Avaya Solution & Interoperability Test Lab

Application Notes for Envox CT Connect 6.1 with Avaya Communication Manager 3.0 using MAP-D – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Envox CT Connect 6.1 to successfully interoperate with Avaya Communication Manager 3.0 using Avaya Multi-Application Platform for Definity (MAP-D). Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

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 end user business applications. The integration with Avaya Communication Manager 3.0 is accomplished through the Avaya Multi-Application Platform for Definity (MAP-D) Definity LAN Gateway (DLG) interface, as illustrated in **Figure 1**.

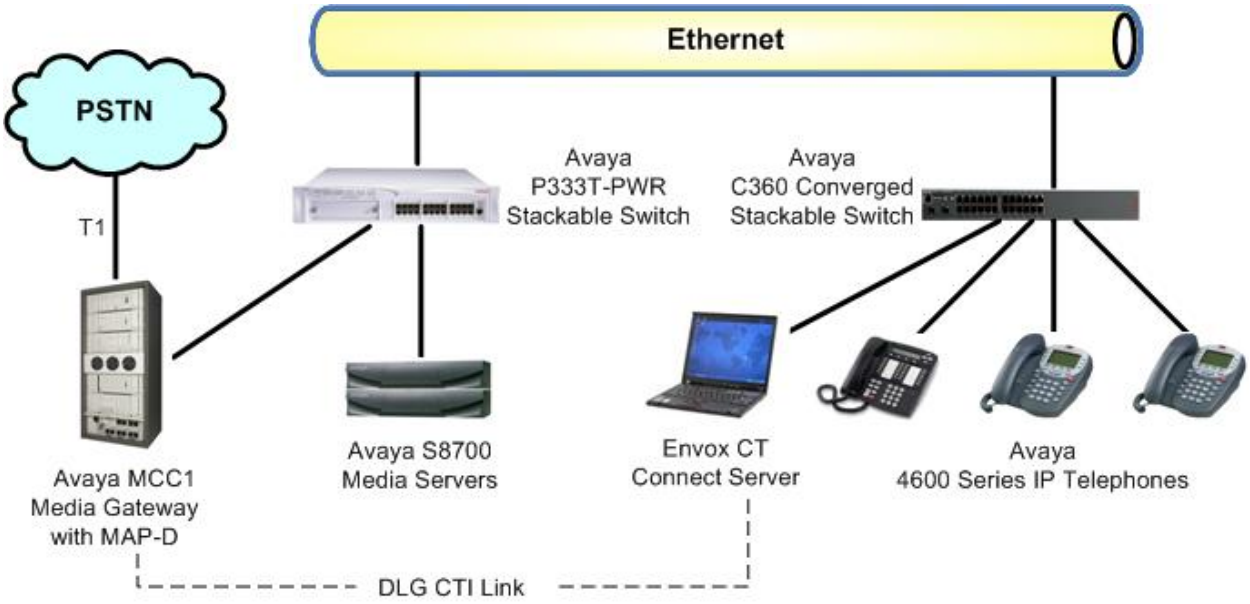

Figure 1: Envox CT Connect with Avaya Communication Manager using MAP-D

The Envox CT Connect software client/server technology supports industry-standard hardware, operating systems, network services, and call control programming interfaces such as C, C++, Java, TAPI, and ActiveX, allowing application developers to easily integrate more intelligent call control features into existing business applications.

The server component of the software runs under Windows operating system environments and supports comprehensive call control and monitoring through links to many popular telephony switches. The software also includes client application programming interfaces for Microsoft Windows 2000, Windows 2003, Windows XP, Sun Solaris, Hewlett-Packard HP-UX, and Compaq Tru64 UNIX and OpenVMS operating systems.

The compliance testing focused on verification of the Envox CT Connect server with Avaya Communication Manager, and did not include verification of interfaces between the Envox CT Connect server with its client applications. An Envox CT Connect test tool was utilized to emulate client applications to initiate call scenarios, verify feature functionality, and assist with troubleshooting.

