



## Avaya Solution & Interoperability Test Lab

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# Application Notes for the Teleformix ECHO Call Recording Solution with Avaya Communication Manager using Communication Manager Application Programming Interface – Issue 1.0

## Abstract

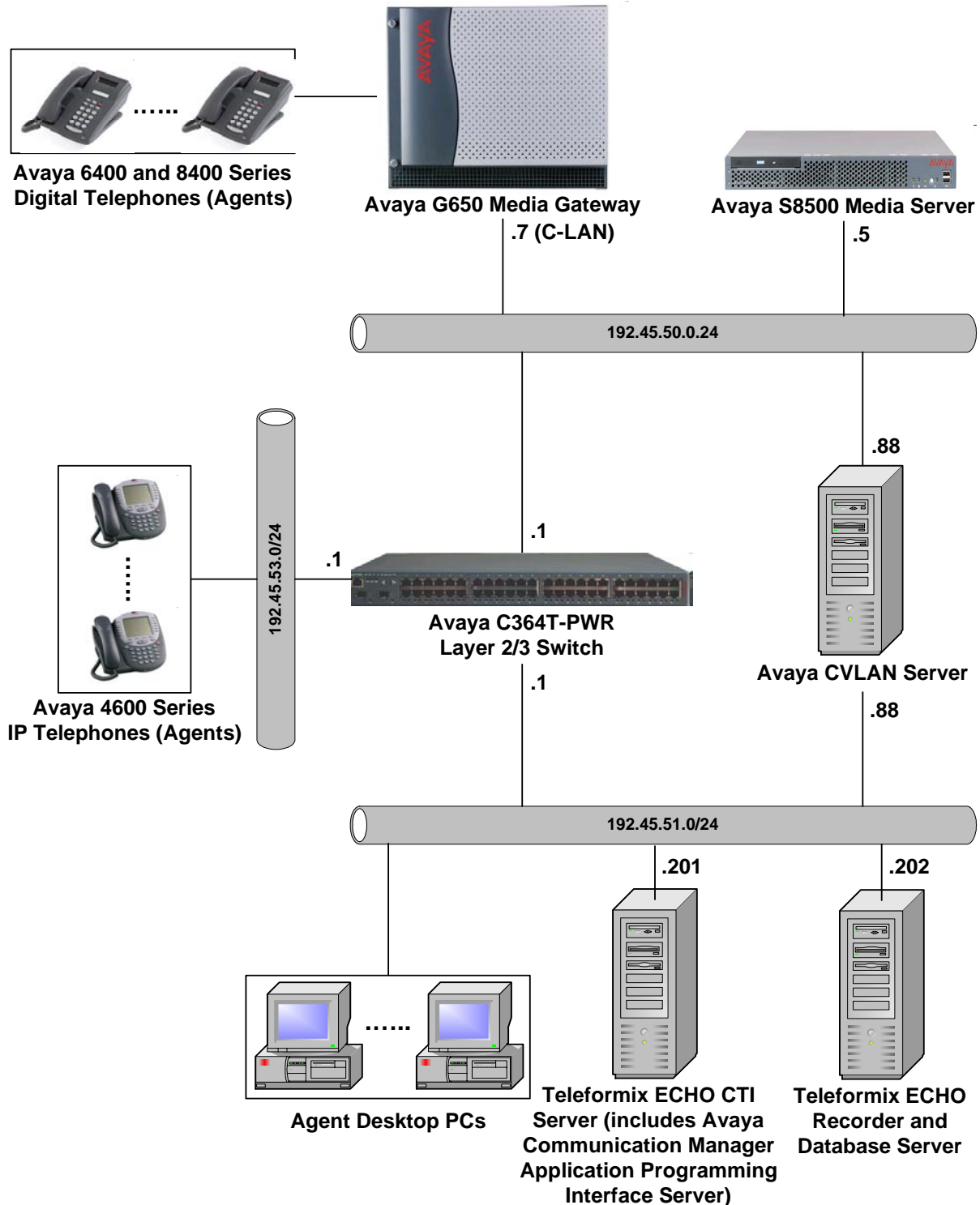
These Application Notes describe the procedures for configuring the Teleformix ECHO call recording solution to monitor and record calls placed to and from stations, agents, and Vector Directory Numbers (VDNs) on an Avaya Communication Manager system. Recordings may be made on demand and based on customer-defined recording plans. In the configuration discussed in these Application Notes, ECHO employs Communication Manager Application Programming Interface “virtual” stations as recording ports. During compliance testing, ECHO successfully recorded calls placed to and from stations and agents, as well as calls placed to a VDN and then queued to an agent hunt/skill group. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe a compliance-tested configuration comprised of Avaya Communication Manager, Avaya Computer Telephony Integration related interfaces, specifically the CallVisor LAN (CVLAN) Application Programming Interface and the Communication Manager Application Programming Interface, and the Teleformix ECHO call recording solution. ECHO monitors, records, stores, and plays back phone calls for verification and quality assurance. The recordings may be made on demand and based on customer-defined recording plans. The ECHO FastPack configuration (the compliance-tested configuration) consists of an ECHO CTI Server and an ECHO Recorder and Database Server, and can be configured with 24 to 96 recording ports.

ECHO interacts with an Avaya CVLAN server to receive event reports concerning particular stations, agents, and VDNs, and can use those event reports as recording triggers. ECHO also interacts with an Avaya Communication Manager Application Programming Interface server to register Communication Manager Application Programming Interface “virtual” stations with Avaya Communication Manager. The Communication Manager Application Programming Interface stations essentially appear as IP softphones to Avaya Communication Manager. When recording of a call is demanded, ECHO issues a Single Step Conference request to Avaya Communication Manager (via the CVLAN Server) to bridge a Communication Manager Application Programming Interface station onto the call. Since the IP address of the Communication Manager Application Programming Interface station is that of the ECHO Recorder and Database Server, the audio portion of the call is directed to ECHO and can thus be monitored and recorded. Any available caller information such as Dialed Number Identification Service (DNIS), Automatic Number Identification (ANI), User-to-User Information (UII), and ANI II digits may also be recorded with the call.

**Figure 1** illustrates a sample configuration consisting of an Avaya S8500 Media Server, an Avaya G650 Media Gateway, an Avaya Communication Manager Application Programming Interface server, an Avaya CVLAN server, agents logged into Avaya IP and Digital Telephones, a Teleformix ECHO CTI Server and a Teleformix ECHO Recorder and Database Server. Avaya Communication Manager runs on the S8500 Media Server, though the solution described herein is also extensible to other Avaya Media Servers and Media Gateways. Though it typically runs on a separate server, the Avaya Communication Manager Application Programming Interface server runs on the ECHO CTI server in the ECHO call recording solution. The Avaya C364T-PWR Layer 2/3 Switch supports the illustration and verification of the Avaya/Teleformix solution. Its configuration is not the focus of these Application Notes and is thus not described here.



