Avaya Solution & Interoperability Test Lab

Application Notes for the Primas Group LinkScope CTI Monitor with Avaya Aura™ Communication Manager and Avaya Aura™ Application Enablement Services – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for The Primas Group's LinkScope CTI Monitor to interoperate with Avaya Aura™ Communication Manager and Avaya Aura™ Application Enablement Services. The objective of the test was to evaluate the ability of LinkScope to monitor the CTI link between contact center components, record call information in a database, and decode Avaya Adjunct Switch Application Interface (ASAI) protocol messages in a contact center environment. All test cases were completed successfully.

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

The LinkScope CTI Suite is designed to monitor the CTI link between contact center components, record call information in a database, and decode Avaya Adjunct Switch Application Interface (ASAI) protocol messages in a contact center environment. The Notifier desktop client presents information to the agent and agent supervisor, and the Web Application hosts a dashboard for a general overview of the contact center systems from the perspective of the CTI messages. The Application Service manages and performs operations based on the CTI messages themselves, offering a web services interface to a database as well as Screen Pop and First Call Resolution for the agents. The Web Application is the main user interface to the LinkScope Suite, providing the customer access to real-time and historical data. It also allows the user to configure the alerting and notification systems.

The interoperability of The Primas Group's LinkScope CTI Suite Version 2.0 with Avaya Aura™ Communication Manager is accomplished through Avaya Aura™ Application Enablement Services. These Application Notes describe the compliance test configuration used to test The Primas Group's LinkScope CTI Suite Version 2.0, with Communication Manager running on an Avaya S8300 Server and an Avaya G350 Media Gateway.

1.1. Interoperability Compliance Testing

The Compliance testing focused on the following areas, covered in the DevConnect Test Plan for Communication Manager and Application Enablement Services and The Primas Group's LinkScope:

Phase 1 Installation & Configuration

Phase 2 LinkScope/Avaya Feature Functionality Verification

Phase 3 Failover and Serviceability Tests

The installation and configuration testing focused on the setup of all components and the ability to interoperate. It also covered the ability to remove the application from the system.

The functionality testing focused on verifying LinkScope's ability to receive and parse real-time data from Communication Manager, and the use of the data in various captures and alarm reports.

The serviceability testing focused on verifying the ability of LinkScope to recover from and report on adverse conditions.

1.2. Support

For technical support on LinkScope, contact The Primas Group at +1 714 362-0021, Option 1 or e-mail at support@primas.net (please include on the subject line the word "LinkScope").

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2. Reference Configuration

The interoperability of LinkScope with Communication Manager is accomplished through Application Enablement Services. The compliance test configuration used to test LinkScope includes the Avaya S8300 Server, the Avaya G350 Media Gateway, Application Enablement Services, Windows 2003 Server running CT Connect, and telephones. Envox CT Connect is computer telephony call control server software capable of connecting telephone switches to data processing environments. Envox CT Connect implements the Avaya ASAI protocol to provide CTI call control and monitoring functionality and application programming interfaces to business applications like LinkScope. **Figure 1** provides a high level topology.

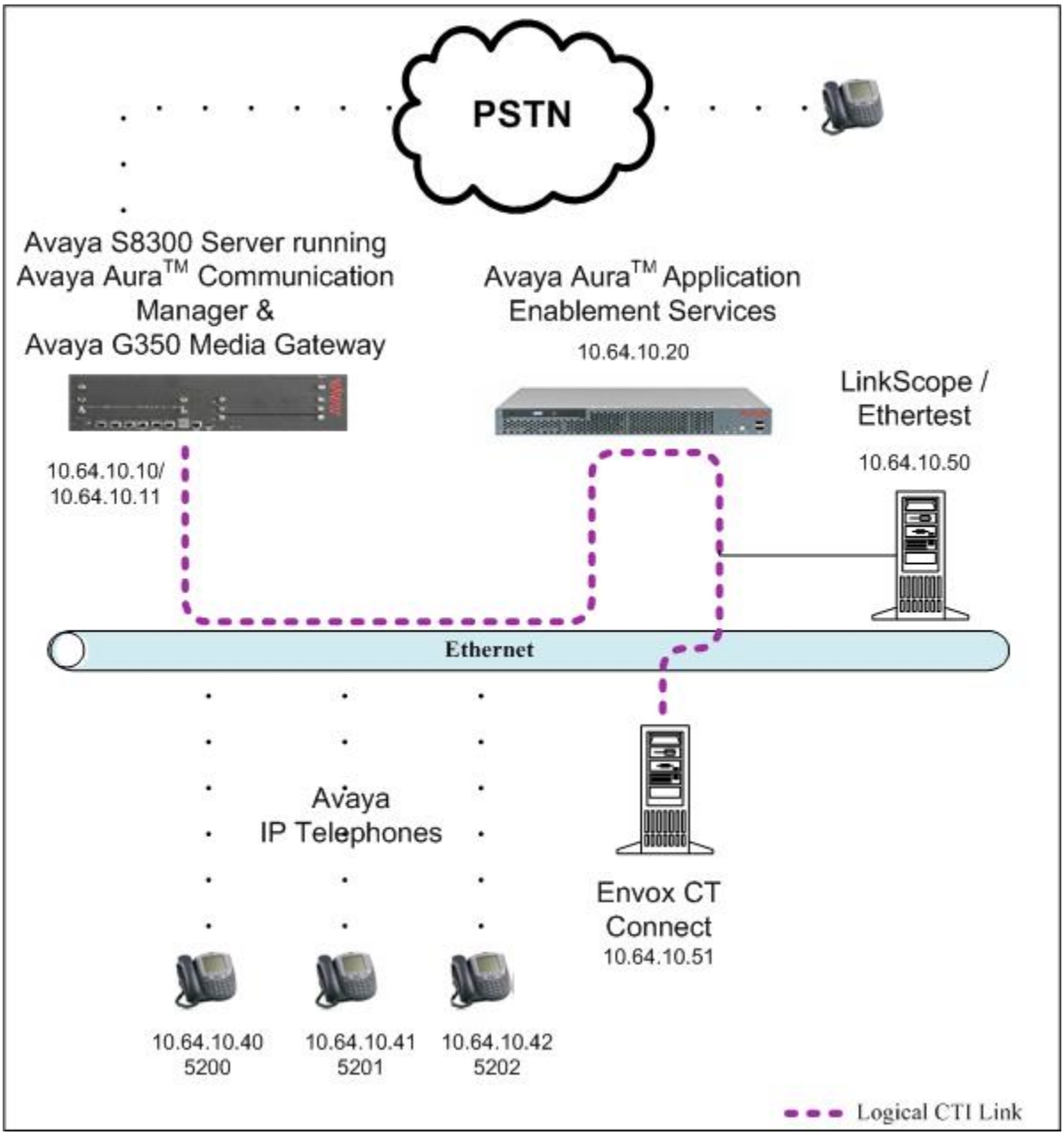

Figure 1: The Primas Group LinkScope CTI Monitor Compliance Test Sample Configuration

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3. Equipment and Software Validated

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

Hardware/Software Component	Version/Description
Avaya S8300 Server and G350 Media Gateway	Avaya Aura™ Communication Manager 5.2 (R015x.02.0.947.3) with Service Pack 17534
Avaya Aura™ Application Enablement Services	Release 4.2.3
Avaya 9600 Series IP Telephones	9620, 9630, 9640 Terminals R2.0
The Primas Group's LinkScope running on Windows XP	Version 2.0, LS.3867, .dll (service, decoders, and database)
Frontline Ethertest (NMT & Protocol Analyzer)	Version 7.8.12
Envox CT Connect (CTCVM) running on VMWare server	Version 7

4. Configure Avaya Aura™ Communication Manager

All the configuration changes in this section for Communication Manager are performed through the System Access Terminal (SAT) interface. For more information on configuring Communication Manager, refer to the Avaya product documentation, Reference [1].

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

- Administer Processor Ethernet Interface for Application Enablement Services connectivity
- Administer CTI link for CTI device

The detailed administration of contact center entities, such as VDN, Skill, Split, Logical Agents and Station Extensions are assumed to be in place and are not covered in these Application Notes.

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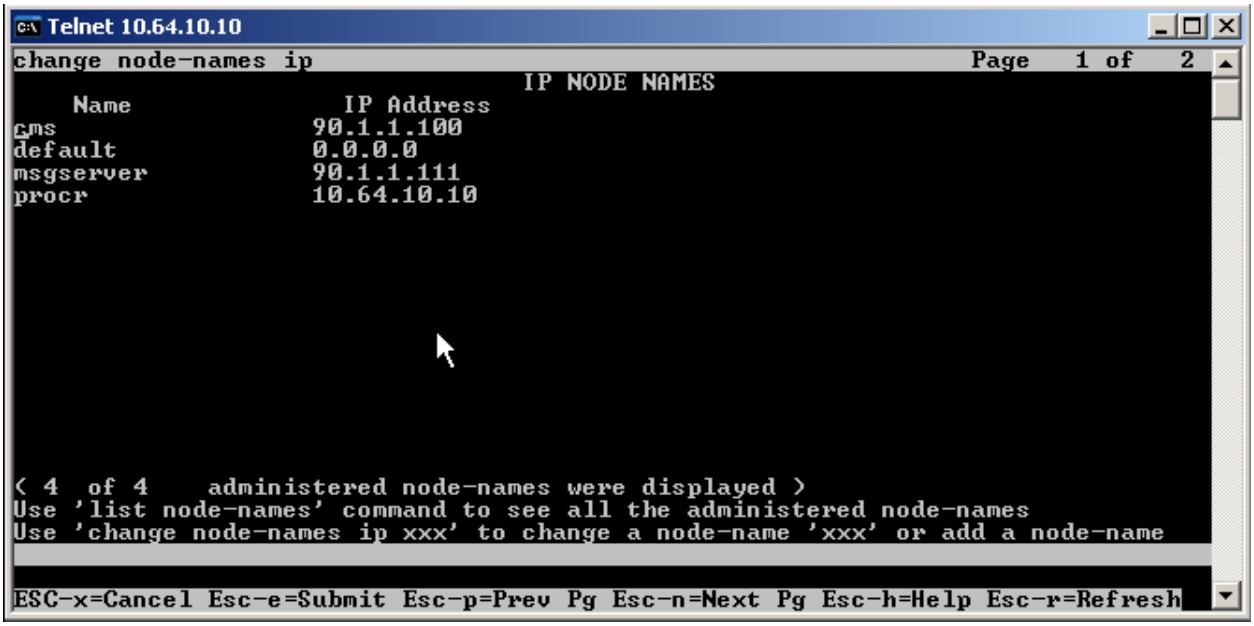
4.1. Administer Processor Ethernet Interface for AES Connectivity

Verify the entry for the Processor Ethernet Interface in the node-names form.

- Enter the **change node-names ip** command. In this case, **procr** and **10.64.10.10** are already populated as Name and IP Address for the Processor Ethernet Interface that will be used for connectivity to the AES server. The actual IP address may vary. Submit these changes.



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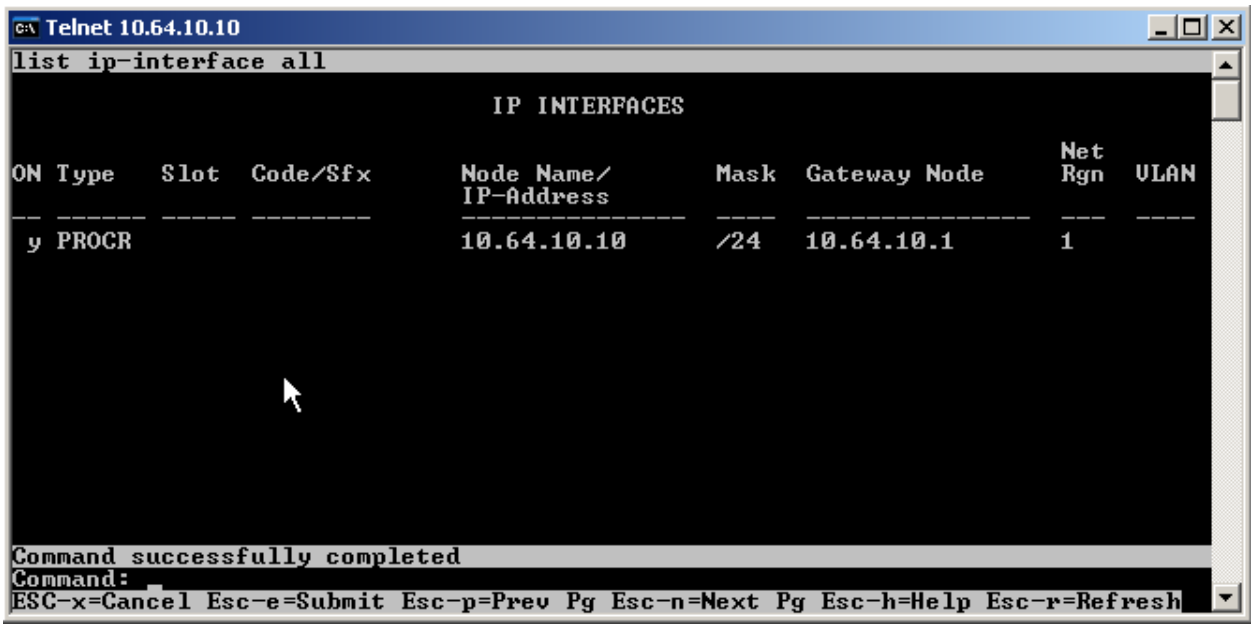
On an S8300, the Processor Ethernet Interface should already be in the ip-interface list.

- Either the **display ip-interface procr** command or the **list ip-interface all** command will display the parameters of the Processor Ethernet Interface on the S8300.



