Avaya Solution & Interoperability Test Lab

Application Notes for Grandsys Technology & Service LOG8000 with Avaya Communication Manager and Avaya Application Enablement Services - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Grandsys Technology & Service LOG8000 to monitor and record calls placed to and from Avaya IP telephones and agents on Avaya Communication Manager.

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.

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1. Introduction

These Application Notes describe a compliance-tested configuration comprised of an Avaya Communication Manager, an Avaya Application Enablement Services (AES) and Grandsys Technology & Service LOG8000.

Grandsys LOG8000 is a recording solution made for the customers of the call center market. Grandsys LOG8000 communicates with Avaya AES using the Telephony Services Application Programming Interface (TSAPI) and uses E1 FXS lines as recording channels. When a call starts on an extension to be recorded, the recording channel will be added to the call using the TSAPI Single Step Conference feature. Grandsys LOG8000 will then record the call and save the recording to the database. Detailed call information obtained using TSAPI are also stored for each call along with the recording.

Figure 1 illustrates a sample configuration consisting of an Avaya S8500 Server, an Avaya G650 Media Gateway, an Avaya AES Server, Avaya IP Telephones and a Windows 2003 Server running Grandsys LOG8000. The Grandsys LOG8000 Server connects to Avaya Communication Manager using E1 FXS lines for voice recording. The Grandsys LOG8000 Server also monitors the agent extensions using the TSAPI Service to retrieve call related information. The TSAPI Service is provided by the Avaya AES Server.

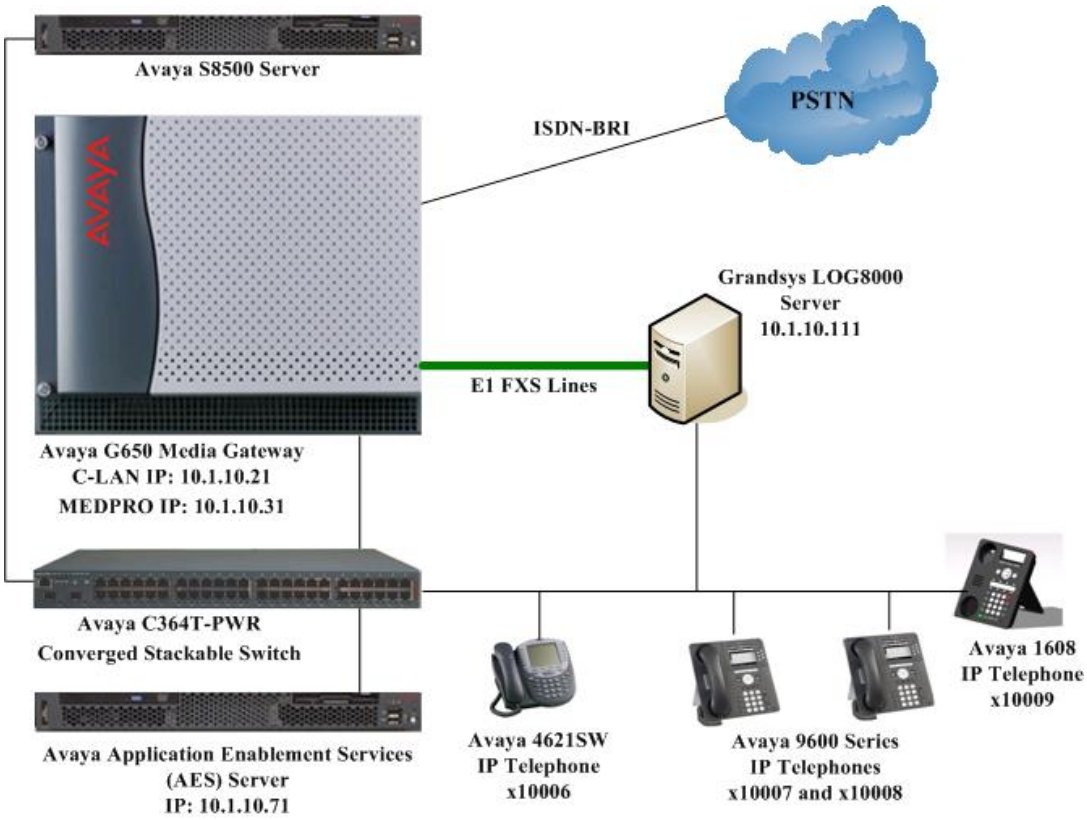

Figure 1: Test Configuration

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2. Equipment and Software Validated

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

Equipment	Version
Avaya S8500 Server	Avaya Communication Manager 5.1 (Service Pack 1 01.0.414.3-15962)
Avaya G650 Media Gateway - TN2312BP IP Server Interface - TN799DP C-LAN Interface - TN2602AP IP Media Processor - TN2214CP Digital Line - TN2464BP DS1 Interface	- HW07, FW044 HW01, FW026 HW02, FW040 HW08, FW015 HW05, FW022
Avaya Application Enablement Services	4.1 with Patch 1
Avaya 4621SW IP Telephone	2.8.8.7 (H.323)
Avaya 9600 Series IP Telephones - 9630 - 9640	 1.55 (H.323) 1.55 (H.323)
Avaya 1608 IP Telephone	1.0.2 (H.323)
Avaya C364T-PWR Converged Stackable Switch	4.5.18
Grandsys LOG8000	2.1.5

3. Configure Avaya Communication Manager

This section provides the procedures for configuring Computer Telephony Integration (CTI) links and FXS stations on Avaya Communication Manager. All the configuration changes in Avaya Communication Manager are performed through the System Access Terminal (SAT) interface. The highlights in the following screens indicate the values used during the compliance test.

3.1. Configure AES and CTI Links

The Avaya AES server forwards CTI requests, responses, and events between Grandsys LOG8000 and Avaya Communication Manager. The Avaya AES server communicates with Avaya Communication Manager over an AES link. Within the AES link, CTI links may be configured to provide CTI services to CTI applications such as Grandsys LOG8000. The following steps demonstrate the configuration of the Avaya Communication Manager side of the AES and CTI links. See **Section 4** for the details of configuring the AES side of the AES and CTI links.

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Step	Description
1.	Enter the **display system-parameters customer-options** command. On Page 3, verify that **Computer Telephony Adjunct Links** is set to **y**. If not, contact an authorized Avaya account representative to obtain the license.

```
display system-parameters customer-options                    Page   3 of  11
                                OPTIONAL FEATURES

    Abbreviated Dialing Enhanced List? n          Audible Message Waiting? n
        Access Security Gateway (ASG)? n              Authorization Codes? y
        Analog Trunk Incoming Call ID? n Backup Cluster Automatic Takeover? n
 A/D Grp/Sys List Dialing Start at 01? n                        CAS Branch? n
Answer Supervision by Call Classifier? n                          CAS Main? n
                                  ARS? y                 Change COR by FAC? n
                 ARS/AAR Partitioning? y  Computer Telephony Adjunct Links? y
          ARS/AAR Dialing without FAC? n   Cvg Of Calls Redirected Off-net? n
          ASAI Link Core Capabilities? n                       DCS (Basic)? n
          ASAI Link Plus Capabilities? n                 DCS Call Coverage? n
       Async. Transfer Mode (ATM) PNC? n                DCS with Rerouting? n
  Async. Transfer Mode (ATM) Trunking? n
             ATM WAN Spare Processor? n    Digital Loss Plan Modification? n
                                  ATMS? n                          DS1 MSP? n
                   Attendant Vectoring? n             DS1 Echo Cancellation? n
```

2.	Enter the **add cti-link m** command, where **m** is a number between 1 and 64, inclusive. Enter a valid **Extension** under the provisioned dial plan in Avaya Communication Manager, set the **Type** field to **ADJ-IP**, and assign a descriptive **Name** to the CTI link.

```
add cti-link 1                                                Page   1 of   2
                                    CTI LINK
 CTI Link: 1
Extension: 19951
     Type: ADJ-IP
                                                                   COR: 1
     Name: TSAPI Svcs
```

3.	Enter the **change node-names ip** command. In the compliance-tested configuration, the **CLAN-01A02** IP address was utilized for registering H.323 endpoints (Avaya IP Telephones) and for connectivity to Avaya AES.

```
change node-names ip                                          Page   1 of   2
                                 IP NODE NAMES
    Name                 IP Address
CLAN-01A02             10.1.10.21
MEDPRO-01A13           10.1.10.31
VAL-01A04              10.1.10.41
default                0.0.0.0
procr                  10.1.10.10
```

4.	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 **CLAN-01A02** board that was configured previously in **Step 3**. During the compliance test, the default port was utilized for the **Local Port** field.

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Step	Description
	change ip-services Page 1 of 3 IP SERVICES Service Type / Enabled / Local Node / Local Port / Remote Node / Remote Port **AESVCS y CLAN-01A02 8765**
	On Page 3, enter the hostname of the Avaya AES server for the **AE Services Server** field. The server name may be obtained by logging in to the Avaya AES server using Secure Shell (SSH), and running the **uname –a** command. Enter an alphanumeric password for the **Password** field and set the **Enabled** field to **y**. The same password will be configured on the Avaya AES server in **Section 4.1**.
	change ip-services Page 3 of 3 AE Services Administration Server ID / AE Services Server / Password / Enabled / Status 1: **aes1 xxxxxxxxxxxxxxx y** 2: 3:

3.2. Recording Stations

The recording stations in this configuration are E1 FXS stations configured as **DS1FD** type of stations.

