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Avaya Solution & Interoperability Test Lab

Application Notes for Shanghai Elite Software Technology Elite CRM for Call Center with Avaya Communication Manager using Avaya Application Enablement Services – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Shanghai Elite Software Technology Elite CRM for Call Center to successfully interoperate with Avaya Communication Manager using Avaya Application Enablement Services. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

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Solution & Interoperability Test Lab Application Notes
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1. Introduction

Elite CRM for Call Center is a complete solution for the call center. It provides a configurable business-flow platform to meet the ever-changing requirements of the customer. This is very suitable and beneficial for outsourced call centers. The main features of Elite CRM for Call Center include:

- All interface designs for the agents are done through the AddinBuilder and WorkOrder utilities, eliminating the need for software development.
- The Workflow engine can be configured in many aspects such as assigning the person responsible for each step in the flow and the treatment for expired tasks.
- Contact objective and history make customer management and analysis easier.
- The Outbound management sub-system enables you to setup and manage a campaign with call list generation, job distribution, interface design, call process monitoring and reporting.
- The Monitoring system provides system wide management capability such as monitoring agent status, queue status and special business target.
- The Reporting system exports data in Excel format with customer defined criteria and format. Graphical statistical reporting is also available.

Figure 1 illustrates the configuration used to verify the Elite CRM for Call Center solution. Agents use the Elite Agent application to perform their tasks.
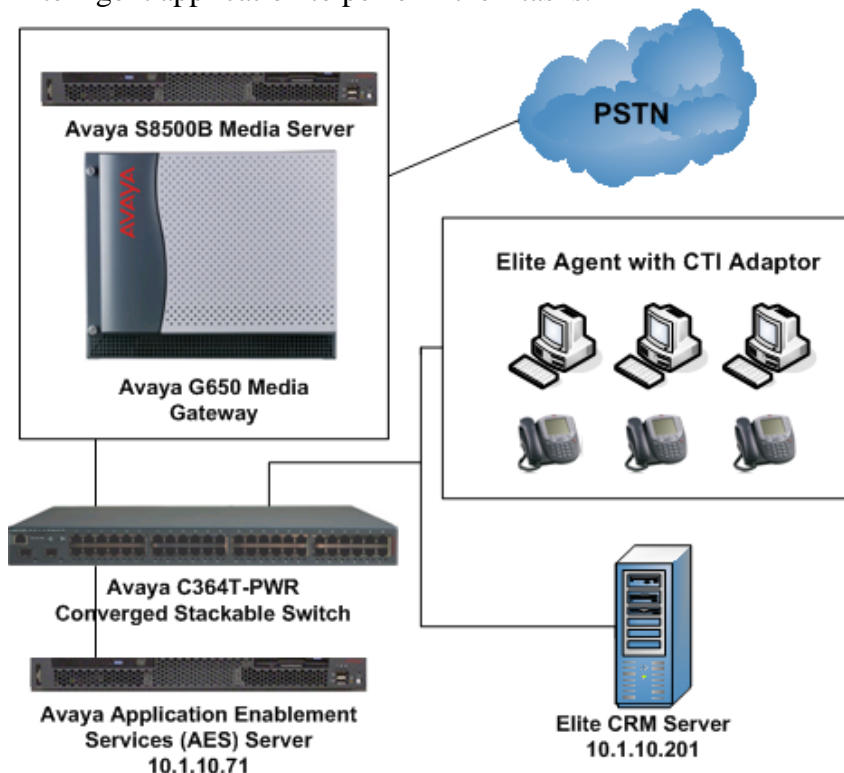

Figure 1: Elite CRM with Avaya Communication Manager using AES

Figure 2 shows the Elite Agent software architecture. The Elite Agent application is made up of 2 executables – *ESoftPhone* and *EliteClient*. *EliteClient* uses a Server Adaptor to connect to the Elite CRM Server for business process operations. *ESoftPhone* uses a CTI Adaptor to integrate with Avaya Communication Manager through the Avaya Application Enablement Services (AES) Telephony Services Application Programming Interface (TSAPI) service for telephony operations.
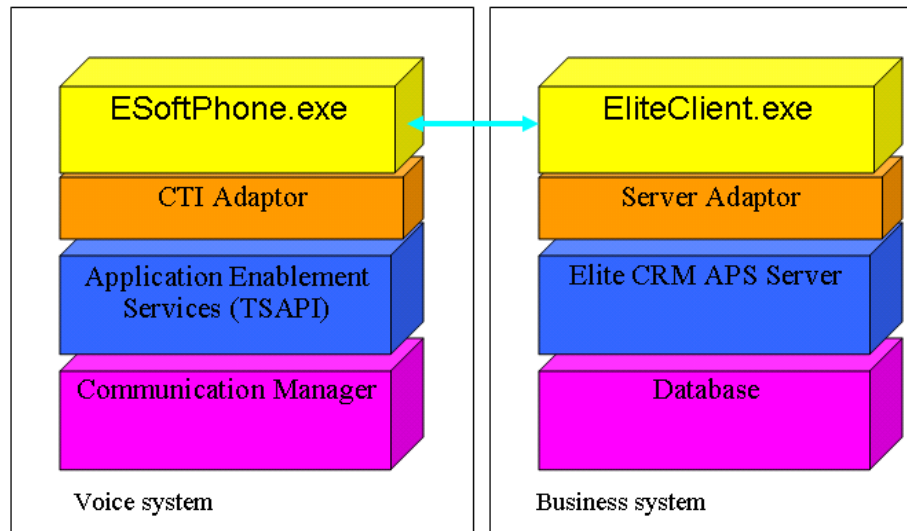