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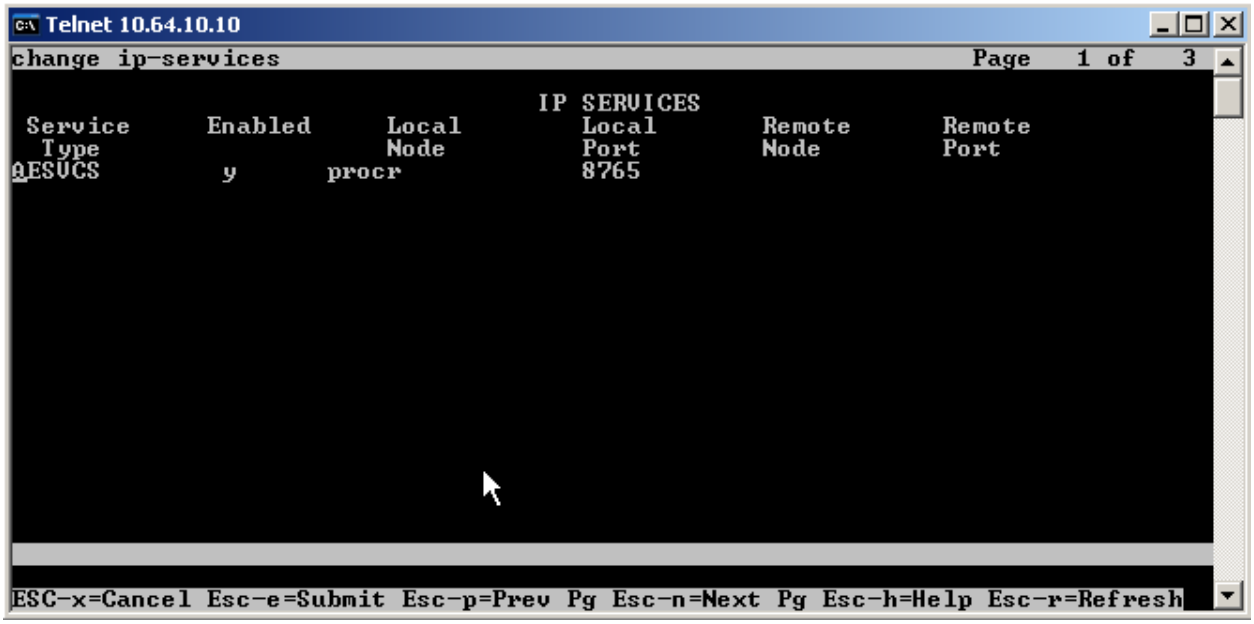
Add an entry for IP Services with the following values for fields on Page 1, as displayed below:

- Enter the **change ip-services** command.
- In the **Service Type** field, type **AESVCS**.
- In the **Enabled** field, type **y**.
- In the **Local Node** field, type the Node name **procr** for the Processor Ethernet Interface.
- In the **Local Port** field, retain the default of 8765.



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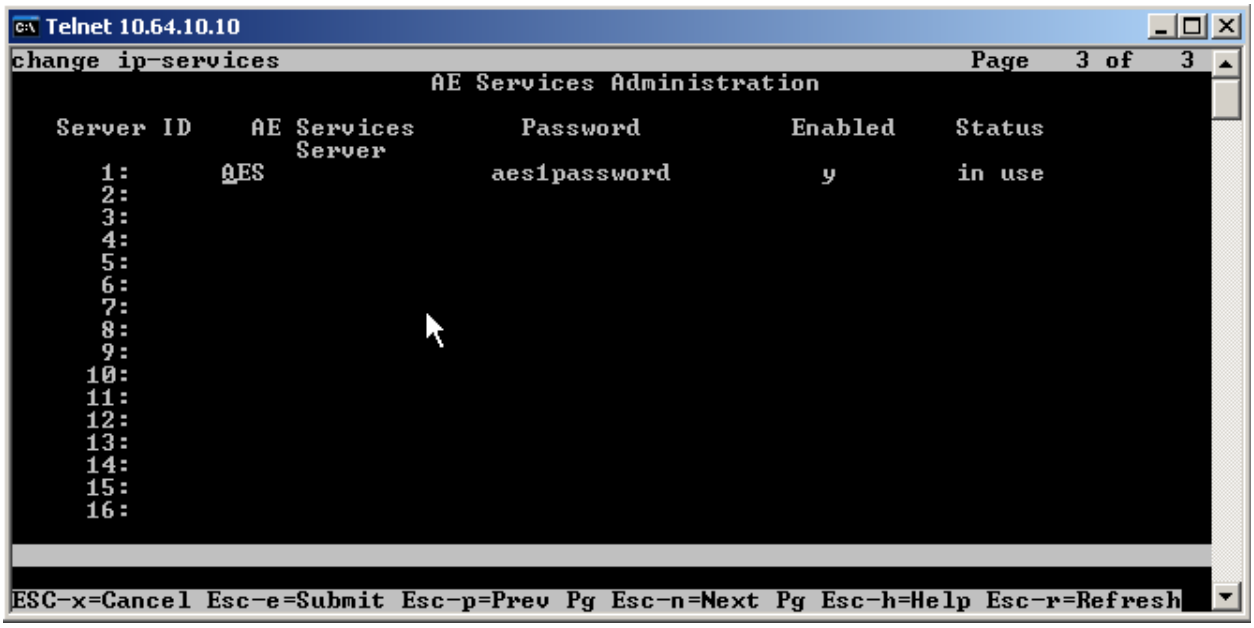
Go to Page 3 of the IP Services form, and enter the following values:

- In the **AE Services Server** field, type the name obtained from the AES server, in this case **AES**.
- In the **Password** field, type the same password to be administered on the AES server, in this case **aes1password**.
- In the **Enabled** field, type **y**.



Note that the name and password entered for the **AE Services Server** and **Password** fields must match the hostname and password on the AES server. The administered 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 above will need to be set on the AES server using **Administration > Switch Connections > Edit Connection > Set Password**. For detailed information on AES, see Section 5 Configure Application Enablement Services.

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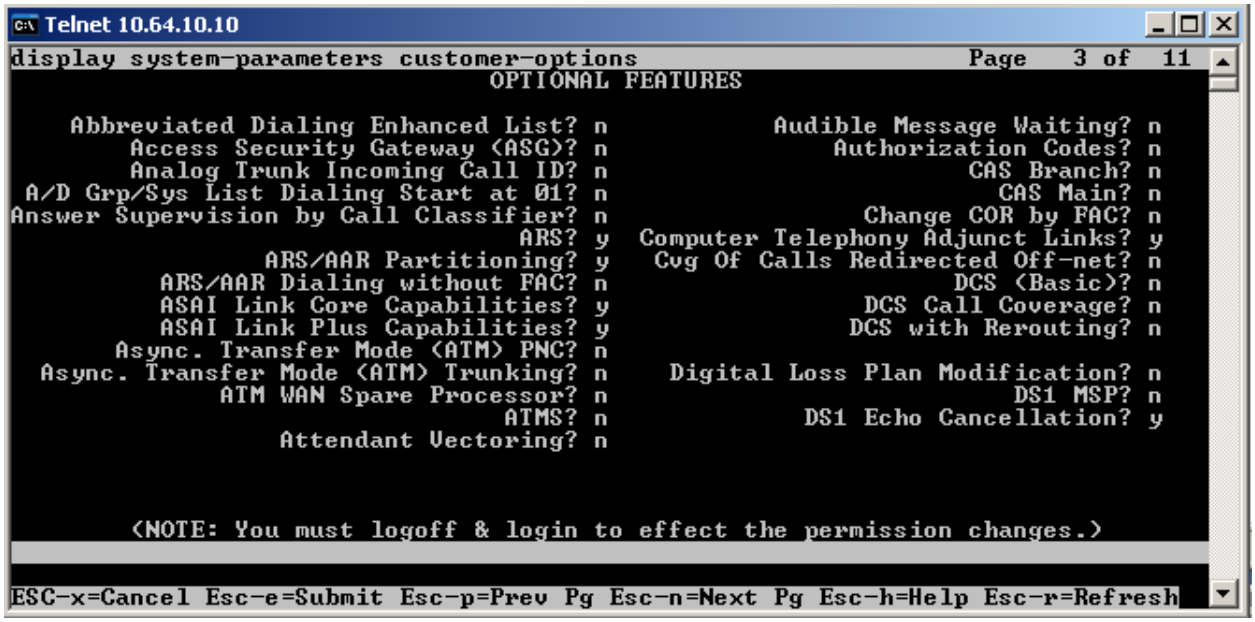
4.2. Administer Computer Telephony Integration (CTI) Link

It is assumed that Communication Manager is enabled with feature licenses for Vectoring, ASAI Link Core Capabilities, and Computer Telephony Adjunct Links.

This section provides the steps required for configuring a CTI Link.

Enter the **display system-parameters customer-options** command.

- On Page 3, verify that the **Computer Telephony Adjunct Links** field is set to **y** for yes. If not, contact an authorized Avaya account representative to obtain the license.



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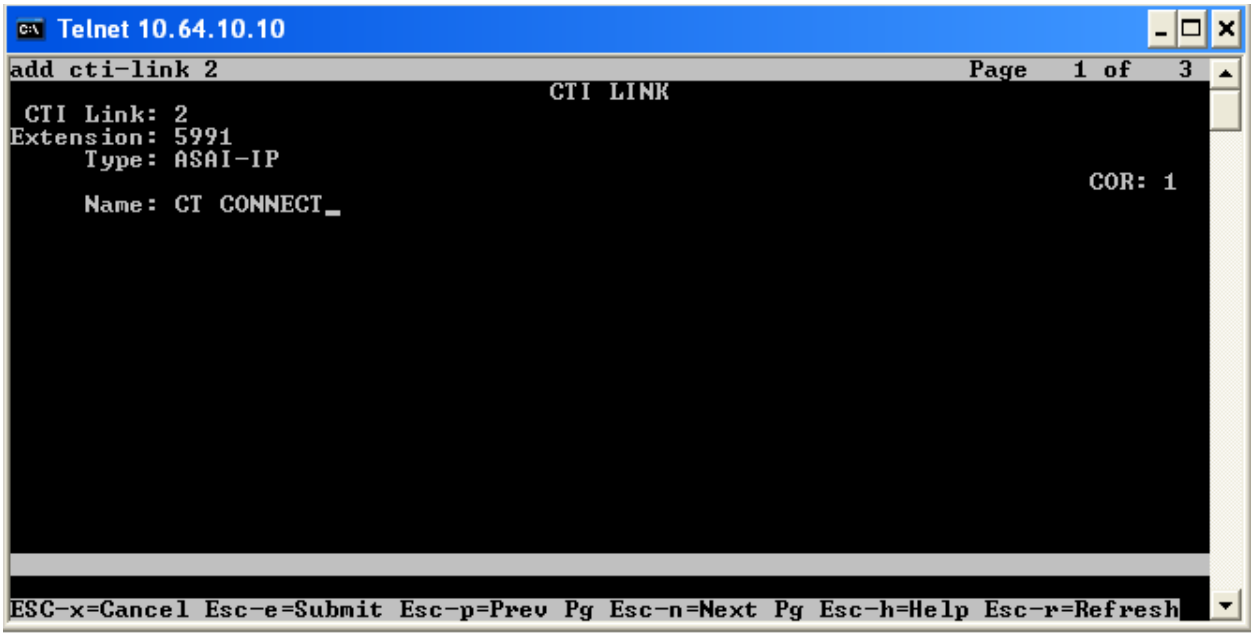
For this test, CT Connect was used in place of an existing CTI application. A link was added for CT Connect.

Enter the **add cti-link <link number>** command, where **<link number>** is an available CTI link number.

- In the **Extension** field, type **<station extension>**, where **<station extension>** is a valid station extension.
- In the **Type** field, type **ASAI-IP**.
- In the **Name** field, type a descriptive name.



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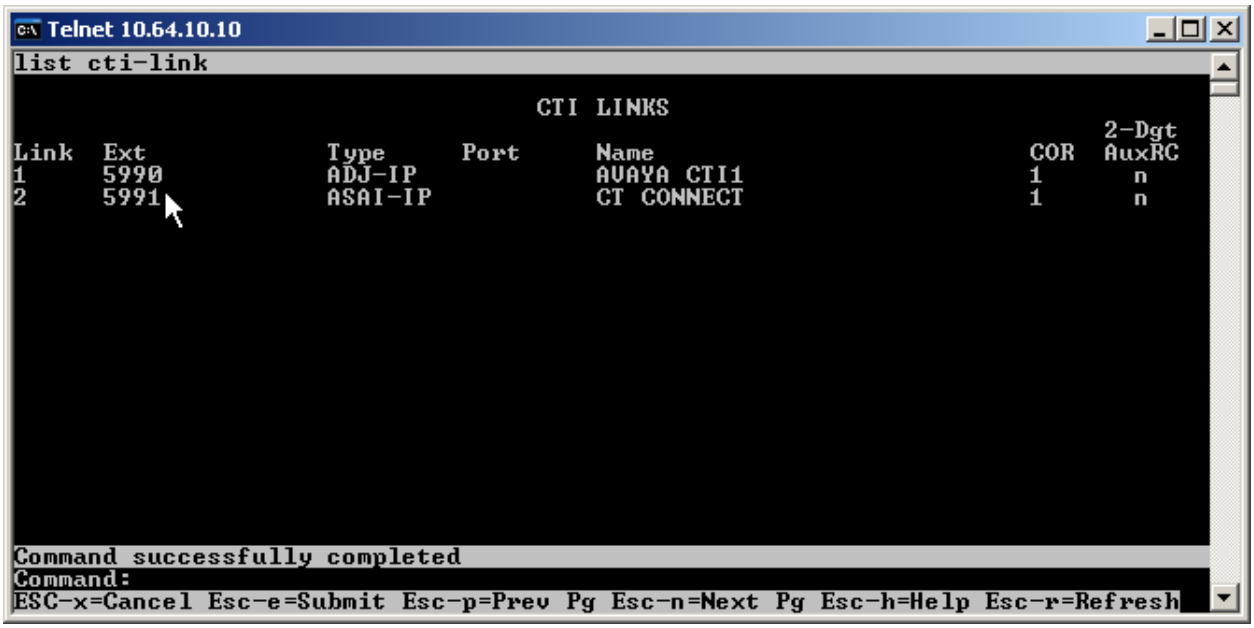
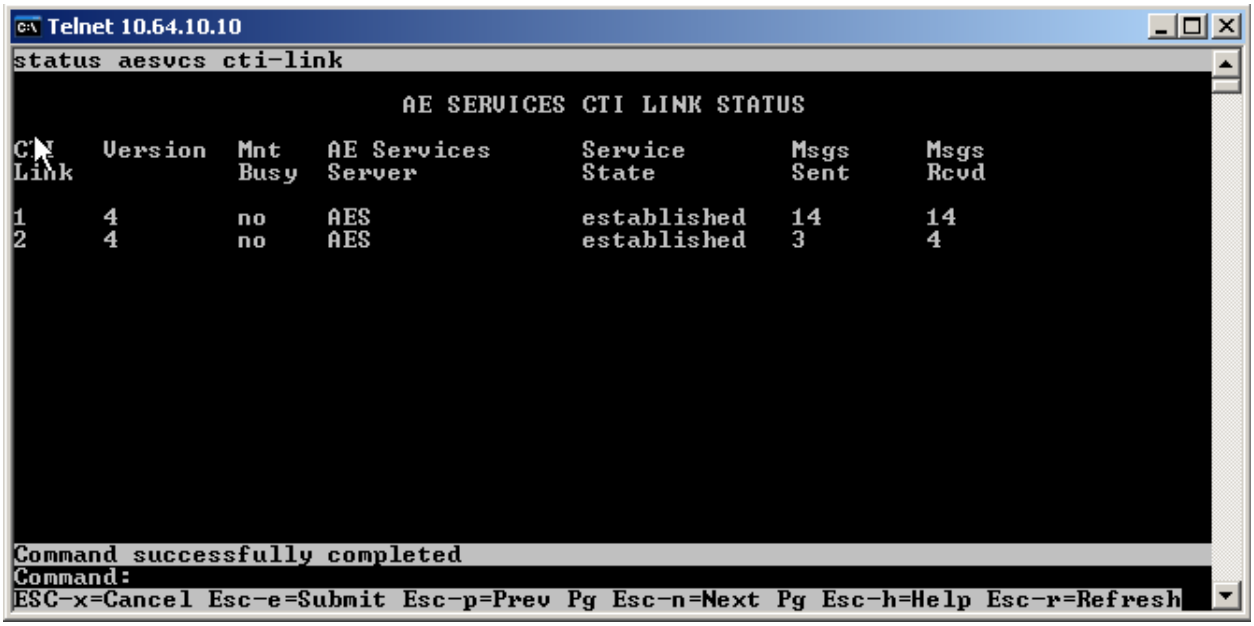
Enter the **list cti-link** command to verify that the CTI Link is correctly configured. In this case, **Link 2** is the link of interest.