**Figure 1: Sample configuration.**

## 2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8500 Media Server	2.1.1 (R012x.01.1.414.1)
Avaya G650 Media Gateway	-
TN2312BP IP Server Interface	12
TN799DP C-LAN Interface	12
TN2302AP IP Media Processor	95
TN464GP DS1 Interface	15
Avaya 4600 Series IP Telephones	1.8.3 (4606) 1.8.3 (4612) 1.8.3 (4624) 1.8.2 (4602SW) 2.1.3 (4610SW) 2.1.3 (4620SW) 2.0.1 (4630SW)
Avaya 6400 Series Digital Telephones	-
Avaya 8400 Series Digital Telephones	-
Avaya Communication Manager Application Programming Interface server	2.1.23
Avaya CVLAN Server for Linux	9.1
Avaya C364T-PWR Layer 2/3 Switch	4.3.12
ECHO CTI Server	2.2.4
ECHO Recorder and Database Server	2.2.4

### 3. Configure Avaya Communication Manager

This section describes the steps for configuring Computer Telephony Integration (CTI) links, hunt/skill groups, vectors, Vector Directory Numbers (VDNs), agents, agent login/logoff codes, and recording ports on Avaya Communication Manager. The steps are performed through the System Access Terminal (SAT) interface.

#### 3.1. CTI Link

The Avaya CVLAN server communicates with the Avaya Communication Manager via a CTI link. The following steps demonstrate the configuration of the Avaya Communication Manager side of the CTI link. See Section 4 for details on configuring the Avaya CVLAN server side of the CTI link.

Step	Description
1.	<p>Enter the <b>display system-parameters customer-options</b> command and verify that <b>ASAI Link Core Capabilities</b> and <b>Co-Res DEFINITY LAN Gateway</b> are set to “y”.</p> <pre> 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? n 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? y             Co-Res DEFINITY LAN Gateway? y ASAI Link Core Capabilities? y Cvg Of Calls Redirected Off-net? n ASAI Link Plus Capabilities? n             DCS (Basic)? n Async. Transfer Mode (ATM) PNC? n          DCS Call Coverage? n Async. Transfer Mode (ATM) Trunking? n     DCS with Rerouting? n ATM WAN Spare Processor? n ATMS? n Digital Loss Plan Modification? n Attendant Vectoring? n                    DS1 MSP? n DS1 Echo Cancellation? n  (NOTE: You must logoff &amp; login to effect the permission changes.) </pre>

Step	Description
2.	<p>Enter the <b>add cti-link m</b> command, where m is a number between 1 and 16, inclusive. Enter an <b>Extension</b> valid under the provisioned dial plan in Avaya Communication Manager, set <b>Type</b> to “<b>ASAI-IP</b>”, and assign a descriptive <b>Name</b> to the CTI link.</p> <pre> add cti-link 1 CTI LINK CTI Link: 1 Extension: 29001 Type: ASAI-IP COR: 1 Name: CVLAN Server Linux sig01 </pre>
3.	<p>Enter the <b>change node-names ip</b> command. Specify node names for the C-LAN board on the G650 and the Avaya CVLAN server, and enter their respective IP addresses.</p> <pre> change node-names ip IP NODE NAMES Name IP Address Name IP Address CLAN-1A02 192.45 .50 .7 . . . CVLAN-Server 192.45 .50 .88 . . . MEDPRO-1A03 192.45 .50 .8 . . . MEDPRO-1A13 192.45 .50 .9 . . . MEDPRO-1B03 192.45 .50 .10 . . . MEDPRO-1B13 192.45 .50 .11 . . . default 0 .0 .0 .0 . . . procr . . . . . </pre>

Step	Description																		
4.	Enter the <b>change ip-services</b> command. On Page 1 of the <b>ip-services</b> form, configure and enable a “ <b>DLG</b> ” <b>Service Type</b> and specify the node name configured in Step 3 above for the C-LAN board as the <b>Local Node</b> . The <b>Local Port</b> should be fixed at <b>5678</b> .																		
	<div>change ip-services<div>Page1 of 3</div></div>																		
	<table><tr><th colspan="6">IP SERVICES</th></tr><tr><th>Service Type</th><th>Enabled</th><th>Local Node</th><th>Local Port</th><th>Remote Node</th><th>Remote Port</th></tr><tr><td>DLG</td><td>y</td><td>CLAN-1A02</td><td>5678</td><td></td><td></td></tr></table>	IP SERVICES						Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port	DLG	y	CLAN-1A02	5678		
	IP SERVICES																		
	Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port													
DLG	y	CLAN-1A02	5678																
On Page 3 of the <b>ip-services</b> form, configure and enable a <b>CTI link</b> with the same link number configured in Step 2. For <b>Client Name</b> , enter the node name configured in Step 3 for the Avaya CVLAN server. For <b>Client Link</b> , enter the link number to be configured on the Avaya CVLAN server side of the CTI link (see Step 7 of Section 4).																			
<div>change ip-services<div>DLG AdministrationPage3 of 3</div></div>																			
	<table><tr><th>CTI Link</th><th>Enabled</th><th>Client Name</th><th>Client Link</th><th>Client Status</th></tr><tr><td>1</td><td>y</td><td>CVLAN-Server</td><td>1</td><td></td></tr></table>	CTI Link	Enabled	Client Name	Client Link	Client Status	1	y	CVLAN-Server	1									
CTI Link	Enabled	Client Name	Client Link	Client Status															
1	y	CVLAN-Server	1																

## 3.2. Agent Logins, Agent Hunt/Skill Groups, and Call Vectoring

The following steps describe the configuration of hunt/skill groups, agent logins, and call vectoring in Avaya Communication Manager.

Step	Description
1.	<p>Enter the <b>display system-parameters customer-options</b> command and verify that <b>ACD</b> and <b>Vectoring (Basic)</b> are set to “y”. <b>Expert Agent Selection</b> was enabled for the testing, but the feature is not required.</p> <pre> change system-parameters customer-options                               Page 6 of 11 CALL CENTER OPTIONAL FEATURES  Call Center Release: 12.0  ACD? y    PASTE (Display PBX Data on Phone)? n BCMS (Basic)? y    Reason Codes? n BCMS/VuStats Service Level? n    Service Level Maximizer? n BSR Local Treatment for IP &amp; ISDN? n    Service Observing (Basic)? y Business Advocate? n    Service Observing (Remote/By FAC)? n Call Work Codes? n    Service Observing (VDNs)? n DTMF Feedback Signals For VRU? n    Timed ACW? n Dynamic Advocate? n Expert Agent Selection (EAS)? y    Vectoring (Basic)? y EAS-PHD? n    Vectoring (Prompting)? n Forced ACD Calls? n    Vectoring (G3V4 Enhanced)? n Least Occupied Agent? n    Vectoring (ANI/II-Digits Routing)? n Lookahead Interflow (LAI)? n    Vectoring (G3V4 Advanced Routing)? n Multiple Call Handling (On Request)? n    Vectoring (CINFO)? n Multiple Call Handling (Forced)? n    Vectoring (Best Service Routing)? n  Vectoring (Holidays)? n  Vectoring (Variables)? n (NOTE: You must logoff &amp; login to effect the permission changes.) </pre>



