



Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura® Communication Manager R6.3 and Avaya Aura® Application Enablement Services R6.3 to interoperate with YouCon Cube - Issue 1.0

Abstract

These Application Notes describe the configuration steps for YouCon Cube to successfully interoperate with Avaya Aura® Communication Manager and Avaya Aura® Application Enablement Services. YouCon Cube integrates with Avaya Aura® Application Enablement Services using TSAPI for Computer Telephony Integration.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps for YouCon Cube to successfully interoperate with Avaya Aura® Communication Manager R6.3 and Avaya Aura® Application Enablement Services R6.3. YouCon Cube integrates with Avaya Aura® Application Enablement Services using TSAPI for Computer Telephony Integration.

YouCon Cube is a Computer Telephony Integration (CTI) middleware that links the Avaya Aura® Communication Manager telephone system with an SAP application. Cube allows the SAP client third-party call control of Communication Manager telephones. This then allows the SAP Client user full CTI capability to make, receive, hold and transfer calls using the SAP Client application.

2. General Test Approach and Test Results

The interoperability compliance testing evaluated the of Cube to integrate correctly with AES and Communication Manager using the TSAPI link on the AES to gain third-party call control of Communication Manager telephones. Tests were carried out using the SAP Client to make, receive, hold and transfer calls.

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 both feature functionality and serviceability testing. The feature functionality testing focused on placing and recording calls in different call scenarios with good quality audio recordings and accurate call records. The tests included:

- **Agent state change**– Make agent Ready/Not Ready using SAP client.
- **Inbound Calls** – Answer calls using SAP Client.
- **Outbound Calls** – Make calls using SAP Client.
- **Call Hold** – Place calls on hold and retrieve calls using the SAP Client.
- **Blind Transfer** – Transfer callers using SAP Client.
- **Consultative Transfer** - Transfer callers using SAP Client.
- **Inbound Skillset Calls** – Answer skillset/VDN calls using the SAP Client.
- **Failover Testing** - The serviceability testing focused on verifying the ability of Cube to recover from disconnection and reconnection to the Avaya solution.

2.2. Test Results

All functionality and serviceability test cases were completed successfully. The following observations were noted.

- The SAP Client does not login or logout the agents on Communication Manager. An agent must be logged in manually before the SAP Client takes call control.
- If the agent is make ready/not ready manually on either the Avaya one-X® Agent or the Avaya H.323 telephone this is not reflected on the SAP Client screen.
- If a call is made manually using either the Avaya one-X® Agent or the Avaya H.323 telephone this is not reflected on the SAP Client screen.
- If a caller is placed on hold manually using either the Avaya one-X® Agent or the Avaya H.323 telephone this is not reflected on the SAP Client screen.

2.3. Support

Technical support can be obtained for YouCon as follows:

- Website: www.youcon.com
- Phone: +43 (1) 33 44 0 44

3. Reference Configuration

The configuration in **Figure 1** will be used to compliance test YouCon Cube with Communication Manager using a CTI connection through AES to gain call control of the Avaya one-X® Agent softphone and the Avaya H.323 Deskphone.

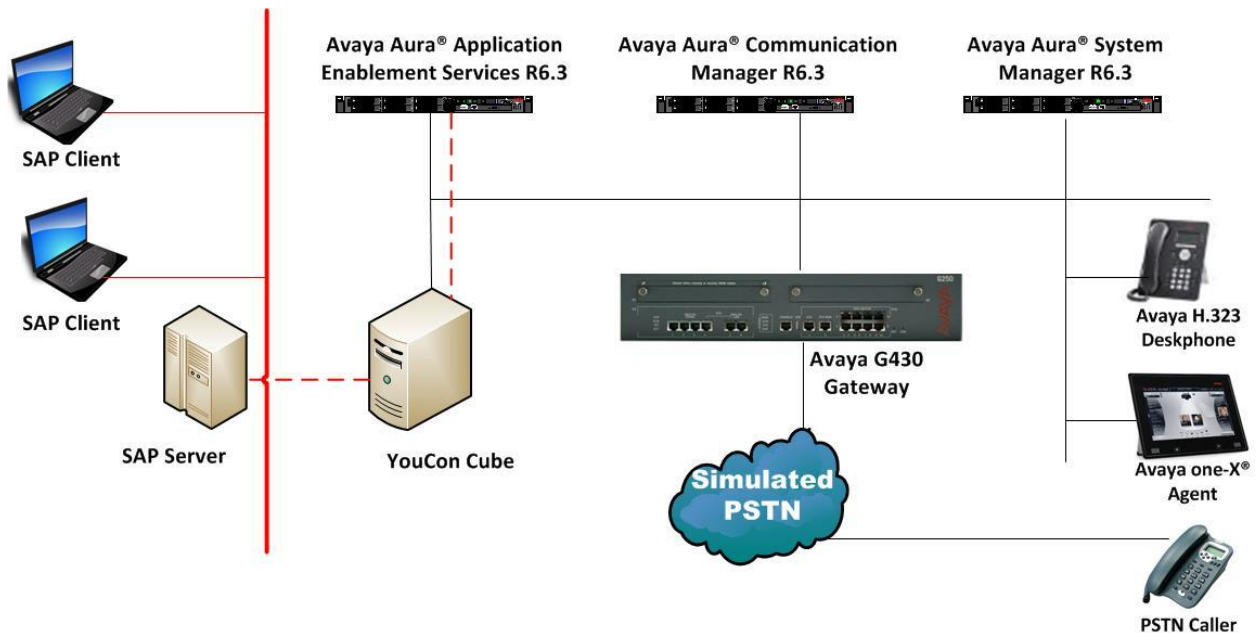


Figure 1: Connection of YouCon Cube with Avaya Aura® Communication Manager R6.3 and Avaya Aura® Application Enablement Services R6.3

4. Equipment and Software Validated

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

| Equipment/Software | Release/Version |
|---|---|
| Avaya Aura® System Manager running on Avaya S8800 Server | System Manager 6.3.0 - FP2 Build No. - 6.3.0.8.5682-6.3.8.1814 Software Update Revision No: 6.3.3.5.1719 |
| Avaya Aura® Communication Manager running on Avaya S8800 Server | R6.3 SP1 R016x.03.0.124.0 |
| Avaya Aura® Application Enablement Services running on Avaya S8800 Server | R6.3 Build No - 6.3.0.0.212-0 |
| Avaya G430 Gateway | R6.3 |
| Avaya 96xx/96x1Series Deskphone | 96xx H.323 Release 3.1 SP2 |
| Avaya one-X® Agent | R2.5 |
| YouCon Cube - SAP Module - Avaya Contact Centre Module | V 1.4.0 V1.0.0 |
| SAP CRM Client | 7 EP1 |

5. Configure Avaya Aura® Communication Manager

The information provided in this section describes the configuration of Communication Manager relevant to this solution. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 10**.

The configuration illustrated in this section was performed using Communication Manager System Administration Terminal (SAT).

5.1. Verify System Features

Use the **display system-parameters customer-options** command to verify that Communication Manager has permissions for features illustrated in these Application Notes. On **Page 3**, ensure that **Computer Telephony Adjunct Links?** is set to **y** as shown below.

| display system-parameters customer-options | | Page | 3 of 11 |
|--|---|--|----------|
| 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? | y | DCS (Basic)? | y |
| ASAI Link Core Capabilities? | n | DCS Call Coverage? | y |
| ASAI Link Plus Capabilities? | n | DCS with Rerouting? | y |
| Async. Transfer Mode (ATM) PNC? | n | Digital Loss Plan Modification? | y |
| Async. Transfer Mode (ATM) Trunking? | n | DS1 MSP? | y |
| ATM WAN Spare Processor? | n | DS1 Echo Cancellation? | y |
| ATMS? | y | | |
| Attendant Vectoring? | y | | |

5.2. Note procr IP Address for Avaya Aura® Application Enablement Services Connectivity

Display the procr IP Address by using the command **display node-names ip** and noting the IP address for the **procr** and AES (**aes63vmpg**).

| display node-names ip | | Page 1 of 2 |
|-----------------------|--------------------|-------------|
| IP NODE NAMES | | |
| Name | IP Address | |
| SM100 | 10.10.40.34 | |
| aes63vmpg | 10.10.40.30 | |
| default | 0.0.0.0 | |
| g430 | 10.10.40.15 | |
| procr | 10.10.40.31 | |

5.3. Configure Transport Link for Avaya Aura® Application Enablement Services Connectivity

To administer the transport link to AES use the **change ip-services** command. On **Page 1** add an entry with the following values:

- **Service Type:** should be set to **AESVCS**.
- **Enabled:** set to **y**.
- **Local Node:** set to the node name assigned for the procr in **Section 5.10**.
- **Local Port** Retain the default value of **8765**.

| | | | | | | | |
|--------------------|---------|-------|-------|--------|--------|------|---|
| change ip-services | | | | | Page | 1 of | 4 |
| IP SERVICES | | | | | | | |
| Service | Enabled | Local | Local | Remote | Remote | | |
| Type | | Node | Port | Node | Port | | |
| AESVCS | y | procr | 8765 | | | | |

Go to **Page 4** of the **ip-services** form and enter the following values:

- **AE Services Server:** Name obtained from the AES server, in this case **aes63vmpg**.
- **Password:** Enter a password to be administered on the AES server.
- **Enabled:** Set to **y**.