Check the service state of the link by entering the **status aesvcs cti-link** command. The service state should show **no** for maintenance busy and the Service State should indicate **established**.



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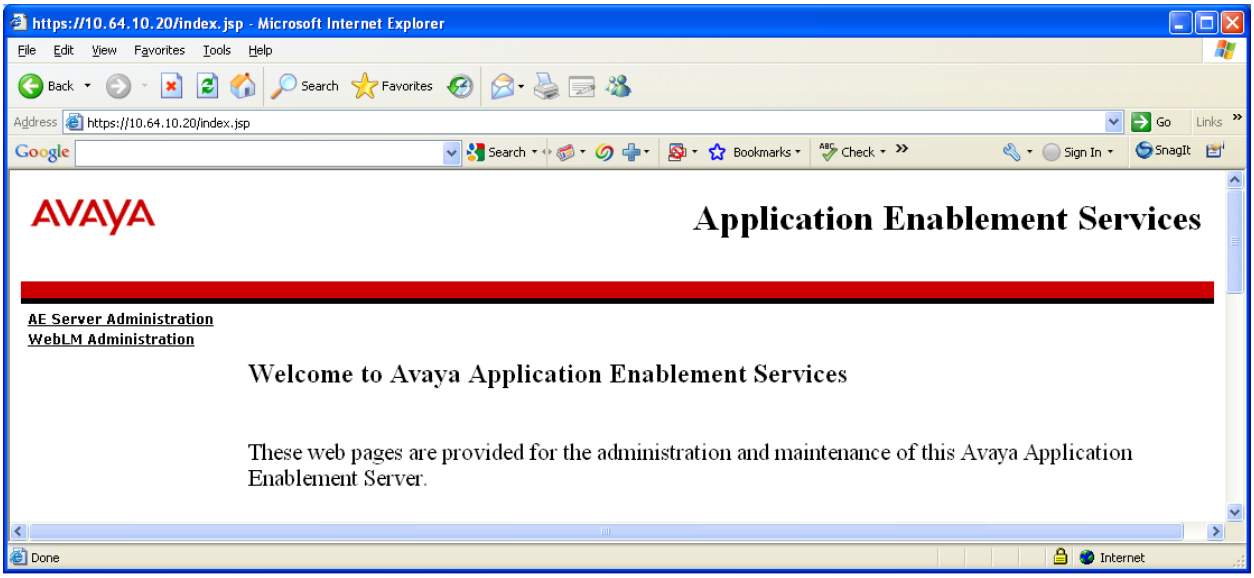
5. Configure Application Enablement Services

The Application Enablement Services (AES) server enables Computer Telephony Interface (CTI) applications to monitor and control telephony resources on Communication Manager. The Application Enablement Services server receives requests from CTI applications and forwards them to Communication Manager. Conversely, the Application Enablement Services server receives responses and events from Communication Manager and forwards them to the appropriate CTI applications.

This section assumes that the installation and basic administration of the Application Enablement Services server has already been performed. For more information on administering Application Enablement Services, refer to the Avaya product documentation, Reference [2].

Access the AES OAM web-based interface by using the URL **https://ip-address** in an Internet browser window, where **ip-address** is the IP address of the AES server. Click on the **AE Server Administration** Link.



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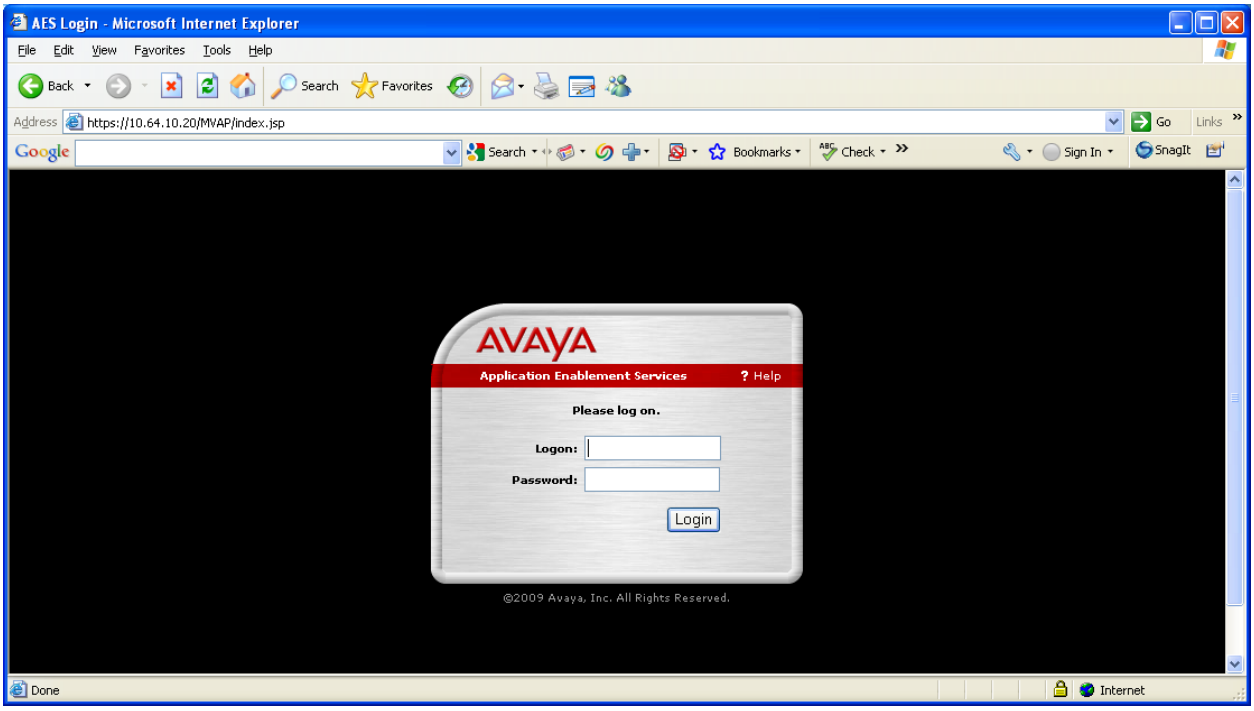
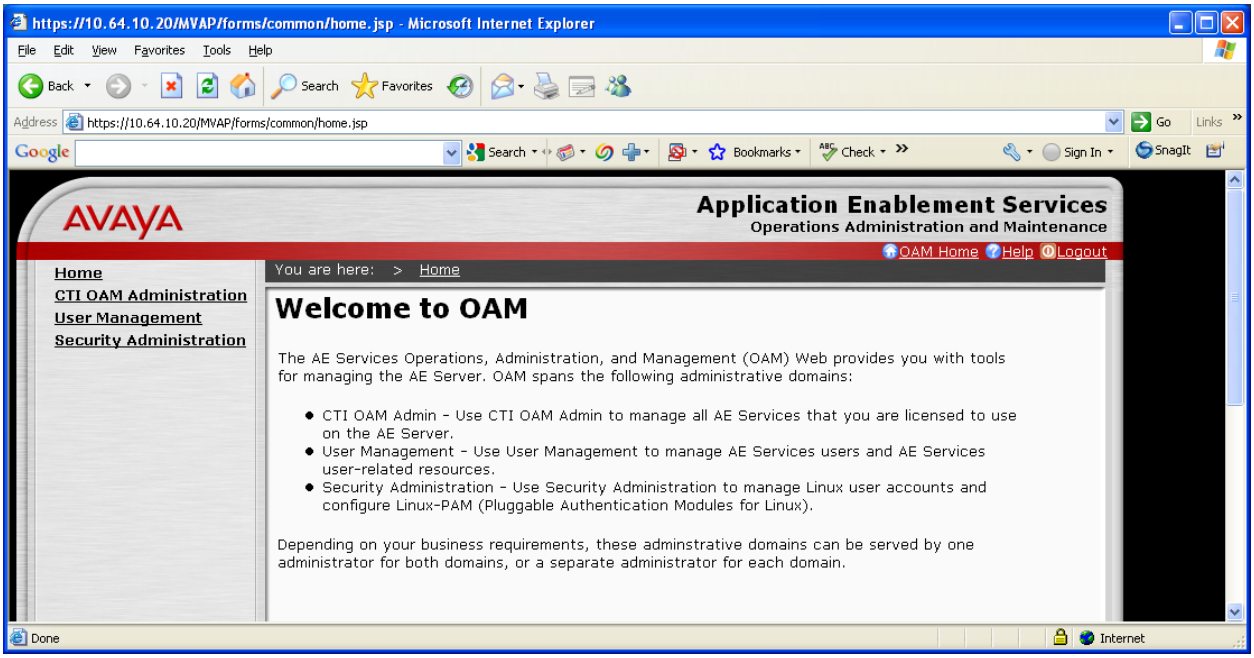
The **Login** screen is displayed as shown below. Log in with the appropriate credentials.



The **Welcome to OAM** screen is displayed next. Select **CTI OAM Administration** from the left pane.



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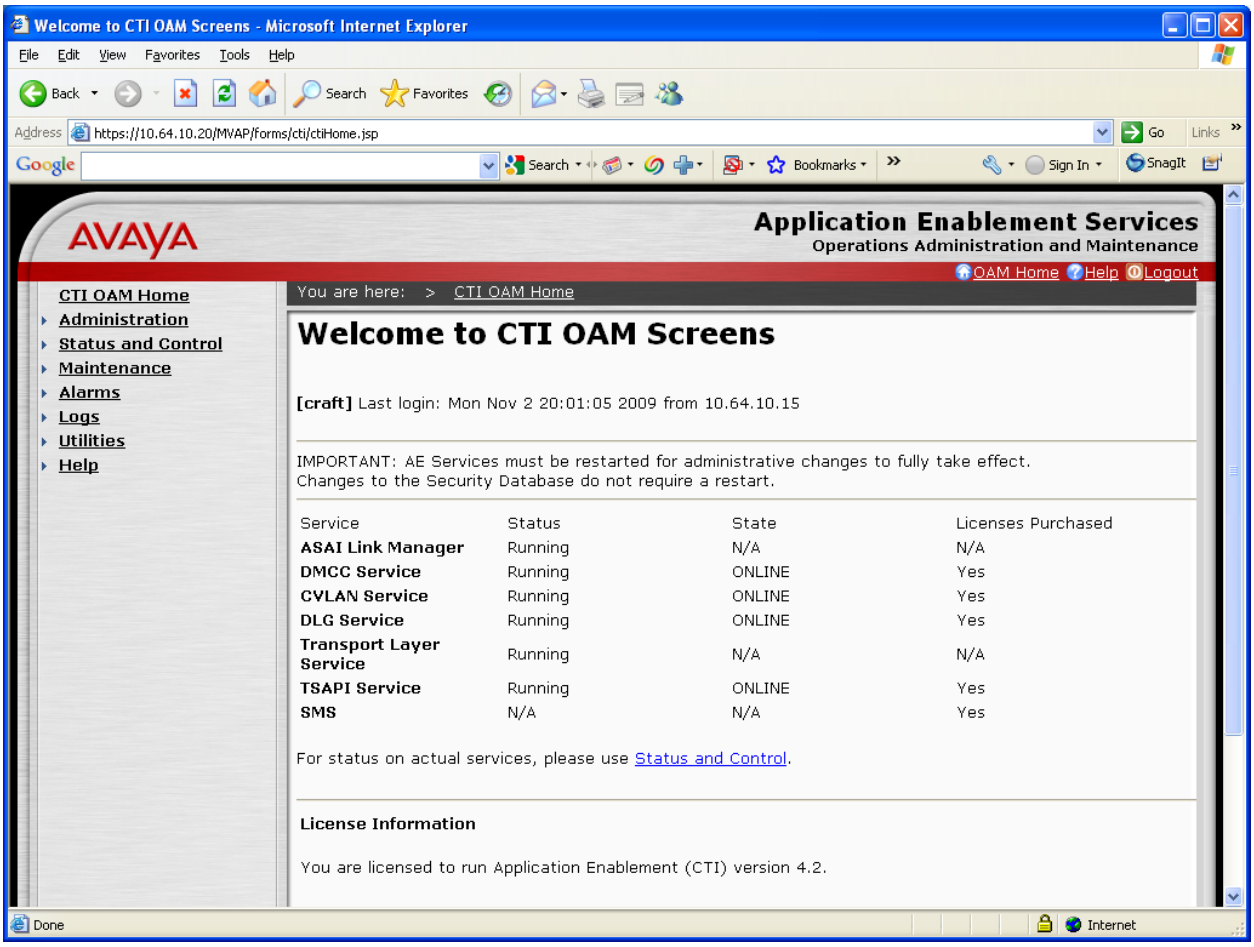
The **Welcome to CTI OAM Screens** screen is displayed. Verify that AES is licensed for the DLG Service, as shown in the screen below. If the DLG Service is not licensed, contact the Avaya sales team or business partner for a proper license file.



