



Avaya Solution & Interoperability Test Lab

Application Notes for the TISL Eventra VoIP Recording with Avaya Communication Manager and Avaya Application Enablement Services - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the TISL Eventra to successfully interoperate with Avaya Communication Manager and Avaya Application Enablement Services. Eventra is a voice recording and event capture system. These Application Notes only contain information about the configuration and testing carried out using only the Eventra VoIP recording module to record incoming and outgoing trunk calls on Avaya IP phones only.

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

1. Introduction

Eventra is a voice recording and event capture system; it offers complete multi-media recording and event capture solution for agent performance analysis. These Application Notes only contain information about the configuration and testing carried out using only the Eventra VoIP recording module to record incoming and outgoing calls on Avaya IP phones only.

The Eventra VoIP recording solution connects to Avaya Application Enablement Services via Eventra's CTI module. The Eventra CTI module uses Telephony Services API (TSAPI) to monitor all the events to identify starts, stops, hold and transfer messages of the monitored extensions. Eventra uses SNMP (Simple Network Management Protocol) to find out the IP addresses of Avaya IP telephone extensions and maps the IP addresses to extension numbers. Eventra captures the related voice packets of the Avaya IP telephones by using port mirroring on the Ethernet switch to capture the Real Time Protocol (RTP) packets. During compliance testing Avaya IP phones were plugged into a hub instead of using port mirroring on a switch. The Eventra server has two network interface cards, one to connect to Avaya Application Enablement Services to receive CTI messages and the second card to capture the RTP packets.

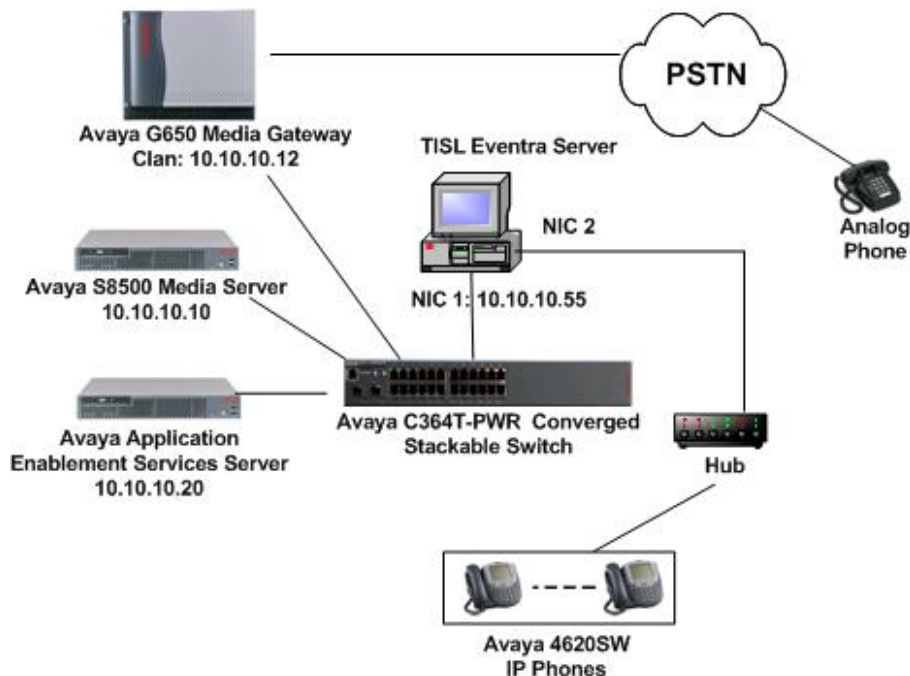


Figure 1: Avaya Communication Manager, Avaya Application Enablement Services and TISL Eventra Compliance Test Configuration

2. Equipment and Software Validated

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

Equipment	Software
Avaya S8500 Media Server – Avaya Communication Manager	3.1.2 (R013x.01.2.632.0)
Avaya Application Enablement Services	3.1 (r3-1-0-build-33-1-0)
Avaya C364T-PWR Converged Stackable Switch	4.3.12
Avaya 4600 Series IP Telephones	2.2.4 (4620SW)
TISL Eventra	3.5 build 40

3. Configure Avaya Communication Manager

Basic configuration of Avaya Communication Manager and Avaya Application Enablement Services Server are beyond the scope of these Application Notes. See Section 10 for Avaya documentation details.