Step	Description
1.	Enter the **add ds1 <board location>** command to configure the DS1 board used to connect to Grandsys LOG8000. Enter a descriptive **Name**, set **Bit Rate** to **2.048, Line Coding** to **hdb3**, **Signaling Mode** to **CAS**, **Interconnect** to **pbx**, **Interface Companding** to **alaw**, **Idle Code** to **11111111** and **CRC** to **n**. The remaining fields can be left at their defaults.
	add ds1 1a08 Page 1 of 1 DS1 CIRCUIT PACK Location: 01A08 Name: **LOG8000** Bit Rate: **2.048** Line Coding: **hdb3** Signaling Mode: **CAS** Interconnect: **pbx** Country Protocol: 1 Interface Companding: **alaw** CRC? **n** Idle Code: **11111111** Slip Detection? n Near-end CSU Type: other Echo Cancellation? n

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Step	Description
2.	Enter the **add station t** command, where **t** is an extension valid under the provisioned dial plan. On Page 1, set **Type** to **DS1FD**, **Port** to the first port of the DS1 board configured in **Step 1** and enter a descriptive **Name**. Repeat this as necessary to configure additional FXS stations. For the compliance test, stations from 10901 to 10910 were created for the purpose of recording. The remaining fields can be left at their defaults.

```
add station 10901                                          Page   1 of   4
                                    STATION

Extension: 10901                        Lock Messages? n              BCC: 0
     Type: DS1FD                        Security Code:                 TN: 1
     Port: 01A0801                    Coverage Path 1:                COR: 1
     Name: LOG8000 #1                 Coverage Path 2:                COS: 1
                                      Hunt-to Station:              Tests? y
STATION OPTIONS
                                          Time of Day Lock Table:
             Loss Group: 4
    Off Premises Station? y
       R Balance Network? n


          Survivable COR: internal
   Survivable Trunk Dest? Y
```

4. Configure Avaya Application Enablement Services

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

- Administer CTI User
- Verify Avaya Application Enablement Services License
- Administer Switch Connection
- Administer TSAPI link
- Administer CTI user permission
- Administer Ports

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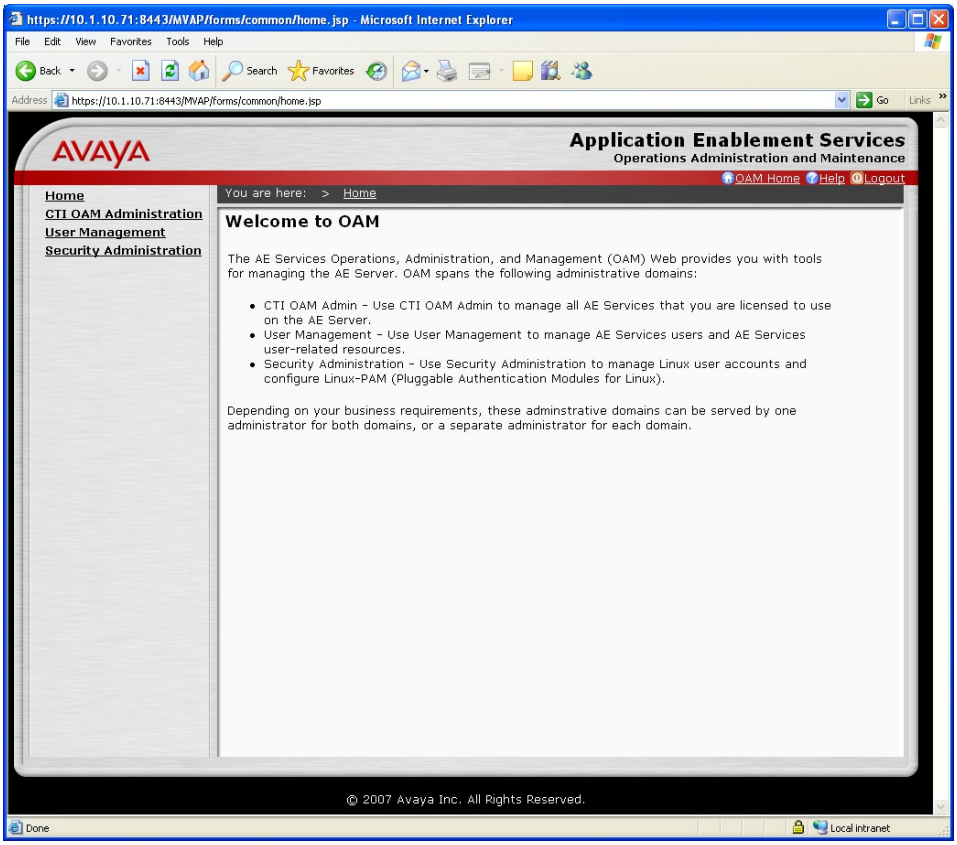
4.1. Administer CTI User

Step	Description
1.	Launch a web browser and enter **https://<IP address of AES server>/MVAP/** to access the AES OAM web based interface. Log in to AES OAM using an administrative login and password (not shown), and the Welcome To OAM screen will be displayed.



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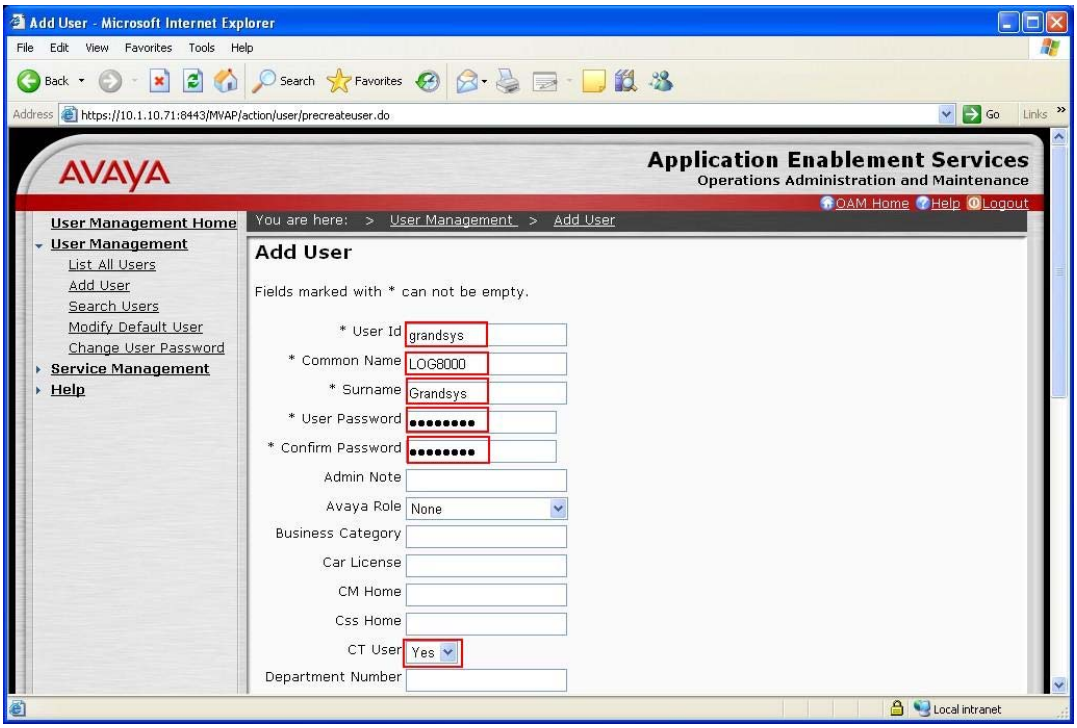
Step	Description
2.	Click **User Management**, then **User Management > Add User** in the left pane. Specify a value for **User Id**, **Common Name**, **Surname**, **User Password** and **Confirm Password**. Set **CT User** to **Yes**. Use the values for **User Id** and **User Password** to configure Grandsys LOG8000 in **Section 5.2 Step 4** to access the TSAPI Services on the AES server. Scroll down to the bottom of the page and click **Apply** (not shown).



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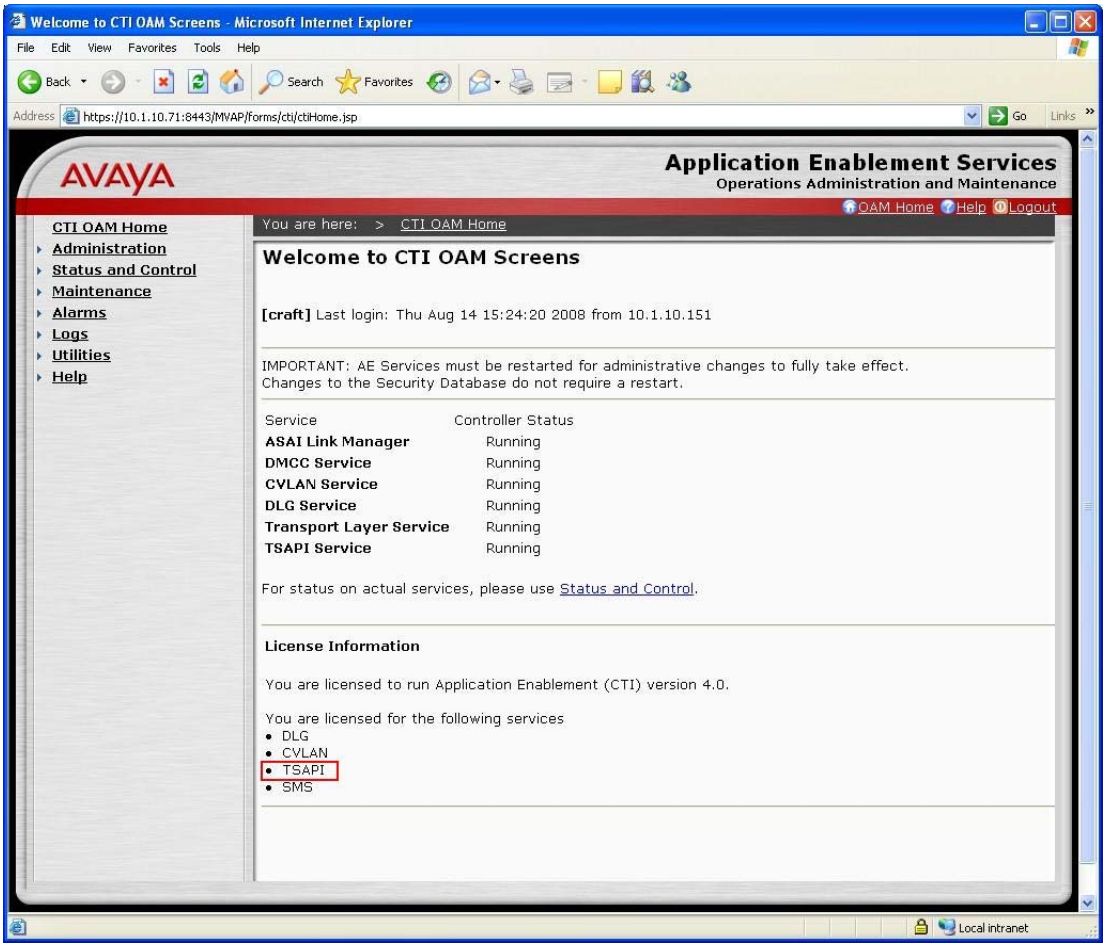
4.2. Verify Avaya Application Enablement Services License