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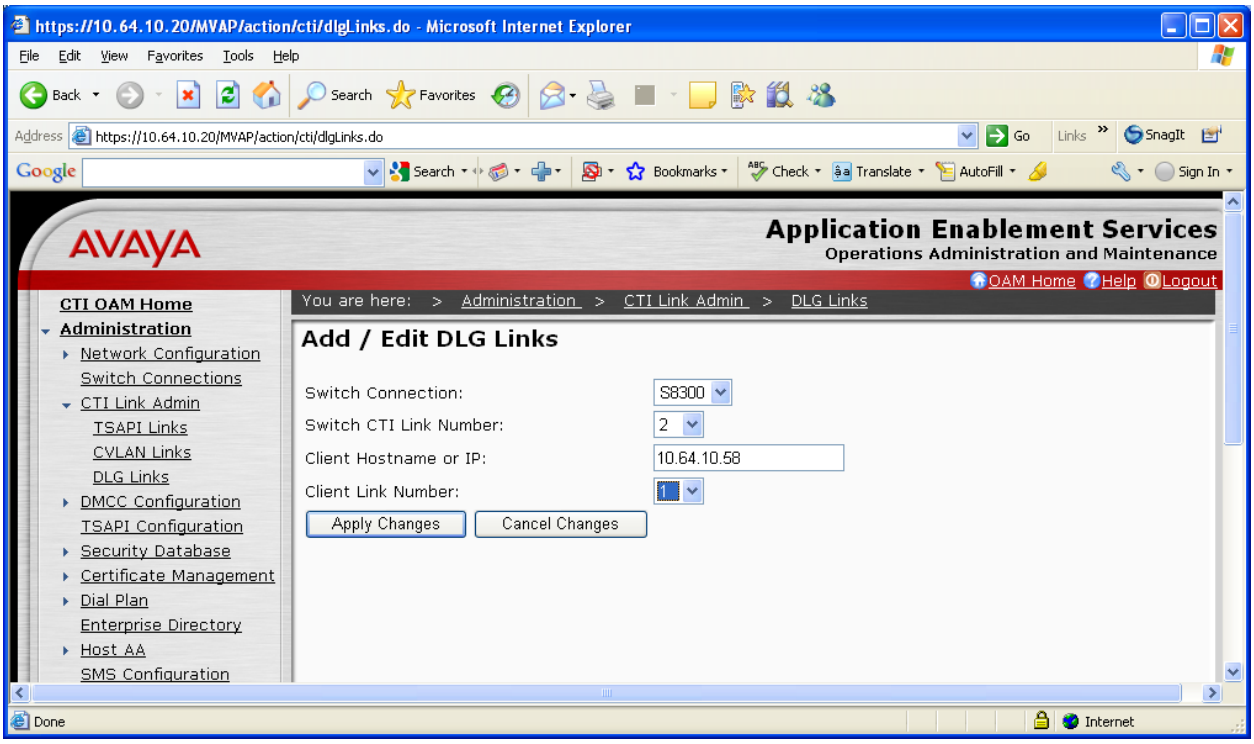
To administer a DLG link, select **Administration > CTI Link Admin > DLG Links** from the left pane. The **Add / Edit DLG Links** screen is displayed, as shown below.

- From the pull-down menu, select the **Switch Connection**, in this case **S8300**.
- Choose the **Switch CTI Link Number** from the pull-down menu based on the CTI link number previously assigned in Communication Manager.
- Add the **Client Hostname or IP** address, in this case, the IP Address is that of the CT Connect Host.
- Choose the **Client Link Number** from the pull-down menu. In this case, the number is chosen based on the client configuration.

Click **Apply Changes**.



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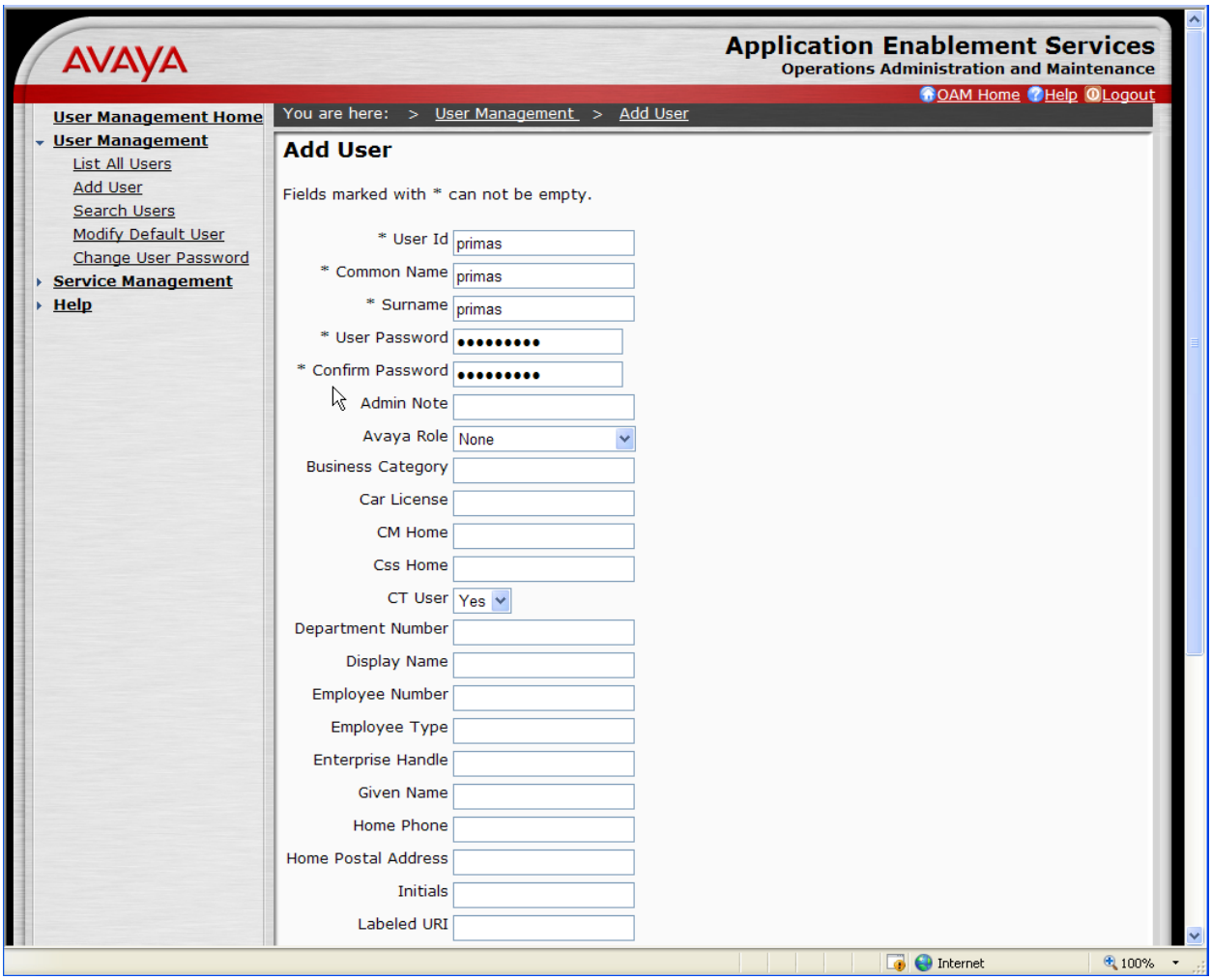
Next, add a CTI User, as LinkScope requires a CTI user to access AES. Select **OAM Home > User Management > Add User** from the left pane.

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

- In the **User Id** field, type a meaningful user id.
- In the **Common Name** field, type a descriptive name.
- In the **Surname** field, type a descriptive surname.
- In the **User Password** field, type a password for the user.
- In the **Confirm Password** field, re-enter the same password for the user.
- In the **Avaya Role** field, retain the default of **None**.
- In the **CT User** field, select **Yes** from the dropdown menu.
- Click **Apply** at the bottom of the screen (not shown here).



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6. Configure LinkScope

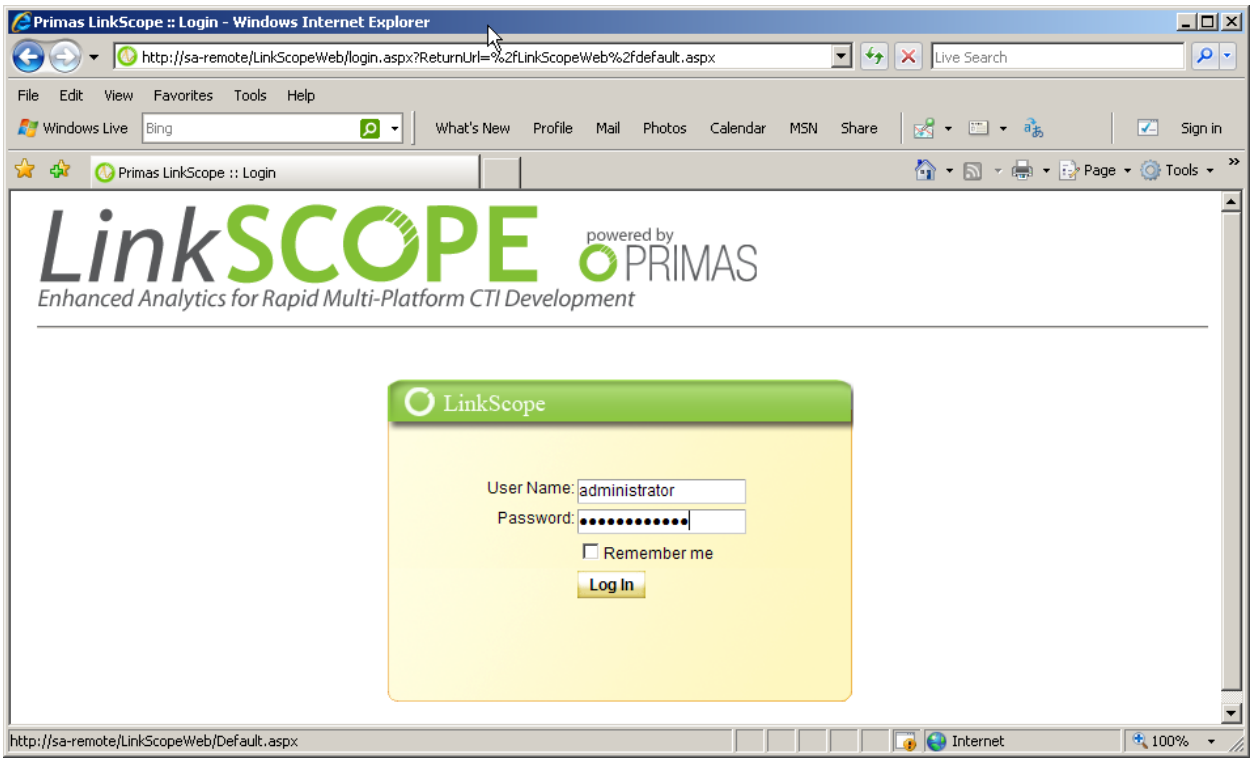
This section provides the procedures for configuring LinkScope. The procedures include the following areas:

- Launch LinkScope Web Service
- Configure CTI Registered Servers
- Configure Screen Pop
- Configure Agents
- Configure Notifier Client
- Install and Launch Ethertest

The configuration of LinkScope is typically performed by Primas support technicians. The procedural steps are presented in these Application Notes for informational purposes.

6.1. Launch LinkScope Web Service

Access the LinkScope Web Service interface using the URL http://<localhost>/LinkScopeWeb/login.aspx in an Internet browser window, where <localhost> is the name of the LinkScope server. Log in using the appropriate credentials.



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Upon logging in, select one of the icons for setup and configuration of the LinkScope solution.