Figure 2: Elite Agent Architecture

ESoftPhone has a softphone Graphical User Interface (GUI) for agents to use to perform telephone operations. In addition, *ESoftPhone*'s CTI functionality is well integrated into the business process flow of *EliteClient*. Under normal operational process, the agents do not need to use the telephone or even the softphone, as all the CTI operation is controlled by *EliteClient*. For example, when the agent receives an incoming call, selecting the customer record in *EliteClient* will instruct *ESoftPhone* to answer the call.

Thus, the TSAPI interface is used by each instance of the Elite Agent for call status and control for the desktop agent phone. The Elite CRM Server does not directly interface to the Avaya Application Enablement Services Server or Avaya Communication Manager.

2. Equipment and Software Validated

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

Equipment	Software
Avaya S8500B Media Server	3.0.1 (R013x.00.1.346.0)
Avaya G650 Media Gateway • TN2312BP IP Server Interface • TN799DP C-LAN Interface • TN2302AP IP Media Processor	- HW07, FW022 HW01, FW015 HW20, FW107
Avaya Application Enablement Services	r3-0-0-build-50-1-0 (3.0.1)
Avaya 4600 Series IP Telephones	2.4 (4610SW) 2.4 (4621SW) 2.5 (4625SW)
Avaya C364T-PWR Converged Stackable Switch	4.3.12
Shanghai Elite CRM for Call Center	3.1

3. Configure Avaya Communication Manager

This section provides the procedures for configuring Avaya Communication Manager. The procedures fall into the following areas:

- Administer C-LAN for AES connectivity
- Administer transport link for AES connectivity
- Administer CTI link with TSAPI service

The detailed administration of contact center devices, such as VDNs, Vectors, Hunt Groups, Logical Agents and Station Extensions are assumed to be in place and are not covered in these Application Notes.

3.1. Administer C-LAN for AES Connectivity

The C-LAN administration procedure will involve adding an IP node name, an IP interface, and a data module. First, add an entry for the C-LAN in the node-names form. Use the "change node-names ip" command, as shown in **Figure 3**. In this case, "s8500-clan1" and "10.1.10.21" are entered as **Name** and **IP Address** for the C-LAN that will be used for connectivity to the AES server. The actual node name and IP address may vary. Submit these changes.

```
change node-names ip
                              IP NODE NAMES
    Name                 IP Address
default              0   .0   .0   .0
aes1                 10  .1   .10  .71
procr                10  .1   .10  .10
s8500-clan1          10  .1   .10  .21
s8500-medpro1        10  .1   .10  .31
s8500-val1           10  .1   .10  .41
```
Figure 3: IP Node Names

Next, add the C-LAN to the system configuration using the "add ip-interface 1a02" command. Note that the actual slot number may vary. In this case, "1a02" is used as the slot number, as shown in **Figure 4** below. Enter the node name assigned from **Figure 3** above into the **Node Name** field, and then the IP address will be populated automatically.

Enter proper values for the **Subnet Mask** and **Gateway Address** fields. In this case, "255.255.255.0" and "10.1.10.1" are used to correspond to the network configuration in these Application Notes. Set the **Enable Ethernet Port** field to "y". It is recommended that the field **Auto** be set to "n" and the **Speed** and **Duplex** fields set to the connection speed configured on the Ethernet switch. Default values may be used in the remaining fields. Submit these changes.

```
add ip-interface 1a02
                              IP INTERFACES


              Type: C-LAN
              Slot: 01A02
       Code/Suffix: TN799  D
         Node Name: s8500-clan1
        IP Address: 10 .1   .10 .21
       Subnet Mask: 255.255.255.0                          Link: 1
   Gateway Address: 10 .1   .10 .1
 Enable Ethernet Port? y                    Allow H.323 Endpoints? y
     Network Region: 1                        Allow H.248 Gateways? y
              VLAN: 1010                       Gatekeeper Priority: 5

 Target socket load and Warning level: 400
      Receive Buffer TCP Window Size: 8320
                            ETHERNET OPTIONS
              Auto? n
             Speed: 100Mbps
            Duplex: Full
```
Figure 4: IP Interface

Next, add a new data module using the "add data-module n" command, where "n" is an available extension. Enter the following values as shown in **Figure 5**:

- **Name:** A descriptive name.
- **Type:** "ethernet"
- **Port:** Same slot number from **Figure 4** and port "17".
- **Link:** A link number not previously assigned on this switch.

```
add data-module 19990
                                DATA MODULE

  Data Extension: 19990                Name: Data Ext for CLAN 1a02
            Type: ethernet
            Port: 01A0217
            Link: 1




Network uses 1's for Broadcast Addresses? y
```
Figure 5: Data Module

3.2. Administer Transport Link for AES Connectivity

Administer the transport link to Avaya Application Enablement Services (AES) with the "change ip-services" command. Add an entry with the following values for fields on Page 1, as shown in **Figure 6** below:

- **Service Type:** "AESVCS"
- **Enabled:** "y"
- **Local Node:** Node name for the C-LAN assigned in **Figure 3**.
- **Local Port** Retain the default of "8765".

```
change ip-services                                          Page  1 of  3


                            IP SERVICES
Service      Enabled    Local       Local       Remote      Remote
 Type                   Node        Port        Node        Port
AESVCS         y        s8500-clan1  8765
SAT            y        s8500-clan1  5023        any         0
```
Figure 6: IP Services Page 1

Go to Page 3 of the IP Services form, and enter the following values as shown in **Figure 7**:

- **AE Services Server:** Name obtained from the AES server, in this case "aes1".
- **Password:** The associated AES Server password.
- **Enabled:** "y"

Note that the name and password entered for the **AE Services Server** and **Password** fields must match the name and password administered on the AES server. The name for the AES server 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. The same password entered in **Figure 7** below must be set on the AES server using **Administration > Switch Connections > Edit Connection > Set Password** as shown in **Figure 13**.

```
change ip-services                                          Page   3 of   3
                        AE Services Administration


   Server ID    AE Services        Password        Enabled    Status
                  Server
     1:      aes1                *                     y
     2:
     3:
```

Figure 7: IP Services Page 3

3.3. Administer CTI Link with TSAPI Service

Add a CTI link and set the values as shown in **Figure 8** below using the "add cti-link n" command, where "n" is an available CTI link number. Enter an available extension number in the **Extension** field. Note that the CTI link number and extension number may vary. Enter "ADJ-IP" in the **Type** field, and a descriptive name in the **Name** field. Default values may be used in the remaining fields. Submit these changes.

```
add cti-link 1                                              Page   1 of   2
                                CTI LINK
CTI Link: 1
Extension: 19001
      Type: ADJ-IP
                                                                  COR: 1

      Name: AES TSAPI Svc
```

Figure 8: CTI Link

4. Configure Avaya Application Enablement Services

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

- Verify Avaya Application Enablement Services License
- Administer local IP
- Administer switch connections
- Administer TSAPI link
- Administer security database
- Administer Elite CRM user

4.1. Verify Avaya Application Enablement Services License

Access the AES OAM web based interface. Note that the AES OAM includes two separate administrative accounts, one to manage CTI OAM Admin and a separate one for User Management. Log in to AES OAM using the CTI OAM Admin user and password, and the "Welcome To OAM" screen will be displayed as shown in **Figure 9**.
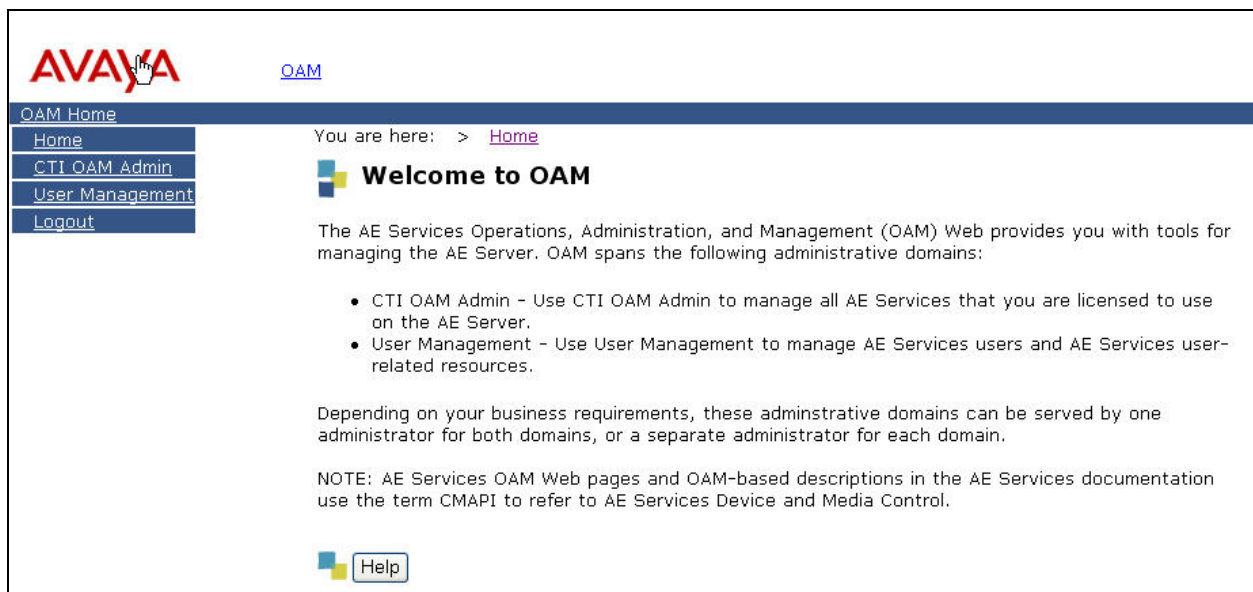
Figure 9: Welcome to OAM