Step	Description
2.	<p>Enter the <b>add hunt group n</b> command, where n is a number between 1 and 99, inclusive. On Page 1 of the <b>hunt group</b> form, assign a <b>Group Name</b> and <b>Group Extension</b> valid under the provisioned dial plan and set <b>ACD</b>, <b>Queue</b>, and <b>Vector</b> to “y”. When <b>ACD</b> is enabled, hunt group members serve as ACD agents and must log in to receive ACD split/skill calls. When <b>Queue</b> is enabled, calls to the hunt group will be served by a queue. When <b>Vector</b> is enabled, the hunt group will be vector controlled.</p>
	<pre> add hunt-group 1 HUNT GROUP Group Number: 1 Group Name: Agent pool Group Extension: 73000 Group Type: ucd-mia TN: 1 COR: 1 Security Code: ISDN Caller Display: ACD? y Queue? y Vector? y MM Early Answer? n Calls Warning Threshold: Time Warning Threshold: Port: Port: </pre>
	<p>On Page 2, set <b>Skill</b> to “y”. This means that agent membership in the hunt group is based on skills assigned to agent login IDs.</p>
	<pre> add hunt-group 1 HUNT GROUP Skill? y AAS? n Measured: internal Supervisor Extension: Controlling Adjunct: none Redirect on No Answer (rings): 5 Redirect to VDN: Forced Entry of Stroke Counts or Call Work Codes? n </pre>

Step	Description
3.	<p>Enter the <b>add agent-loginID p</b> command, where p is an extension valid under the provisioned dial plan. On Page 1 of the <b>agent-loginID</b> form, enter a descriptive <b>Name</b> and <b>Password</b>.</p> <pre> add agent-loginID 75001                                 Page 1 of 2                                  AGENT LOGINID                                  Login ID: 75001                                 Name: Agent-75001                                 TN: 1                                 COR: 1                                 Coverage Path:                                 Security Code:                                  AAS? n                                 AUDIX? n                                 LWC Reception: spe                                 LWC Log External Calls? n                                 AUDIX Name for Messaging:                                  LoginID for ISDN Display? n                                 Password: 12345                                 Password (enter again): 12345                                 Auto Answer: station  WARNING: Agent must log in again before skill changes take effect </pre> <p>On Page 2, set the Skill Number (SN) to the hunt group number assigned in Step 2. The Skill Level (SL) may be set according to customer requirements.</p> <pre> add agent-loginID 75001                                 Page 2 of 2                                  AGENT LOGINID                                  Direct Agent Skill:                                 Call Handling Preference: skill-level                                  SN      SL      SN      SL                                 1: 1      1      16:                                 2:          17:                                 3:          18:                                 4:          19:                                 5:          20:                                 6:                                 7:                                 8:                                 9:                                 10:                                 11:                                 12:                                 13:                                 14:                                 15: </pre> <p>Repeat this step as necessary to configure additional agent extensions.</p>

Step	Description
4.	<p>Enter the <b>change vector q</b> command, where q is a valid vector number. Enter a descriptive <b>Name</b>, and program the vector to deliver calls to the hunt/skill group number defined in Step 2. Agents that are logged into the hunt/skill group will be able to answer calls queued to the hunt/skill group.</p> <pre> change vector 1                                 CALL VECTOR                                 Page 1 of 3  Number: 1                      Name: Queue to skill1                                 Meet-me Conf? n          Lock? n Basic? y    EAS? y    G3V4 Enhanced? n    ANI/II-Digits? n    ASAI Routing? y Prompting? n    LAI? n    G3V4 Adv Route? n    CINFO? n    BSR? n    Holidays? n Variables? n 01 wait-time      2    secs hearing ringback 02 queue-to       skill 1    pri m 03 </pre>
5.	<p>Enter the <b>add vdn r</b> command, where r is an extension valid under the provisioned dial plan. Specify a descriptive <b>Name</b> for the VDN and the <b>Vector Number</b> configured in Step 4. In the example below, incoming calls to the extension 72000 will be routed to VDN 72000, which in turn will invoke the actions specified in vector 1.</p> <pre> add vdn 72000                                 VECTOR DIRECTORY NUMBER                                 Page 1 of 2                                  Extension: 72000                                 Name: VDN-72000                                 Vector Number: 1                                  Meet-me Conferencing? n                                 Allow VDN Override? n                                 COR: 1                                 TN: 1                                 Measured: internal                                  1st Skill:                                 2nd Skill:                                 3rd Skill: </pre>

Step	Description
6.	Enter the <b>change feature-access-codes</b> command. Define the <b>Auto-In Access Code</b> , <b>Login Access Code</b> , and <b>Logout Access Code</b> used for logging in/out agents.
	<pre> change feature-access-codes                                 Page 5 of 6                                 FEATURE ACCESS CODE (FAC)                                  Automatic Call Distribution Features                                  After Call Work Access Code:                                   Assist Access Code:                                     <b>Auto-In Access Code: #66</b>                                   Aux Work Access Code:                                     <b>Login Access Code: #65</b>                                     <b>Logout Access Code: *65</b>                                   Manual-in Access Code:                                  Add Agent Skill Access Code:                                 Remove Agent Skill Access Code:                                 Remote Logout of Agent Access Code: </pre>