Step	Description
1.	Select **OAM Home**, then click on **CTI OAM Administration** from the left menu (not shown). From the Welcome to CTI OAM screen, 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.



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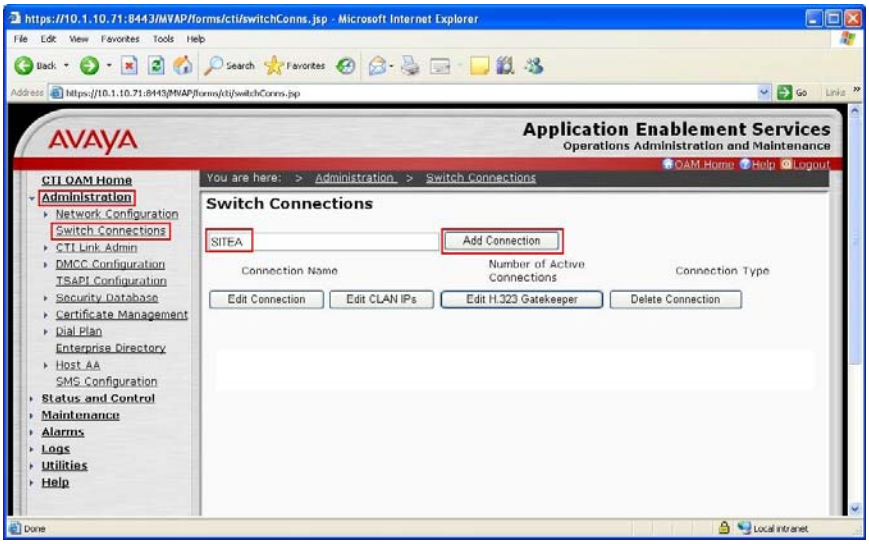
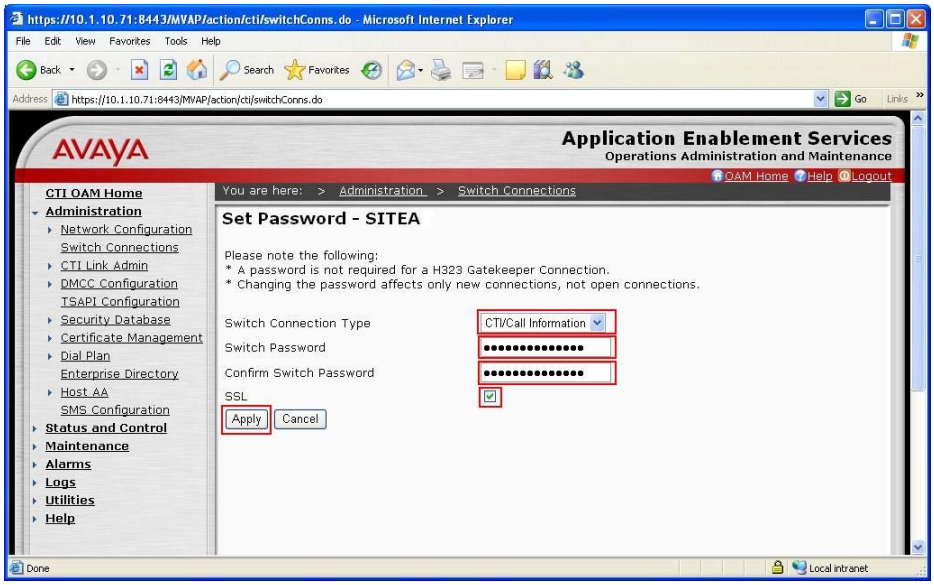
4.3. Administer Switch Connection

Step	Description
1.	From the CTI OAM Home menu, select **Administration > Switch Connections**. Enter a descriptive name for the switch connection and click **Add Connection**. In this case, **SITEA** is used. 
2.	The Set Password screen is displayed. Select **CTI/Call Information** for **Switch Connection Type**. 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 3.1 Step 4**. The **SSL** field needs to be checked for the S8500 Server. Click **Apply**. 

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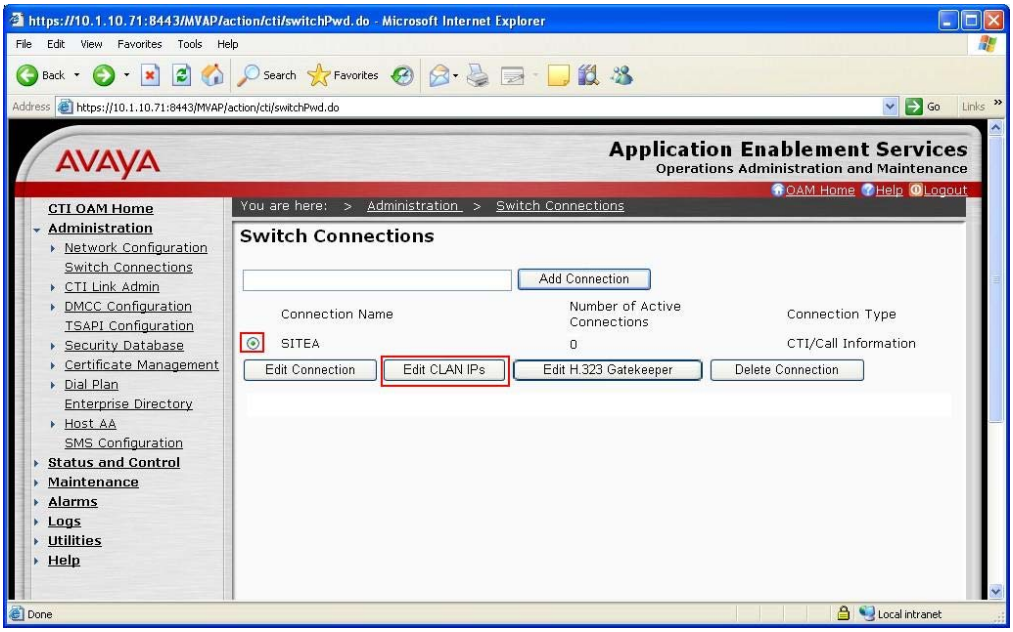
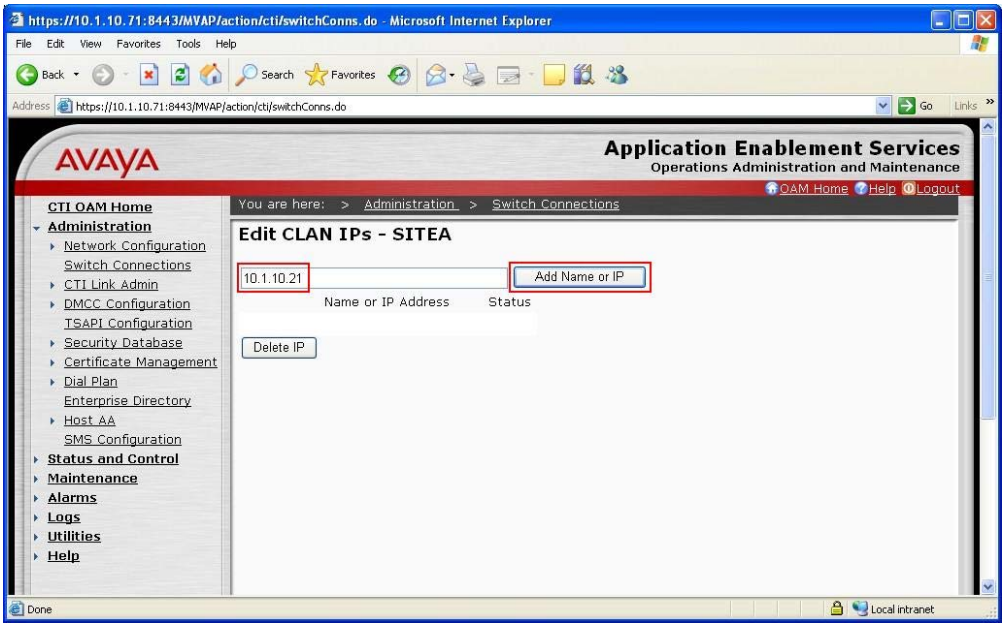
Step	Description
3.	The Switch Connections screen is displayed. Select the newly added switch connection name and click **Edit CLAN IPs**. 
4.	In the Edit CLAN IPs screen, enter the host name or IP address of the C-LAN used for AES connectivity. In this case, **10.1.10.21** is used, which corresponds to the IP address of the C-LAN administered on Avaya Communication Manager in **Section 3.1 Step 3**. Click **Add Name or IP**. 