Step	Description
1.	<p>Log into the System Access Terminal (SAT) to verify that the Avaya Communication Manager license has proper permissions for features illustrated in these Application Notes. Enter the display system-parameters customer-options command. On the OPTIONAL FEATURES screen, verify that Computer Telephony Adjunct Links? is set to “y” as shown below.</p> <pre> display system-parameters customer-options Page 3 of 11 OPTIONAL FEATURES 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? y CAS Main? n ARS? y Change COR by FAC? n ARS/AAR Partitioning? y Computer Telephony Adjunct Links? y ARS/AAR Dialing without FAC? y Cvg Of Calls Redirected Off-net? n ASAI Link Core Capabilities? n DCS (Basic)? n ASAI Link Plus Capabilities? n DCS Call Coverage? n </pre>
2.	<p>Enter the add cti-link n command; where “n” is an available CTI link number. Enter an available extension number in the Extension field. Set Type to “ADJ-IP” and enter a descriptive name in the Name field.</p> <p>Note: This step assumes that the connection between Avaya Communication and Avaya Application Enablement Services has already been established. This can be confirmed by entering status aesvcs link command.</p> <pre> add cti-link 3 Page 1 of 2 CTI LINK CTI Link: 3 Extension: 13000 Type: ADJ-IP COR: 1 Name: TSAPI link 3 </pre>

- Enter the **display ip-network-region “n”**, where n is the ip network region with what the IP phones are configured. Ensure the **UDP Port Min** number is greater than the minimum RTP port configured in the tislrecorder.ini file in Section 5.1, Step 3.

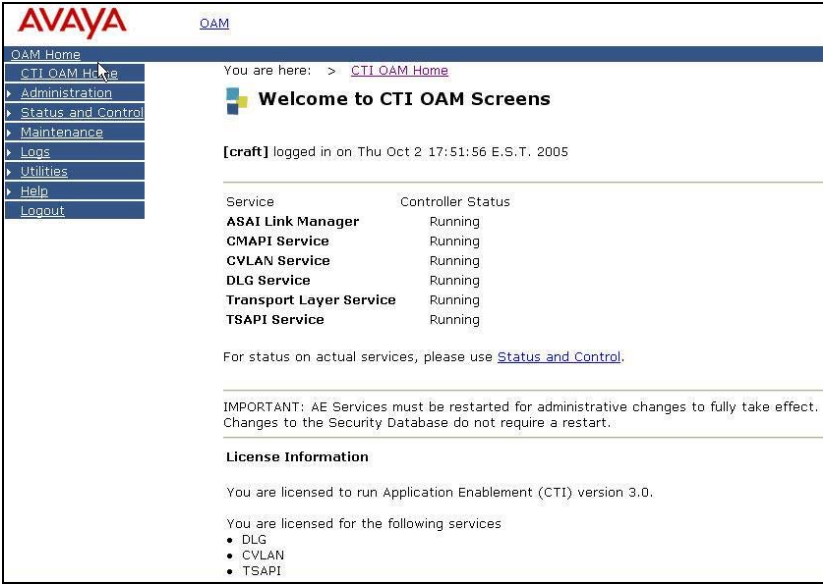
```

display ip-network-region 1                                     Page 1 of 19
                                     IP NETWORK REGION
Region: 1
Location: Authoritative Domain: devconuk.avaya.com
Name:
MEDIA PARAMETERS                                         Intra-region IP-IP Direct Audio: yes
Codec Set: 1                                             Inter-region IP-IP Direct Audio: yes
UDP Port Min: 2048                                       IP Audio Hairpinning? y
UDP Port Max: 3029
DIFFSERV/TOS PARAMETERS                                   RTCP Reporting Enabled? y
Call Control PHB Value: 46                               RTCP MONITOR SERVER PARAMETERS
Audio PHB Value: 46                                     Use Default Server Parameters? y
Video PHB Value: 26
802.1P/Q PARAMETERS

```

4. Configure Avaya Application Enablement Services Server

This section provides the procedures for configuring Avaya Application Enablement Services. Basic configuration related to the switch connection between Avaya Communication Manager and Avaya Application Enablement Services is assumed to be established.

Step	Description														
1.	<p>Log into the Avaya Application Enablement Services (AES) Server OAM web interface to verify that the Avaya Application Enablement Services license has proper permissions for features illustrated in these Application Notes. Select CTI OAM Admin and verify that the TSAPI service is licensed as shown below.</p>  <p>The screenshot shows the Avaya OAM web interface. The navigation menu on the left includes: OAM Home, CTI OAM Home, Administration, Status and Control, Maintenance, Logs, Utilities, Help, and Logout. The main content area displays 'Welcome to CTI OAM Screens' and shows the user '[craft]' logged in on Thu Oct 2 17:51:56 E.S.T. 2005. A table lists the following services and their controller status:</p> <table border="1"> <thead> <tr> <th>Service</th> <th>Controller Status</th> </tr> </thead> <tbody> <tr> <td>ASAI Link Manager</td> <td>Running</td> </tr> <tr> <td>CMAPI Service</td> <td>Running</td> </tr> <tr> <td>CVLAN Service</td> <td>Running</td> </tr> <tr> <td>DLG Service</td> <td>Running</td> </tr> <tr> <td>Transport Layer Service</td> <td>Running</td> </tr> <tr> <td>TSAPI Service</td> <td>Running</td> </tr> </tbody> </table> <p>Below the table, it states: 'For status on actual services, please use Status and Control.' An important note follows: 'IMPORTANT: AE Services must be restarted for administrative changes to fully take effect. Changes to the Security Database do not require a restart.' The license information section indicates: 'You are licensed to run Application Enablement (CTI) version 3.0.' and lists the licensed services: DLG, CVLAN, and TSAPI.</p>	Service	Controller Status	ASAI Link Manager	Running	CMAPI Service	Running	CVLAN Service	Running	DLG Service	Running	Transport Layer Service	Running	TSAPI Service	Running
Service	Controller Status														
ASAI Link Manager	Running														
CMAPI Service	Running														
CVLAN Service	Running														
DLG Service	Running														
Transport Layer Service	Running														
TSAPI Service	Running														