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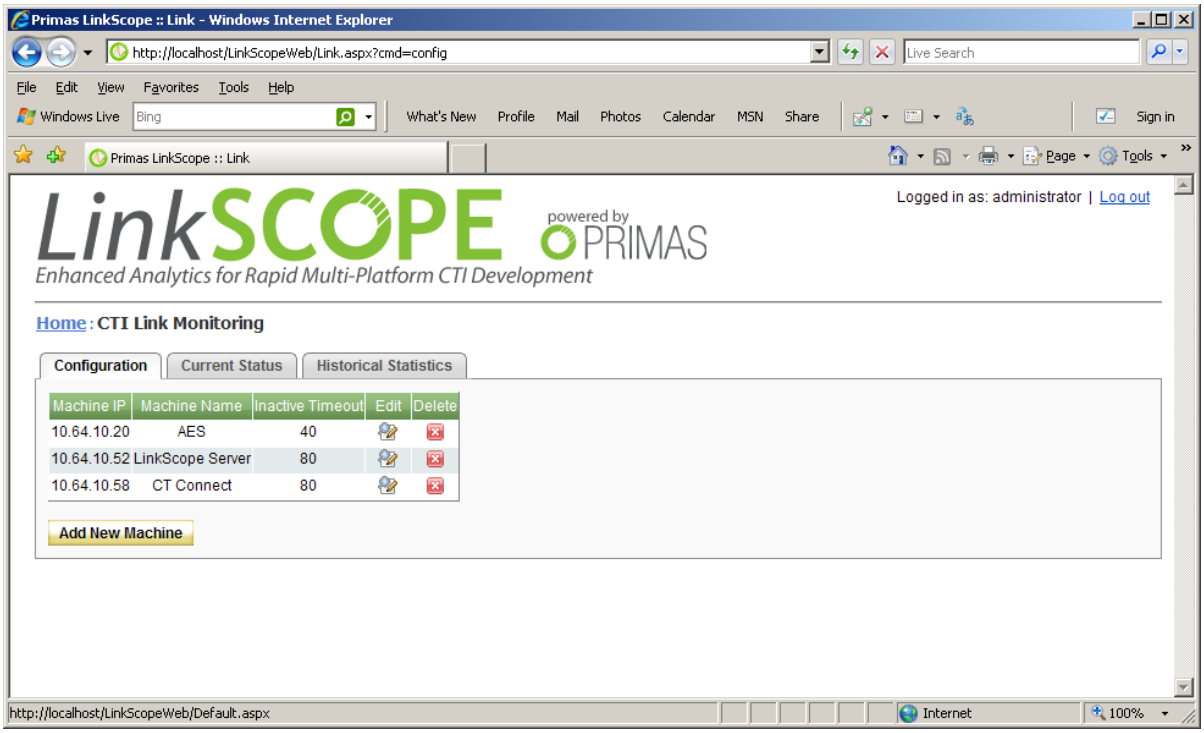
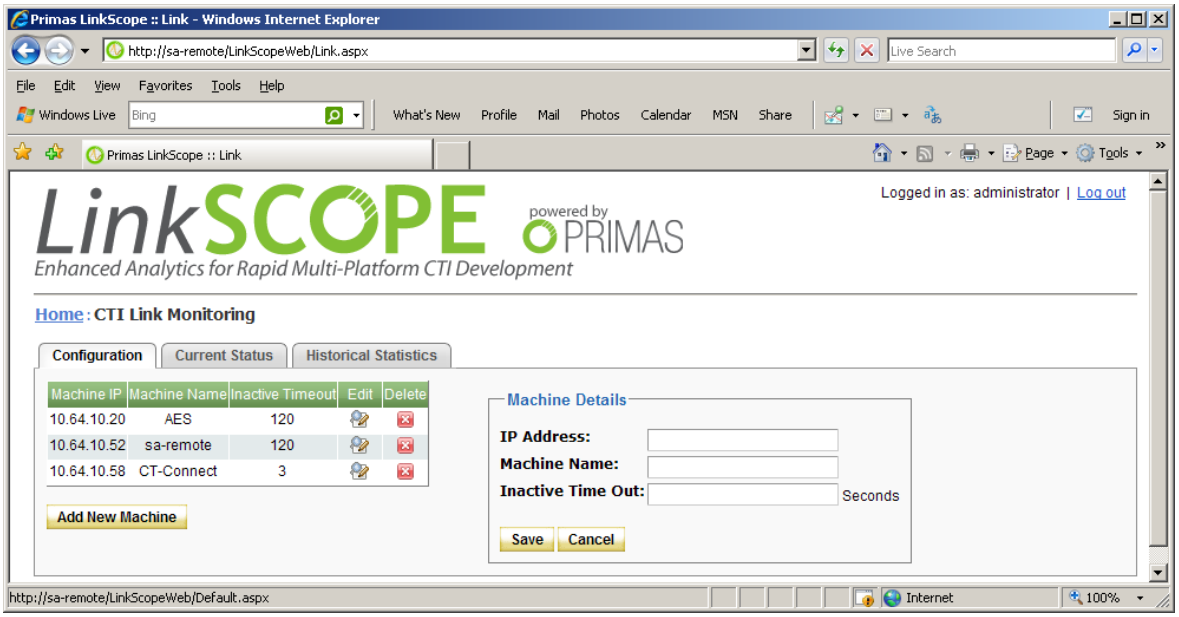
6.2. Configure CTI Registered Servers

Any add/remove/change of CTI registered servers (i.e. CT Connect) or AES Servers need to be reflected within the CTI Link Monitoring module Configuration tab. This is set up initially by Primas with client-provided details.



- Click on **Add New Machine**. Fill in **IP Address**, **Machine Name**, and an **Inactive Time Out** parameter. Save changes.



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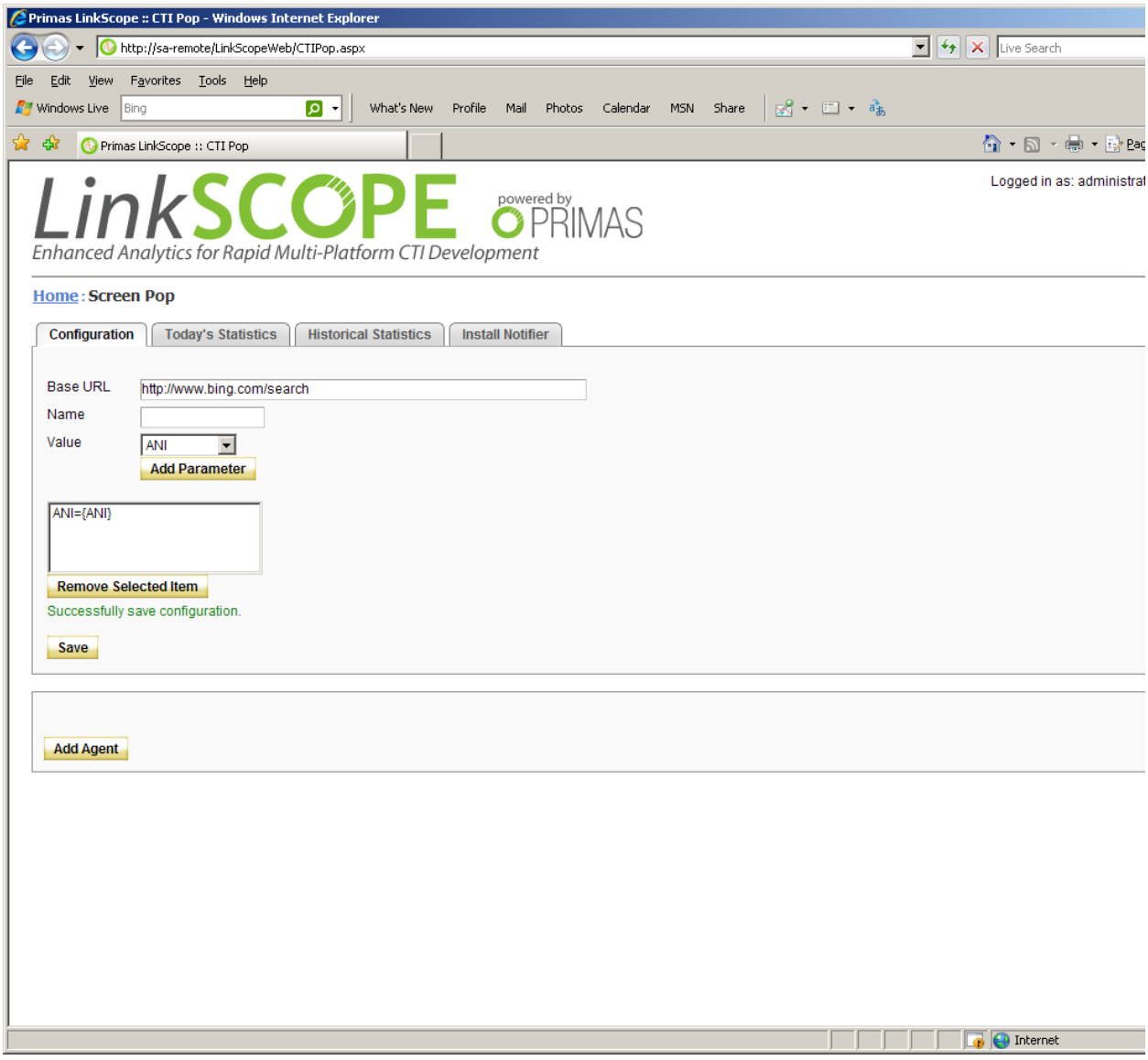
6.3. Screen Pop Configuration Tab

The initial configuration of the Screen Pop tab includes setting a base URL (in this case, bing.com since this was not connected to a CRM system or internal web-based host) and populating parameters for values including ANI, ACDPOSID, CID and UUI. Any move of the web-based host for Screen Pop needs to be reflected here. This is set up initially by Primas with client-provided details.



This Screen Pop tab also includes tabs for Screen Pop data including latency of Screen Pops and days of the week metrics.

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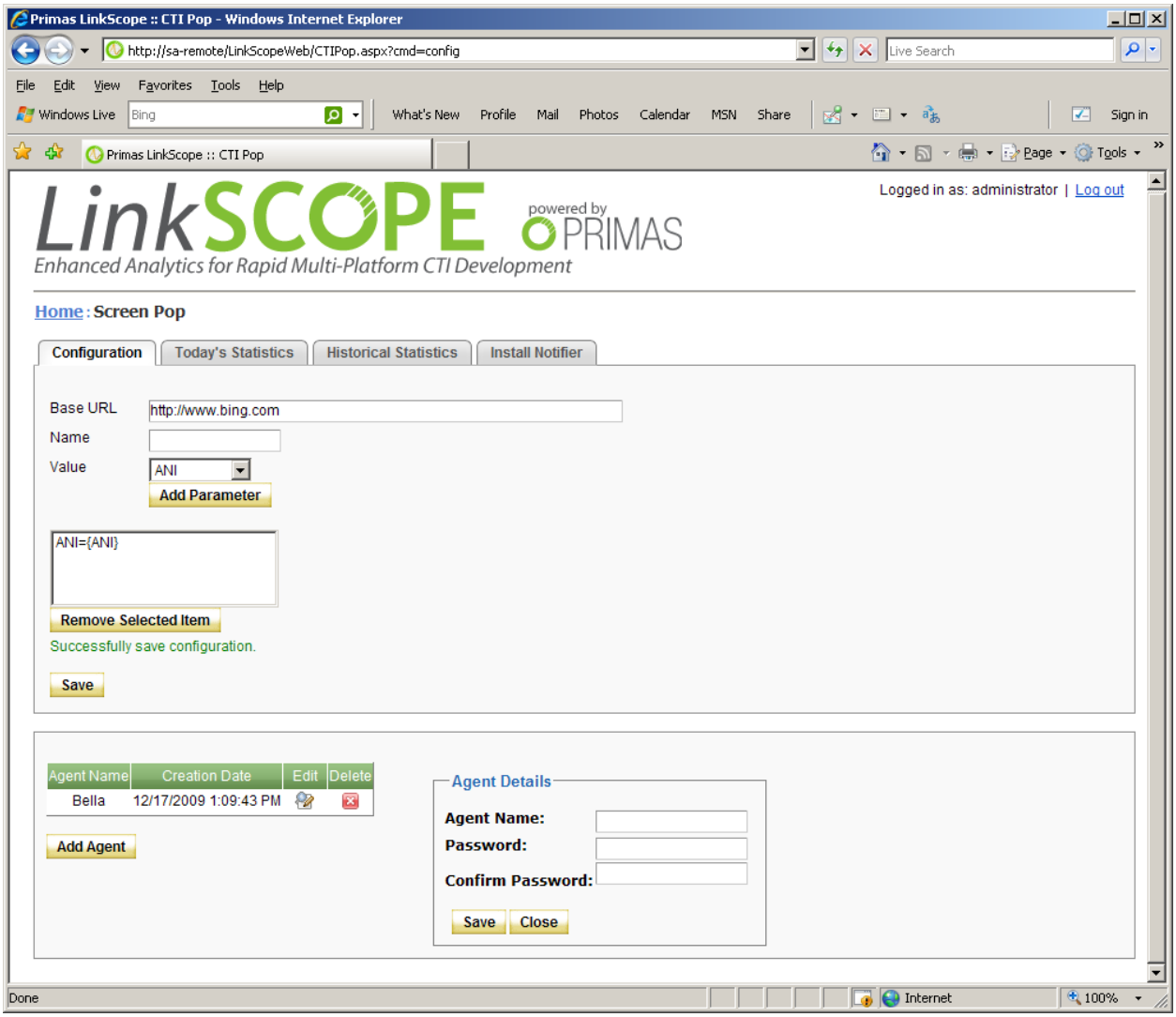
6.4. Configure Agents on Screen Pop Tab

New agents (add/delete) are administered within the Screen Pop Configuration tab or the Agent Performance Configuration tab. Each agent has a name and a login, which will be used to log into the Notifier Client.

Each agent logs into the Notifier Client to receive the Screen Pop and First Call Resolution Pop.

- Click **Add Agent**, and fill in **Agent Name**, **Password**, and **Password** again. Hit **Save**.



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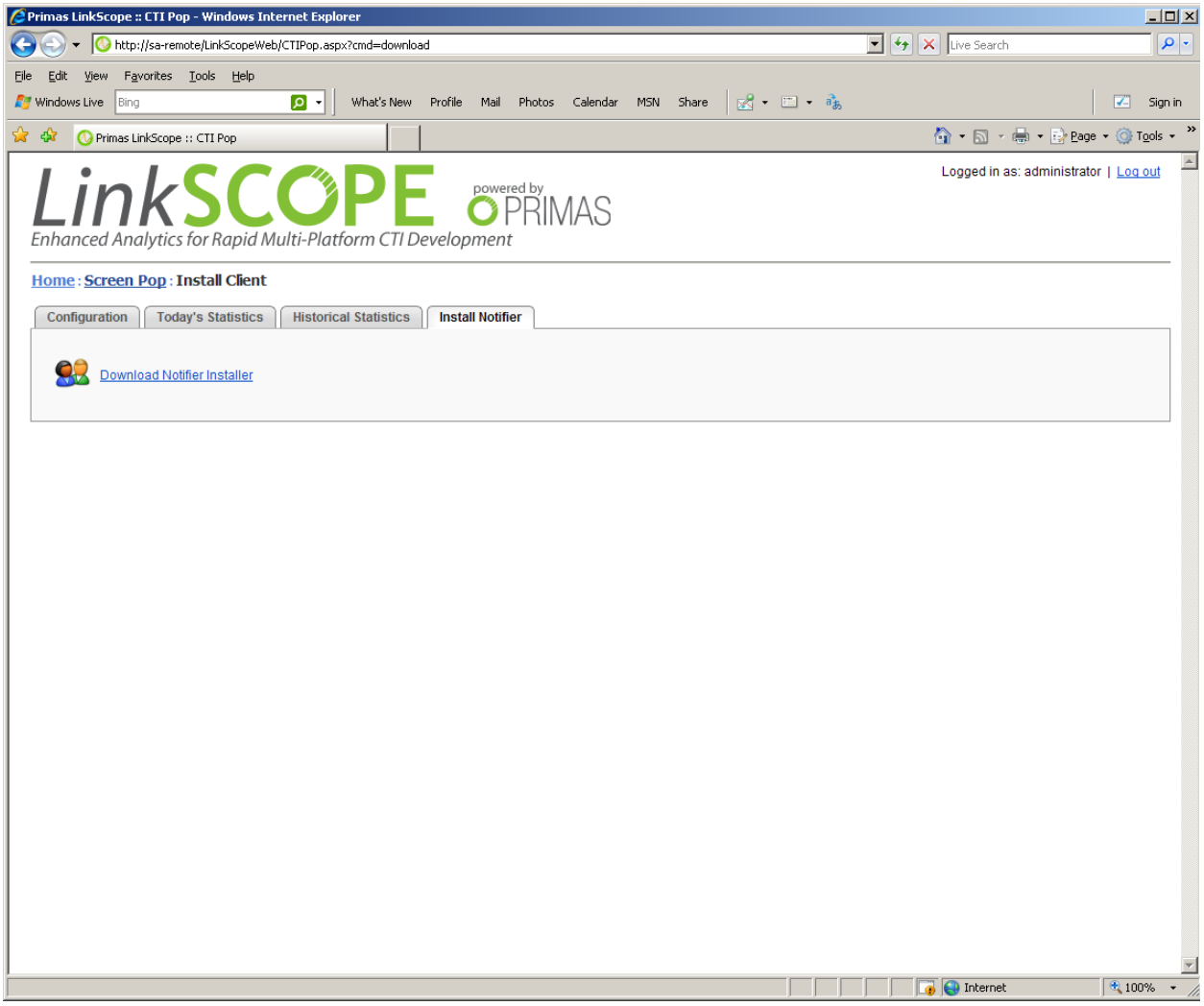
6.5. Configure Notifier Client

Upon initial installation, the Notifier client is downloaded via the LinkScope Screen Pop module Install Notifier tab, and then configured with the location of the LinkScope server on the client's network. Clicking on the link launches the installation. This allows the agents to use Notifier for Screen Pop and First Call Resolution Pop.