Note: The password entered for **Password** field must match the password on the AES server in **Section 6.2**. The **AE Services Server** should match the administered name for the AES server, this is created as part of the AES installation, and can be obtained from the AES server by typing **uname -n** at the Linux command prompt.

| | | | | | | | |
|----------------------------|--------------------|----------|---------|--------|---|----|---|
| change ip-services | | | | Page | 4 | of | 4 |
| AE Services Administration | | | | | | | |
| Server ID | AE Services Server | Password | Enabled | Status | | | |
| 1: | aes63vmpg | ***** | y | idle | | | |
| 2: | | | | | | | |
| 3: | | | | | | | |

5.4. Configure CTI Link for TSAPI Service

Add a CTI link using the **add cti-link n** command. Enter an available extension number in the **Extension** field. 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: 2002 | | | | |
| Type: ADJ-IP | | | | |
| COR: 1 | | | | |
| Name: aes63vmpg | | | | |

5.5. Configure Agent Stations

It is assumed that all agent stations are already full configured and that all monitored phones are already in place. Please refer to Appendix A for a printout of the following that were used during compliance testing:

- Avaya 9620 Deskphone
- Avaya one-X Agent Softphone
- Agent 4400

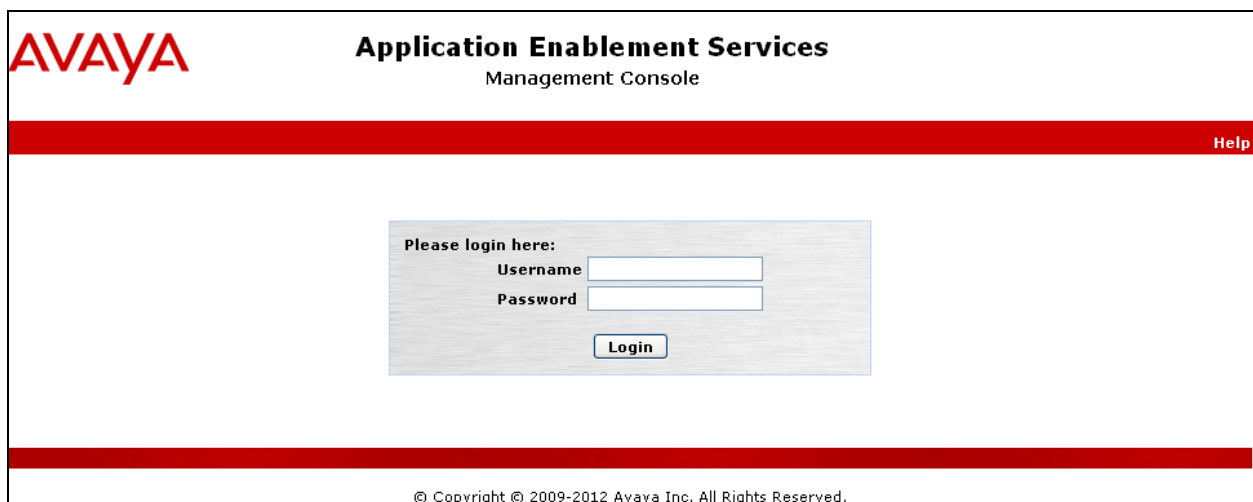
6. Configure Application Enablement Services

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

- Verify Licensing
- Create Switch Connection
- Administer TSAPI link
- Create CTI User
- Enable CTI Link User
- Identify Tlinks
- Enable TSAPI ports

6.1. Verify Licensing

To access the maintenance console, enter **https://<ip-addr>** as the URL in an Internet browser, where <ip-addr> is the active IP address of AES. The login screen is displayed, log in with the appropriate credentials and then select the **Login** button.



The screenshot shows the Avaya Application Enablement Services Management Console login interface. At the top left is the Avaya logo. To its right, the text "Application Enablement Services" is displayed in bold, with "Management Console" underneath it. A red horizontal bar spans the width of the page, containing a "Help" link on the right. In the center of the page is a login box with a light gray background. Inside this box, the text "Please login here:" is followed by two input fields: "Username" and "Password". Below these fields is a "Login" button. At the bottom of the page, a red horizontal bar contains the copyright notice: "© Copyright © 2009-2012 Avaya Inc. All Rights Reserved."

The Application Enablement Services Management Console appears displaying the **Welcome to OAM** screen (not shown). Select **AE Services** and verify that the TSAPI Service is licensed by ensuring that **TSAPI Service** is in the list of services and that the **License Mode** is showing **NORMAL MODE**. If not, contact an Avaya support representative to acquire the proper license for your solution.

AVAYA Application Enablement Services Management Console

Welcome: User craft
Last login: Wed Dec 12 10:45:16 2012 from 192.168.10.209
Number of prior failed login attempts: 0
HostName/IP: aes62vmgpg.devconnect.local/10.10.40.10
Server Offer Type: SWONLY
SW Version: r6-2-0-18-0
Server Date and Time: Thu Dec 20 11:51:08 UTC 2012

AE Services Home | Help | Logout

▼ AE Services

- ▶ CVLAN
- ▶ DLG
- ▶ DMCC
- ▶ SMS
- ▶ TSAPI
- ▶ TWS
- ▶ Communication Manager Interface
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▶ Status

AE Services

IMPORTANT: AE Services must be restarted for administrative changes to fully take effect. Changes to the Security Database do not require a restart.

| Service | Status | State | License Mode | Cause* |
|-------------------------|---------------|----------------|--------------------|------------|
| ASAI Link Manager | N/A | Running | N/A | N/A |
| CVLAN Service | ONLINE | Running | NORMAL MODE | N/A |
| DLG Service | OFFLINE | Running | N/A | N/A |
| DMCC Service | ONLINE | Running | NORMAL MODE | N/A |
| TSAPI Service | ONLINE | Running | NORMAL MODE | N/A |
| Transport Layer Service | N/A | Running | N/A | N/A |

For status on actual services, please use [Status and Control](#)

* -- For more detail, please mouse over the Cause, you'll see the tooltip, or go to help page.

6.2. Create Switch Connection

From the AES Management Console navigate to **Communication Manager Interface** → **Switch Connections** to set up a switch connection. Enter in a name for the Switch Connection to be added and click the **Add Connection** button.

AVAYA Application Enablement Services Management Console

Welcome: User craft
Last login: Thu Nov 14 10:22:12 2013 from 10.10.40.140
Number of prior failed login attempts: 16
HostName/IP: AES63VMGPG
Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
SW Version: 6.3.0.0.212-0
Server Date and Time: Tue Dec 3 15:33:26 UTC 2013

Communication Manager Interface | Switch Connections Home | Help | Logout

▼ AE Services

- ▶ Communication Manager Interface
- Switch Connections**
- ▶ Dial Plan
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▶ Status
- ▶ User Management
- ▶ Utilities
- ▶ Help

Switch Connections

CM63VMGPG Add Connection

| Connection Name | Processor Ethernet | Msg Period | Number of Active Connections |
|-----------------|--------------------|------------|------------------------------|
| | | | |

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

In the resulting screen enter the **Switch Password**, the Switch Password must be the same as that entered into Communication Manager AE Services Administration screen via the **change ip-services** command, described in **Section 5.3**. Default values may be accepted for the remaining fields. Click **Apply** to save changes.

AVAYA Application Enablement Services Management Console

Welcome: User craft
Last login: Thu Nov 14 10:22:12 2013 from 10.10.40.140
Number of prior failed login attempts: 16
HostName/IP: AES63VMPG
Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
SW Version: 6.3.0.0.212-0
Server Date and Time: Tue Dec 3 15:35:47 UTC 2013

Communication Manager Interface | Switch Connections Home | Help | Logout

AE Services
Communication Manager Interface
Switch Connections
Dial Plan
Licensing
Maintenance
Networking
Security
Status
User Management
Utilities
Help

Connection Details - CM63vmpg

Switch Password: [Redacted]
Confirm Switch Password: [Redacted]
Msg Period: 30 Minutes (1 - 72)
SSL: ☒
Processor: Ethernet ☒
Apply Cancel

From the **Switch Connections** screen, select the radio button for the recently added switch connection and select the **Edit CLAN IPs** button (not shown). In the resulting screen, enter the IP address of the procr as shown in **Section 5.2** that will be used for the AES connection and select the **Add Name or IP** button.

AVAYA Application Enablement Services Management Console

Welcome: User craft
Last login: Thu Nov 14 10:22:12 2013 from 10.10.40.140
Number of prior failed login attempts: 16
HostName/IP: AES63VMPG
Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
SW Version: 6.3.0.0.212-0
Server Date and Time: Tue Dec 03 15:36:31 UTC 2013

Communication Manager Interface | Switch Connections Home | Help | Logout

AE Services
Communication Manager Interface
Switch Connections
Dial Plan
Licensing
Maintenance
Networking
Security
Status
User Management
Utilities
Help

Edit Processor Ethernet IP - CM63vmpg

10.10.40.31 Add/Edit Name or IP

| Name or IP Address | Status |
|--------------------|--------|
| 10.10.40.31 | In Use |

Back

6.3. Administer TSAPI link

From the Application Enablement Services Management Console, select **AE Services** → **TSAPI** → **TSAPI Links**. Select **Add Link** button as shown in the screen below.