Select **OAM Home -> CTI OAM Home.**. From the Welcome to CTI OAM screen shown in **Figure 10**, verify that the Avaya Application Enablement Services license has proper permissions for the features illustrated in these Application Notes by ensuring the TSAPI service is licensed. If the TSAPI service is not licensed, then contact the Avaya sales team or business partner for a proper license file.

Figure 10: Welcome to CTI OAM Screens

4.2. Administer Local IP

From the CTI OAM Home menu, select **Administration > Local IP**. As shown in **Figure 11**, in the **Client Connectivity** field, select the AES server IP address that will be used to connect to Elite CRM. In the **Switch Connectivity** field, select the AES server IP address that will be used to connect to Avaya Communication Manager. Click on **Apply Changes**.

Figure 11: Local IP

4.3. Administer Switch Connections

From the CTI OAM Home menu, select **Administration > Switch Connections**. As shown in **Figure 12**, enter a descriptive name for the switch connection and click on **Add Connection**. In this case, "S8500SITEA" is used.

Figure 12: Switch Connections

Next, the Set Password screen is displayed as shown in **Figure 13**. For the **Switch Password** and **Confirm Switch Password** fields, enter the password that was administered in Avaya Communication Manager using the IP Services form in Section 3.2. The **SSL** field needs to be checked for the S8500 Media Server. Click on **Apply**.

Figure 13: Set Password

The Switch Connections screen is displayed. As shown in **Figure 14**, select the newly added switch connection name and click on **Edit CLAN IPs**.

Figure 14: Switch Connections

In the Edit CLAN IPs screen, enter the host name or IP address of the C-LAN used for AES connectivity as shown in **Figure 15**. In this case, "10.1.10.21" is used, which corresponds to the C-LAN administered on Avaya Communication Manager in **Figure 3**. Click on **Add Name or IP**.

Figure 15: Edit CLAN IPs

4.4. Administer TSAPI Service

To administer a TSAPI link on AES, select **Administration > CTI Link Admin > TSAPI Links** from the CTI OAM Home menu as shown in **Figure 16** below. Click on **Add Link**.

Figure 16: TSAPI Links

In the Add/Edit TSAPI Links screen, select the following values as shown in **Figure 17**:

- **Link:** Select an available Link number from 1 to 16.
- **Switch Connection:** Administered switch connection configured in **Figure 12**.
- **Switch CTI Link Number:** Corresponding CTI link number configured in **Figure 8**.

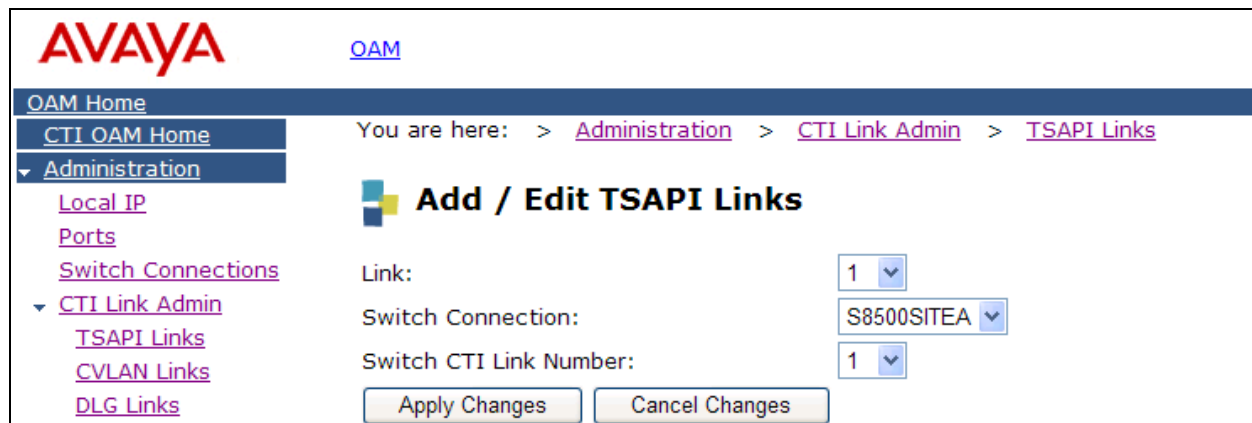Note that the actual values may vary. Click on **Apply Changes**.