### 3.3. Recording Ports

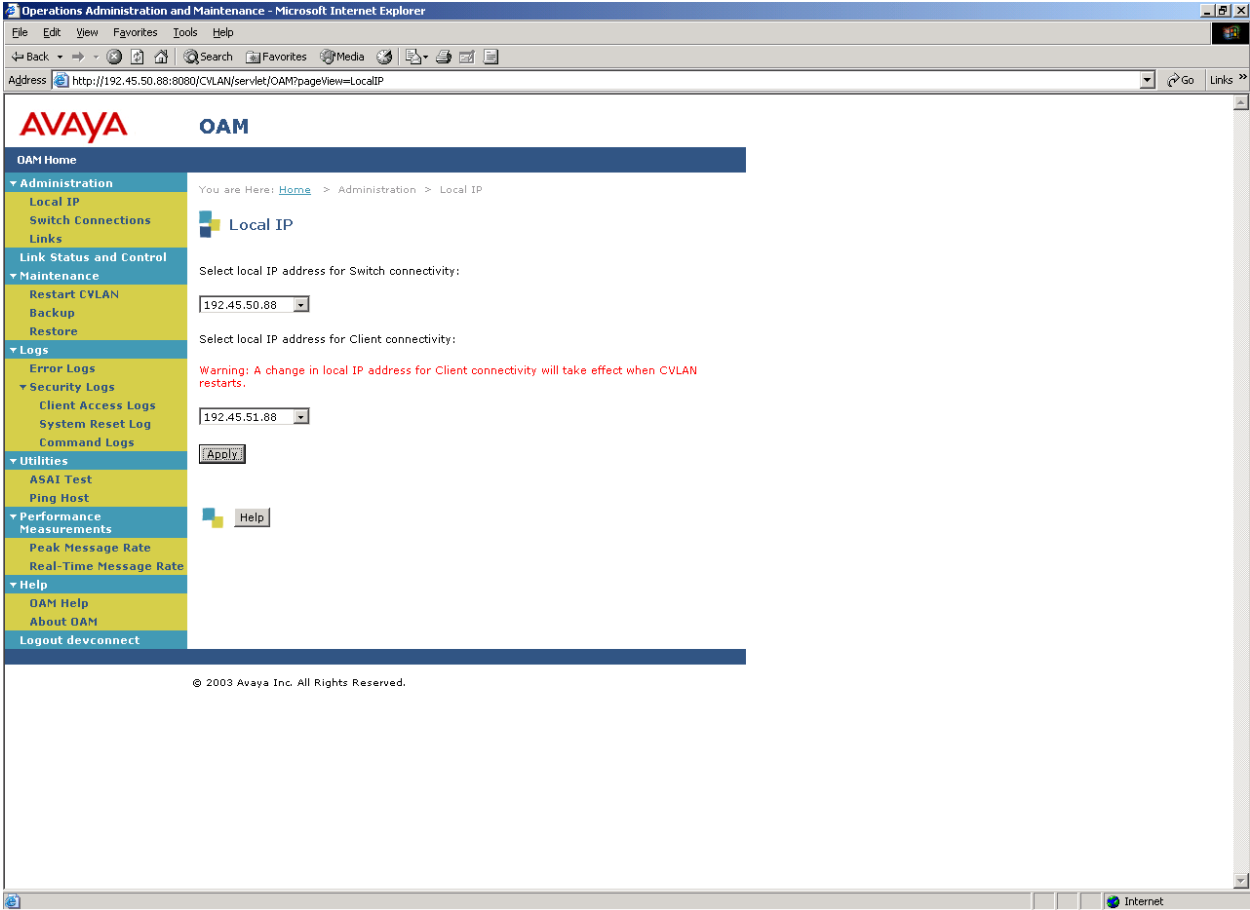
The recording ports in this configuration are Communication Manager Application Programming Interface stations that essentially appear as IP softphones to Avaya Communication Manager. Enter the **add station s** command, where s is an extension valid under the provisioned dial plan. On Page 1 of the **station** form, set **Type** to an IP or Digital phone set type, set **Port** to **IP**, enter a descriptive **Name**, specify the **Security Code**, and set **IP Softphone** to “y.”

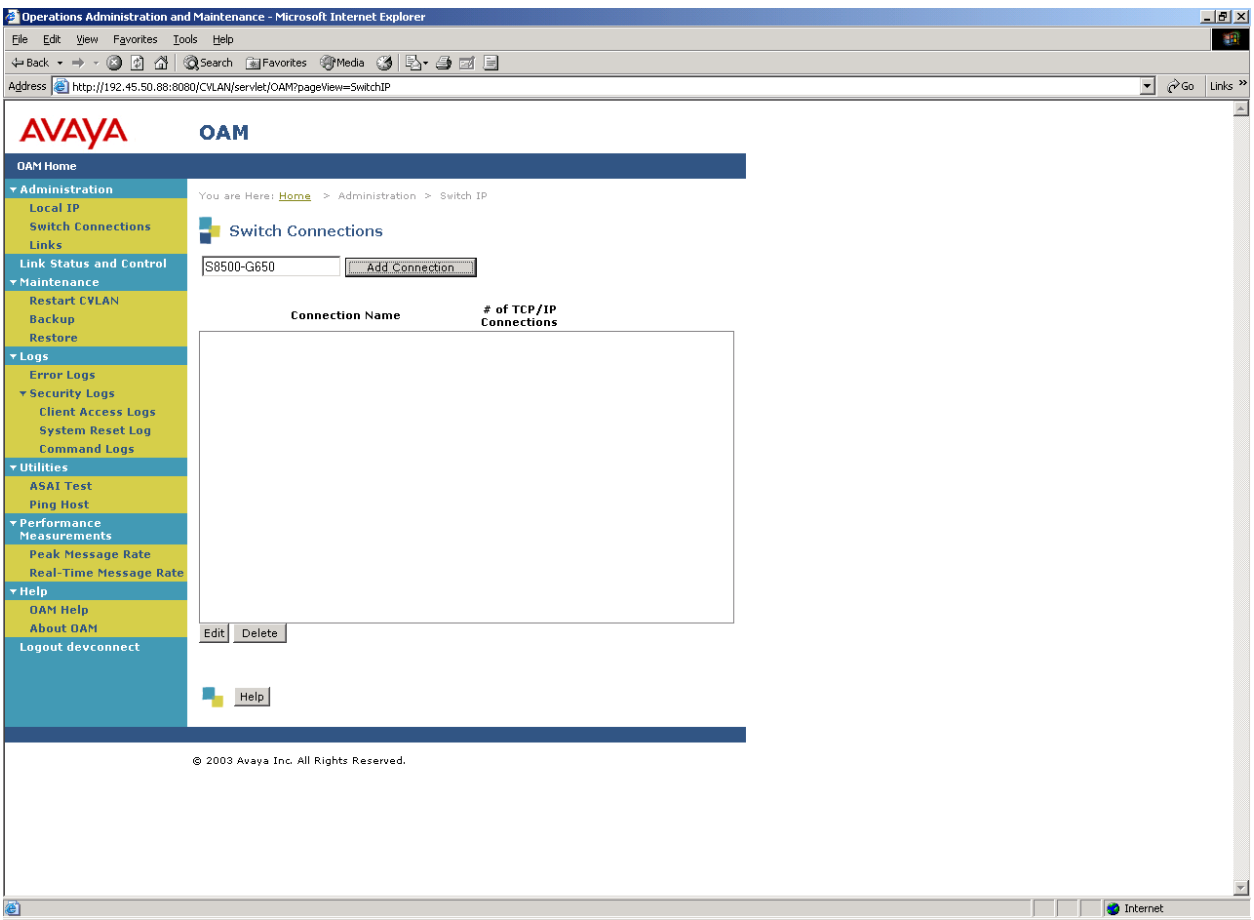
add station 60001	Page 1 of 3
STATION	
Extension: 60001	Lock Messages? n
<b>Type: 4610</b>	<b>Security Code: 12345</b>
<b>Port: IP</b>	BCC: 0
<b>Name: CMAPI Recording Line 1</b>	TN: 1
	COR: 1
	COS: 1
	Hunt-to Station:
STATION OPTIONS	
Loss Group: 19	Personalized Ringing Pattern: 1
Speakerphone: 2-way	Message Lamp Ext: 60001
Display Language: english	Mute Button Enabled? y
Survivable GK Node Name:	Media Complex Ext:
	<b>IP SoftPhone? y</b>