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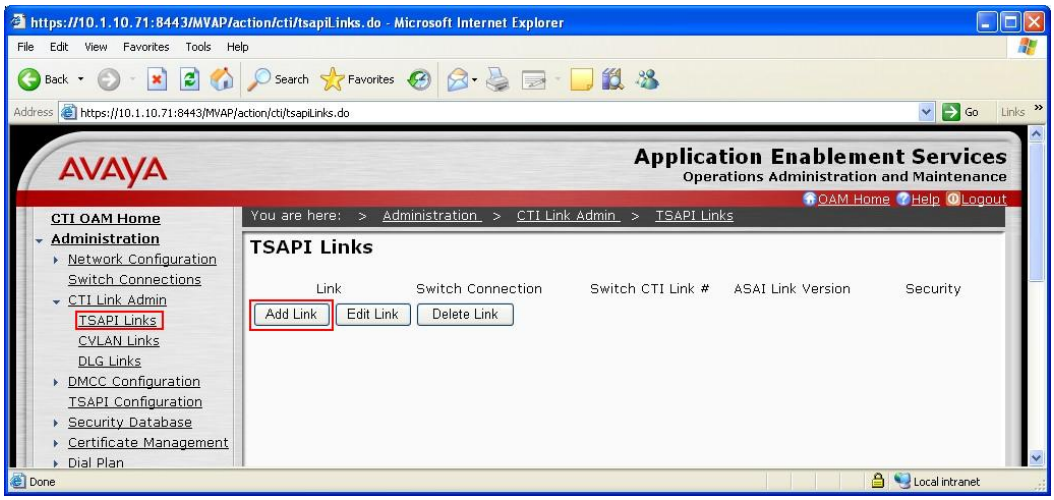
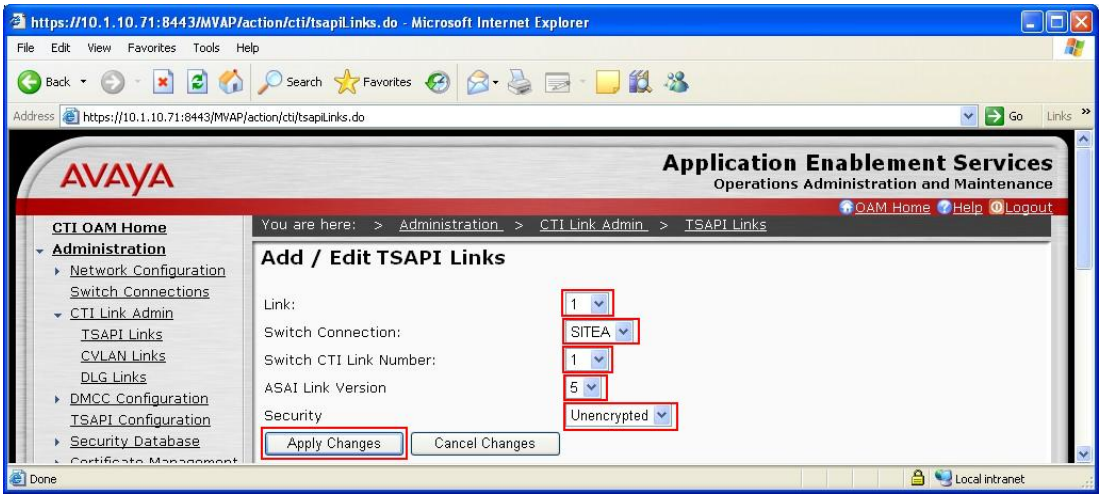
4.4. Administer TSAPI Link

Step	Description
1.	To administer a TSAPI link on AES, select **Administration > CTI Link Admin > TSAPI Links** from the CTI OAM Home menu. Click **Add Link**. 
2.	In the Add / Edit TSAPI Links screen, select the following values: • **Link:** Select an available Link number from 1 to 16. • **Switch Connection:** Administered switch connection in **Section 4.3 Step 1**. • **Switch CTI Link Number:** Corresponding CTI link number in **Section 3.1 Step 2**. • **ASAI Link Version:** Set to either **4** or **5**. • **Security:** **Unencrypted** TSAPI Links are used. Note that the actual values may vary. Click **Apply Changes**. 

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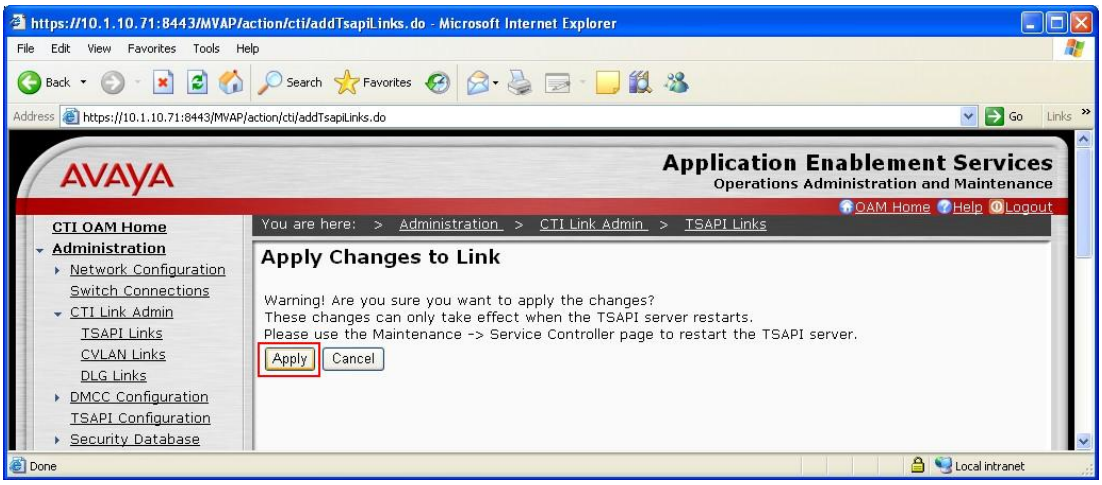
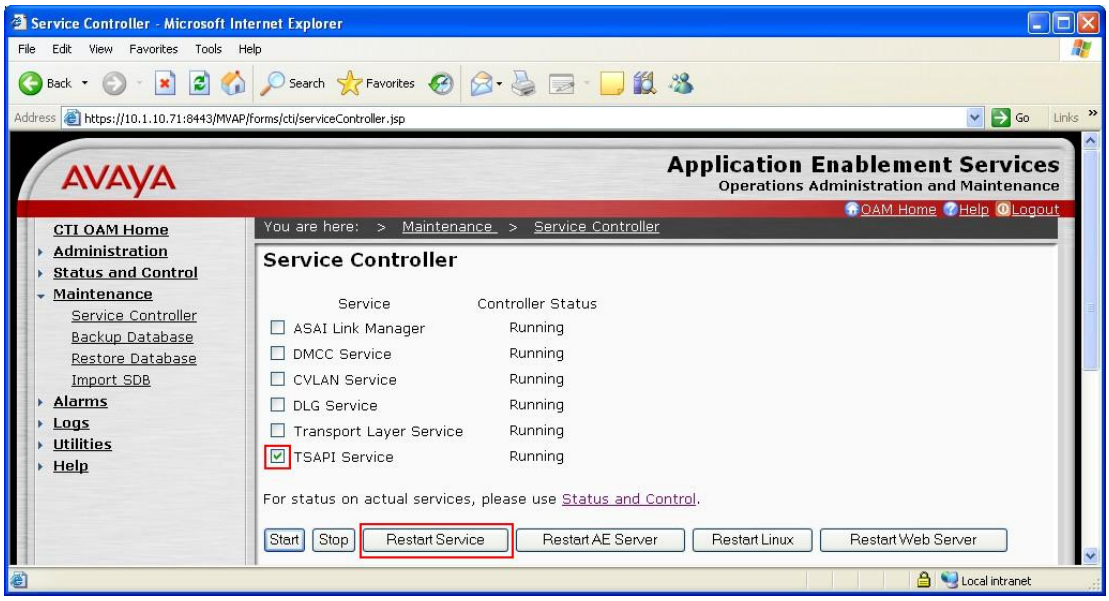
Step	Description
	Click **Apply** to confirm the changes. 
3.	To restart the TSAPI Service, select **Maintenance > Service Controller** from the CTI OAM Home menu. Check the **TSAPI Service** checkbox and click **Restart Service**. 

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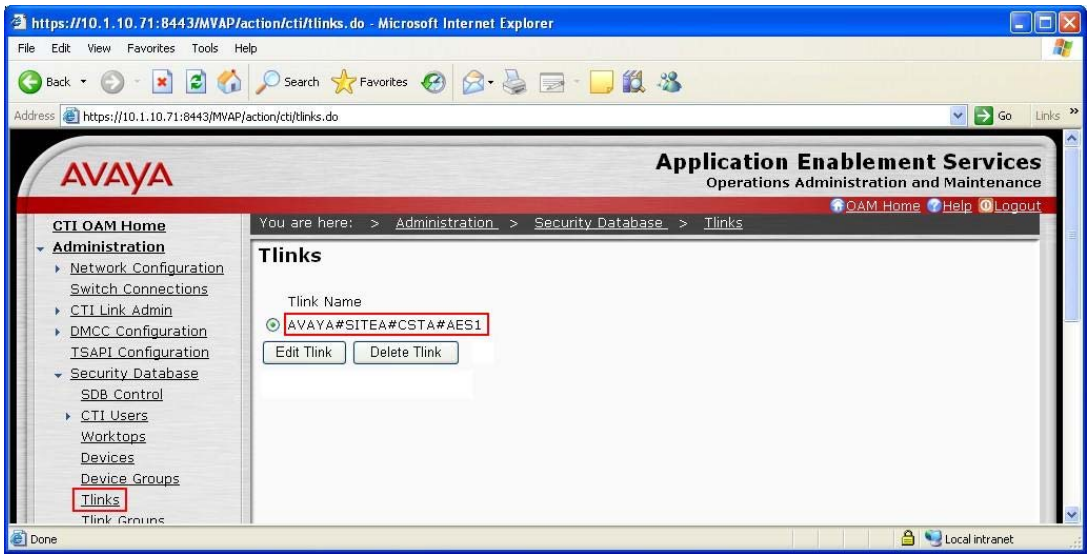
Step	Description
	Click **Restart** to confirm the restart.
4.	Navigate to the Tlinks screen by selecting **Administration > Security Database > Tlinks** from the CTI OAM Home menu. Note the value of the **Tlink Name**, as this will be needed to configure the Grandsys LOG8000 Server in **Section 5.2 Step 4**. In this configuration, the **Tlink Name** is **AVAYA#SITEA#CSTA#AES1**, which is automatically assigned by the AES server. 