Figure 17: Add/Edit TSAPI Links

Next, enable the Security Database on AES. From the CTI OAM Home menu, select **Administration > TSAPI Configuration** to display the TS Configuration screen shown in **Figure 18** below. Click on **Enable SDB**, followed by **Apply Changes**.
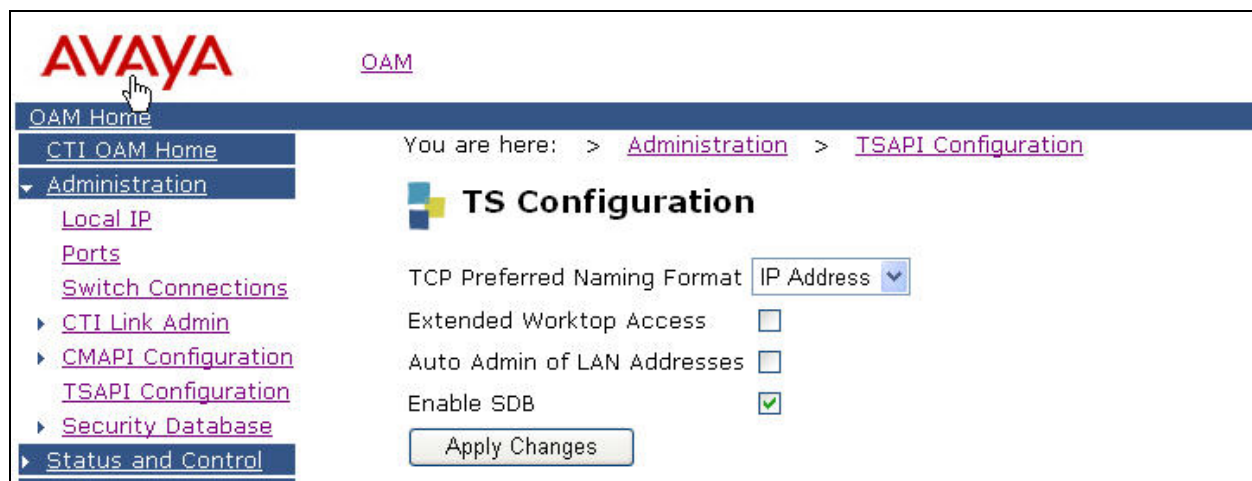

Figure 18: TS Configuration

Navigate to the Tlinks screen by selecting **Administration > Security Database > Tlinks** from the CTI OAM Home menu. Note the value of the **Tlink Name**, as this will be needed to configure the CTI Adaptor in Elite Agent application in Section 5.2.

In this case, the **Tlink Name** is "AVAYA#S8500SITEA#CSTA#AES1", which is automatically created by the AES server and shown in **Figure 19**.
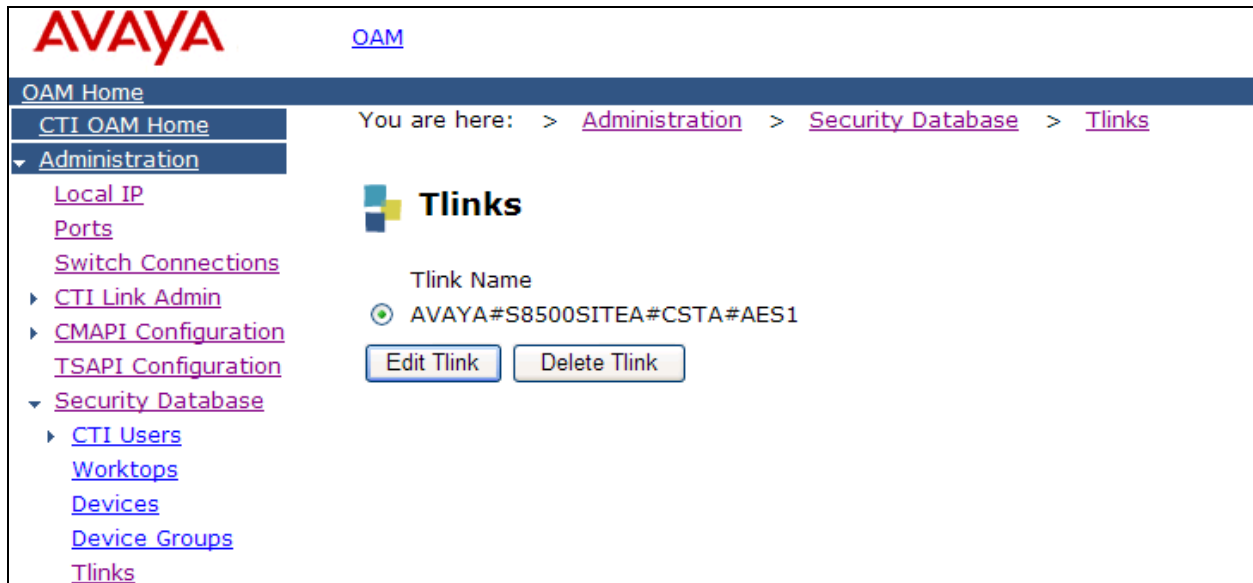