2. From the CTI OAM menu, select **Administration → CTI Link Admin → TSAPI Links**. Click on **Add Link**. In the Add/ Edit TSAPI Links page shown below, configure the **Link**, **Switch Connection** and **Switch CTI Link Number**. Click on **Apply Changes**.

- **Link:** Choose a link number between 1 and 16 that is available.
- **Switch Connection:** Select the appropriate previously configured switch connection to be used, from the drop down list.
- **Switch CTI Link Number:** Corresponding CTI link number configured in Section 3 Step 2.



3. The Security Database (SDB) stores information about users and the devices they control. By default the SDB setting is enabled. For convenience during compliance testing, the TSAPI Security Database (SDB) was disabled. In environments where the TSAPI SDB is enabled, the devices to be monitored must be configured in the TSAPI SDB. To access SDB, select **Administration → TSAPI Configuration**.

4. Navigate to the Tlinks page by selecting **Administration → Security Database → Tlinks**. Note the value of the **Tlink Name**, as this will be needed for configuring the TISL Eventra server in Section 5.1. The **Tlink Name** shown below is automatically created by the AES server.



5. A user id and password needs to be configured for the TISL Eventra server to communicate as a TSAPI Client with the AES server. Click on **OAM Home** → **User Management** and log into the User Management pages. Click on **User Management** → **Add User**. In the **Add User** page shown below, enter a **User Id** and a password. These will be used by the TISL Eventra server in Section 5.1. Enter descriptive names for the **Common Name** and **Surname** fields. Select “Yes” from the drop down box for the **CT User** field.

AVAYA OAM

OAM Home

User Management Home You are here: > User Management > Add User

User Management **Add User**

List All Users

Add User

Search Users

Modify Default User

Change User Password

Service Management

Help

Logout

Fields marked with * can not be empty.

* User Id TISL

* Common Name TISL

* Surname TISL

New Password

Confirm New Password

Admin Note

Avaya Role None

Business Category

Car License

CM Home

Css Home

CT User Yes

5. Configure TISL Eventra

The following steps address provisioning of the TISL Eventra application as it relates to Avaya Communication Manager. For all other provisioning information, please contact TISL support.

5.1. Administer TISL Eventra Server

Step	Description
1.	<p>Modify the TISLCTI.cfg file in the directory C:\Program Files\TISL\Eventra\Bin\ACM.</p> <ul style="list-style-type: none">- Modify the [SI] section for voip recording by setting Record Trunk = "N".- Modify the [TSAPI] section as shown below, with AES Tlink and username and password details configured in Section 4 Step 5.- Modify the [MONITOR] Section with the extension numbers to be monitored. It is also possible to list hunt/skills groups to be monitored.- Set Stop on Hold field to "Y" as there are no RTP packets sent and received when the IP phone goes on hold.- Set filterevents field to "Y". If this field is set to "N" then Eventra requests all TSAPI events from the AES, otherwise it only gets the Cleared, Established, Held, Retrieved, Transfer & Conference events.

```
TISLCTI.CFG - Notepad
File Edit Format View Help

[SI]
Test=N
Record Trunk =N
Record Internal=Y
Record Extension=Y
Stop on Hold=Y
silentMonitor=N

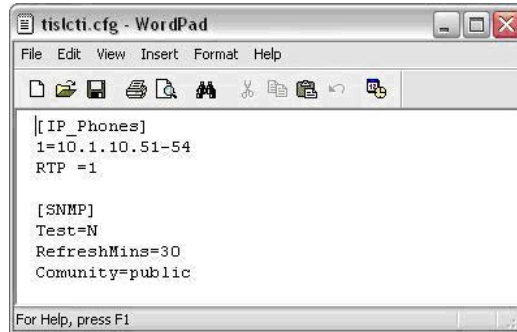
[TSAPI]
Server = AVAYA#S8500ADC1#CSTA#AESERVER
Login = TISL
Pwd =
Isvoip=Y

startonConfirm = N
startonEstablish = N
queryPolicyBeforeStart=N
filterevents = Y

[MONITOR]
1= 10000-10002
2= 10003
3= 10100-10115
4= 10116-10129

[log]
LogRawData = Y
```

