the Switch Connections page. A Switch Connection defines a connection between the Application Enablement Services and Communication Manager. Enter a descriptive name for the switch connection and click on **Add Connection**.

The screenshot shows the "Switch Connections" page in the Application Enablement Services Management Console. The top header includes the AVAYA logo, "Application Enablement Services Management Console", and a welcome message for user "cust" with login details. A red navigation bar at the top contains "Communication Manager Interface | Switch Connections" and links for "Home | Help | Logout". On the left is a sidebar menu with "AE Services", "Communication Manager Interface" (expanded), "Switch Connections" (highlighted), "Dial Plan", "High Availability", "Licensing", and "Maintenance". The main content area is titled "Switch Connections" and features a text input field containing "acm" and an "Add Connection" button. Below this is a table with the following data:

| Connection Name | Processor Ethernet | Msg Period | Number of Active Connections |
|-----------------|--------------------|------------|------------------------------|
| acm             | Yes                | 30         | 1                            |

At the bottom of the table are buttons for "Edit Connection", "Edit PE/CLAN IPs", "Edit H.323 Gatekeeper", "Delete Connection", and "Survivability Hierarchy".

The next window that appears prompts for the **Switch Password**. Enter the same password that was administered in Communication Manager in **Section 5.1**. Check box for **Processor Ethernet**. Click on **Apply**.

Welcome! User: cust  
 Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
 Number of prior failed login attempts: 0  
 HostName/IP: aes/10.64.110.15  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 7.0.1.0.2.15-0  
 Server Date and Time: Wed Jul 27 15:30:02 MDT 2016  
 HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

AE Services  
 Communication Manager Interface  
 Switch Connections  
 Dial Plan  
 High Availability  
 Licensing  
 Maintenance  
 Networking  
 Security  
 Status

Connection Details - acm

Switch Password: [password field]  
 Confirm Switch Password: [password field]  
 Msg Period: 30 Minutes (1 - 72)  
 Provide AE Services certificate to switch: ☐  
 Secure H323 Connection: ☐  
 Processor Ethernet: ☒  
 Apply Cancel

After returning to the Switch Connections page, select the radio button corresponding to the switch connection added previously, and click on **Edit PE/CLAN IPs**.

Welcome! User: cust  
 Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
 Number of prior failed login attempts: 0  
 HostName/IP: aes/10.64.110.15  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 7.0.1.0.2.15-0  
 Server Date and Time: Wed Jul 27 15:30:59 MDT 2016  
 HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

AE Services  
 Communication Manager Interface  
 Switch Connections  
 Dial Plan  
 High Availability  
 Licensing  
 Maintenance  
 Networking  
 Security  
 Status

Switch Connections

[text field] Add Connection

| Connection Name                      | Processor Ethernet | Msg Period | Number of Active Connections |
|--------------------------------------|--------------------|------------|------------------------------|
| <input checked="" type="radio"/> acm | Yes                | 30         | 1                            |

Edit Connection Edit PE/CLAN IPs Edit H.323 Gatekeeper Delete Connection Survivability Hierarchy

Enter the IP address of Procr used for Application Enablement Services connectivity from **Section 5.1**, and click on **Add Name or IP**.



AVAYA Application Enablement Services Management Console

Welcome! User: cust  
Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
Number of prior failed login attempts: 0  
HostName/IP: aes/10.64.110.15  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 7.0.1.0.2.15-0  
Server Date and Time: Wed Jul 27 15:33:53 MDT 2016  
HA Status: Not Configured

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 - acm

10.64.110.10 Add/Edit Name or IP

| Name or IP Address | Status |
|--------------------|--------|
| 10.64.110.10       | In Use |

Back

After returning to the Switch Connections page, select the radio button corresponding to the switch connection added previously, and click on the **Edit H.323 Gatekeeper** button.



AVAYA Application Enablement Services Management Console

Welcome! User: cust  
Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
Number of prior failed login attempts: 0  
HostName/IP: aes/10.64.110.15  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 7.0.1.0.2.15-0  
Server Date and Time: Wed Jul 27 15:34:51 MDT 2016  
HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

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


Switch Connections

Add Connection

| Connection Name                      | Processor Ethernet | Msg Period | Number of Active Connections |
|--------------------------------------|--------------------|------------|------------------------------|
| <input checked="" type="radio"/> acm | Yes                | 30         | 1                            |

Edit Connection Edit PE/CLAN IPs Edit H.323 Gatekeeper Delete Connection Survivability Hierarchy

On the **Edit H.323 Gatekeeper – acm** page, enter the procr IP address which will be used for the DMCC service. Click on **Add Name or IP**.