Figure 19: Tlinks

4.5. Administer Security Database

All devices that are monitored and controlled by Elite Agent application running on the agent PCs must be configured in the AES Security Database. These devices include the station extensions used by the agents. From the CTI OAM Home menu, select **Administration > Security Database -> Devices**, and add each device by entering the device extension and clicking on **Add Device**. A sample listing of the configured devices used for compliance testing is shown in **Figure 20**. Note that the total number of devices may vary, as this depends on the number of extensions to be monitored.

Figure 20: Devices

The associated field values for each device are entered in the **Add / Edit Device** screen shown in **Figure 21**. Select "PHONE" for **Device Type** and "Any" for **Tlink Group**, followed by **Apply Changes**.

Figure 21: Add/Edit Devices

4.6. Administer CTI User for Elite CRM

Select **OAM Home -> User Management** to display the AES login screen. Log in using the User Management user name and password, and the same "Welcome To OAM" screen from **Figure 9** is displayed.

To create the CTI User for Elite CRM on AES, select **OAM Home > User Management > Add User** from the User Management Home menu. In the **Add User** screen shown in **Figure 22**, enter the following values:

- **User Id:** A meaningful user id, e.g. *elitecrm*.
- **Common Name:** A descriptive name.
- **Surname:** A descriptive surname.
- **User Password:** Password for the Elite CRM user.
- **Confirm Password:** Re-enter the same password for the Elite CRM user.
- **Avaya Role:** Retain the default of "None".
- **CT User:** Select "Yes" from the drop-down menu.

Click on **Apply** at the bottom of the screen (not shown in **Figure 22**).

Figure 22: Add User

Select **OAM Home -> CTI OAM HOME->Administration** to display the AES login screen again. Log in using the user name and password, and the same "Welcome to OAM" screen from **Figure 9** is displayed. Bring up the "Welcome to CTI OAM" Screens in **Figure 10** by following the procedural steps associated with **Figure 10**.

From the CTI OAM Home menu, select **Administration -> Security Database -> CTI Users -> List All Users** to get a listing of all CTI users, as shown in **Figure 23**. Select the Elite CRM user created back in **Figure 22** and click on **Edit**.
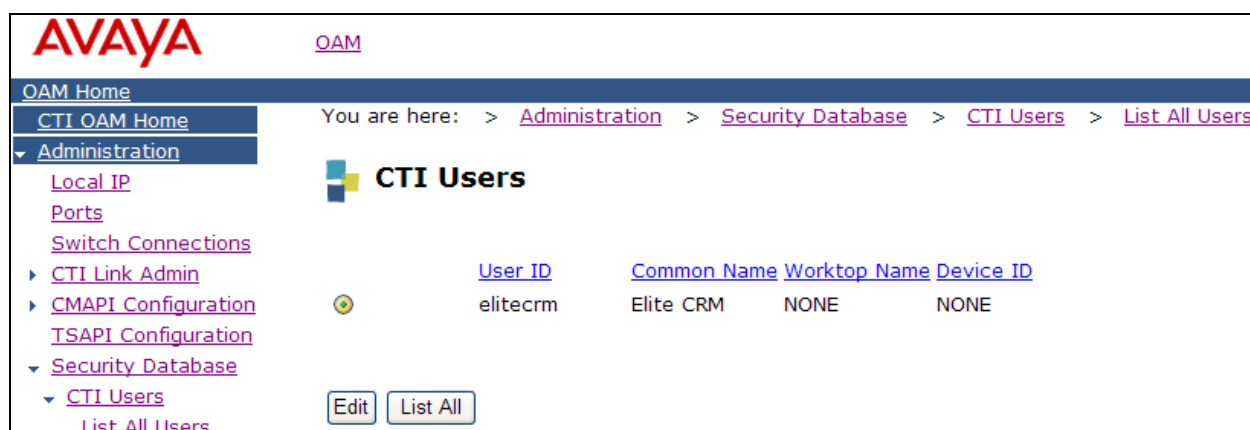