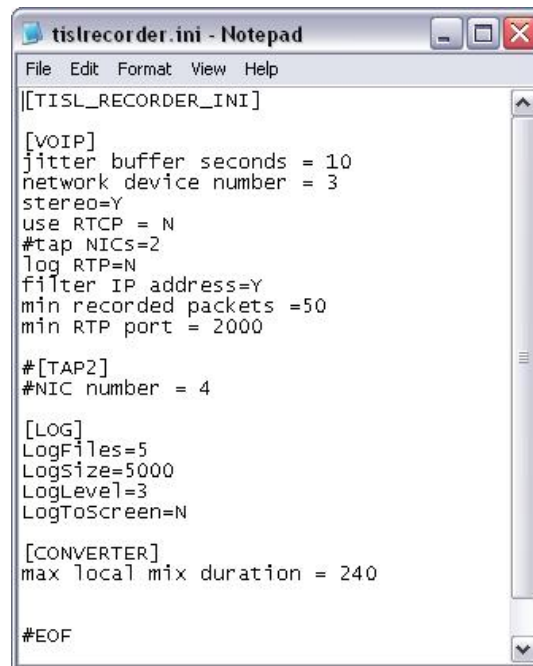
2. Modify the tislcti.cfg file in the directory C:\Program Files\TISL\Eventra\Bin\Avaya SNMP DI Interface. Enter the IP address range for the Avaya IP telephones to be monitored in the [IP_Phones] section. In the [SNMP] section, **RefreshMins** refers to the time in minutes that the Eventra periodically interrogates the Avaya IP telephones for any IP address changes. This RefreshMins time can be modified depending on how frequently the IP addresses of IP telephones will change.



```
tislcti.cfg - WordPad
File Edit View Insert Format Help
[IP_Phones]
i=10.1.10.51-54
RTP =1

[SNMP]
Test=N
RefreshMins=30
Community=public
For Help, press F1
```

3. Modify the tislrecorder.ini file in the directory C:\Program Files\TISL\Eventra\Bin. In the [VOIP] section ensure the **network device number** matches the correct network card used for capturing the RTP packets, connected to the hub. Setting **filter IP address** = “Y”, will ensure only the monitored IP address RTP packets within the same range as the UDP port range configured on Avaya Communication Manager, are processed and recorded. The **min RTP port** needs to be smaller than the UDP Port Min set in Section 3, Step 3.



```
tislrecorder.ini - Notepad
File Edit Format View Help
[[TISL_RECORDER_INI]

[VOIP]
jitter buffer seconds = 10
network device number = 3
stereo=Y
use RTCP = N
#tap NICs=2
log RTP=N
filter IP address=Y
min recorded packets =50
min RTP port = 2000

#[TAP2]
#NIC number = 4

[LOG]
LogFiles=5
LogSize=5000
LogLevel=3
LogToScreen=N

[CONVERTER]
max local mix duration = 240

#EOF
```


4. Click on the Start Eventra (batch file) icon on the desktop created during installation. This will start the TISL Component Manager service and TISL System Manager service.



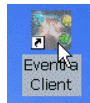
Double click on the Eventra Server icon located on the desktop to start the server client interface if not already started.



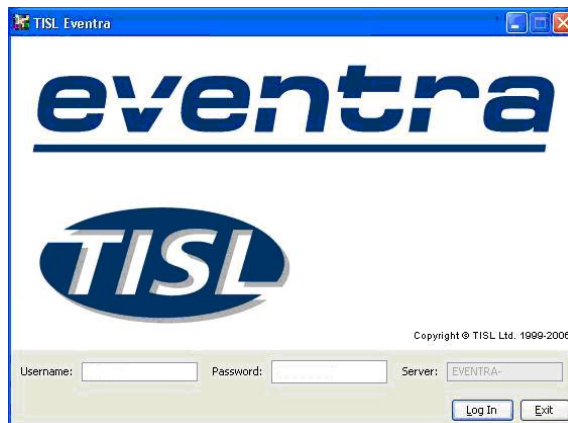
The Eventra Client-Server Manager dialog box below will appear once the server has started.