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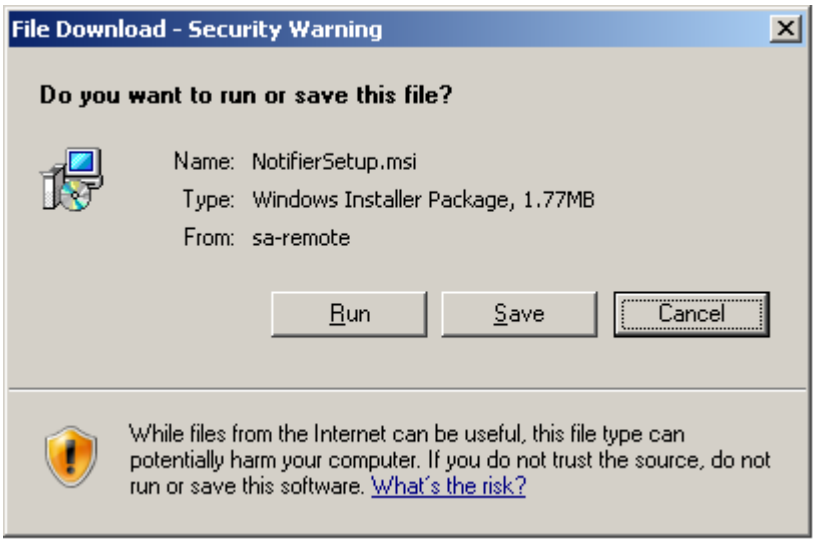
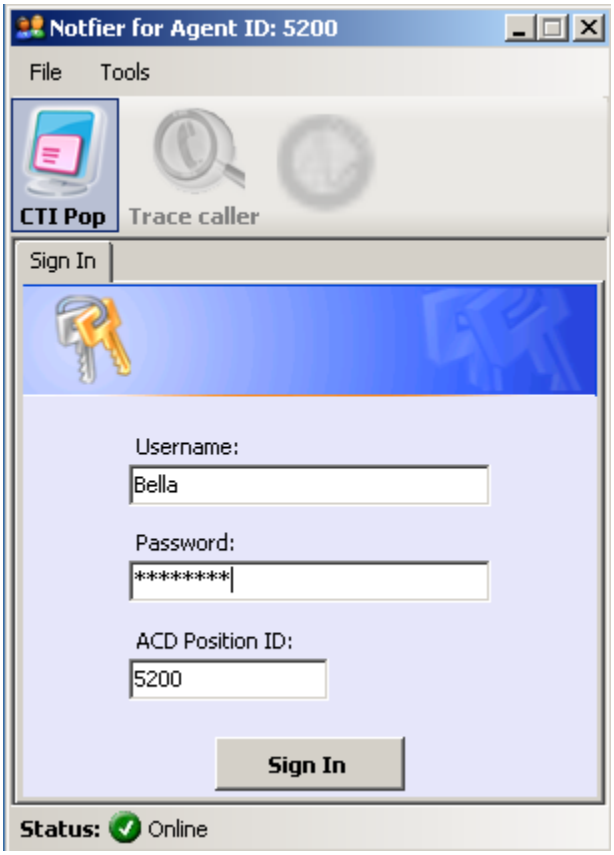
Click on Download Notifier Installer, and the following download screen pops up. Run the program to install the Notifier Client.



Once the Notifier Installation has been run and Notifier is launched, the status must show as green/checkmark, Online to be able to log in. Log in with the credentials entered for the agents created on the Screen Pop page (see previous).



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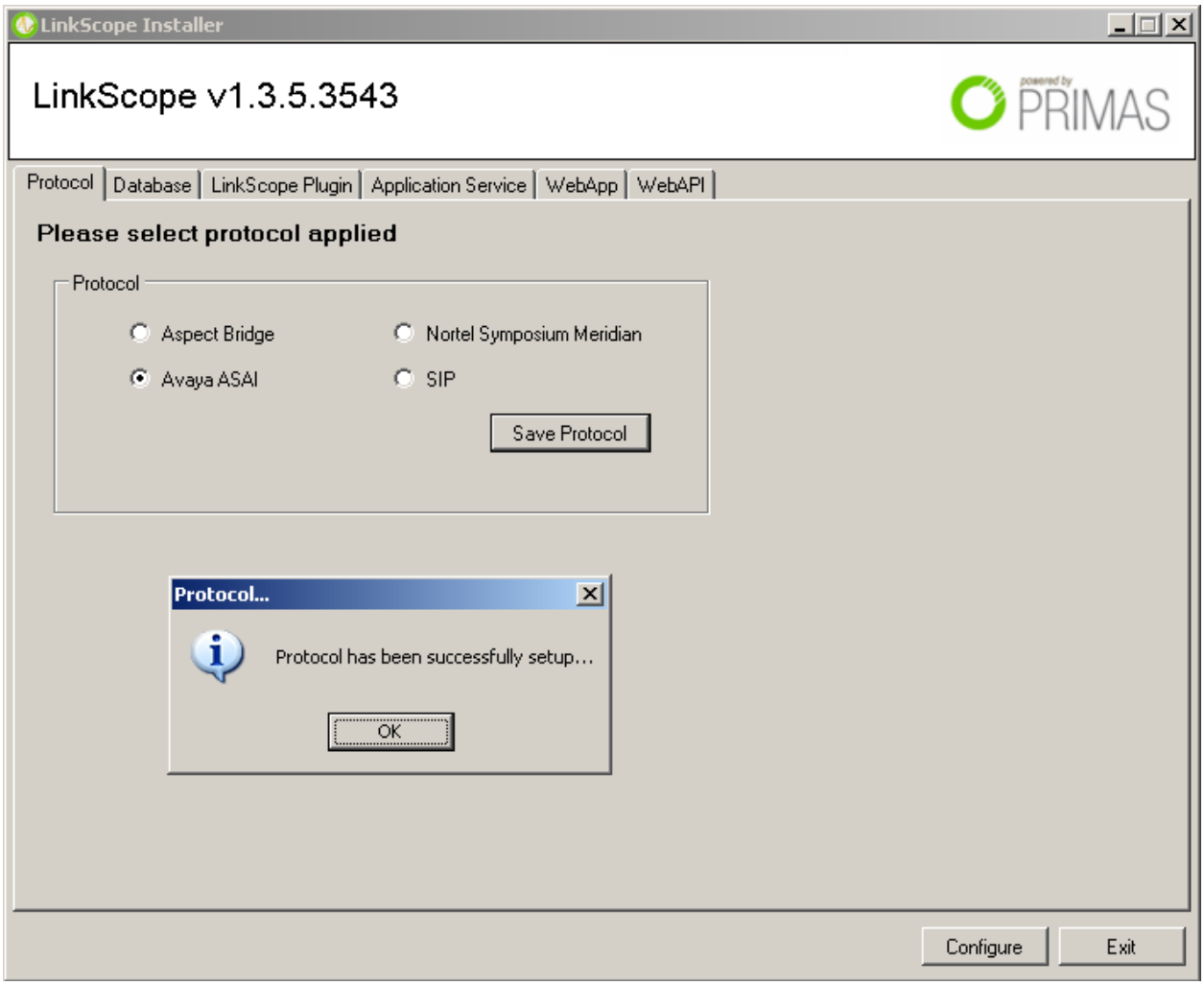
6.6. Install and Launch Ethertest

When LinkScope is downloaded to a system, there is a file called Ethertest. Frontline's Ethertest is a general purpose Ethernet communications monitor and protocol analyzer for 10 Mbps, 100 Mbps and 1Gbps Ethernet local area networks (LAN). Ethertest interfaces with the LAN through a PC's standard Network Interface Card (NIC) and runs on Windows XP.

This Ethertest file contains a conventional executable file that includes the name of the product and the version number (Ethertest-7.8.12.0.exe). This executable file walks the technician through the setup.

Once the application is installed, a few settings must be saved in the LinkScope configuration.

- The Avaya ASAI protocol must be applied. Choose **Avaya ASAI**, and then hit **Save Protocol**.



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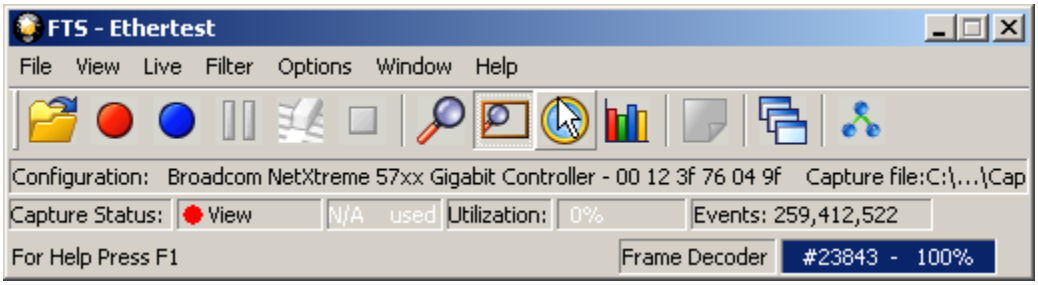
Click on the Ethertest icon (shown below) on the desktop to launch Ethertest. AVAYA ASAI has been selected during the installation portion by Primas, so the application has the ability to filter AVAYA ASAI messages.



To start a capture, choose **Live**, **Start Capture to Disk** or click on the blue circle. Under **View**, choose the desired display, including **Event Display**, **Frame Display**, **Protocol Navigator**, or **Statistics**. The Frame Display option is shown below.

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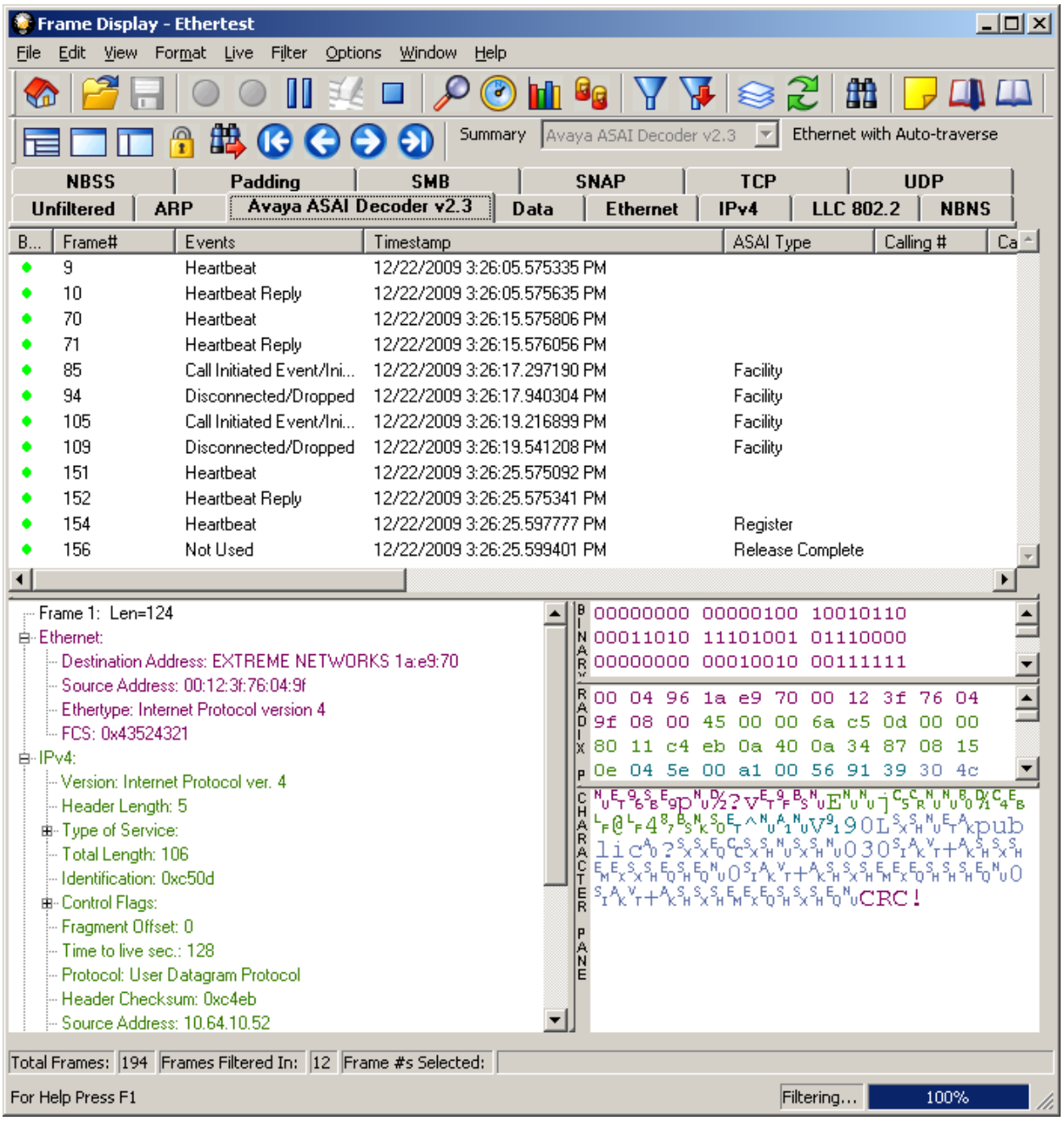
Note the Avaya ASAI Decoder v2.3 message tab. Call events are tracked here in real-time.