Figure 23: CTI Users

The Edit CTI User screen is displayed, as shown in **Figure 24**. Select "Any" from the drop down menu for the fields **Call Origination and Termination**, **Device / Device** and **Call / Device**. Put a check against **Call / Call** followed by **Apply Changes**.
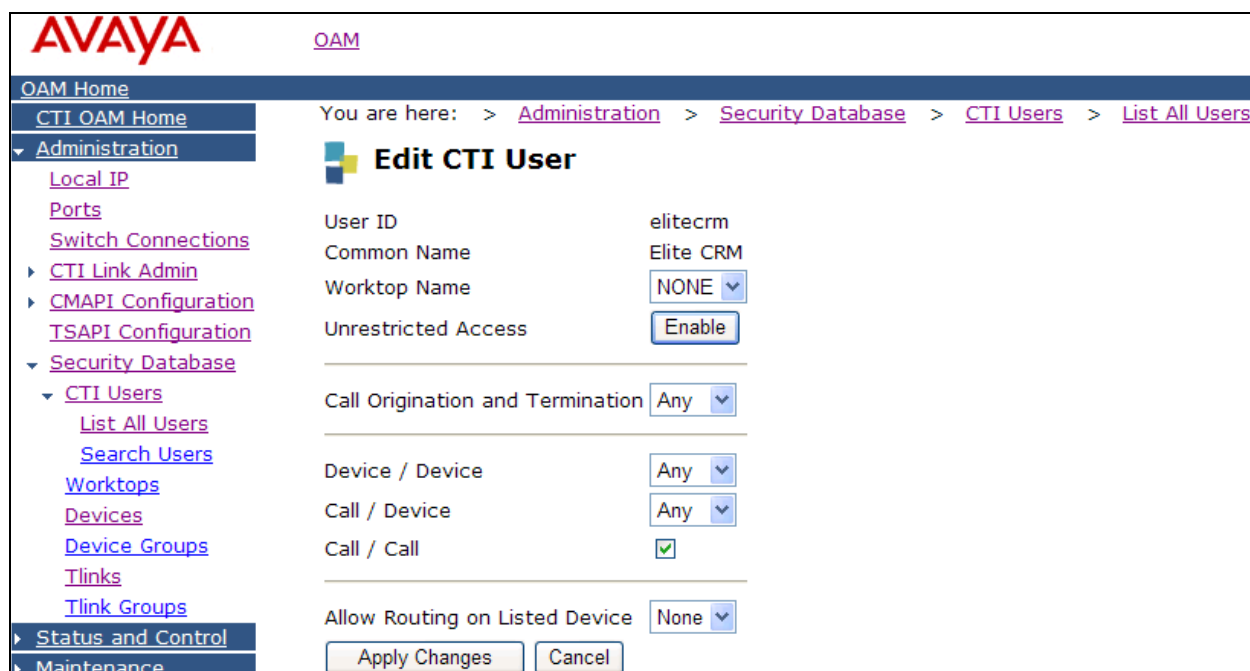

Figure 24: Edit CTI User

5. Configure Elite CRM for Call Center

This section provides the procedures for configuring Elite CRM for Call Center. Elite Agent was installed on a generic Pentium 4, 3.2 GHz PC with 1 GB of memory running Microsoft Windows XP Professional with Service Pack 2. Elite Agent includes an AutoUpgrade utility that enables it to connect to an upgrade server to perform software upgrades using FTP. This allows the Elite CRM administrator to manage the Elite Agent application and configuration files centrally.

5.1. Install Avaya CT TS Win32 Client Software

Elite Agent uses the Avaya CT TS Win32 Client software to communication with the AES. AES 3.0.1 does not introduce a new TSAPI client. To install Avaya CT TS Win32 Client, run the file Setup.exe from the Avaya Computer Telephony 1.3 CDROM. The installation runs through the following steps:

   a. A welcome window will be displayed. Click **Next** to continue.

   b. Leave the **Administration** utilities unchecked, select the **Destination Folder** and click **Next**. The **Administration** utilities are not applicable for the AES.

   c. In the **Host Name or IP Address** field, enter the IP Address of the AES server and click **Add to List**. In this configuration, enter **10.1.10.71**. Click **Next**.

   d. The installation wizard will install the product.

   e. At the end of installation process click on the "**Finish**" button.

5.2. Install Elite Agent Software

To install Elite Agent, run the file Setup.exe. The installation runs through the following steps:

   a. A welcome window will be displayed. Click **Next** to continue.

   b. Enter the **Name**, **Company** and **Serial** information and click **Next**. The **Serial** field is not used, but needs to be populated.

   c. Select the Destination Folder and click **Next**. The default path is **C:\Program Files\Elite\Elite Agent**.

   d. Select the Program Folder and click **Next**. The default program folder is **Elite Agent**.

   e. Review the installation details and click **Next**.

   f. The installation wizard will install the product.

   g. At the end of installation process click on the "**Finish**" button.

5.3. Configuring Elite Agent Software

To configure Elite Agent to integrate with AES, we need to modify the **[CTI]** section in the configuration file EliteClient.ini used by the CTI Adaptor. The CTI Adaptor reads the **[CTI]** section when Elite Agent is launched. As there are many configurable settings, only those required by the CTI Adaptor to integrate with AES will be mentioned here.