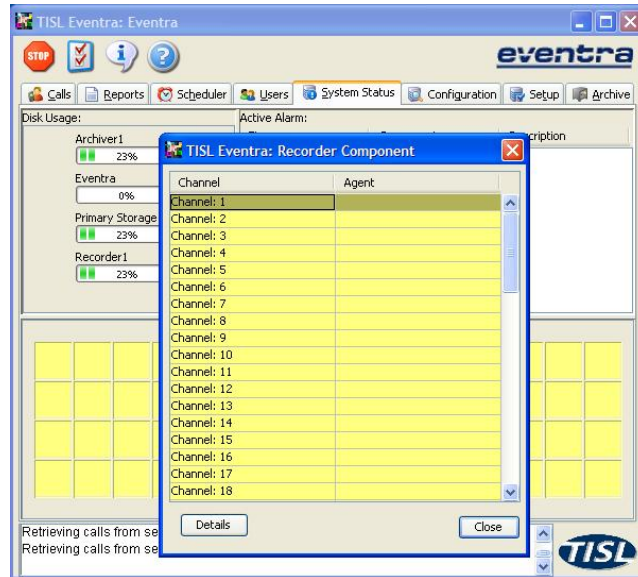
5. Double click on the Eventra Client icon located on the desktop to start the client interface.



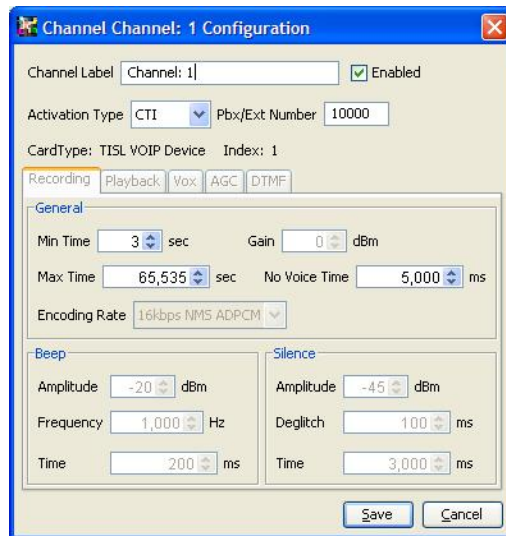
In the TISL Eventra window enter an appropriate **Username** and **Password**. Click **Log In**.



6. Click on the **System Status** tab. Right click on the top row of lozenges (yellow boxes). In the Recorder Component box highlight Channel: 1 and click on **Details**.



Select “CTI” for the **Activation Type** field and in the **Pbx/Ext Number** field, enter the extension number to be monitored and recorded as shown below. The other options can be left with default values. Click on **Save**. Only the extensions listed in the TISLCTI.cfg in Section 5.1, Step 1 will be recorded.



Repeat this Step for the number of extensions that need to be monitored and recorded. During compliance testing static channel association with extensions was configured. It is possible to have dynamic channel association by setting the channel type in the Eventra database to be dynamic to allow more extensions to be monitored than channels available.