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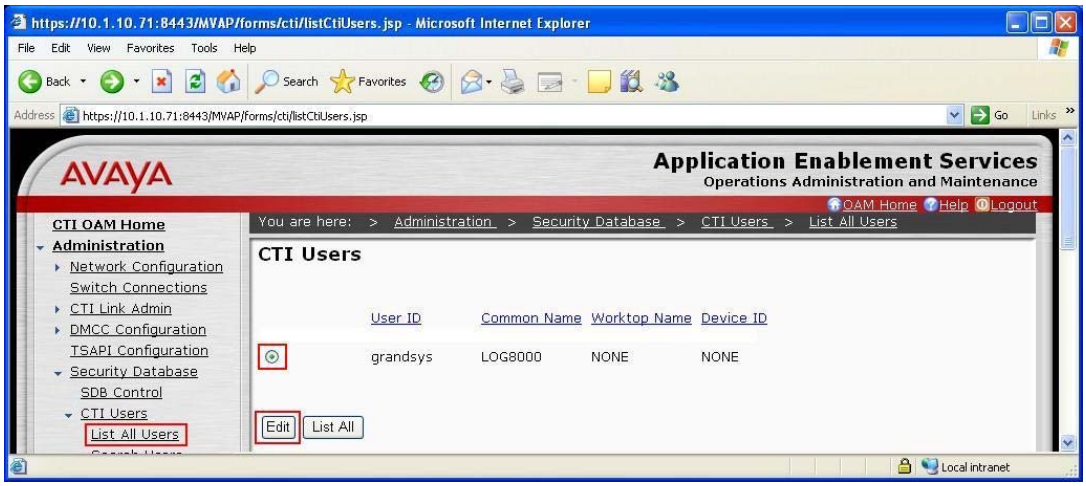
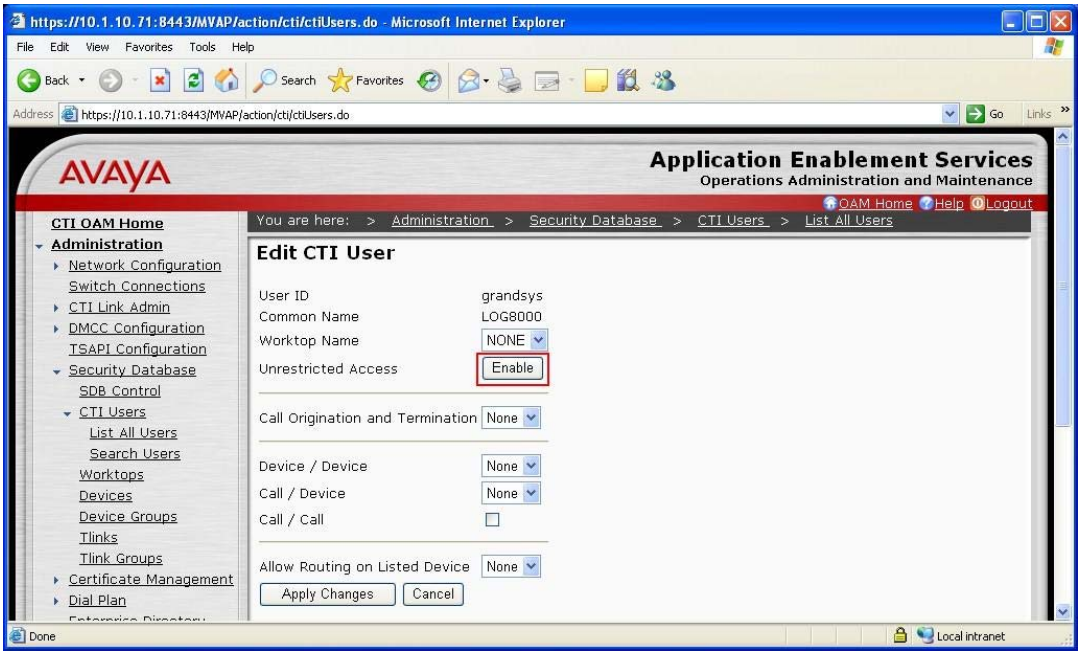
4.5. Administer CTI User Permission

Step	Description
1.	Select **Administration > Security Database > CTI Users > List All Users** from the CTI OAM Home menu. Select the **User ID** created in **Section 4.1 Step 2** and click **Edit**. 
2.	Assign access rights and call/device privileges according to customer requirements. For simplicity in configuration, **Unrestricted Access** was enabled during compliance testing. If **Unrestricted Access** is not desired, then consult [1] for guidance on configuring the call/device privileges as well as devices and device groups. Click **Enable**. 

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Step	Description
	Click **Apply** to apply the changes.

5. Configure Grandsys LOG8000

Grandsys installs, configures, and customizes the Grandsys LOG8000 application for their end customers. This section only describes the interface configuration for the Grandsys LOG8000 application to communicate with Avaya AES and Avaya Communication Manager.
Refer to [3] and [4] for configuring the Grandsys LOG8000 application.

5.1. Install Avaya AES TSAPI Client Software

Grandsys LOG8000 uses the Avaya AES TSAPI Client software to communication with the TSAPI Service on the AES server. The Avaya AES TSAPI Client software will be provided by Grandsys, or it can also be downloaded from Avaya Support website (http://support.avaya.com).

The installation runs through the following steps:

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

b. Accept the **Destination Folder** and click **Next**.

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. At the end of installation process click **Finish**.

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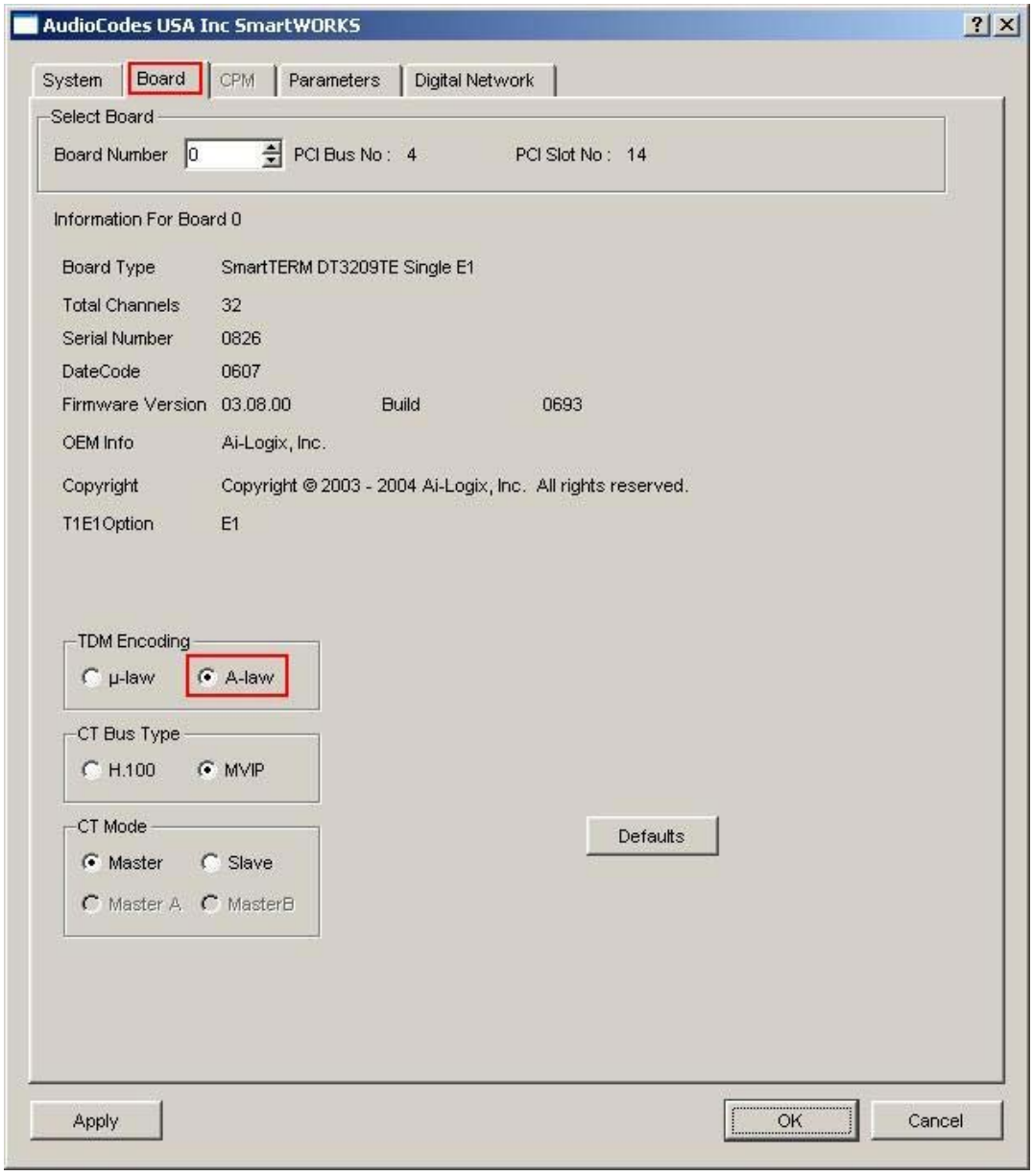
5.2. Configure Grandsys LOG8000

Step	Description
1.	On the Grandsys LOG8000 Server, click **Start > Control Panel > SmartControl** to configure the E1 board. Click on the **Board** tab and set **TDM Encoding** to **A-law** to match the DS1 board setting configured in **Section 3.2 Step 1**.