Setting	Description
ServerHost=AVAYA#S8500SITEA#CSTA#AES1	Name of the TLink in **Figure 12**.
PBXType=2	2 for Avaya Communication Manager
CTIUserName=elitecrm	CTI User Name for Elite Agent
CTIPassword=xxxxxxxx	Password for the CTI User
NeedAgentID=1	Agent LoginID is required
NeedPassword=1	Password is defined for Agent LoginID
NeedQueue=0	Set to 0 if Expert Agent Selection (EAS) is used in Avaya Communication Manager
NeedExtension=1	Extension is required to login
ExtensionManully=2	Extension can be modified during login
DestBusy=RECONNECT	Reconnect call when consultation transfer to busy extension
MakeCallOnReady=0	Cannot make outbound call when in Ready state
ReadyMode=manualin	Use manual-in mode when the agent is ready to answer calls
NotReadyMode=AUX	Use aux-work mode when the agent is not ready to answer calls
PBXAutoWrap=1	Set to 1 if PBX sets agent to After Call Work (ACW) mode automatically after a call
PBXAutoAnswer=0	Set to 0 if auto-answer is not configured
LogonStatus=NotReady	Agent in Not Ready state after logon
AutoPrefix=	Do not add prefix for outbound calls
IBReleaseState=Ready	Set agent to Ready state after wrapping up an inbound call
OBReleaseState=NotReady	Set agent to Not Ready state after wrapping up an outbound call
AutoAnswer=0	Set to 0 if Elite Agent do not automatically answer calls
NoCallDisconnect=1	Pending ACW request will be sent when agent is still on the call

6. Interoperability Compliance Testing

The Interoperability compliance test included feature functionality and serviceability testing.

The feature functionality testing focused on verifying Elite Agent's handling of TSAPI messages in the areas of logging in and logging out of agents, call control, setting agent states and event notification.

The serviceability testing focused on verifying the ability of Elite Agent to recover from adverse conditions, such as busying out the CTI link and disconnecting the Ethernet cable for the CTI link.

6.1. General Test Approach

The feature functionality test cases were performed manually. Upon startup of the Elite Agent application, it logged the agent into the ACD and monitored the agent extension for calls. Incoming calls were made to the VDN were routed to the agents. Calls were answered using Elite Agent application. Other telephony features such as call transfer and conference were verified also.

The serviceability test cases were performed manually by busying out and releasing the CTI link, and by disconnecting and reconnecting the LAN cables to the systems.

6.2. Test Results

All feature functionality and serviceability test cases passed. Elite CRM for Call Center successfully integrate with the Avaya Communication Manager through the Avaya Application Enablement Services (AES) Telephony Services Application Programming Interface (TSAPI) service for telephony operations. For serviceability testing, Elite CRM was able to recover after resets of the Elite CRM Server and Avaya Communication Manager. The Elite CRM Server was also able to recover from network disconnects and reconnects.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya Application Enablement Services and Elite CRM for Call Center.

7.1. Verify Avaya Communication Manager

Verify the status of the administered CTI link by using the "status aesvcs cti-link" command as shown in **Figure 25**.

```
status aesvcs cti-link

                       AE SERVICES CTI LINK STATUS

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

1      4        no    aes1             established  87      130
2      4        no    aes1             established  97      97
```

Figure 25: Status Aesvcs CTI-link

7.2. Verify Avaya Application Enablement Services

From the AES CTI OAM Home menu, select **Status and Control > Switch Conn Summary** and verify the status of the switch connection as shown in **Figure 26**. The **Conn State** of the switch connection should display **Talking**.

Figure 26: Switch Connections Summary

Verify the status of the TSAPI link by selecting **Status and Control > Services Summary** from the CTI OAM Home menu. Click on **TSAPI Service**, followed by **Details**. The TSAPI Link Details screen is displayed, as shown in **Figure 27**. The **Conn Status** of the TSAPI Link should show **Talking** and **Service State** show **Online**.

Figure 27: TSAPI Link Details

7.3. Verify Elite CRM for Call Center

On the PC running Elite Agent, open a command prompt and change to the directory **C:\Program Files\Elite\Elite Agent**. Type **ESoftPhone.exe –standalone** to bring up ESoftPhone application in standalone mode. Verify that the configuration is working by logging in an agent using ESoftPhone.

8. Support

Technical support on Elite CRM for Call Center can be obtained through the following:

- Call Shanghai Elite technical support at +86-21-64516261.
- Email support@elitecrm.com

9. Conclusion

These Application Notes describe the configuration steps required for Elite CRM for Call Center 3.1 to successfully interoperate with Avaya Communication Manager 3.0.1 using Avaya Application Enablement Services 3.0.1. All feature functionality and serviceability test cases were completed successfully.

10. Additional References

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

- *Avaya Application Enablement Services 3.0 Administration and Maintenance Guide*, Document ID 02-300357, Issue 1, June 2005, available at http://support.avaya.com.

- *Elite CRM Installation and Configuration Guide, Version 3.0*, November 2005, available from Shanghai Elite Software Technology at http://www.elitecrm.com.

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