The screenshot shows the AVAYA Application Enablement Services Management Console. The top navigation bar includes the AVAYA logo, the title "Application Enablement Services Management Console", and a welcome message for user "craft" with login details. The left sidebar shows a tree view with "AE Services" expanded, containing "CVLAN", "DLG", "DMCC", "SMS", "TSAPI" (expanded), "TSAPI Links" (selected), "TSAPI Properties", and "Communication Manager Interface". The main content area is titled "TSAPI Links" and contains a table with columns: "Link", "Switch Connection", "Switch CTI Link #", "ASAI Link Version", and "Security". Below the table are three buttons: "Add Link", "Edit Link", and "Delete Link". The "Add Link" button is highlighted with a red box.

On the **Add TSAPI Links** screen, enter the following values:

- **Link:** Use the drop-down list to select an unused link number.
- **Switch Connection:** Choose the switch connection **CM63VMPG**, which has already been configured in **Section 6.2** from the drop-down list.
- **Switch CTI Link Number:** Corresponding CTI link number configured in **Section 5.12** which is **1**.
- **ASAI Link Version:** This can be left at the default value of **5**.
- **Security:** This can be left at the default value of **both**.

Once completed, select **Apply Changes**.

The screenshot shows the AVAYA Application Enablement Services Management Console in the "Edit TSAPI Links" mode. The left sidebar is the same as the previous screenshot, with "TSAPI Links" selected. The main content area is titled "Edit TSAPI Links" and contains a form with the following fields: "Link" (value: 1), "Switch Connection" (value: CM63vmpg, highlighted with a red box), "Switch CTI Link Number" (value: 1), "ASAI Link Version" (value: 5), and "Security" (value: Both). At the bottom of the form are three buttons: "Apply Changes" (highlighted with a red box), "Cancel Changes", and "Advanced Settings".

Another screen appears for confirmation of the changes. Choose **Apply**.

AVAYA **Application Enablement Services**
Management Console

Welcome: User craft
Last login: Thu Dec 15 19:28:13 2011 from 10.10.16.62
HostName/IP: devconaes611/10.10.16.29
Server Offer Type: TURNKEY
SW Version: r6-1-1-30-0

AE Services | TSAPI | TSAPI Link Home | Help | Logout

▼ AE Services

- ▶ CVLAN
- ▶ DLG
- ▶ DMCC
- ▶ SMS
- ▼ TSAPI
 - TSAPI Links
 - TSAPI Properties
- ▶ Communication Manager Interface

Apply Changes to Link

Warning! Are you sure you want to apply the changes?
These changes can only take effect when the TSAPI server restarts.
Please use the Maintenance -> Service Controller page to restart the TSAPI server.

Apply **Cancel**

When the TSAPI Link is completed, it should resemble the screen below.

AVAYA **Application Enablement Services**
Management Console

Last login: Tue Dec 3 15:32:14 2013 from 10.10.40.225
Number of prior failed login attempts: 17
HostName/IP: AES63VMPG
Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
SW Version: 6.3.0.0.212-0
Server Date and Time: Tue Dec 03 16:34:53 UTC 2013

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

▼ AE Services

- ▶ CVLAN
- ▶ DLG
- ▶ DMCC
- ▶ SMS
- ▼ TSAPI
 - TSAPI Links
 - TSAPI Properties

TSAPI Links

| Link | Switch Connection | Switch CTI Link # | ASAI Link Version | Security |
|------|-------------------|-------------------|-------------------|----------|
| 1 | CM63vmppg | 1 | 5 | Both |

Add Link **Edit Link** **Delete Link**

The TSAPI Service must be restarted to effect the changes made in this section. From the Management Console menu, navigate to **Maintenance** → **Service Controller**. On the Service Controller screen, tick the **TSAPI Service** and select **Restart Service**.

AVAYA **Application Enablement Services**
Management Console

Welcome: User craft
Last login: Thu Dec 15 19:28:13 2011 from 10.10.16.62
HostName/IP: devconaes611/10.10.16.29
Server Offer Type: TURNKEY
SW Version: r6-1-1-30-0

Maintenance | Service Controller Home | Help | Logout

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ Licensing
- ▼ Maintenance
 - Date Time/NTP Server
 - ▶ Security Database
 - Service Controller
 - ▶ Server Data
- ▶ Networking
- ▶ Security
- ▶ Status
- ▶ User Management

Service Controller

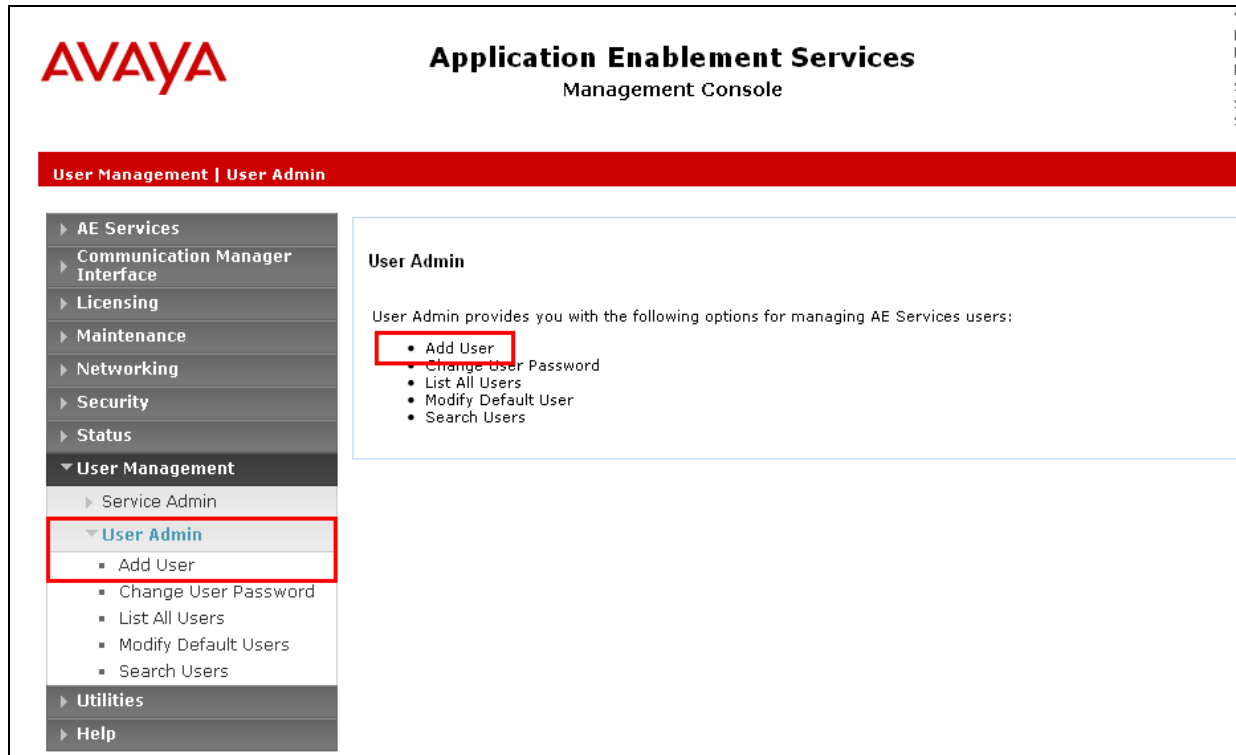
| Service | Controller Status |
|---|-------------------|
| <input type="checkbox"/> ASAI Link Manager | Running |
| <input type="checkbox"/> DMCC Service | Running |
| <input type="checkbox"/> CVLAN Service | Running |
| <input type="checkbox"/> DLG Service | Running |
| <input type="checkbox"/> Transport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

For status on actual services, please use [Status and Control](#)

Start **Stop** **Restart Service** **Restart AE Server** **Restart Linux** **Restart Web Server**

6.4. Create Avaya CTI User

A User ID and password needs to be configured for the Cube server to communicate as a TSAPI client with the Application Enablement Services server. Navigate to the **User Management** → **User Admin** screen then choose the **Add User** option.



In the **Add User** screen shown below, enter the following values:

- **User Id** - This will be used by the Cube Server in **Section 7.2**.
- **Common Name** and **Surname** - Descriptive names need to be entered.
- **User Password** and **Confirm Password** - This will be used with the **User Id** in **Section 7.2**.
- **CT User** - Select **Yes** from the drop-down menu.

Complete the process by choosing **Apply** at the bottom of the screen (not shown).

AVAYA **Application Enablement Services**
Management Console

User Management | User Admin | List All Users

AE Services
Communication Manager Interface
Licensing
Maintenance
Networking
Security
Status
User Management
Service Admin
User Admin
Add User
Change User Password
List All Users
Modify Default Users
Search Users
Utilities
Help

Edit User

| | |
|-------------------|------|
| * User Id | cube |
| * Common Name | cube |
| * Surname | cube |
| User Password | |
| Confirm Password | |
| Admin Note | |
| Avaya Role | None |
| Business Category | |
| Car License | |
| CM Home | |
| Css Home | |
| CT User | Yes |
| Department Number | |
| Display Name | |
| Employee Number | |

The next screen will show a message indicating that the user was created successfully (not shown).