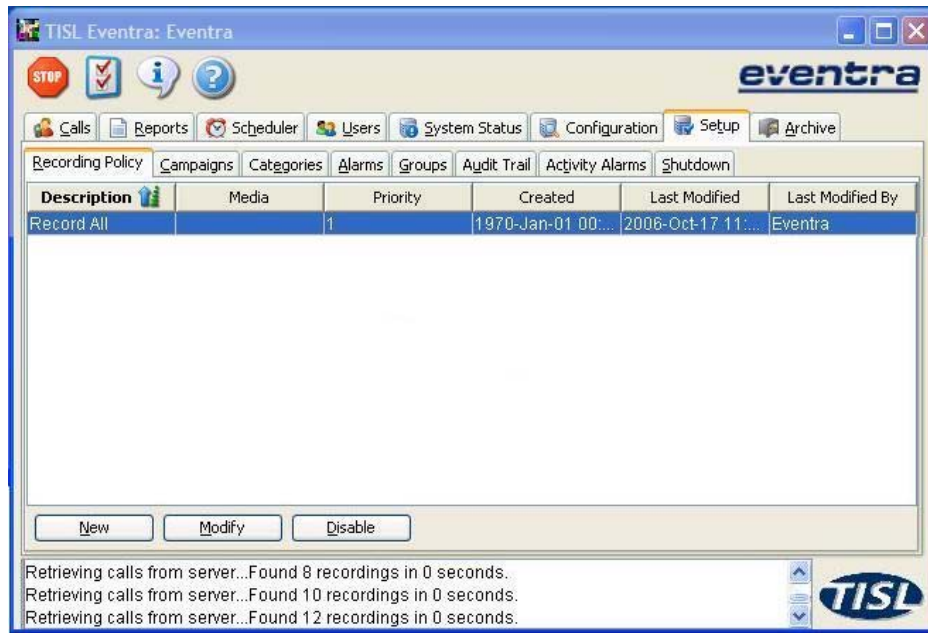
7.	<p>Double click on the Stop Eventra (batch file) icon located on the desktop to stop the TISL Eventra services, and then double click on Start Eventra icon also located on the desktop to restart the TISL Eventra services.</p>
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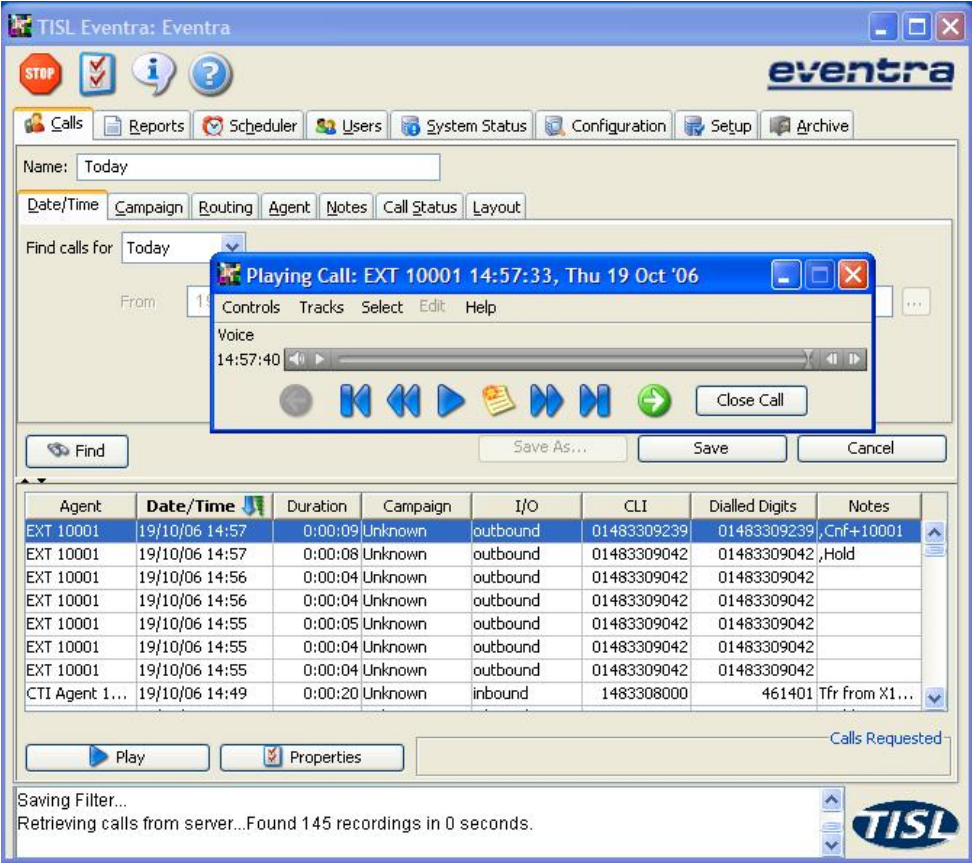
5.2. Administer TISL Eventra Agents

Step	Description
1.	<p>In the TISL Eventra client interface, click on the Users tab and click New. In the User Profile dialog box that appears click on the User Status tab. Tick the Agent check box and enter the agent name in the Full Name field as shown below.</p> <div style="text-align: center;"> </div> <p>Click on the Phone Details tab, and enter in the agent extension to be monitored in the Extension field and click Save.</p> <div style="text-align: center;"> </div>

2. Repeat Step 1 for each extension to be monitored. Users created must also match the extensions listed in the TISLCTI.cfg in Section 5.1, Step 1.
3. It is possible to create recording policies that give greater control over which extensions to record and not to record depending on time, Campaign, Routing, Users etc. During compliance testing a recording policy license was installed hence by default there is always one **Record All** policy created. All agent extensions created will be automatically added to this Record All policy and be recorded by default. It is possible to create as many recording policies as the license installed allows. Click on the **Setup** tab and then the **Recording Policy** tab to view the Record All policy. Only the extensions listed in the TISLCTI.cfg in Section 5.1, Step 1 will be recorded.



5.3. Using the TISL Eventra Replay Client

Step	Description
1.	<p>The main client window will display the Calls tab (this is where the list of any saved call filters will appear). It is possible to sort the calls by Date/Time, Campaign, Routing, Agent etc. Click on the Date/Time tab and then click Find. Highlight and double click the recording to be played. The Media screen is displayed.</p> <p>To play the selected call, click .</p> 

6. Interoperability Compliance Testing

The interoperability compliance test included feature functionality, performance and serviceability testing. The testing examined the TISL Eventra interoperability with Avaya Communication Manager and Avaya Application Enablement Services. The majority of the testing focused on the ability of the TISL Eventra to record calls to and from internal and external extensions and replay the voice recordings correctly. The source, destination and duration of each call recording were verified. The Solution tested was only calls on Avaya IP phones only. A BHCC of 3000 was achieved using 30 channels during performance testing.