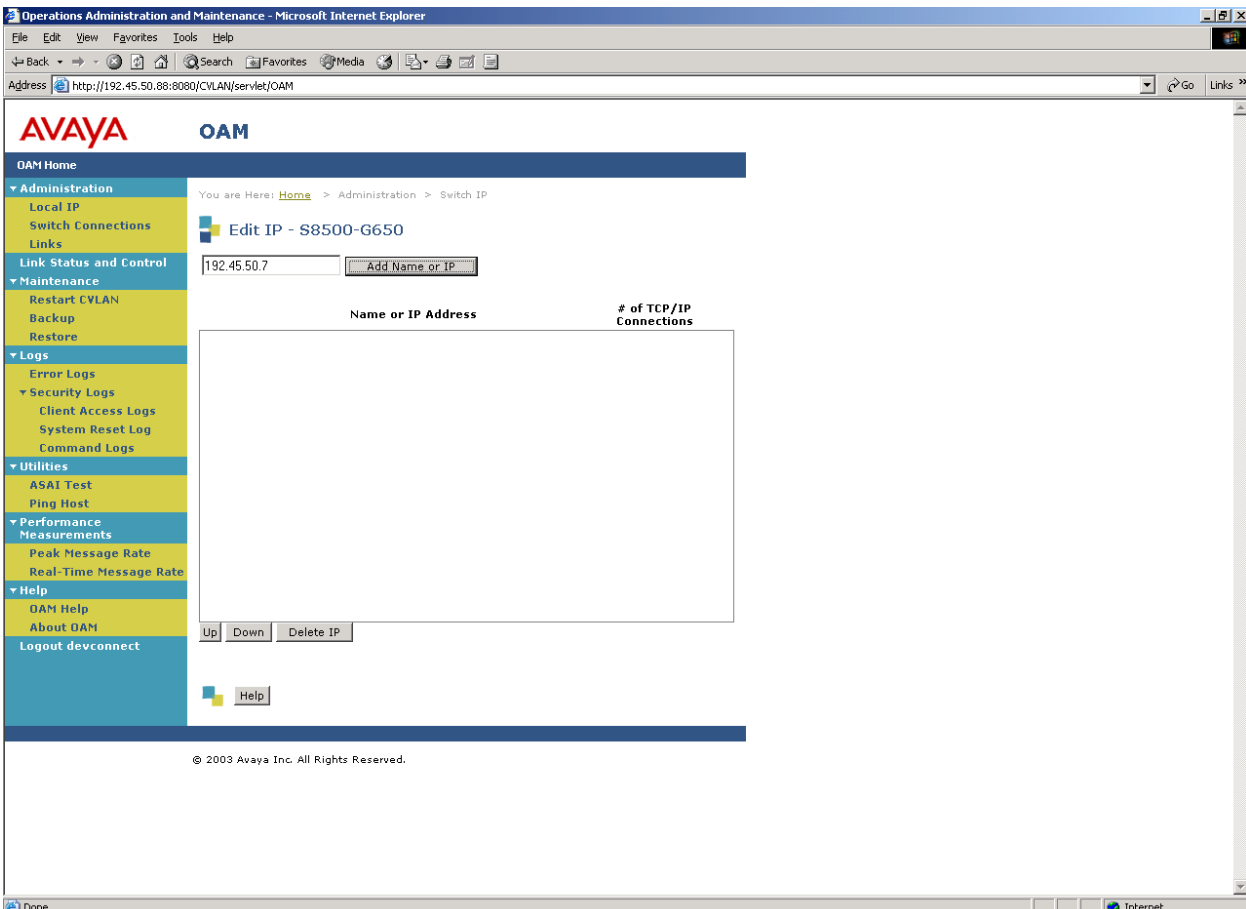
## 4. Configure the Avaya CVLAN Server for Linux

Avaya CVLAN Server for Linux enables CTI applications to control and monitor telephony resources on Avaya Communication Manager. The CVLAN Server receives requests from CVLAN clients, i.e. CTI applications, and forwards them to Avaya Communication Manager. Conversely, the Avaya CVLAN Server receives responses and events from Avaya Communication Manager and forwards them to the appropriate CTI applications.

Step	Description
1.	<p>Open a browser and enter the following URL:</p> <p><a href="http://&lt;hostname&gt;:&lt;port&gt;/CLVAN/OAM">http://&lt;hostname&gt;:&lt;port&gt;/CLVAN/OAM</a></p> <p>where &lt;hostname&gt; is the name or IP address of the Linux server on which the CVLAN Server is running and &lt;port&gt; is the appropriate port number (the default port number is 8080).</p>
2.	<p>Log on using an account (on the Linux server) with administrator privileges. Note that logging on as “root” is not allowed.</p>

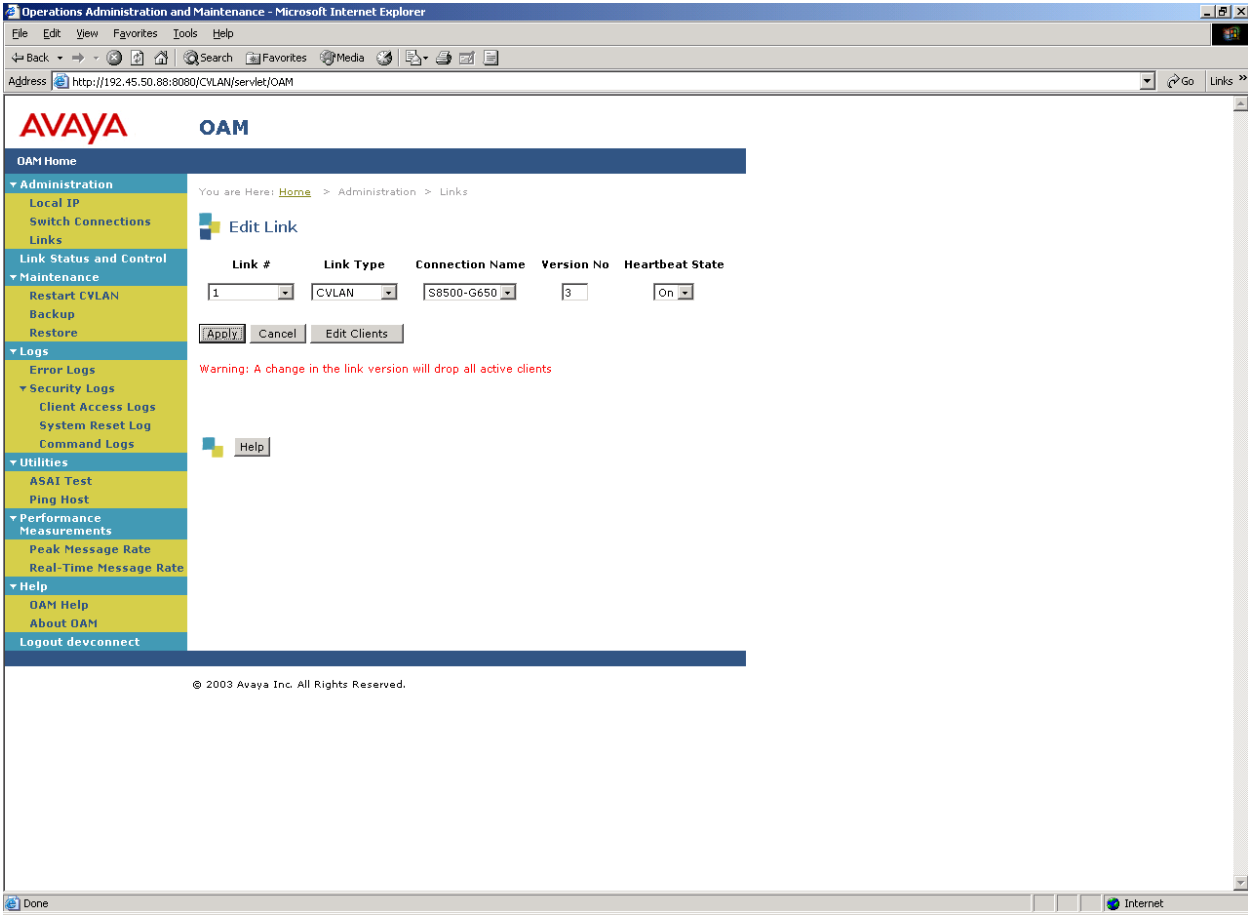
Step	Description
3.	<p>Click on “<b>Local IP</b>” in the left panel. For <b>Select local IP address for Switch connectivity</b>, select the IP address of the Linux server interface <u><b>connected to the same subnet as the G650 C-LAN board</b></u>. For <b>Select local IP address for Client connectivity</b>, select the IP address of the Linux server interface <u><b>connected to the same subnet as ECHO</b></u>. Click on “<b>Apply</b>” and then “<b>Restart CVLAN</b>” in the left panel.</p> 