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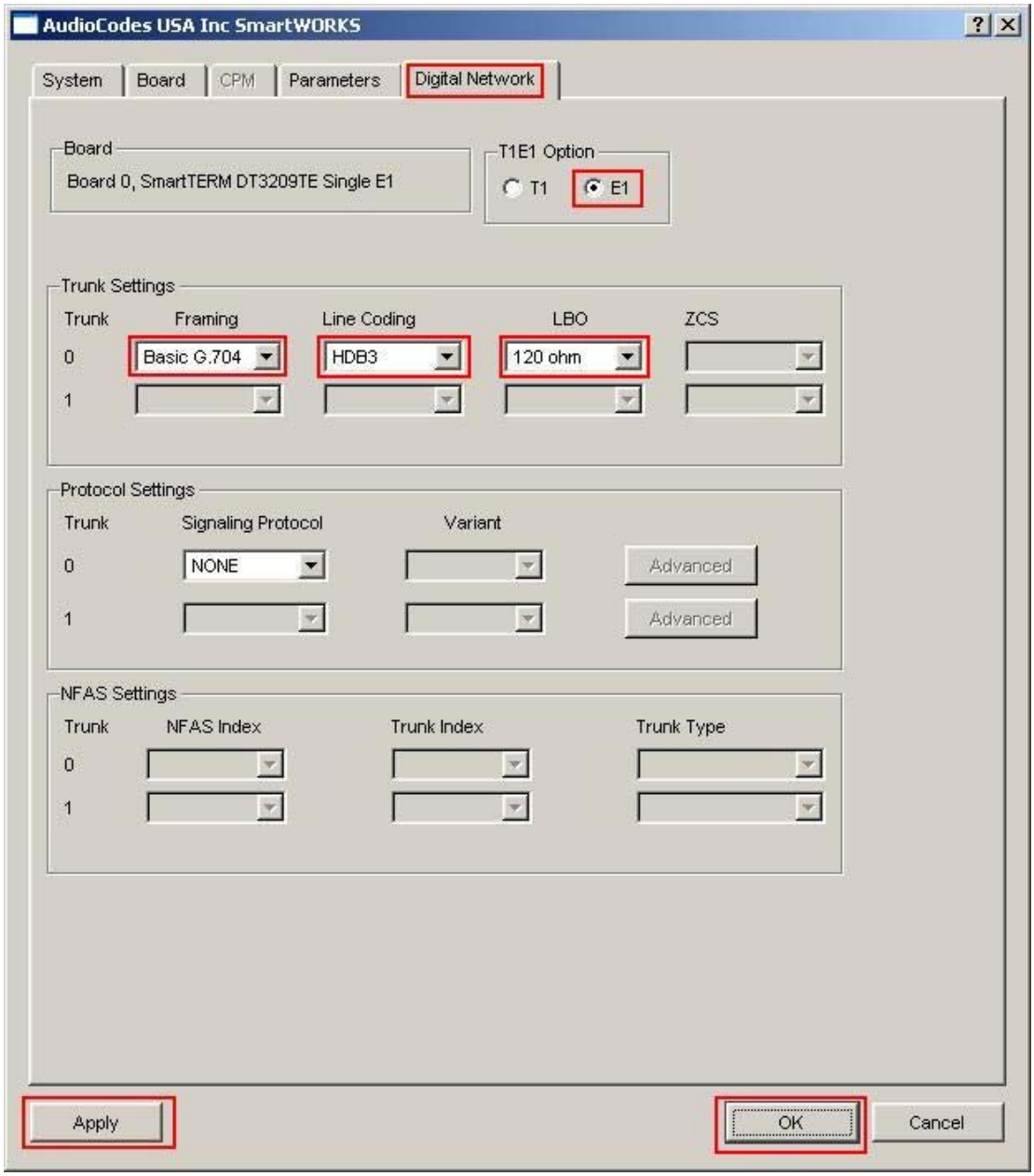
Step	Description
2.	Click on the **Digital Network** tab. Set **T1E1 Option** to **E1**, **Framing** to **Basic G.704**, **Line Coding** to **HDB3** and **LBO** to **120 ohm**. These settings must match the DS1 board setting configured in **Section 3.2 Step 1**. Click **Apply** to save the settings and click **OK**. Restart the server to effect the changes to the E1 board. 

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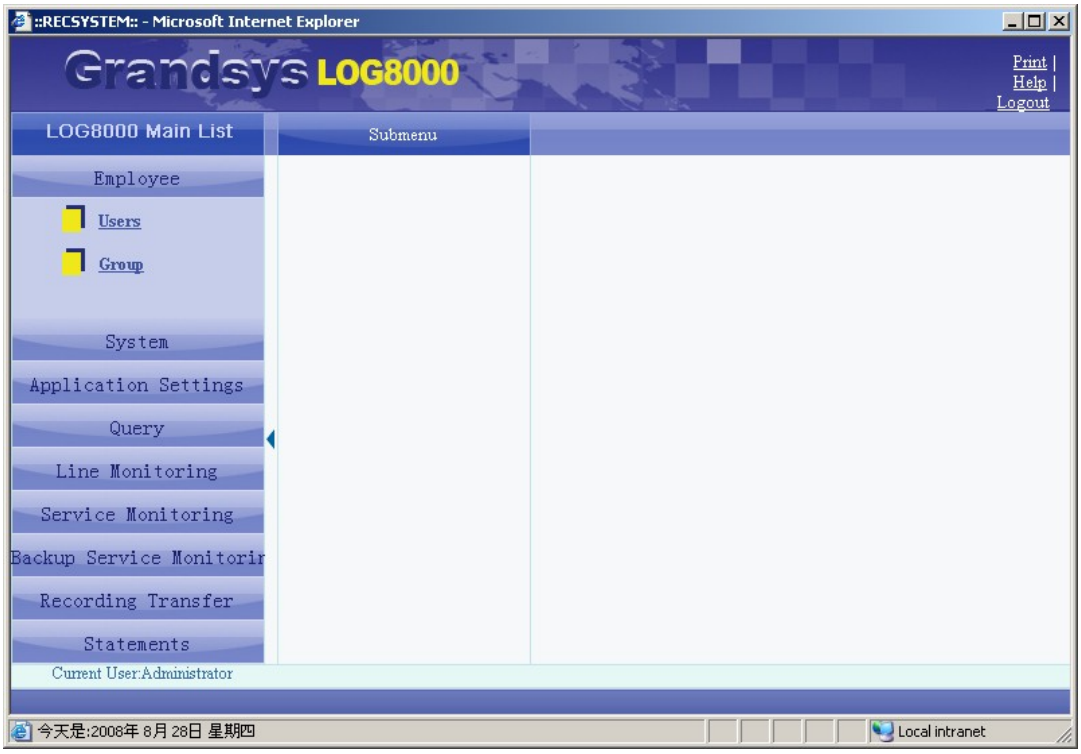
Step	Description
3.	Launch a web browser and enter **http://<IP address of Grandsys LOG8000 Server>/record/** to access the Grandsys LOG8000 web based interface. Log in using an administrative login and password (not shown) and the following screen will be displayed.



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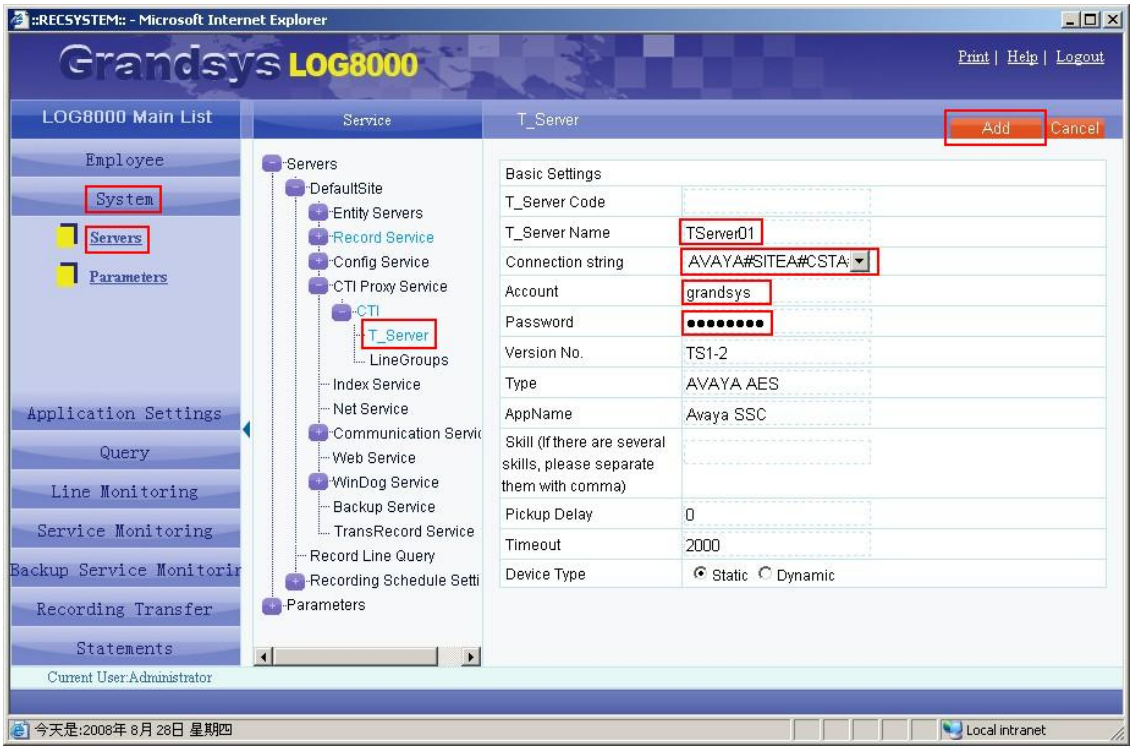
Step	Description
4.	Click **System > Servers** on the left-most pane. To configure the settings for TSAPI, expand **Servers > DefaultSite > CTI Proxy Service > CTI** in the center pane and click on **T_Server**. On the right-most pane, enter a descriptive value for **T_Server Name** and select the TSAPI Link noted down in **Section 4.4 Step 4** for the **Connection string**. Set **Account** and **Password** to the **User Id** and **User Password** configured in **Section 4.1 Step 2** respectively. The rest of the fields are left at their default values. Click **Add**.