6.5. Enable Unrestricted Access for CTI User

Navigate to the **CTI Users** screen by selecting **Security** → **Security Database** → **CTI Users** → **List All Users**. Select the user that was created in **Section 6.4** and select the **Edit** option.

The screenshot shows the Avaya Application Enablement Services Management Console. The left sidebar contains a navigation menu with categories: AE Services, Communication Manager Interface, Licensing, Maintenance, Networking, and Security. Under Security, the 'Security Database' is expanded, and 'CTI Users' is selected, with 'List All Users' highlighted. The main content area displays a table of CTI Users. The table has four columns: User ID, Common Name, Worktop Name, and Device ID. The rows are: asc, cube, and presence. The 'cube' row is highlighted with a red border. Below the table are 'Edit' and 'List All' buttons. The top right corner shows system information: Last login: Tue Apr 8 09:51:05 2014 from 10.10.40.222, Number of prior failed login attempts: 37, HostName/IP: AES63VMPG, Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE, SW Version: 6.3.0.0.212-0, Server Date and Time: Wed Apr 9 10:53:34 UTC 2014.

| User ID | Common Name | Worktop Name | Device ID |
|----------|-------------|--------------|-----------|
| asc | asc | NONE | NONE |
| cube | cube | NONE | NONE |
| presence | presence | NONE | NONE |

The **Edit CTI User** screen appears. Check the **Unrestricted Access** box and **Apply Changes** at the bottom of the screen.

The screenshot shows the 'Edit CTI User' screen. The left sidebar is the same as the previous screenshot. The main content area is titled 'Edit CTI User'. It shows the user profile for 'cube'. The 'Unrestricted Access' checkbox is checked and highlighted with a red border. Below this are sections for 'Call and Device Control', 'Call and Device Monitoring', and 'Routing Control'. The 'Apply Changes' button is highlighted with a red border. The 'Cancel Changes' button is also visible.

| User Profile: | User ID | Common Name | Worktop Name | Unrestricted Access |
|---------------|---------|-------------|--------------|-------------------------------------|
| | cube | cube | NONE | <input checked="" type="checkbox"/> |

| Call and Device Control: | Call Origination/Termination and Device Status | |
|--------------------------|--|------|
| | | None |

| Call and Device Monitoring: | Device Monitoring | |
|-----------------------------|------------------------------|--------------------------|
| | Device Monitoring | None |
| | Calls On A Device Monitoring | None |
| | Call Monitoring | <input type="checkbox"/> |

| Routing Control: | Allow Routing on Listed Devices | |
|------------------|---------------------------------|------|
| | | None |

A screen (not shown) appears to confirm applied changes to **CTI User**, choose **Apply**. This CTI user should now be enabled.

6.6. Identify Tlinks

Navigate to **Security** → **Security Database** → **Tlinks**. Verify the value of the **Tlink Name**. This will be needed to configure the Cube server in **Section 7.4**.

The screenshot displays the Avaya Application Enablement Services Management Console. The top header features the Avaya logo and the title "Application Enablement Services Management Console". Below this is a red navigation bar with the text "Security | Security Database | Tlinks". On the left, a sidebar menu lists various services: AE Services, Communication Manager Interface, Licensing, Maintenance, Networking, Security, Account Management, Audit, Certificate Management, Enterprise Directory, Host AA, PAM, Security Database, Control, CTI Users, Devices, Device Groups, and Tlinks. The "Tlinks" item is highlighted with a red box. The main content area is titled "Tlinks" and contains a "Tlink Name" section with two radio buttons. The first radio button is selected and is highlighted with a red box; it corresponds to the name "AVAYA#CM63VMPG#CSTA#AES63VMPG". The second radio button is unselected and corresponds to "AVAYA#CM63VMPG#CSTA-S#AES63VMPG". Below the radio buttons is a "Delete Tlink" button.

6.7. TSAPI Ports enabled

To ensure that TSAPI ports are enabled navigate to **Networking→Ports→TSAPI Ports**. Ensure these are set to **Enabled** as shown below.

AVAYA Application Enablement Services Management Console

Networking | Ports

Ports

CVLAN Ports

| | | | Enabled | Disabled |
|----------------------|-----------------------------------|--|----------------------------------|-----------------------|
| Unencrypted TCP Port | 9999 | | <input checked="" type="radio"/> | <input type="radio"/> |
| Encrypted TCP Port | <input type="text" value="9998"/> | | <input checked="" type="radio"/> | <input type="radio"/> |

DLG Port

| | | | Enabled | Disabled |
|----------|------|--|----------------------------------|-----------------------|
| TCP Port | 5678 | | <input checked="" type="radio"/> | <input type="radio"/> |

TSAPI Ports

| | | | Enabled | Disabled |
|-------------------------|-----------------------------------|--|----------------------------------|-----------------------|
| TSAPI Service Port | 450 | | <input checked="" type="radio"/> | <input type="radio"/> |
| Local TLINK Ports | | | | |
| TCP Port Min | 1024 | | | |
| TCP Port Max | 1039 | | | |
| Unencrypted TLINK Ports | | | | |
| TCP Port Min | <input type="text" value="1050"/> | | | |
| TCP Port Max | <input type="text" value="1065"/> | | | |
| Encrypted TLINK Ports | | | | |
| TCP Port Min | <input type="text" value="1066"/> | | | |
| TCP Port Max | <input type="text" value="1081"/> | | | |

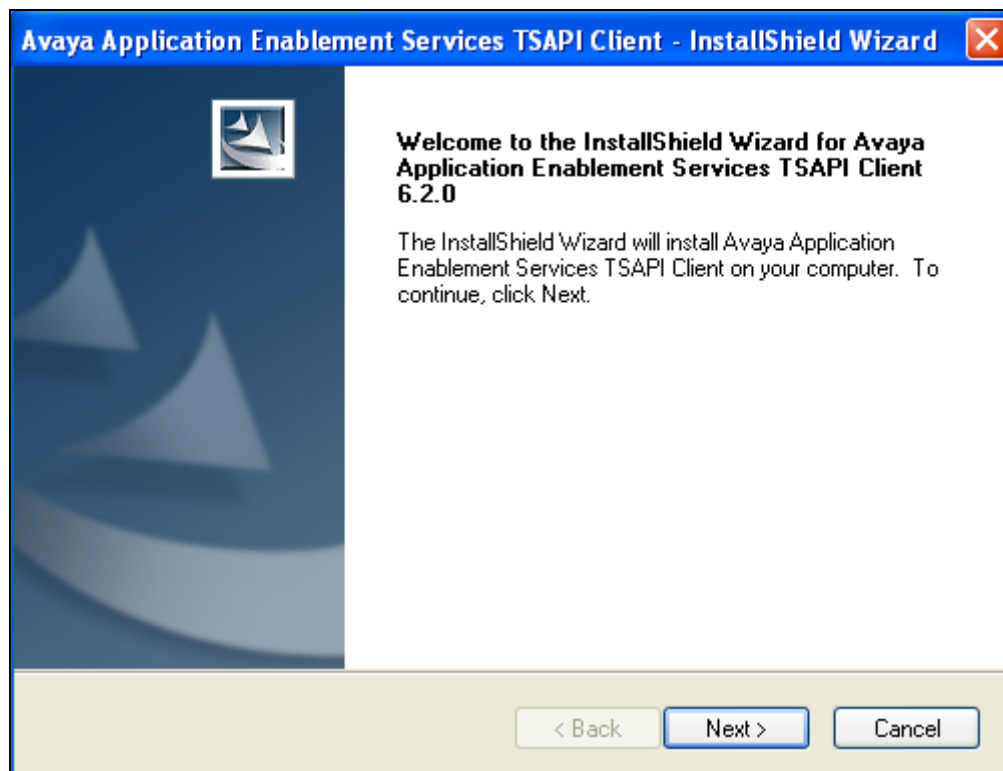
7. Configure YouCon Cube

The installation of YouCon Cube is always carried out by an engineer from YouCon either on site or remotely. The installation and configuration of Cube is therefore outside the scope of these Application Notes. The following sections will outline the process involved in connecting the Avaya Contact Centre module of Cube to the AES.