6.1. General Test Approach

The general approach was to place internal and external calls to monitored Avaya IP telephones and verify the recordings. For functionality testing, basic telephony operations such as answer, hold/retrieve, transfer, and conference were exercised on inbound and outbound calls as well between internal calls. The serviceability testing focused on verifying the ability of the TISL Eventra to recover from adverse conditions, such as busying out the CTI link and disconnecting the Ethernet cable for the CTI link. For performance testing, a call generator placed inbound calls over an E1 trunk to Avaya IP phones over an extended period of time.

6.2. Test Results

All feature and performance tests passed. The TISL Eventra successfully recorded, displayed and replayed the recordings.

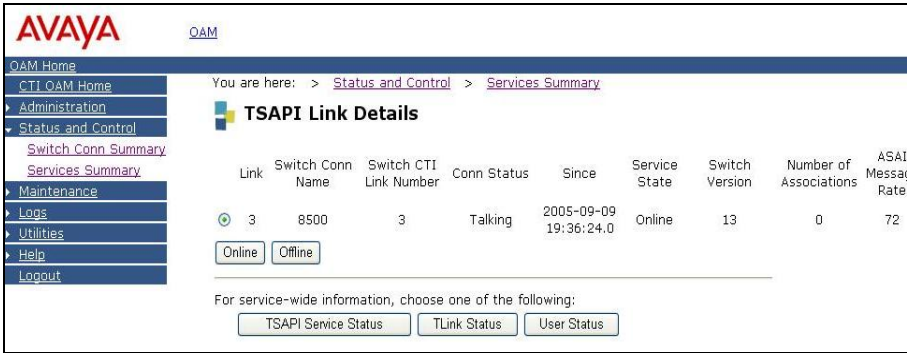
During the CTI failure tests it was observed that, when the connection to the AES has been lost for a duration of longer than 3 minutes the recording channel stays active until the next time a call is made using that channel. The call recorded will be stamped with extension details of the latter call that used that channel.

7. Verification Steps

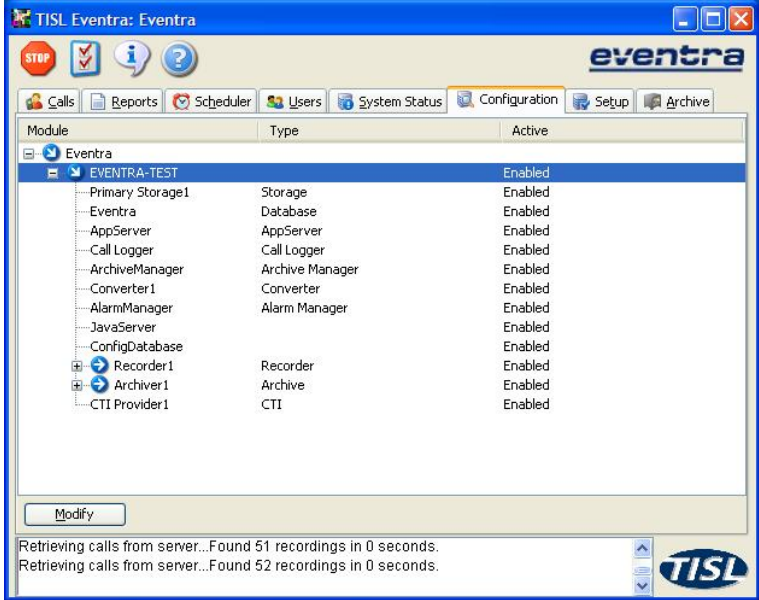
This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya Application Enablement Services, and TISL Eventra.

7.1. Verify Avaya Communication Manager and Avaya Enablement Services

The following steps can ensure that the communication between Avaya Communication Manager and the Avaya Application Enablement Services server is working.

Step	Description																												
1.	<p>Verify that the service state of the TSAPI link is established.</p> <pre>status aesvcs cti-link</pre> <table border="1"> <thead> <tr> <th colspan="7">AE SERVICES CTI LINK STATUS</th> </tr> <tr> <th>CTI Link</th> <th>Version</th> <th>Mnt Busy</th> <th>AE Services Server</th> <th>Service State</th> <th>Msgs Sent</th> <th>Msgs Rcvd</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4</td> <td>no</td> <td>AEServer</td> <td>established</td> <td>15</td> <td>15</td> </tr> <tr> <td>3</td> <td>4</td> <td>no</td> <td>AEServer</td> <td>established</td> <td>15</td> <td>15</td> </tr> </tbody> </table>	AE SERVICES CTI LINK STATUS							CTI Link	Version	Mnt Busy	AE Services Server	Service State	Msgs Sent	Msgs Rcvd	1	4	no	AEServer	established	15	15	3	4	no	AEServer	established	15	15
AE SERVICES CTI LINK STATUS																													
CTI Link	Version	Mnt Busy	AE Services Server	Service State	Msgs Sent	Msgs Rcvd																							
1	4	no	AEServer	established	15	15																							
3	4	no	AEServer	established	15	15																							
2.	<p>Verify the status of the TSAPI link by selecting Status and Control → Services Summary on the AES OAM web interface. Click on TSAPI Service, followed by Details. The TSAPI Link Details screen is displayed as shown below.</p> 																												