**Application Enablement Services**  
Management Console

Welcome! User: cust  
Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
Number of prior failed login attempts: 0  
HostName/IP: aes/10.64.110.15  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 7.0.1.0.2.15-0  
Server Date and Time: Wed Jul 27 15:35:44 MDT 2016  
HA Status: Not Configured

Communication Manager Interface | Switch Connections

Home | Help | Logout

» AE Services  
» Communication Manager Interface  
» Switch Connections  
» Dial Plan  
» High Availability  
» Licensing  
» Maintenance

### Edit H.323 Gatekeeper - acm

Name or IP Address

☒ 10.64.110.10



### 6.3. Configure the CTI Users

Navigate to **User Management → User Admin → Add User** link from the left pane of the window. On the Add User page, provide the following information:

- User Id
- Common Name
- Surname
- User Password
- Confirm Password


Select **Yes** using the drop down menu on the CT User field. This enables the user as a CTI user. Default values may be used in the remaining fields. Click the **Apply** button (not shown) at the bottom of the screen to complete the process.

The screenshot displays the Avaya Application Enablement Services Management Console. The top header includes the Avaya logo, the title 'Application Enablement Services Management Console', and a welcome message for user 'cust' with login details. A red navigation bar contains links for 'User Management | User Admin | Add User' and 'Home | Help | Logout'. On the left, a sidebar menu shows 'User Management' expanded with 'User Admin' selected, and 'Add User' highlighted. The main content area is the 'Add User' form. A red box highlights the required fields: 'User Id', 'Common Name', 'Surname', 'User Password', and 'Confirm Password', all containing the value 'interop'. Below these, the 'CT User' dropdown menu is set to 'Yes' and is also highlighted with a red box. Other fields like 'Admin Note', 'Avaya Role', 'Business Category', 'Car License', 'CM Home', 'Cm Home', and 'Department Number' are visible but not highlighted.

The above information (User ID and User Password) must match with the information configured in the Spok Console Configuration page in **Section 7**.

Once the user is created, navigate to the **Security → Security Database → CTI Users → List All Users** link from the left pane of the window. Select the User ID created previously, and click the **Edit** button to set the permission of the user (not shown).

Provide the user with unrestricted access privileges by checking the **Unrestricted Access** checkbox. Click on the **Apply Changes** button.

**Application Enablement Services**  
Management Console

Welcome! User: cust  
Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
Number of prior failed login attempts: 0  
HostName/IP: aas/10.64.110.15  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 7.0.1.0.2.13-0  
Server Date and Time: Wed Jul 27 15:37:40 MDT 2016  
HA Status: Not Configured

Security | Security Database | CTI Users | List All UsersHome | Help | Logout

AE Services

Communication Manager Interface

High Availability

Licensing

Maintenance

Networking

Security

Account Management

Audit

Certificate Management

Enterprise Directory

Host AA

PAM

Security Database

Control

Edit CTI User

User Profile:

User IDinterrop

Common Nameinterrop

Worktop NameNONE

Unrestricted Access☒

Call and Device Controls:

Call Origination/Termination and Device StatusNone

Call and Device Monitoring:

Device MonitoringNone

Calls On A Device MonitoringNone

Call Monitoring☐

Routing Control:

Allow Routing on Listed DevicesNone

Apply Changes

Cancel Changes

## 6.4. Configure the DMCC Port

Navigate to the **Networking → Ports** link, from the left pane of the window, to set the DMCC server port. During the compliance test, the default port values were utilized. The following screen displays the default port values. Since the unencrypted port was utilized during the compliance test, set the Unencrypted Port field to **Enabled**. Default values may be used in the remaining fields. Click the **Apply Changes** button (not shown) at the bottom of the screen to complete the process.

**AVAYA**

**Application Enablement Services**  
Management Console

Welcome: User cust  
Last login: Wed Jul 27 15:20:21 2016 from 10.64.10.47  
Number of prior failed login attempts: 0  
HostName/IP: aee/10.64.110.15  
Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
SW Version: 7.0.1.0.2.15-0  
Server Date and Time: Wed Jul 27 15:41:18 MDT 2016  
HA Status: Not Configured

Networking | Ports

Home | Help | Logout

AE Services

Communication Manager

Interface

High Availability

Licensing

Maintenance

Networking

AE Service IP (Local IP)

Network Configure

Ports

TCP/TLS Settings

Security

Status

User Management

Utilities

Help

Ports

CVLAN Ports

Unencrypted TCP Port 9999

Enabled Disabled

Encrypted TCP Port 9998

DLG Port

TCP Port 5678

TSAPI Ports

TSAPI Service Port 450

Enabled Disabled

Local TLINK Ports

TCP Port Min 1024

TCP Port Max 1039

Unencrypted TLINK Ports

TCP Port Min 1050

TCP Port Max 1065

Encrypted TLINK Ports

TCP Port Min 1066

TCP Port Max 1081

DMCC Server Ports

Unencrypted Port 4721

Enabled Disabled

Encrypted Port 4722

TR/87 Port 4723

## 7. Configure Spok Console

Spok installs, configures, and customizes the Smart Console applications for their end customers. Spok Console integrates with Spok CTI Layer, which is a middleware between Spok Console and Application Enablement Services, to control and monitor the phone states.

**Note:** Avaya phones as the network supplier for the agent workstations is not supported by Spok. Agent workstations should have their own network connection, separate from Avaya phones.