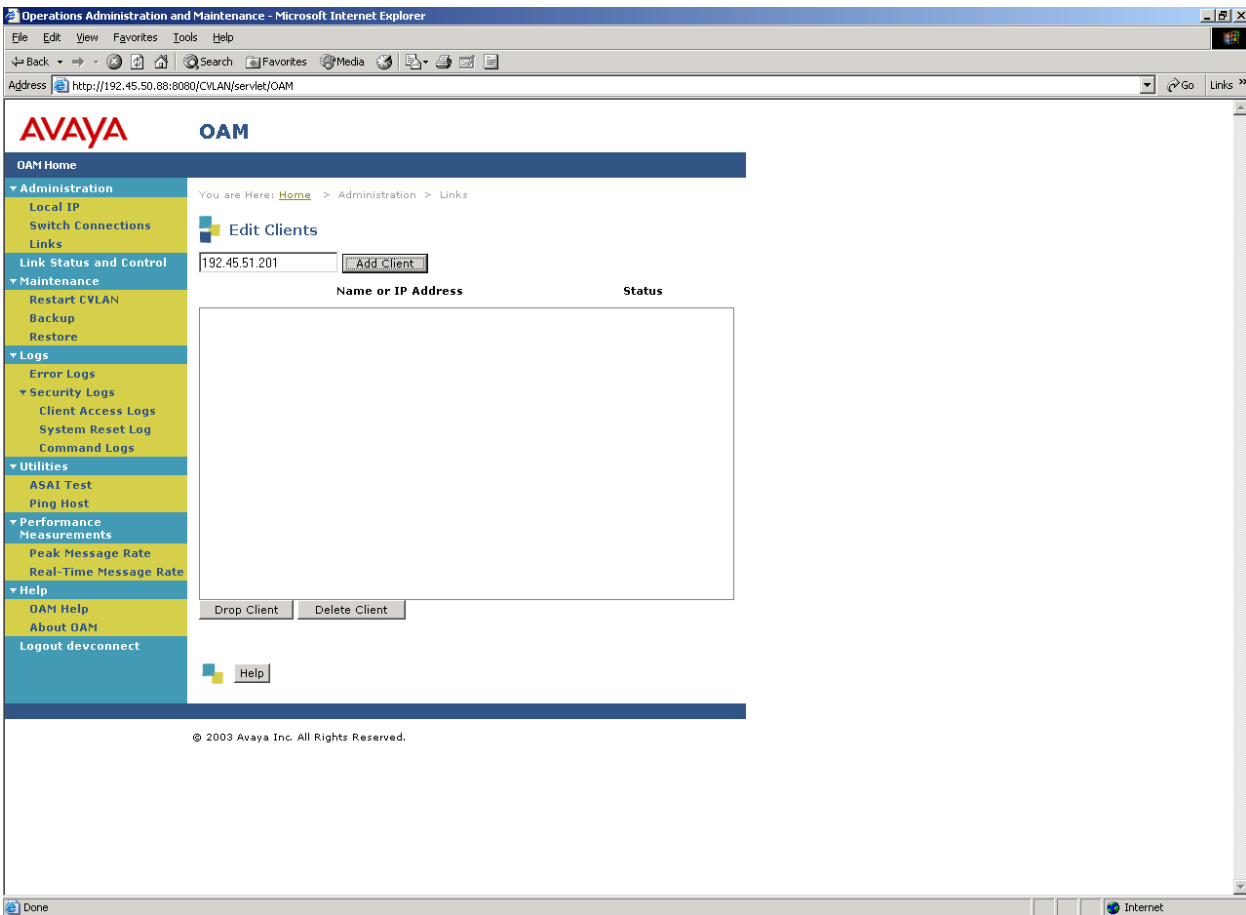
Step	Description
4.	<p>Click on “<b>Switch Connections</b>” in the left panel. Assign a name for the S8500/G650 and click on “<b>Add Connection</b>”.</p> 

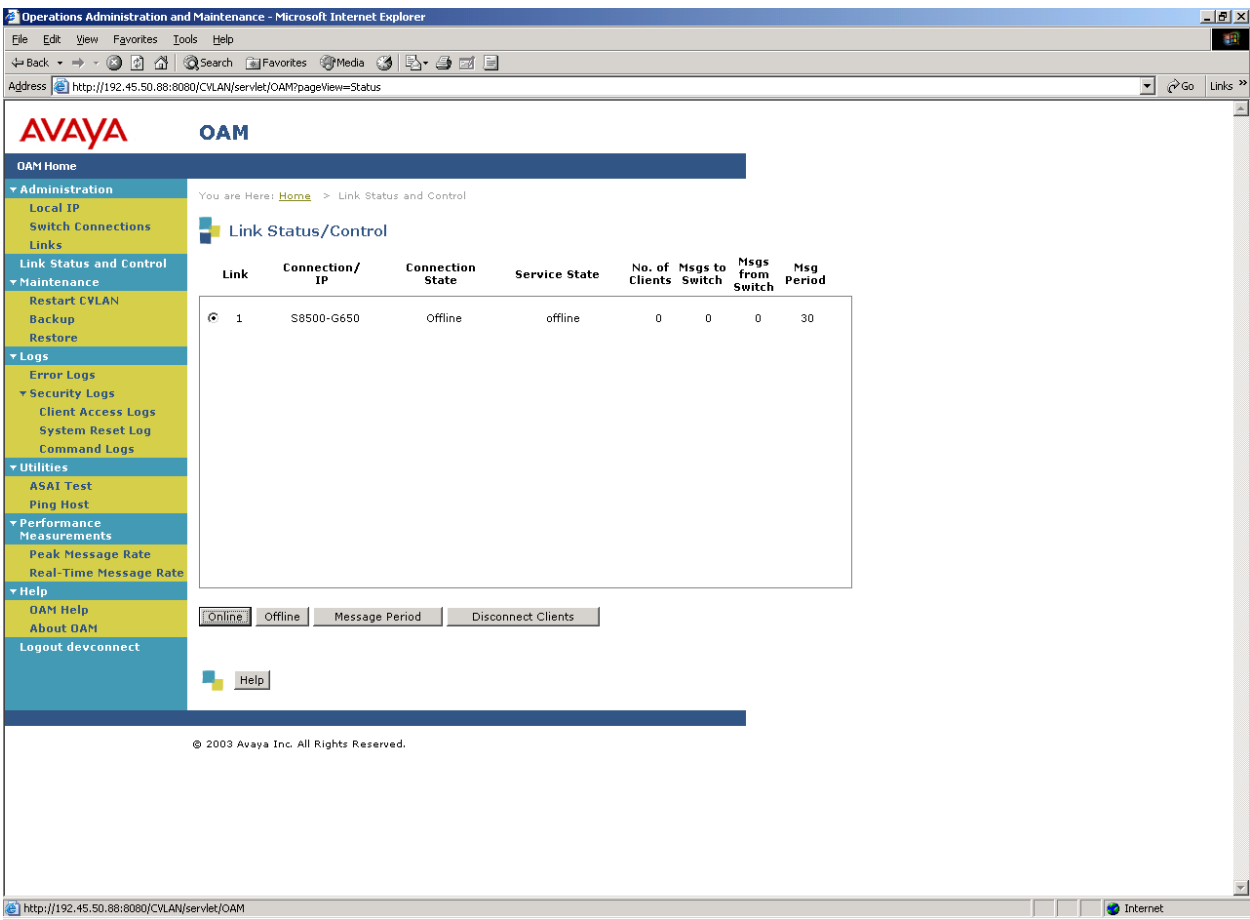
Step	Description
5.	<p>Enter the hostname or IP address of the G650 C-LAN board and click on “Add Name or IP”.</p> 