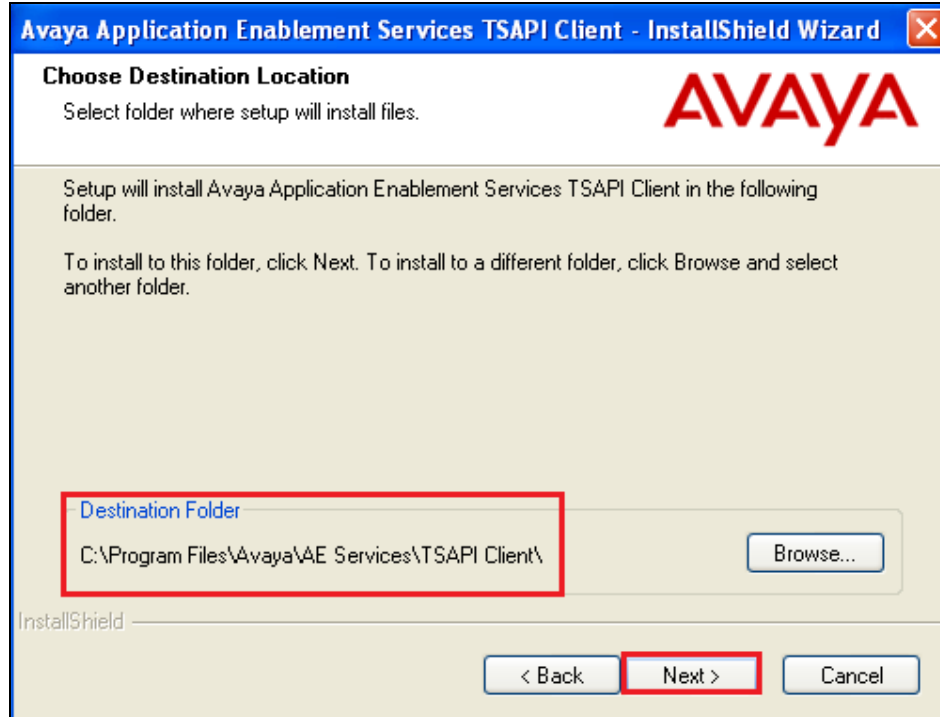
7.1. Installation of Avaya TSAPI Client

The TSAPI client is required by Cube and allows third-party call control of devices on Communication Manager through Avaya Aura® Application Enablement Services (AES). This software may be included by YouCon as part of the installation but it is available as a free download from the Avaya DevConnect website.

Run the TSAPI Client Install.exe on the Cube server (not shown), the following window appears, click on **Next** to continue.

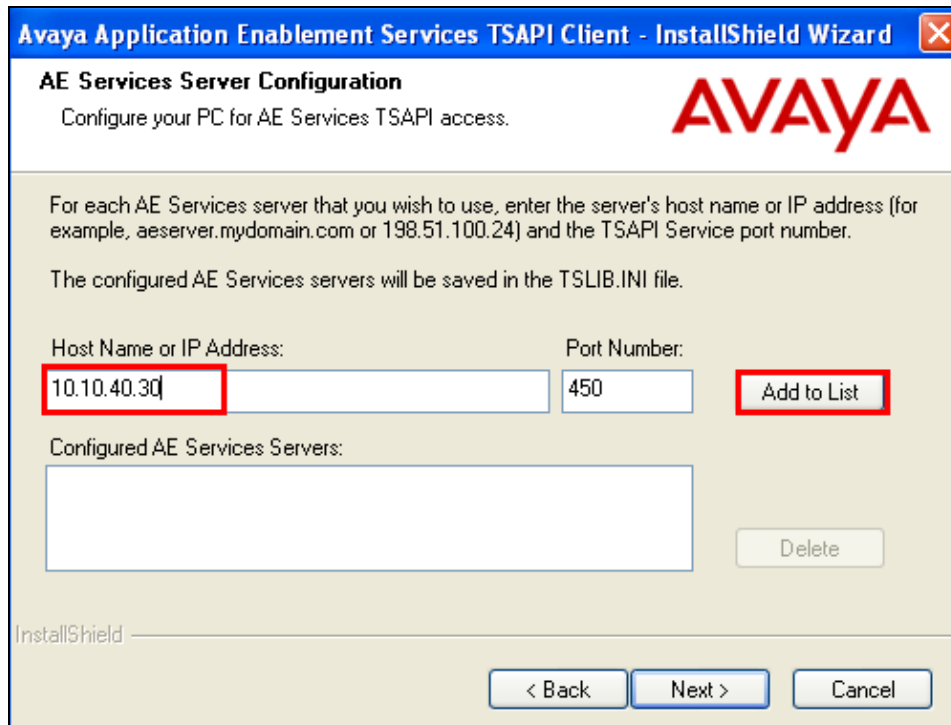


Choose a suitable **Destination Folder** and click on **Next** to continue.



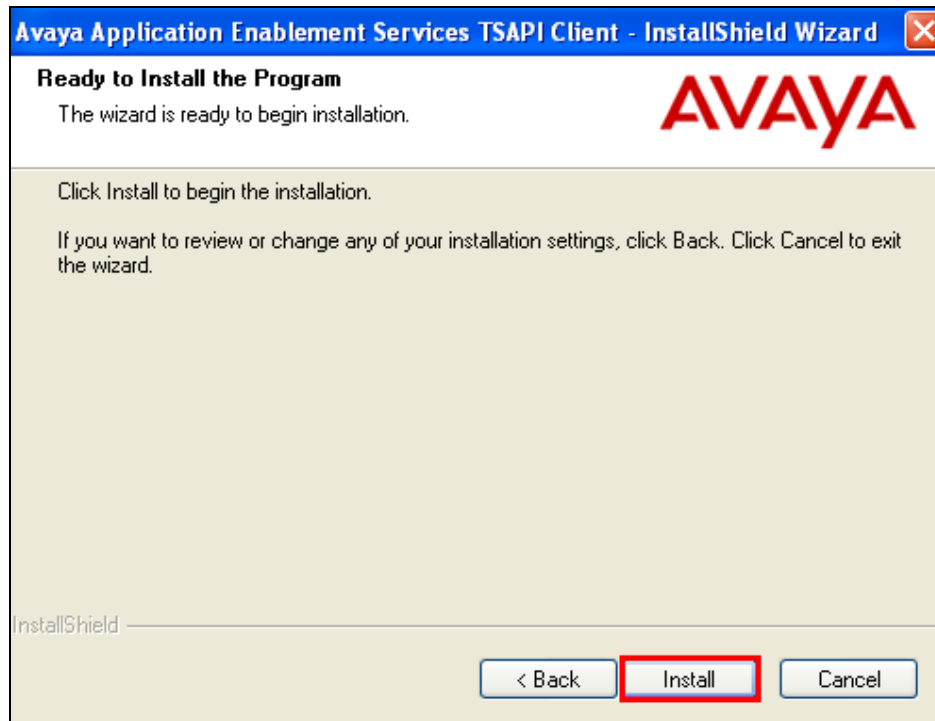
The screenshot shows the 'Choose Destination Location' step of the Avaya Application Enablement Services TSAPI Client installation wizard. The window title is 'Avaya Application Enablement Services TSAPI Client - InstallShield Wizard'. The AVAYA logo is in the top right. The text says: 'Choose Destination Location', 'Select folder where setup will install files.', 'Setup will install Avaya Application Enablement Services TSAPI Client in the following folder.', and 'To install to this folder, click Next. To install to a different folder, click Browse and select another folder.' A text box labeled 'Destination Folder' contains the path 'C:\Program Files\Avaya\AE Services\TSAPI Client\' and is highlighted with a red rectangle. A 'Browse...' button is to its right. At the bottom, there are '< Back', 'Next >' (highlighted with a red rectangle), and 'Cancel' buttons.

Enter the **IP address** of the AES and use the default **Port Number**, click on **Add to List** and then **Next** to continue.



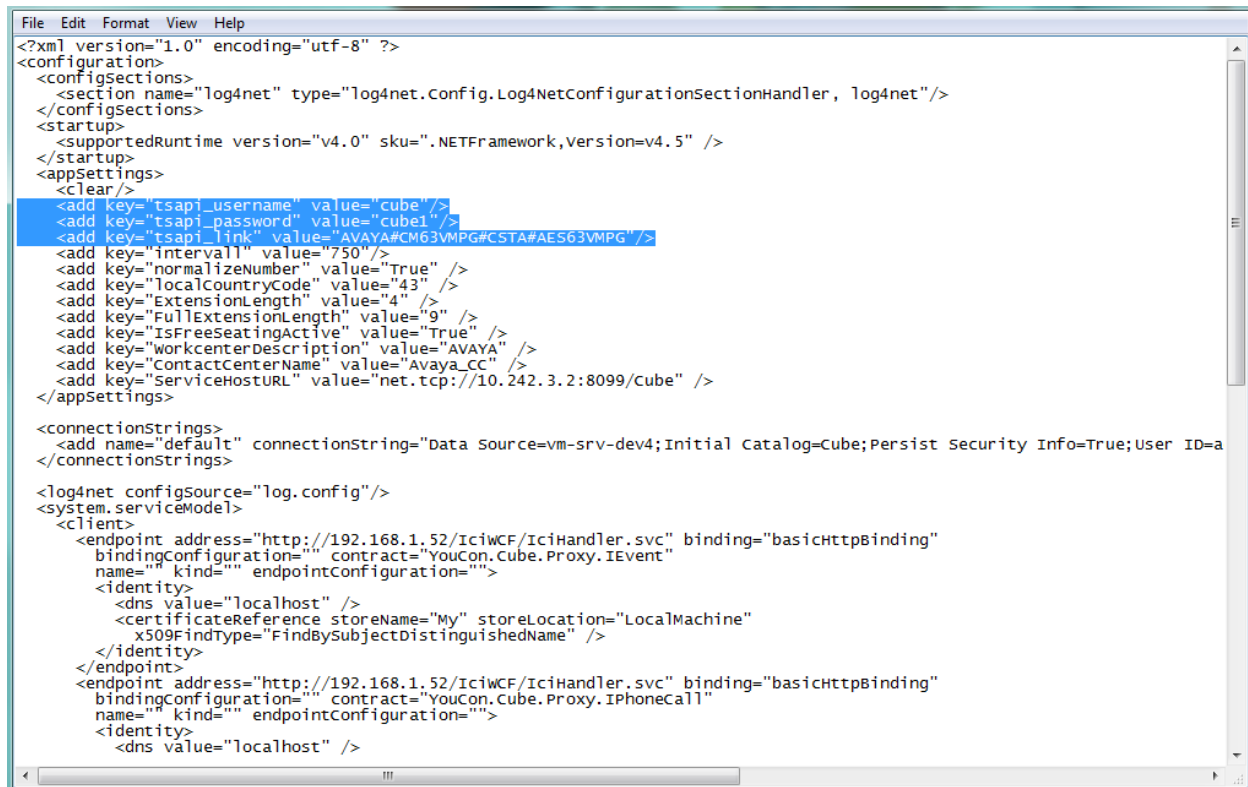
The screenshot shows the 'AE Services Server Configuration' step of the Avaya Application Enablement Services TSAPI Client installation wizard. The window title is 'Avaya Application Enablement Services TSAPI Client - InstallShield Wizard'. The AVAYA logo is in the top right. The text says: 'AE Services Server Configuration', 'Configure your PC for AE Services TSAPI access.', 'For each AE Services server that you wish to use, enter the server's host name or IP address (for example, aeserver.mydomain.com or 198.51.100.24) and the TSAPI Service port number.', and 'The configured AE Services servers will be saved in the TSLIB.INI file.' There are two input fields: 'Host Name or IP Address:' with the value '10.10.40.30' (highlighted with a red rectangle) and 'Port Number:' with the value '450'. An 'Add to List' button (highlighted with a red rectangle) is to the right of the port number field. Below these is a 'Configured AE Services Servers:' section with an empty list box and a 'Delete' button. At the bottom, there are '< Back', 'Next >', and 'Cancel' buttons.