The following shows the **Spok AES CTI Services Setup** page. Provide the following information:

### Under DMCC Settings

- **AES Server** – Enter the IP address of the Application Enablement Services.
- **Switch IP Address** – Enter the procr IP address of Communication Manager.
- **Port** – Enter the port utilized during the compliance test.
- **User** – Enter the user name created for Spok Console.
- **Password** – Enter the password created for Spok Console.

### Under Phone Device Settings

- **Extension** – Enter the extension that will be controlled by Spok Console.
- **Security Code** – Enter the security code for the controlled station.
- **Release Button** – Enter the Release button assigned for the controlled station.
- **Line Appearances** – Enter the line appearances used for the controlled station.

Spok AES CTI Service Setup

**DMCC Settings:**

AES Server: 10.64.110.15

Switch Name:

Switch IP Interface: 10.64.110.10

Port: Unsecure (4721) Application Id: 12

Local Certificate File:

SSL Protocol: TLSv1 (Transport Layer Security version 1)

User (default = cmapi): interop Password:

Media Mode: No Media Shared Control: False

Dependency Mode: Dependent AES Version: 7.0

Telecomuter Extension:

☐ Monitor Call Information

☐ Monitor Media Device

☐ Monitor Device Service

**Phone Device Settings:**

Extension: 11054 RILT Transfer Button Id:

Security Code: Release Button Id: 24

Max SCA Timer (ms): 250 Toggle-Swap Button Id: 23

**Line Appearances:**

|         |               |                |        |
|---------|---------------|----------------|--------|
| Line 1  | Button Id = 1 | Display Id = a |        |
| Line 2  | Button Id = 2 | Display Id = b |        |
| Line 3  | Button Id = 3 | Display Id = c |        |
| Line 4  | Button Id = 4 | Display Id = d | BRIDGE |
| Line 5  | Button Id = 1 | Display Id = y | BRIDGE |
| Line 6  | Button Id = 2 | Display Id = z | BRIDGE |
| Line 7  | Button Id = 3 | Display Id = A | BRIDGE |
| Line 8  | Button Id = 4 | Display Id = B | BRIDGE |
| Line 9  | Button Id = 5 | Display Id = C | BRIDGE |
| Line 10 | Button Id = 1 | Display Id = R | BRIDGE |
| Line 11 | Button Id = 2 | Display Id = S | BRIDGE |

+ Add... - Delete Edit...

**Service Settings:**

Listener Port: 973

Home Directory: C:\Program Files (x86)\Amcom\

Configuration File Name: cmapi.cfg

DLL File Name: C:\Program Files (x86)\Amcom\bin\amcom\_cmapi.dll

LUA Agent Function File:

LUA Agent State File:

LUA App Specific File: C:\Program Files (x86)\Amcom\CTI\_Service\app\_specific\_

☐ Send SCA = 0 at the beginning of call state messages

**Debug Settings:**

File Name: AESCTI

Number of Files: 10 File Size: 10000

Directory: C:\Program Files (x86)\Amcom\Trace

|   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> Level 1 | <input checked="" type="checkbox"/> Level 16  | <input checked="" type="checkbox"/> Level 256  |
| <input checked="" type="checkbox"/> Level 2 | <input checked="" type="checkbox"/> Level 32  | <input checked="" type="checkbox"/> Level 512  |
| <input checked="" type="checkbox"/> Level 4 | <input checked="" type="checkbox"/> Level 64  | <input checked="" type="checkbox"/> Level 1024 |
| <input checked="" type="checkbox"/> Level 8 | <input checked="" type="checkbox"/> Level 128 | <input checked="" type="checkbox"/> Level 2048 |

OK Cancel Restart Service Phone Server

## 8. Verification Steps

The following steps may be used to verify the configuration:

- From the Spok client computers, ping IP interfaces, in particular the Application Enablement Services server, and verify connectivity.
- For the physical IP telephones, verify that the physical telephones are registered by using the **list registered-ip-stations** command on the Communication Manager System Access Terminal (SAT). For the physical Digital telephones, verify that the telephones are attached to the correct ports.
- Go off-hook and on-hook on the controlled telephones manually and use Smart Console, and verify consistency.
- Place and answer calls from the controlled telephones manually and use Smart Console, and verify consistency.

## 9. Conclusion

These Application Notes described a compliance-tested configuration comprised of Communication Manager, Application Enablement Services, Avaya IP and Digital Telephones, and the Spok Console application. Spok Console allows a user to operate a physical telephone and view call and telephone display information through a graphical user interface (GUI). During compliance testing, calls were successfully placed to and from Avaya IP and Digital Telephones that were controlled and monitored by the Spok Console application.

## 10. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>.

[1] *Administering Avaya Aura® Communication Manager, Release 7.0.1, 03-300509, Issue 2, May 2016.*

[2] *Administering Avaya Aura® Avaya Aura® Application Enablement Services, Release 7.0.1, Issue 2, May 2016.*

Product information for Spok products may be found at <http://www.spok.com>.

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