7.2. Verify TISL Eventra

Step	Description																																										
1.	<p>In the Eventra client window, click on the Configuration tab and expand the Eventra-Test. Ensure all services are enabled as shown below.</p>  <p>The screenshot shows the 'TISL Eventra: Eventra' application window. The 'Configuration' tab is selected. The 'EVENTRA-TEST' module is expanded, showing a list of sub-modules. All sub-modules are listed with their types and 'Active' status, all of which are 'Enabled'.</p> <table border="1" data-bbox="488 541 1242 840"> <thead> <tr> <th>Module</th> <th>Type</th> <th>Active</th> </tr> </thead> <tbody> <tr> <td>EVENTRA-TEST</td> <td></td> <td>Enabled</td> </tr> <tr> <td>Primary Storage1</td> <td>Storage</td> <td>Enabled</td> </tr> <tr> <td>Eventra</td> <td>Database</td> <td>Enabled</td> </tr> <tr> <td>AppServer</td> <td>AppServer</td> <td>Enabled</td> </tr> <tr> <td>Call Logger</td> <td>Call Logger</td> <td>Enabled</td> </tr> <tr> <td>ArchiveManager</td> <td>Archive Manager</td> <td>Enabled</td> </tr> <tr> <td>Converter1</td> <td>Converter</td> <td>Enabled</td> </tr> <tr> <td>AlarmManager</td> <td>Alarm Manager</td> <td>Enabled</td> </tr> <tr> <td>JavaServer</td> <td></td> <td>Enabled</td> </tr> <tr> <td>ConfigDatabase</td> <td></td> <td>Enabled</td> </tr> <tr> <td>Recorder1</td> <td>Recorder</td> <td>Enabled</td> </tr> <tr> <td>Archiver1</td> <td>Archive</td> <td>Enabled</td> </tr> <tr> <td>CTI Provider1</td> <td>CTI</td> <td>Enabled</td> </tr> </tbody> </table> <p>Retrieving calls from server...Found 51 recordings in 0 seconds. Retrieving calls from server...Found 52 recordings in 0 seconds.</p>	Module	Type	Active	EVENTRA-TEST		Enabled	Primary Storage1	Storage	Enabled	Eventra	Database	Enabled	AppServer	AppServer	Enabled	Call Logger	Call Logger	Enabled	ArchiveManager	Archive Manager	Enabled	Converter1	Converter	Enabled	AlarmManager	Alarm Manager	Enabled	JavaServer		Enabled	ConfigDatabase		Enabled	Recorder1	Recorder	Enabled	Archiver1	Archive	Enabled	CTI Provider1	CTI	Enabled
Module	Type	Active																																									
EVENTRA-TEST		Enabled																																									
Primary Storage1	Storage	Enabled																																									
Eventra	Database	Enabled																																									
AppServer	AppServer	Enabled																																									
Call Logger	Call Logger	Enabled																																									
ArchiveManager	Archive Manager	Enabled																																									
Converter1	Converter	Enabled																																									
AlarmManager	Alarm Manager	Enabled																																									
JavaServer		Enabled																																									
ConfigDatabase		Enabled																																									
Recorder1	Recorder	Enabled																																									
Archiver1	Archive	Enabled																																									
CTI Provider1	CTI	Enabled																																									
2.	Ensure that the calls are being recorded and can be played back as shown in Section 5.3																																										

8. Support

For technical support for Eventra, contact TISL Customer Service Center at 01883 344114 or via e-mail at HelpDesk@tisl.com.

9. Conclusion

These Application Notes describe the configuration steps required for TISL Eventra 3.5 to successfully interoperate with Avaya Communication Manager 3.1.2 using Avaya Application Enablement Services 3.1 for VoIP side recording of Avaya telephones. All feature functionality, performance and serviceability test cases were completed successfully.

10. Additional References

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

The following Avaya documents are available at <http://support.avaya.com>

- *Administrator Guide for Avaya Communication Manager*, Document ID 03-300509, Issue 2, Feb 2006.
- *Administration for Network Connectivity for Avaya Communication Manager*, Document ID 555-233-504, Issue 11, Feb 2006.

The following documents can be obtained from TISL

Eventra Administration and user guides, version 3.5.x, June2006

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