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7. General Test Approach and Test Results

All feature functionality test cases were performed manually to verify proper operation. The following scenarios were tested using the test configuration diagram shown in **Figure 1**.

The installation test cases were covered with the setup of Communication Manager, Application Enablement Services, and LinkScope. The clean removal of the application was also covered in this section.

The functionality test cases were performed manually. Various calls were placed including incoming PSTN calls to the hunt groups, and incoming and outgoing personal calls from the agents. Data was verified in call trace searches by ANI, DNIS, extension, and call ID, per the test cases.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet cable to an IP telephone, the LinkScope server, and Communication Manager, and also by stopping the CTI service on both links, including CT Connect and Application Enablement Services.

All test cases passed. No errors were detected.

Observation:

After a LinkScope server outage, the Notifier has to be logged out and logged back in at the agent desktop for it to work again. This is by design.

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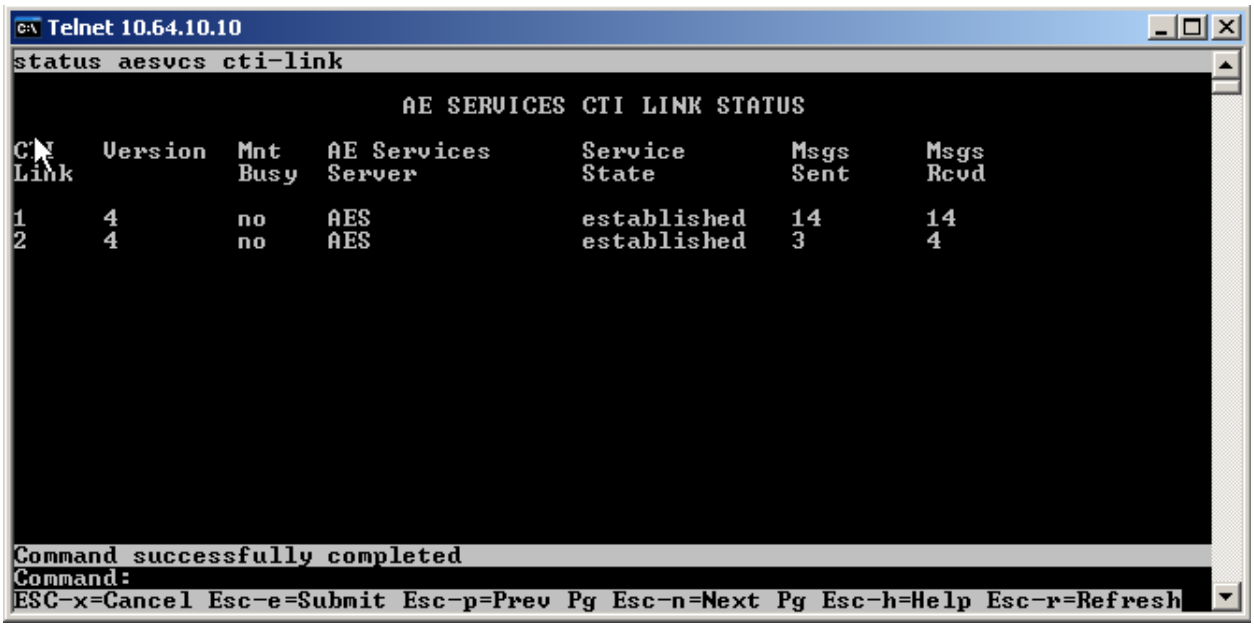
8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, AES, and LinkScope.

For Communication Manager, check the CTI Link status with the **status aesvcs cti-link** command (Link 2 for this configuration). The service state should show **no** for maintenance busy and the Service State should indicate **established**.



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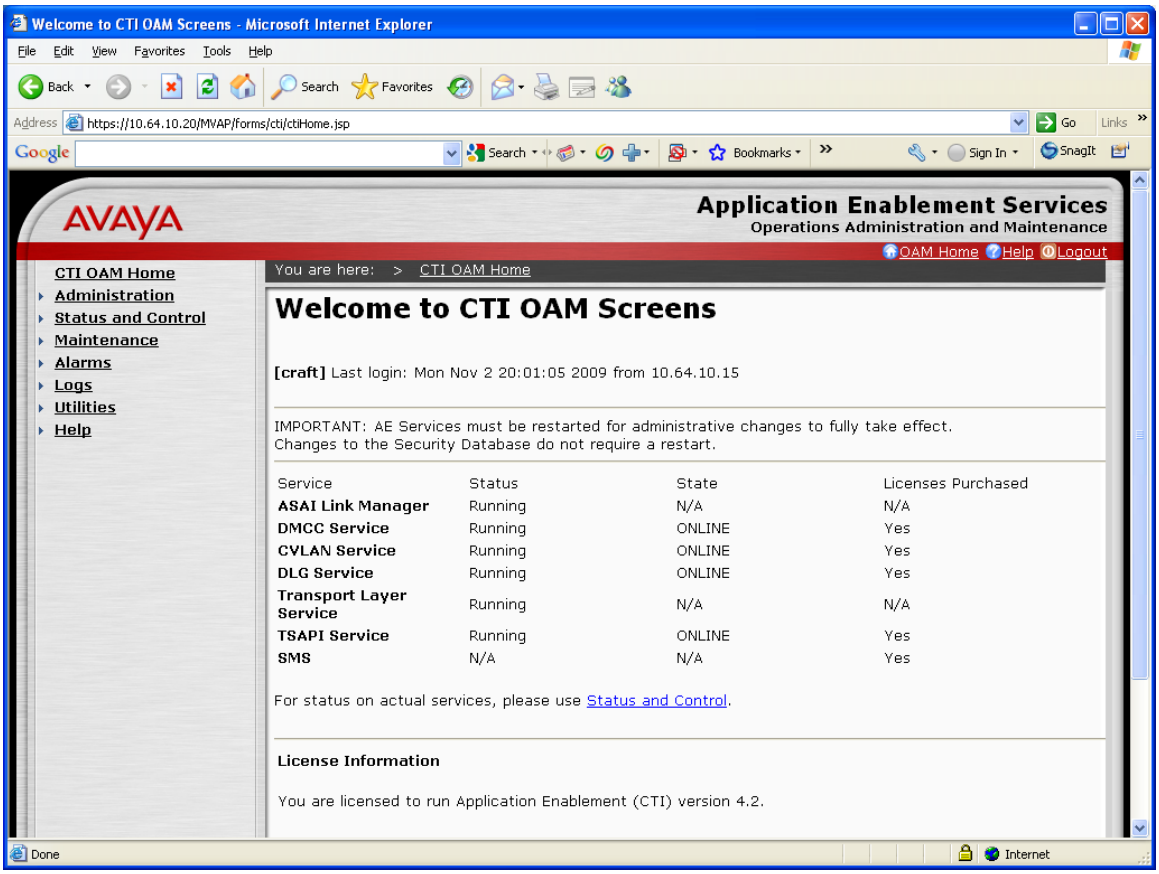
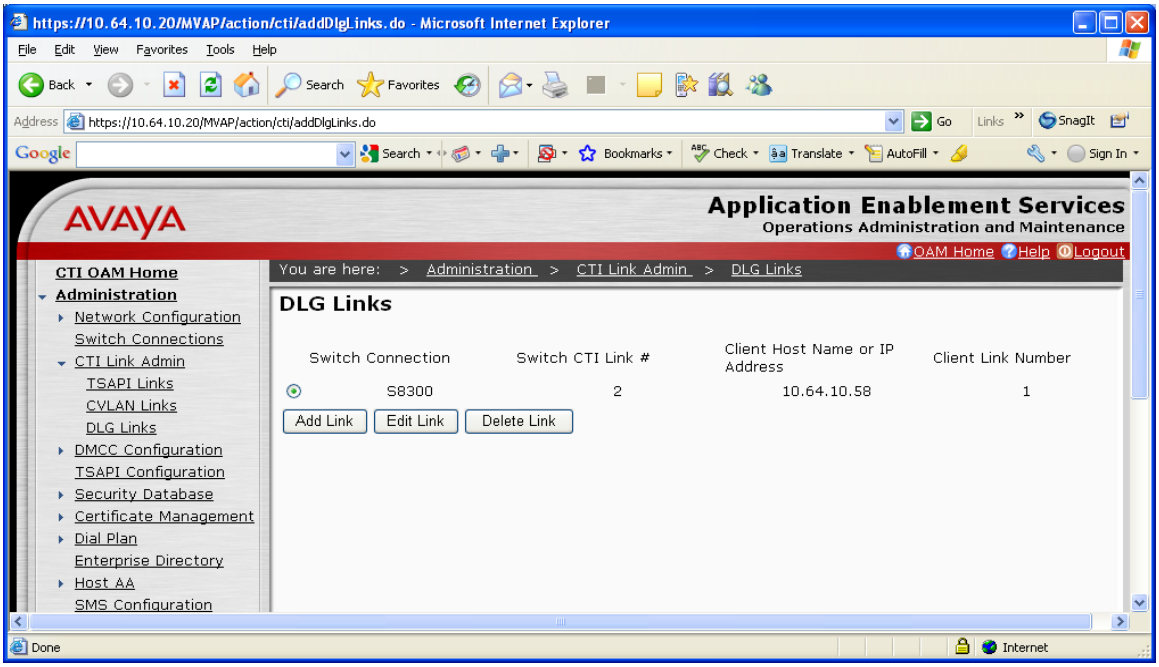
For AES, the DLG Service should show as **Running**, **ONLINE**, and **Yes** for Licenses Purchased. The DLG Links screen will also show the values for that link.





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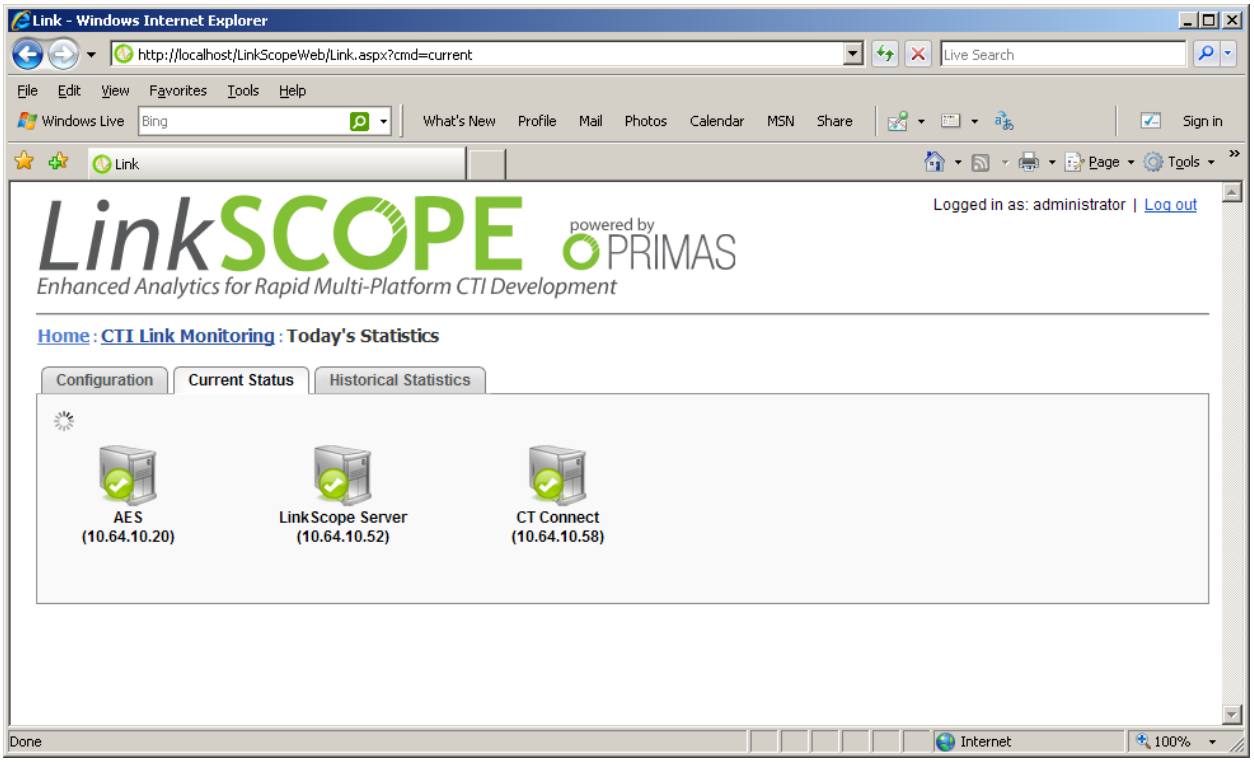
For LinkScope, the **CTI Link Monitoring** should show all green/checkmarks under the Current Status tab. Thresholds were set above 30 seconds to receive key messages in appropriate intervals from the servers.