Step	Description
6.	<p>Click on “<b>Links</b>” in the left panel. Select a link and click on “<b>Edit Link</b>”.</p>

Step	Description
7.	<p>Set <b>Link #</b> to the same client link number configured in Step 4 of Section 3.1, <b>Link Type</b> to “<b>CVLAN</b>”, <b>Connection Name</b> to the name assigned in Step 4 of this section, <b>Version No</b> to “<b>3</b>”, and <b>Heartbeat State</b>* to “<b>On</b>”. Click on “<b>Apply</b>” and then “<b>Edit Clients</b>”.</p> <p>* Alternatively, the <b>Heartbeat State</b> may be set to “<b>Off</b>”. With the “On” setting, the CVLAN Server responds to the heartbeat from Avaya Communication Manager. With the “Off” setting, the CVLAN Server forwards the heartbeat from Avaya Communication Manager to the CVLAN client, i.e. ECHO in this configuration, which in turn responds to the heartbeat.</p> 

Step	Description
8.	<p>Enter the IP address of the ECHO CTI server and click on “Add Client”.</p> 

Step	Description
9.	<p>Click on “<b>Link Status and Control</b>” in the left panel. Select the link configured in Step 7 and click on “<b>Online</b>”.</p> 

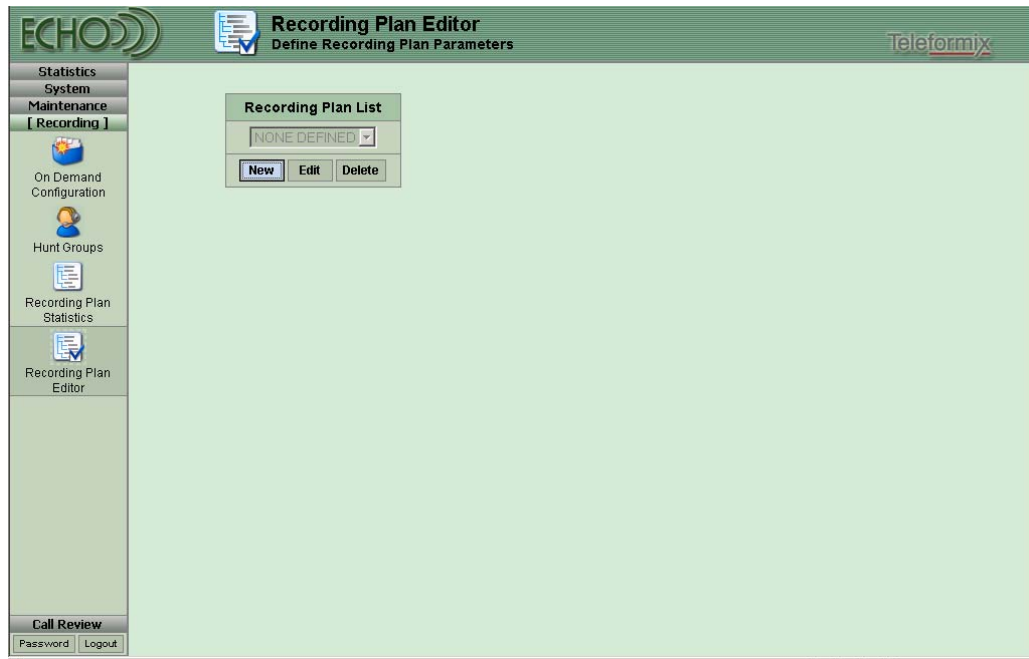
## 5. Configure the Avaya Communication Manager Application Programming Interface Server


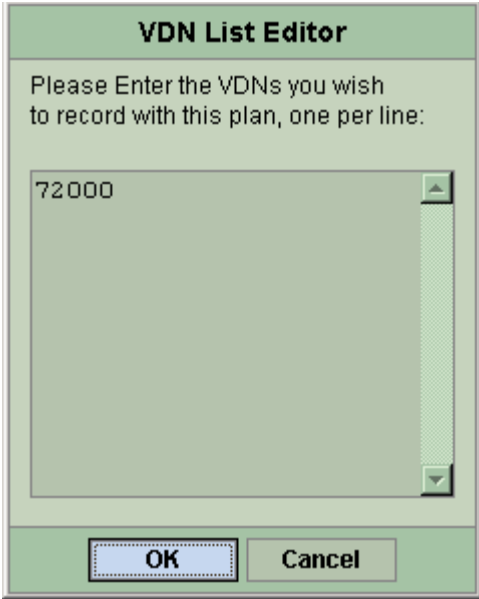
The ECHO call recording solution comes with the Avaya Communication Manager Application Programming Interface server pre-configured and running on the ECHO CTI server. Avaya Communication Manager licenses for Communication Manager Application Programming Interface stations (used as recording ports by ECHO in this application) are also required, and it is assumed that the appropriate number of Communication Manager Application Programming Interface licenses is available.