Finally click on **Install** to complete the installation.



7.2. Configure YouCon Cube Avaya Contact Center Configuration File

Navigate to **Program files (x86) → YouCon → AvayaContactCenter**. Open the **AvayaContactCenter.exe.config** using notepad (If the Avaya Contact Center has been installed as a Windows service, the path and file name will be different. The YouCon engineer that has performed the installation of Cube will provide the correct path and name of the configuration file).



```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <configSections>
    <section name="log4net" type="log4net.Config.Log4NetConfigurationSectionHandler, log4net"/>
  </configSections>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
  </startup>
  <appSettings>
    <clear/>
    <add key="tsapi_username" value="cube"/>
    <add key="tsapi_password" value="cube1"/>
    <add key="tsapi_link" value="AVAYA#CM63VMPG#CSTA#AES63VMPG"/>
    <add key="interval1" value="750"/>
    <add key="normalizeNumber" value="True"/>
    <add key="localCountryCode" value="43"/>
    <add key="ExtensionLength" value="4"/>
    <add key="FullExtensionLength" value="9"/>
    <add key="IsFreeSeatingActive" value="True"/>
    <add key="workcenterDescription" value="AVAYA"/>
    <add key="ContactCenterName" value="Avaya_CC"/>
    <add key="ServiceHostURL" value="net.tcp://10.242.3.2:8099/Cube" />
  </appSettings>
  <connectionStrings>
    <add name="default" connectionString="Data Source=vm-srv-dev4;Initial Catalog=Cube;Persist Security Info=True;User ID=a" />
  </connectionStrings>
  <log4net configSource="log.config"/>
  <system.serviceModel>
    <client>
      <endpoint address="http://192.168.1.52/IciWCF/IciHandler.svc" binding="basicHttpBinding"
        bindingConfiguration="" contract="YouCon.Cube.Proxy.IEevent"
        name="" kind="" endpointConfiguration="" />
      <identity>
        <dns value="localhost" />
        <certificateReference storeName="My" storeLocation="LocalMachine"
          x509FindType="FindBySubjectDistinguishedName" />
      </identity>
      </endpoint>
      <endpoint address="http://192.168.1.52/IciWCF/IciHandler.svc" binding="basicHttpBinding"
        bindingConfiguration="" contract="YouCon.Cube.Proxy.IPhoneCall"
        name="" kind="" endpointConfiguration="" />
      <identity>
        <dns value="localhost" />
      </identity>
    </client>
  </system.serviceModel>
</configuration>
```

Make changes to the highlighted section as shown below, inserting the username and password of the CTI User created in **Section 6.4**. Enter the tsapi link as shown in **Section 6.6**.

```
<add key="tsapi_username" value="cube"/>
<add key="tsapi_password" value="cube1"/>
<add key="tsapi_link" value="AVAYA#CM63VMPG#CSTA#AES63VMPG"/>
```

Once this is completed the connection to the AES should be fully established and can be tested by following the steps outlined in **Section 8**.

This section provides the steps that can be taken to verify a correct configuration of the Avaya Aura® Application Enablement Services and YouCon Cube.


8.1. Verify Avaya Aura® Communication Manager CTI Service State

The following steps can validate that the communication between Communication Manager and AES is functioning correctly. Check the AESVCS link status by using the command **status aesvcs cti-link**. Verify the **Service State** of the CTI link 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 | 4 | no | aes63vmpg | established | 18 | 18 |

8.2. Verify TSAPI Link

On the AES Management Console verify the status of the TSAPI link by selecting **Status** → **Status and Control** → **TSAPI Service Summary** to display the **TSAPI Link Details** screen. Verify the status of the TSAPI link by checking that the **Status** is **Talking** and the **State** is **Online**.



Application Enablement Services Management Console

Welcome: User craft
 Last login: Thu Feb 20 11:01:32 2014 from 192.168.10.222
 Number of prior failed login attempts: 33
 HostName/IP: AES63VMPG
 Server Offer Type: VIRTUAL_APPLIANCE_ON_VMWARE
 SW Version: 6.3.0.0.212-0
 Server Date and Time: Thu Feb 20 11:14:02 UTC 2014

Status | Status and Control | TSAPI Service Summary

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▶ Security
- ▼ Status
- Alarm Viewer
- Log Manager
- ▶ Logs
- ▼ Status and Control
- CVLAN Service Summary
- DLG Services Summary
- DMCC Service Summary
- Switch Conn Summary
- 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 | CM63vmpg | 1 | Talking | Tue Feb 18 11:21:49 2014 | Online | 16 | 5 | 15 | 15 | 30 |

Online
Offline

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

TSAPI Service Status
TLink Status
User Status

8.3. Verify connection to Avaya Aura® Application Enablement Services from YouCon Cube

A TSAPI Test Application comes with the installation of the TSAPI Client which was outlined in **Section 7.1**. This application can be used to make a call from one deskphone to another on Communication Manager, this will confirm that 3rd Party Call Control is possible and therefore the connection from the Cube server to the AES is setup correctly.

Open the **TSAPI Test Application** (not shown), the following window appears. The server information will be populated automatically. Enter the **User** and **Password** for the CTI User that was created in **Section 6.4**. Enter the **From** and **To** extension number for the call and click **Dial**.

TSAPI Test Application

Server: AVAYA#CM63VMPG#CSTA#AES63VMPG

User: cube

Password: xxxxxx

Make Telephone Call...

From: 2001

To: 1000

Dial Close

If the connection is setup correctly deskphone 2001 will have initiated a call to deskphone 1000 and the following message will have appeared.

TSAPI Test Application

Server: AVAYA#CM63VMPG#CSTA#AES63VMPG

TSAPI Test Application

Call successfully originated. Dismiss this message box to terminate call.