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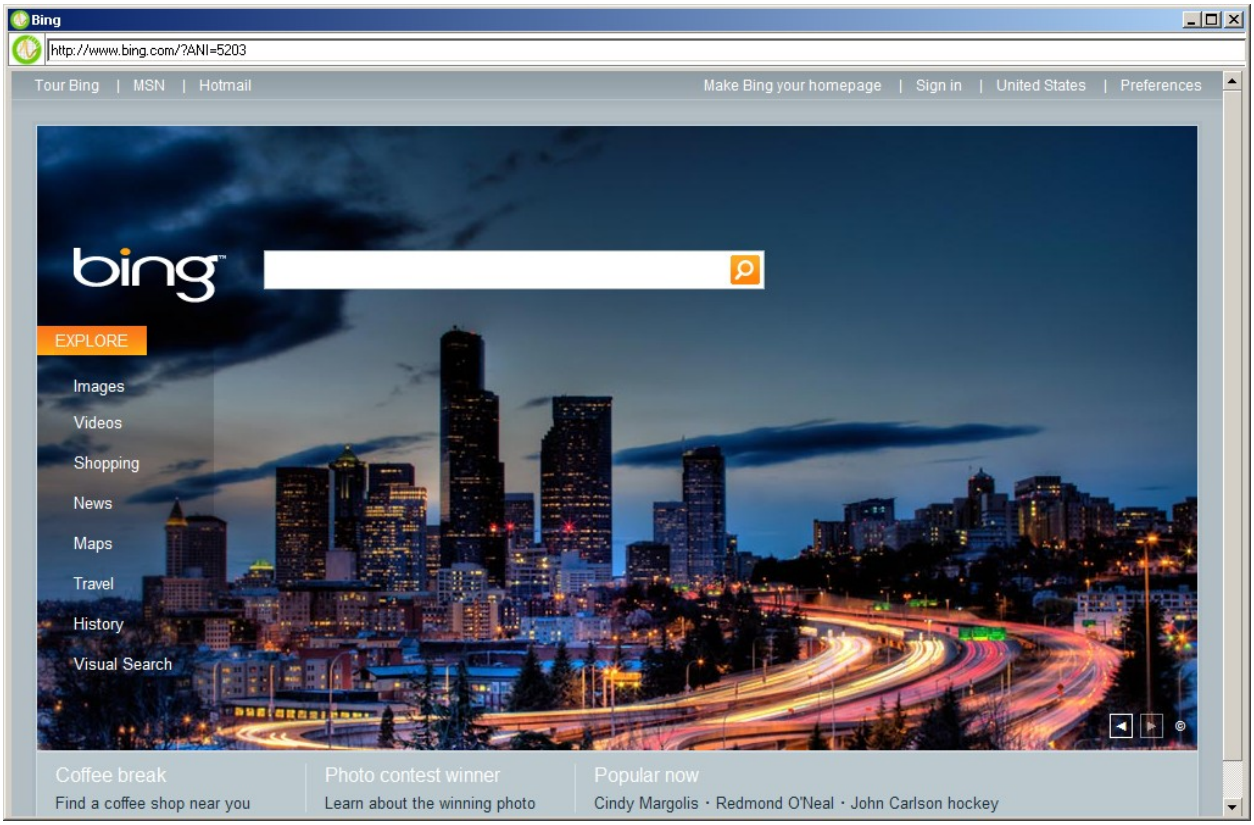
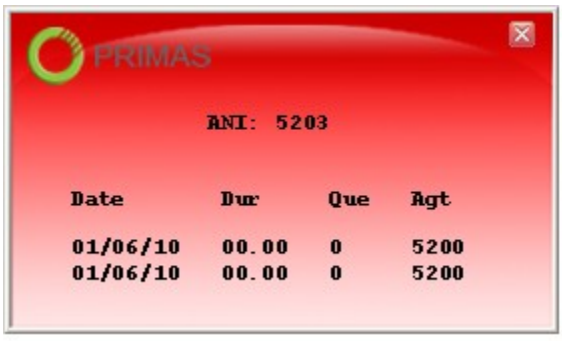
When a call is made from the PSTN, a **Screen Pop** appears.



When the call is repeated, a Screen Pop appears along with a **First Call Resolution** window.



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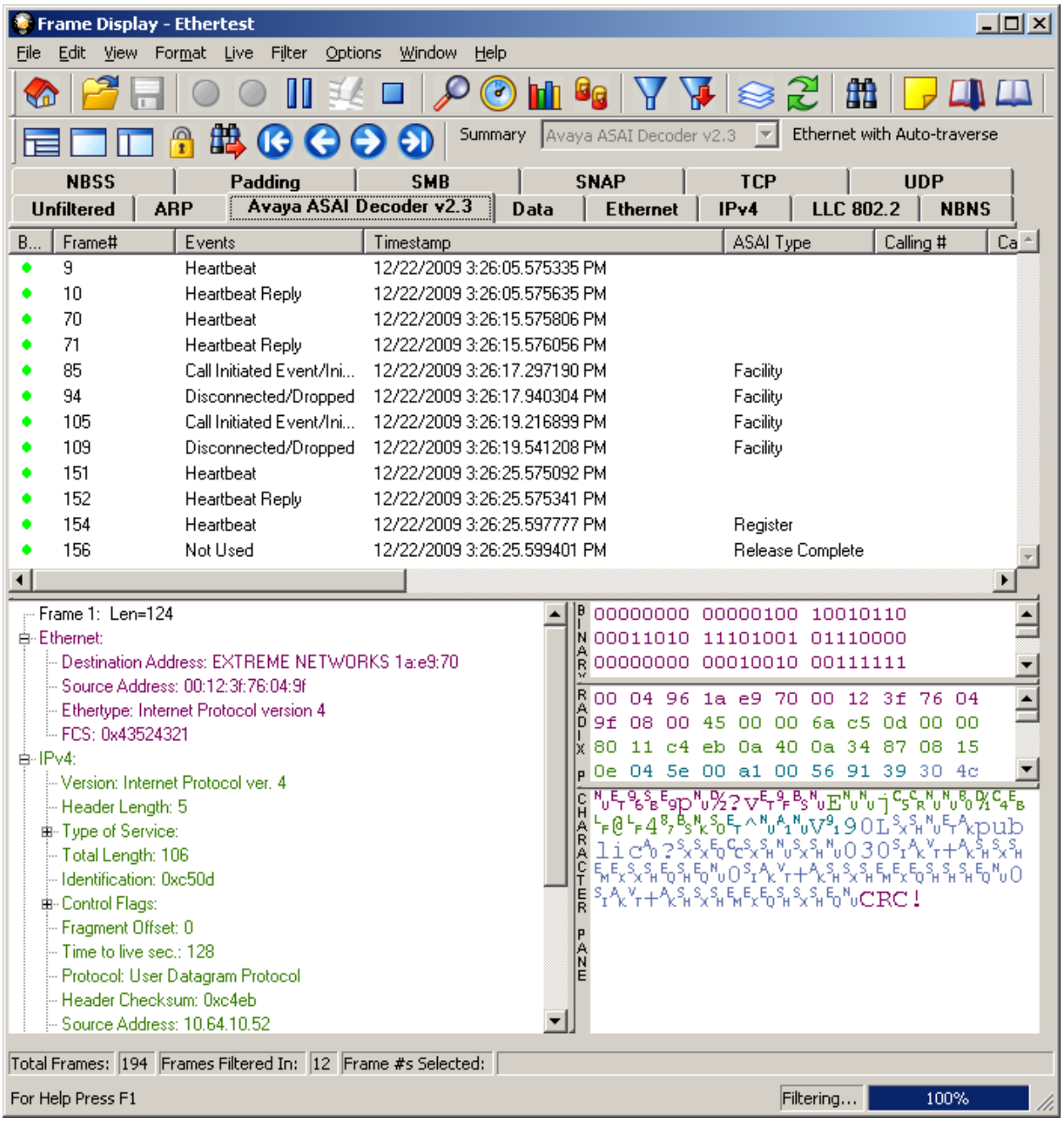
For Ethertest, check the **Frame Display** panel for Avaya ASAI Decoder v2.3 messages.



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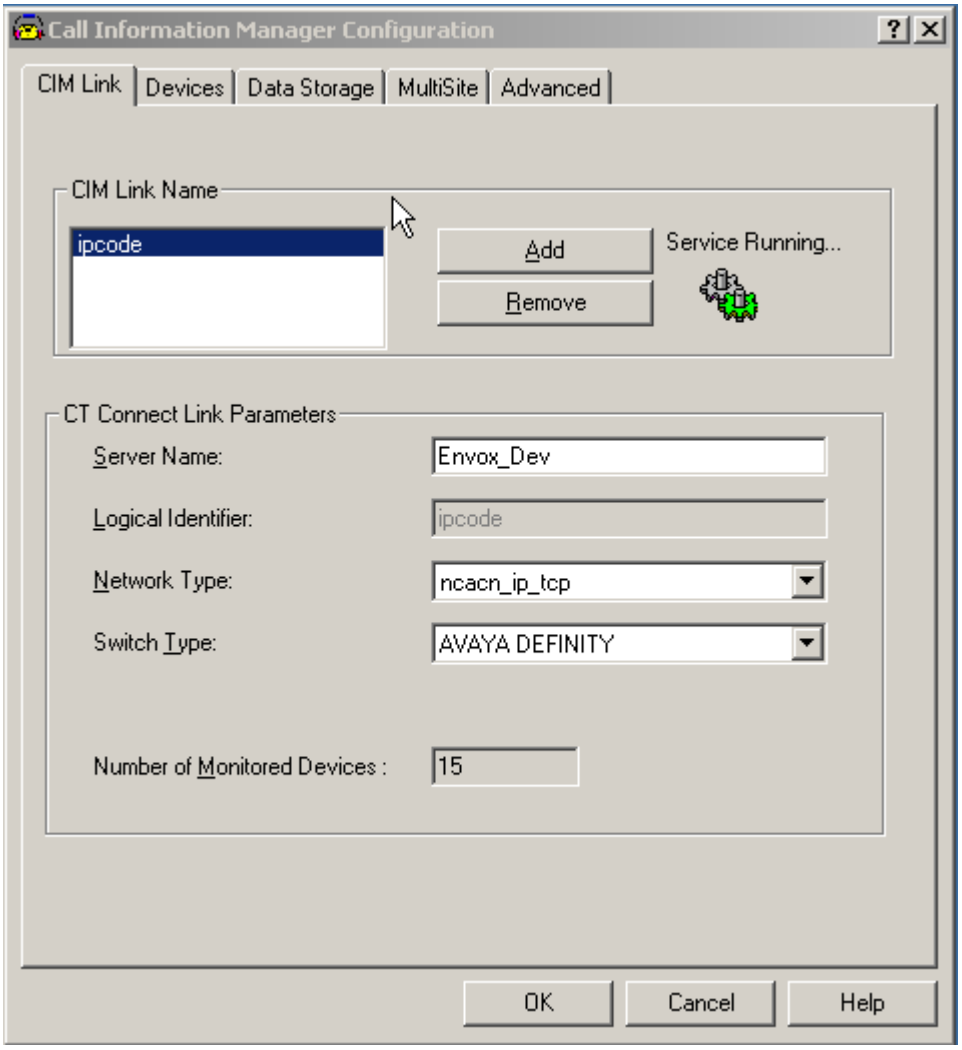
For CT Connect, check the Call Information Manager Configuration to see that the services are running (icon in green).

A registered CTI device such as CT Connect must be running for LinkScope to function properly.



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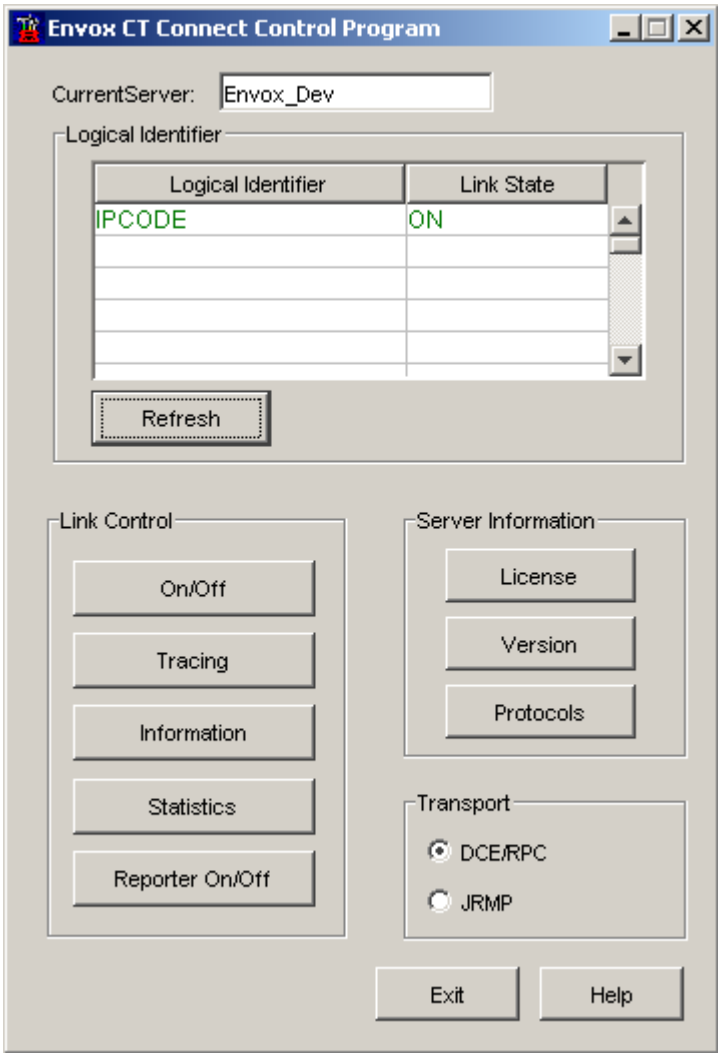
Also for CT Connect, check that the Envox CT Connect Control Program shows **ON** under Link State.



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9. Conclusion

The LinkScope Suite was compliance tested with Communication Manager and Application Enablement Services. LinkScope CTI Monitor successfully monitored and stored information on phone activity for agents and ACD/split groups. All test cases completed successfully.

10. Additional References

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

The following Avaya product documentation can be found at http://support.avaya.com:

[1] *Administering Avaya™ Communication Manager*, Doc ID: 03-300509, Issue 5.0, Release 5.2, May 2009

[2] Avaya *MultiVantage Application Enablement Services Administration and Maintenance Guide*, Doc ID: 02-300357, Release 4.2, Issue 10, May 2008

[3] LinkScope 2.0 Users Guide, Primas Technical Publication Version 1.3.7

[4] LinkScope 2.0 Installation Guide, Primas Technical Publication Version 1.3.7.1

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