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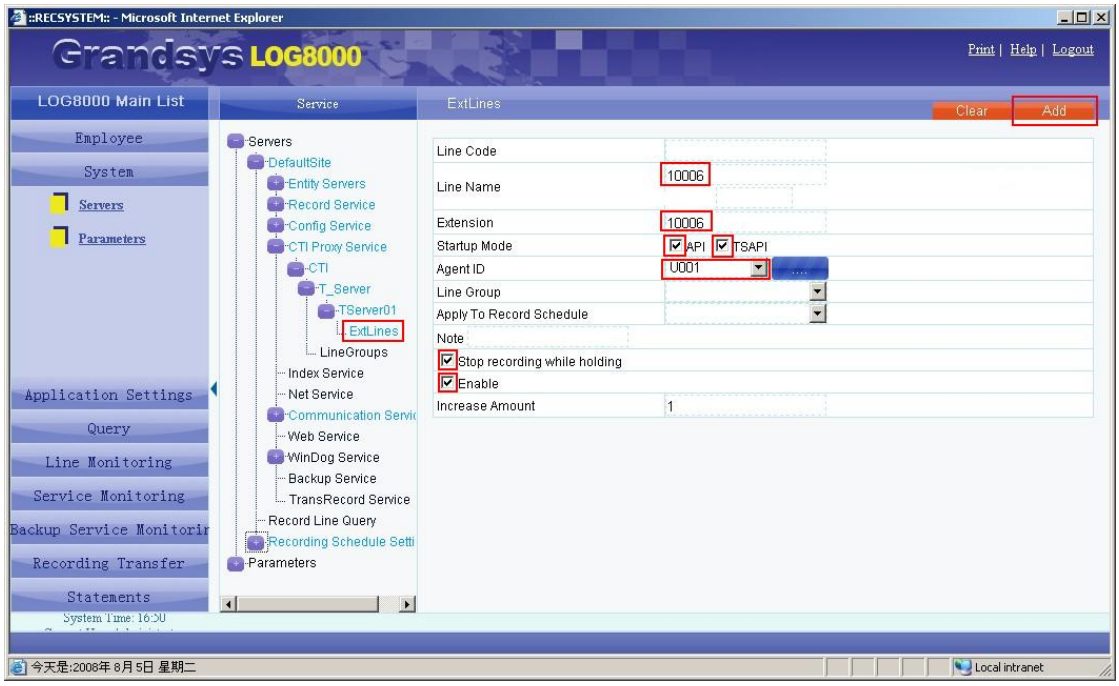
Step	Description
5.	To configure the extensions to be recorded, expand **Servers > DefaultSite > CTI Proxy Service > CTI > T_Server > <Name of T_Server created in Step 4>** in the center pane and click on **ExtLines**. On the right-most pane, enter the following values: • **Line Name**: Enter a descriptive name • **Extension**: Phone extension to be recorded • **Startup Mode > API**: Check • **Startup Mode > TSAPI**: Check • **Agent ID**: Select from the list a user configured in Grandsys LOG8000 • **Stop recording while holding**: Check (recording stops when the call is put on hold and resumes when unhold) • **Enable**: Check Click **Add**. Repeat this step for all extensions to be recorded. In this configuration, extensions 10006 to 10009 are configured. 

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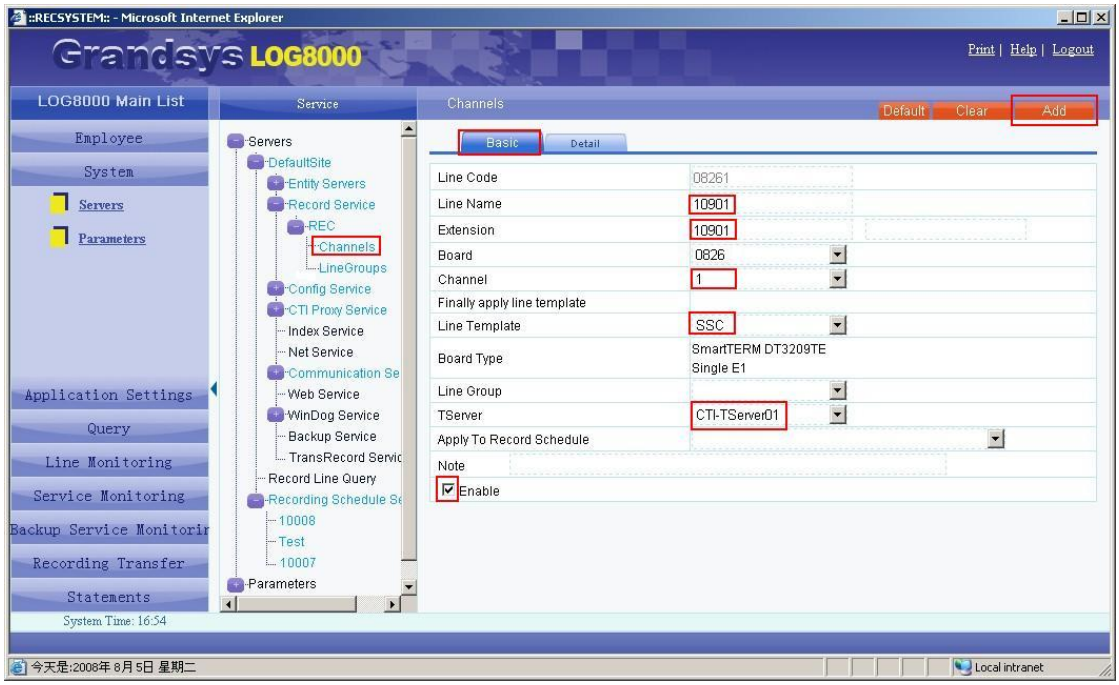
Step	Description
6.	To configure the recording stations, expand **Servers** > **DefaultSite** > **Record Service** > **REC** in the center pane and click on **Channels**. On the right-most pane, enter the following values: • **Line Name**: Enter a descriptive name • **Extension**: Extension of recording station configured in **Section 3.2 Step 2**. • **Channel**: Enter a value from 1 to 30 which correspond to the **Port** configured in **Section 3.2 Step 2**. • **Line Template**: Select **SSC** • **TServer**: Select the TServer configured in **Step 4**. • **Enable**: Check Click **Add**. Repeat this step to add more recording stations. In this configuration, recording stations 10901 to 10910 are configured. 

6. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing evaluated the ability of Grandsys LOG8000 to monitor and record calls placed to and from stations and agents. The serviceability testing introduced failure scenarios to see if Grandsys LOG8000 can resume recording after failure recovery.

6.1. General Test Approach

The general approach was to place various types of calls to and from stations, agents, and Vector Directory Numbers (VDNs), monitor and record them using Grandsys LOG8000, and verify the

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recordings. For feature testing, the types of calls included internal calls, inbound and outbound trunk calls, transferred calls, and conferenced calls. For serviceability testing, failures such as disconnecting the LAN cable to the Grandsys LOG8000 Server and Avaya AES Server, and resetting the Grandsys LOG8000 Server and Avaya Communication Manager were applied.

6.2. Test Results

All test cases were executed and passed.

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 Grandsys LOG8000.