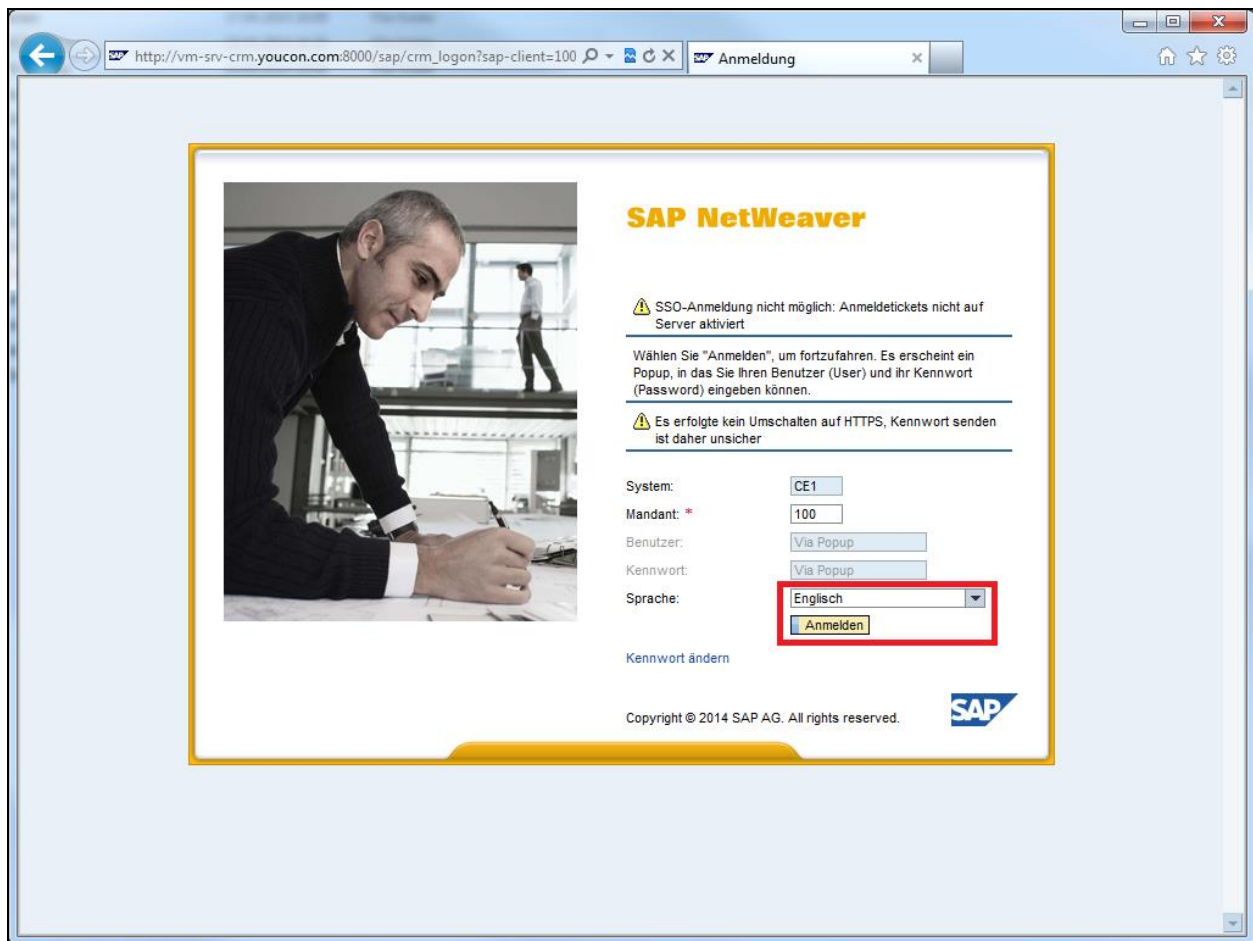
OK

Dial Close

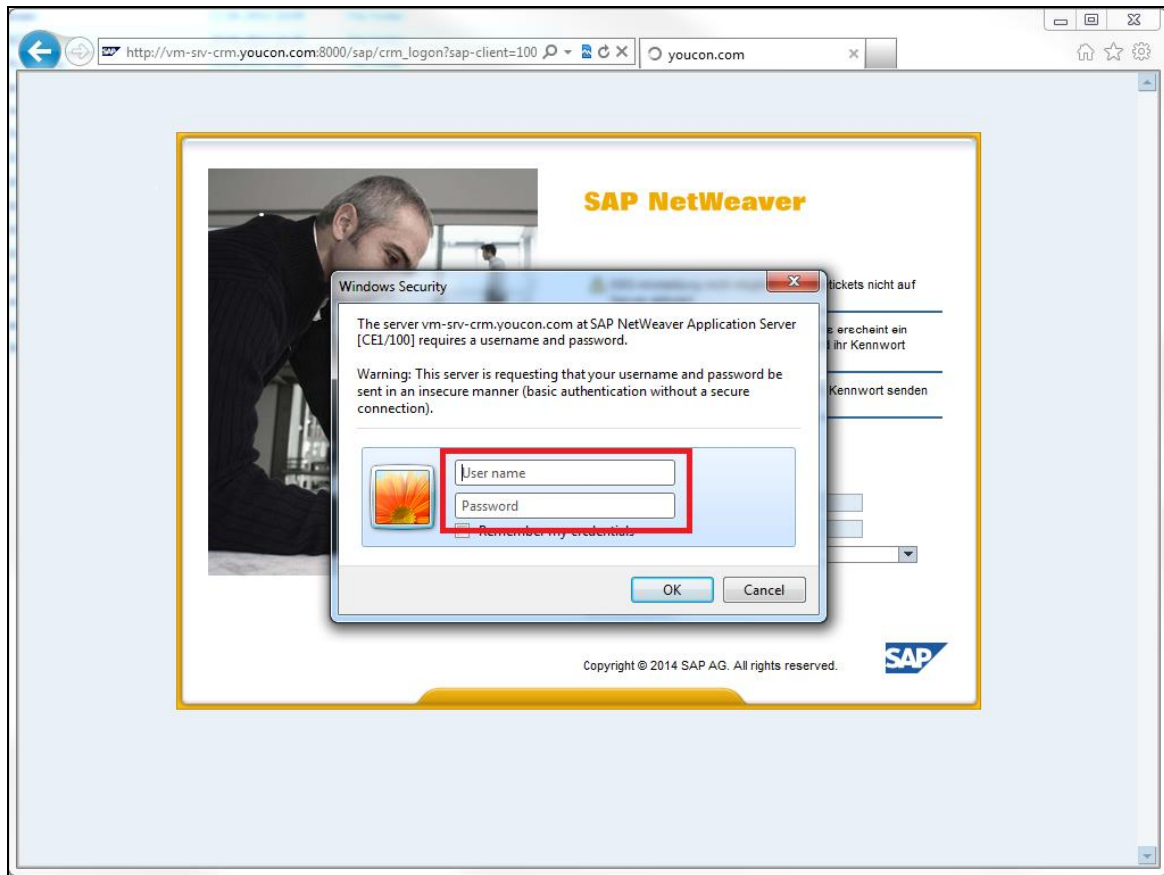
8.4. Verify SAP Client has 3rd – Party Call Control

From an agent workstation (Client PC) open a web browser to the Cube server. Log in to the SAP Client application as shown below.

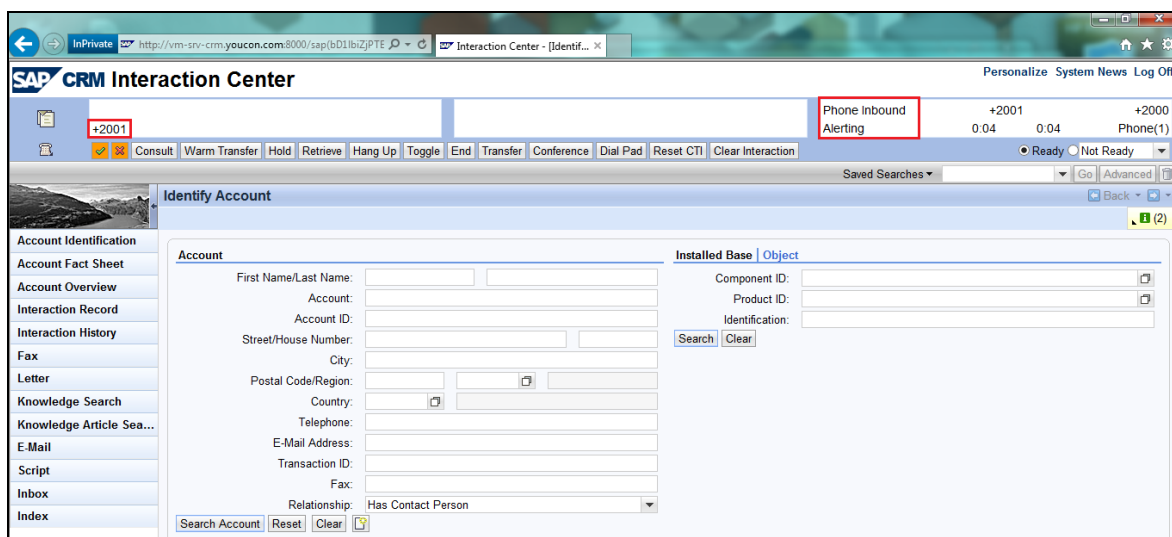
Open a browser and enter the URL of the SAP-CRM Web-Client as supplied by the SAP administrator. Select a language and click on **Anmelden**.



A window will pop up, enter valid SAP-CRM credentials.



Once logged in to the SAP Client make a call into the agent's extension number. The following screen will show an incoming call and the agent in an **Alerting** state. The CLID of the caller should also get displayed.



Once the call is answered the state will have changed from **Alerting** to **Connected**.

The screenshot displays the SAP CRM Interaction Center interface. At the top, the title bar reads "SAP CRM Interaction Center". Below this, a status bar shows a phone icon, a green checkmark, a red X, and a text input field containing "+2001". To the right of the status bar, a red-bordered box contains the text "Phone Inbound Connected". Below the status bar, a row of buttons includes "Consult", "Warm Transfer", "Hold", "Retrieve", "Hang Up", "Toggle", "End", "Transfer", "Conference", "Dial Pad", "Reset CTI", and "Clear Interaction". A "Saved Searches" dropdown menu is located on the right side of this row.

The main content area is titled "Identify Account". On the left side, there is a vertical navigation menu with the following items: "Account Identification", "Account Fact Sheet", "Account Overview", "Interaction Record", "Interaction History", "Fax", "Letter", "Knowledge Search", "Knowledge Article Sea...", "E-Mail", and "Script".