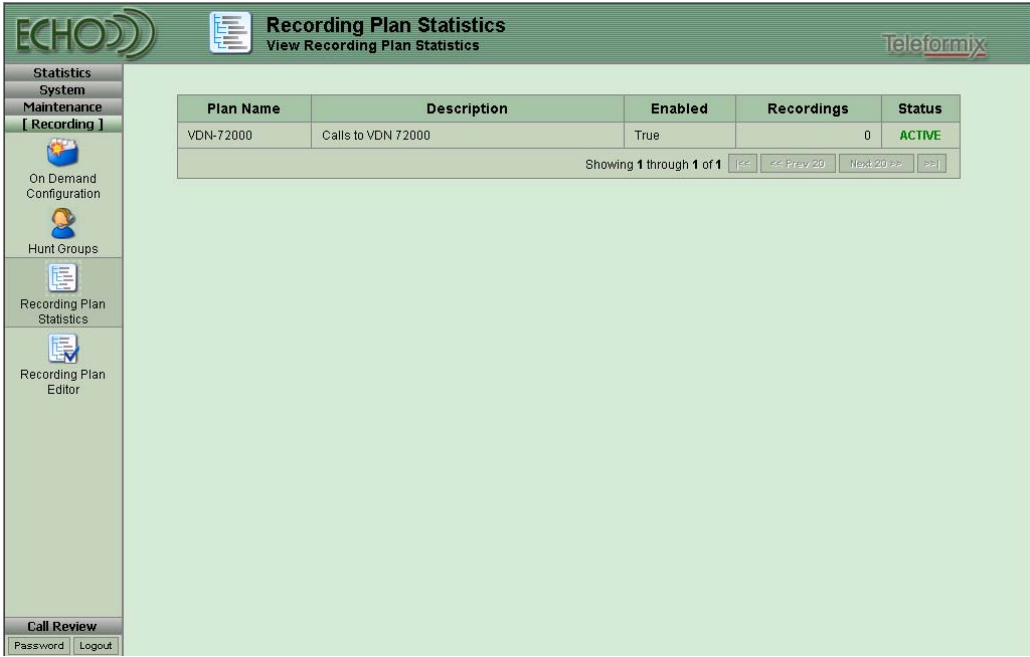
## 6. Configure Teleformix ECHO

The steps in this section describe the configuration of an ECHO recording plan that records calls placed to a VDN and delivered to agents. The agents do not have to be specified in the recording plan. Recording plans may also be configured in a similar manner for recording calls placed to/from particular stations, particular agents, or any combination of stations, agents, and VDNs. Consult [1] for further guidance.

Step	Description
1.	Open a browser, enter the hostname of the ECHO CTI Server as the URL, and log in with the appropriate credentials.
2.	Click on “ <b>Recording</b> ” and then “ <b>Recording Plan Editor</b> ” in the left panel. Click on “ <b>New</b> ”.



Step	Description
3.	<p>Enter a descriptive <b>Plan Name</b> and <b>Description</b> and check the <b>Enabled</b> checkbox. For <b>VDN List</b>, select the <b>List</b> radio button and click on “<b>Edit</b>”.</p> 
4.	<p>Enter the VDNs to be recorded and click on “<b>OK</b>”.</p> 

Step	Description
5.	<p>Click on “OK” to save the Recording Plan Record.</p> 
6.	<p>Click on the “Recording Plan Statistics” in the left panel and verify that the <b>Status</b> of the configured recording plan is <b>ACTIVE</b>. Note that it may take a few minutes for a recording plan to be entered into and updated in the database.</p> 

## 7. Interoperability Compliance Testing

The interoperability compliance testing included feature, serviceability, and performance testing. The feature testing evaluated the ability of ECHO to monitor and record calls placed to and from stations, agents, and VDNs. The serviceability testing introduced failure scenarios to see if ECHO can resume recording after failure recovery. The performance testing stressed the ECHO servers by continuously placing calls to a VDN over extended periods of time.

### 7.1. General Test Approach

The general approach was to place various types of calls to and from stations, agents, and VDNs, monitor and record them using ECHO, and verify the recordings. For feature testing, the types of calls included internal calls, inbound trunk calls, outbound trunk calls, transferred calls, conference calls, Redirection On No Answer (RONA) calls, and Switch-Classified calls. For performance testing, a call generator continuously placed calls to a VDN that queues the calls in a hunt/skill group, which in turn delivers the calls to agents logged into the hunt/skill group. For serviceability testing, failures such as cable pulls, CTI link busyouts/releases, and resets were applied.

### 7.2. Test Results

ECHO successfully monitored, recorded, stored, and played back the various types of calls discussed in Section 7.1. For serviceability testing, ECHO was able to resume recording calls after restoration of connectivity to the CVLAN server, after busyout/release of the CTI link, and after resets of the ECHO servers and S8500 Media Server. For performance testing, ECHO successfully recorded calls under call rates of approximately 11K Busy Hour Call Completions (BHCC) in two recording port configurations. The first configuration used 96 Communication Manager Application Programming Interface virtual stations as the recording ports, while the second configuration used 48 Communication Manager Application Programming Interface virtual stations and 48 T1 channels<sup>1</sup> as the recording ports. The first configuration was tested for 18 consecutive hours and the second configuration was tested for 4 consecutive hours.

The following observations were made during testing:

- To record the consult portions of transfers, the extension of the transfer initiator or target must be included in an active recording plan.
- If the originator of a conference call is included in an active recording plan and drops from the conference call, then recording will stop. However, if any of the remaining parties on the call is included in an active recording plan, then recording of the conference call will continue as long as the party is on the conference call.

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<sup>1</sup> See [2] for details on configuring T1 channels as recording ports for the ECHO call recording solution.



## 8. Verification Steps

The following steps may be used to verify the configuration:

- From the ECHO servers, ping the Avaya CVLAN server and agent desktop computers and verify connectivity.
- From the ECHO servers and Avaya CVLAN server, ping the Avaya G650 Media Gateway C-LAN and Media Processor boards and verify connectivity.
- Verify that calls may be successfully completed between the IP and Digital telephones.
- Verify the CTI link between Avaya Communication Manager and the Avaya CVLAN server is up (use the **status dlgti-link** command on the SAT).
- Log an agent into a hunt/skill group and verify that calls placed to and from the agent are completed successfully.
- Configure a recording plan in ECHO that includes the agent, and place calls to and from the agent. Verify that the call recordings are accurate and complete.

## 9. Support

For technical support on Teleformix products, contact Teleformix at:

- Phone: 1-847-585-6800
- Toll Free: 1-800-413-4000
- Email: [info@teleformix.com](mailto:info@teleformix.com)

## 10. Conclusion

These Application Notes illustrate the procedures for configuring the Teleformix ECHO call recording solution to monitor and record calls placed to and from stations, agents, and VDNs on an Avaya Communication Manager system. In the configuration described in these Application Notes, ECHO employs Communication Manager Application Programming Interface virtual stations as recording ports. During compliance testing, ECHO successfully monitored and recorded calls placed to and from stations and agents, as well as calls placed to a VDN and then queued to an agent hunt/skill group. ECHO was also able to record calls under continuous call volumes over extended periods of time.

## 11. Additional References

- [1] Teleformix ECHO Version 2.2 Operations Manual, September 14, 2004
- [2] Application Notes for the Teleformix ECHO 2.0 Call Recording Solution with Avaya Communication Manager 2.0, Issue 1.0

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

Product information for Teleformix products may be found at  
[http://www.teleformix.com/solutions\\_products.php](http://www.teleformix.com/solutions_products.php).

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