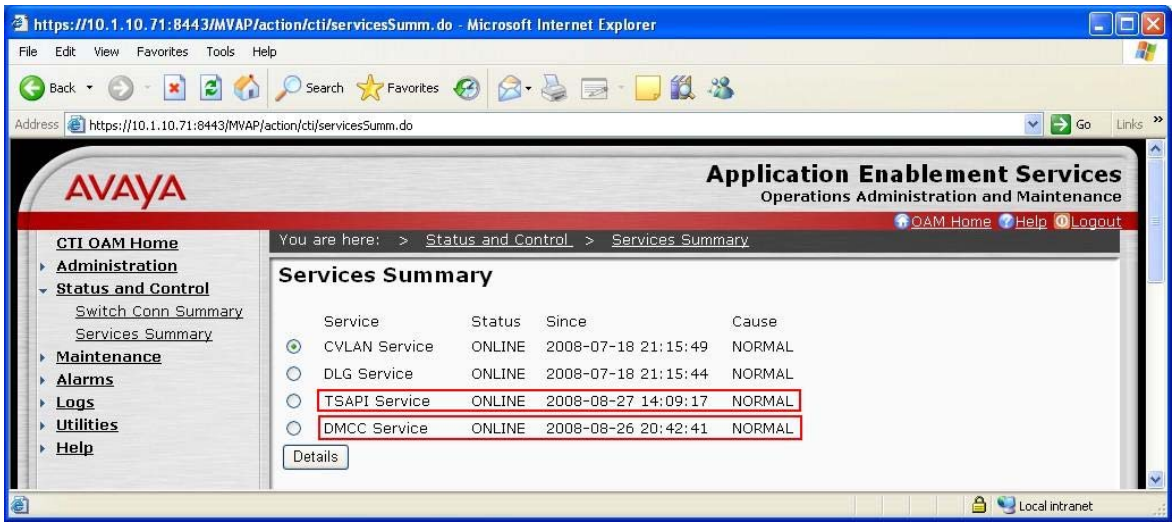
7.1. Verify Avaya Communication Manager

Verify the status of the administered TSAPI CTI link by using the **status aesvcs cti-link** command. The **Service State** field should display **established**.

```
status aesvcs cti-link

                        AE SERVICES CTI LINK STATUS

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

1      5        no    aes1             established   33       45
```

7.2. Verify Avaya Application Enablement Services

From the CTI OAM Admin web pages, verify the status of the TSAPI and DMCC Services by selecting **Status and Control > Services Summary** from the left pane. The **Status** field for both **TSAPI Service** and **DMCC Service** should display **ONLINE**.



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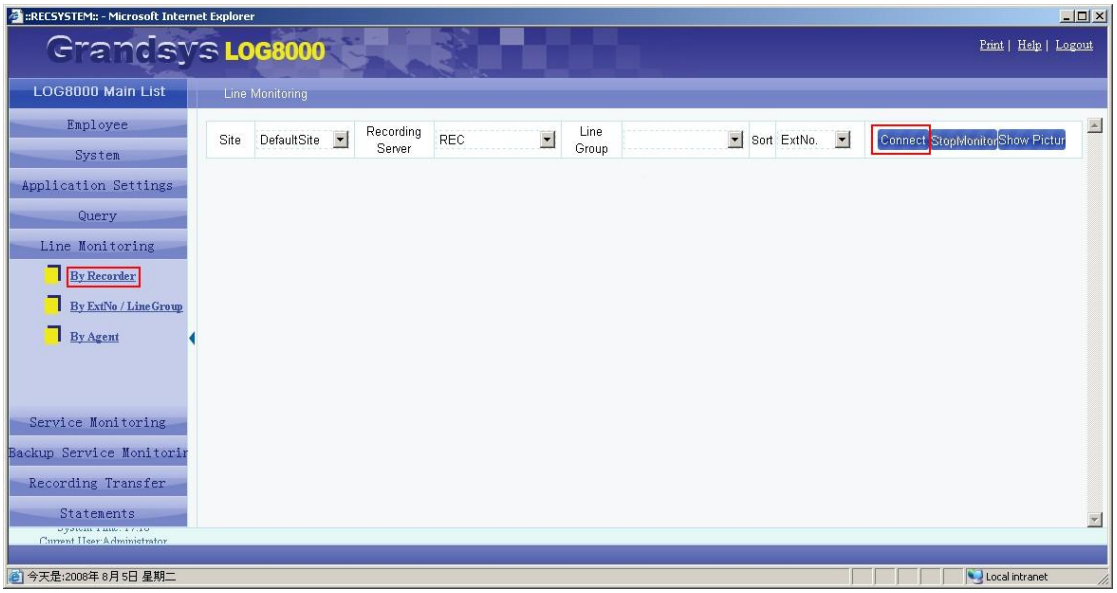
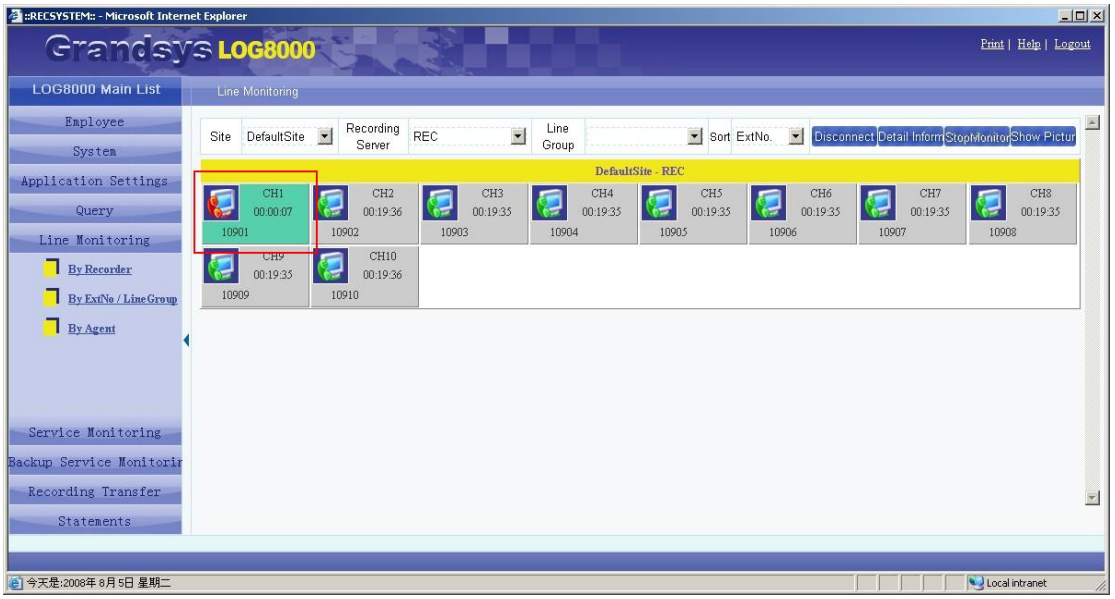
7.3. Verify Grandsys LOG8000

Step	Description
1.	From the Grandsys LOG8000 Server, launch a web browser and log in to the Grandsys LOG8000 web based interface. Select **Line Monitoring > By Recorder** on the left pane and click **Connect** on the right pane. 
2.	Place a test call to an extension being recorded and verify that one of the recording stations on Grandsys LOG8000 becomes active as it records the call. 

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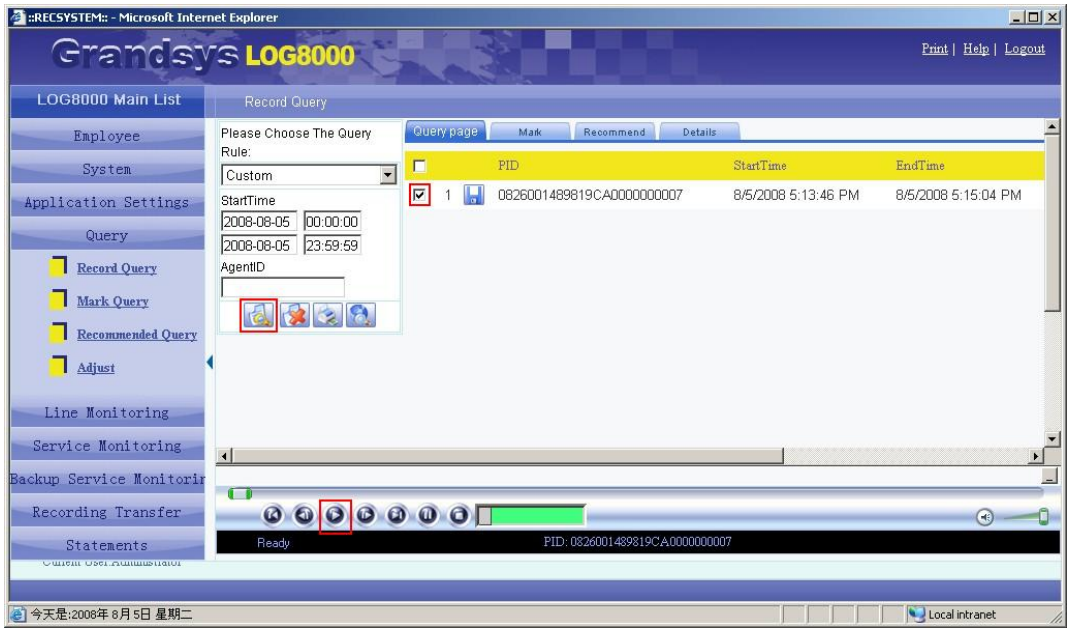
Step	Description
3.	Query for the recording of the test call. Verify that the recording can be played back correctly. 

8. Support

For technical support on Grandsys LOG8000, contact Grandsys at:

- Phone: +886-2-87682715
- Email: service@grandsys.com

9. Conclusion

These Application Notes illustrate the procedures for configuring Grandsys Technology & Service LOG8000 to monitor and record calls placed to and from stations and VDNs on an Avaya Communication Manager system. In the configuration described in these Application Notes, Grandsys LOG8000 uses the Single Step Conference feature of the TSAPI Service of Avaya Application Enablement Services to perform recording. All test cases were completed successfully.

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10. Additional References

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

The following Avaya product documentation can be found at http://support.avaya.com .
[1] *Avaya MultiVantage® Application Enablement Services Administration and Maintenance Guide*, Release 4.1, Document ID 02-300357, Issue 9, February 2008.
[2] *Feature Description and Implementation for Avaya Communication Manager*, Issue 5, February 2007, Document Number 555-245-205.

The following product documentation are available from Grandsys.
[3] *Grandsys LOG8000 System Installation Manual*, Version 2.1.4, June 2008.
[4] *Grandsys LOG8000 System Operation Manual*, Version 2.1.5, February 2008.

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