The "Identify Account" form is divided into two main sections: "Account" and "Installed Base | Object". The "Account" section contains the following fields:

- First Name/Last Name:
- Account:
- Account ID:
- Street/House Number:
- City:
- Postal Code/Region:
- Country:
- Telephone:
- E-Mail Address:
- Transaction ID:

The "Installed Base | Object" section contains the following fields:

- Component ID:
- Product ID:
- Identification:

Below the "Identification" field, there are "Search" and "Clear" buttons.

9. Conclusion

These Application Notes describe the configuration steps required for YouCon Cube to successfully interoperate with Avaya Aura® Communication Manager R6.3 using Avaya Aura® Application Enablement Services R6.3. All feature functionality and serviceability test cases were completed successfully with some observations noted in **Section 2.2**.

10. Additional References

This section references the Avaya and Cube product documentation that are relevant to these Application Notes.

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

- [1] *Administering Avaya Aura® Communication Manager*, Document ID 03-300509
- [2] *Avaya Aura® Communication Manager Feature Description and Implementation*, Document ID 555-245-205
- [3] *Avaya Aura® Application Enablement Services Administration and Maintenance Guide Release 6.3*

Technical documentation can be obtained for Cube as follows:

- Website: www.youcon.com
- Phone: +43 (1) 33 44 0 44

Appendix

Avaya one-X® Agent Softphone

This is a printout of the Avaya one-X® Agent softphone used during compliance testing.

| | | |
|---------------------------|--|----------|
| display station 2100 | Page 1 of 5 | |
| STATION | | |
| Extension: 2100 | Lock Messages? n | BCC: 0 |
| Type: 9630 | Security Code: * | TN: 1 |
| Port: S00031 | Coverage Path 1: | COR: 1 |
| Name: one-X Agent1 | 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: 2100 | |
| 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 | |

| | | |
|---|--|--|
| display station 2100 | Page 2 of 5 | |
| | STATION | |
| FEATURE OPTIONS | | |
| LWC Reception: spe | Auto Select Any Idle Appearance? n | |
| LWC Activation? y | Coverage Msg Retrieval? y | |
| LWC Log External Calls? n | Auto Answer: none | |
| CDR Privacy? n | Data Restriction? n | |
| Redirect Notification? y | Idle Appearance Preference? n | |
| Per Button Ring Control? n | Bridged Idle Line Preference? n | |
| Bridged Call Alerting? n | Restrict Last Appearance? y | |
| Active Station Ringing: single | | |
| | EMU Login Allowed? n | |
| H.320 Conversion? n | Per Station CPN - Send Calling Number? | |
| Service Link Mode: as-needed | EC500 State: enabled | |
| Multimedia Mode: enhanced | Audible Message Waiting? n | |
| MWI Served User Type: | Display Client Redirection? n | |
| AUDIX Name: | Select Last Used Appearance? n | |
| | Coverage After Forwarding? s | |
| | Multimedia Early Answer? n | |
| Remote Softphone Emergency Calls: as-on-local | Direct IP-IP Audio Connections? y | |
| Emergency Location Ext: 2100 | Always Use? n IP Audio Hairpinning? n | |

| | | |
|---|-----------------------|-------------|
| display station 2100 | STATION | Page 3 of 5 |
| <p>Conf/Trans on Primary Appearance? n</p> <p>Bridged Appearance Origination Restriction? n</p> | | |
| <p>Call Appearance Display Format: disp-param-default</p> <p>IP Phone Group ID:</p> <p>Enhanced Callr-Info Display for 1-Line Phones? n</p> | | |
| ENHANCED CALL FORWARDING | | |
| | Forwarded Destination | Active |
| Unconditional For Internal Calls To: 1000 | | n |
| External Calls To: 1000 | | n |
| Busy For Internal Calls To: | | n |
| External Calls To: | | n |
| No Reply For Internal Calls To: | | n |
| External Calls To: | | n |
| SAC/CF Override: n | | |

| | | |
|---|---------|-------------|
| display station 2100 | STATION | Page 4 of 5 |
| <p>SITE DATA</p> <p>Room: Headset? n</p> <p>Jack: Speaker? n</p> <p>Cable: Mounting: d</p> <p>Floor: Cord Length: 0</p> <p>Building: Set Color:</p> | | |
| <p>ABBREVIATED DIALING</p> <p>List1: List2: List3:</p> | | |
| <p>BUTTON ASSIGNMENTS</p> <p>1: call-appr 5: manual-in Grp:</p> <p>2: call-appr 6: after-call Grp:</p> <p>3: call-appr 7: aux-work RC: Grp:</p> <p>4: auto-in Grp: 8:</p> <p>voice-mail</p> | | |

Avaya 9620 H.323 Deskphone

This is a printout of the Avaya 9620 H.323 Deskphone used during compliance testing.

| | | |
|---------------------------|--|----------|
| display station 2000 | Page 1 of 5 | |
| STATION | | |
| Extension: 2000 | Lock Messages? n | BCC: 0 |
| Type: 9620 | Security Code: * | TN: 1 |
| Port: S00000 | Coverage Path 1: 2 | COR: 1 |
| Name: Paul 2000 | 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: 2000 | |
| Speakerphone: 2-way | Mute Button Enabled? y | |
| Display Language: english | | |
| Survivable GK Node Name: | | |
| Survivable COR: internal | Media Complex Ext: | |
| Survivable Trunk Dest? y | IP SoftPhone? n | |
| | IP Video? n | |
| | Short/Prefixed Registration Allowed: default | |
| | Customizable Labels? y | |

| | |
|--------------------------------|--|
| display station 2000 | Page 2 of 5 |
| STATION | |
| FEATURE OPTIONS | |
| LWC Reception: spe | Auto Select Any Idle Appearance? n |
| LWC Activation? y | Coverage Msg Retrieval? y |
| LWC Log External Calls? n | Auto Answer: none |
| CDR Privacy? n | Data Restriction? n |
| Redirect Notification? y | Idle Appearance Preference? n |
| Per Button Ring Control? n | Bridged Idle Line Preference? n |
| Bridged Call Alerting? n | Restrict Last Appearance? y |
| Active Station Ringing: single | |
| | EMU Login Allowed? n |
| H.320 Conversion? n | Per Station CPN - Send Calling Number? y |
| Service Link Mode: as-needed | EC500 State: enabled |
| Multimedia Mode: enhanced | Audible Message Waiting? n |
| MWI Served User Type: | Display Client Redirection? n |
| AUDIX Name: | Select Last Used Appearance? n |
| | Coverage After Forwarding? s |
| | Multimedia Early Answer? n |
| | Direct IP-IP Audio Connections? y |
| Emergency Location Ext: 2000 | Always Use? n IP Audio Hairpinning? n |

Page 3 of 5

STATION

```
Conf/Trans on Primary Appearance? n
Bridged Appearance Origination Restriction? n
```

```

Call Appearance Display Format: inter-location
IP Phone Group ID:
Enhanced Callr-Info Display for 1-Line Phones? n

```

ENHANCED CALL FORWARDING

| | | | | Forwarded Destination | Active |
|-------------------|--------------------|------|--|-----------------------|--------|
| Unconditional For | Internal Calls To: | 4000 | | | n |
| | External Calls To: | 4000 | | | n |
| Busy For | Internal Calls To: | 4202 | | | n |
| | External Calls To: | 4202 | | | n |
| No Reply For | Internal Calls To: | 2101 | | | y |
| | External Calls To: | 2101 | | | y |

SAC/CF Override: n

Page 4 of 5

STATION

SITE DATA

```

Room:                               Headset? n
Jack:                               Speaker? n
Cable:                             Mounting: d
Floor:                             Cord Length: 0
Building:                           Set Color:

```

ABBREVIATED DIALING

```
List1:      List2:      List3:
```

BUTTON ASSIGNMENTS

```

1: call-appr                4: manual-in              Grp:
2: call-appr                5: after-call             Grp:
3: auto-in                  Grp:    6: aux-work               RC:   Grp:

```

voice-mail

Avaya Agent LoginID

This is a printout of one of the agents used during compliance testing.

```
display agent-loginID 4400                                     Page 1 of 3

                        AGENT LOGINID

      Login ID: 4400                                           AAS? n
      Name: Paul                                             AUDIX? n
      TN: 1                                                  LWC Reception: spe
      COR: 1                                                  LWC Log External Calls? n
      Coverage Path:                                         AUDIX Name for Messaging:
      Security Code:

                        LoginID for ISDN/SIP Display? n
                        Password:
                        Password (enter again):
                        Auto Answer: station
                        MIA Across Skills: system
                        ACW Agent Considered Idle: system
                        Aux Work Reason Code Type: system
                        Logout Reason Code Type: system
      Maximum time agent in ACW before logout (sec): system
                        Forced Agent Logout Time:      :
```

```
display agent-loginID 4400                                     Page 2 of 3

                        AGENT LOGINID

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

      SN  RL  SL      SN  RL  SL      SN  RL  SL      SN  RL  SL
1: 33    1           16:           31:           46:
2: 34    1           17:           32:           47:
3:           18:           33:           48:
4:           19:           34:           49:
5:           20:           35:           50:
6:           21:           36:           51:
7:           22:           37:           52:
8:           23:           38:           53:
9:           24:           39:           54:
10:          25:           40:           55:
11:          26:           41:           56:
12:          27:           42:           57:
13:          28:           43:           58:
14:          29:           44:           59:
15:          30:           45:           60:
```

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