The range of applications that can be developed utilizing Envox CT Connect include:

- Customer relationship management
- Call recording and quality monitoring
- Contact center workforce management
- Contact center
- Help desk
- Interactive voice response
- Screen pop

2. Equipment and Software Validated

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

Equipment	Software
Avaya™ S8700 Media Servers	Avaya Communication Manager 3.0
Avaya™ MCC1 Media Gateway • TN801B MAP-D Circuit Pack • TN2302AP IP Media Processor Circuit Pack	Release 2.0, Issue 2.03 HW13 FW095
Avaya 4600 Series IP Telephones	2.1.3 (4610SW), 1.8.3 (4624SW)
Envox CT Connect on IBM ThinkPad with Windows 2003	6.1 SP1

3. Configure Avaya Multi-Application Platform for Definity

This section provides the procedures for configuring Avaya Multi-Application Platform for Definity. The procedures fall into the following areas:

- Administer host
- Administer DLG port
- Administer DLG client

3.1. Administer Host

Log into the MAP-D circuit pack using a telnet session or a direct serial connection. Upon successful log in, the Main Menu will be display as shown in **Figure 2**. Select **TCP/IP Administration** from **Figure 2**, followed by the **This Host** option shown in **Figure 3**.

```
                                Main Menu

 1. Login/Password Administration

 2. TCP/IP Administration...

 3. Port Administration...

 4. Maintenance...

 5. DLG Port Status/Control

 6. CV/LAN Port Status/Control

 7. Exit
```

Figure 2: Main Menu

```
                          TCP/IP Administration

 1. This Host

 2. Local Host Table

 3. Network Routing Information...

 4. Exit
```

Figure 3: TCP/IP Administration

Enter the following values into the fields on the This Host screen as shown in **Figure 4**:

- **Host Name:** Host name for the MAP-D circuit pack
- **Host IP Address:** IP address for the MAP-D circuit pack
- **Subnet Mask:** Subnet mask used by the MAP-D circuit pack

Note the actual values for all three fields may vary, and check with the network administrator for the proper values to use. Submit the changes.

```
                    TCP/IP Administration

                         This Host


          Host Name:        devcon27

          Host IP Address:  192.45.100.86

          Subnet Mask:      255.255.255.0
```

Figure 4: This Host

3.2. Administer DLG Port

Navigate back to the Main Menu that was previously shown in **Figure 2**, and select the **Port Administration** option. In the Port Administration screen shown in **Figure 5** below, select **Application Port Assignment**.

```
                    Port Administration

1. Application Port Assignment

2. DLG Administration

3. CV/LAN Administration

4. Exit
```

Figure 5: Port Administration

In the Application Port Assignment screen shown below in **Figure 6**, assign the DLG application to an available MAP-D port. In this case, port "01" is used. Note that the actual port number may vary. Submit the changes.

```
                    Port Administration
               Application Port Assignment

                        01 DLG
                        02 CVLAN
```

Figure 6: Application Port Assignment

3.3. Administer DLG Client

Navigate back to the Port Administration screen that was previously shown in **Figure 5**, and select the **DLG Administration** option to bring up the DLG Administration screen shown below in **Figure 7**.

```
                        DLG Administration

     Port     Client Name or IP Address    Client Link   Client Status

       4        172.16.252.21                   1            idle
```

Figure 7: DLG Administration

From the DLG Administration screen, click on the **ADD** function key to bring up the Add Client screen shown below in **Figure 8**. Add an entry for the DLG client with the following values:

- **Port:** Administered port number from **Figure 6** above
- **Client Name or IP Address:** Host name or IP address of the client application
- **Client Link** Link number of the client application. In this case, the Envox CT Connect server is the client application.

Note that the actual values for all 3 fields may vary. Submit the changes.

```
                        DLG Administration
                            Add Client

           Port      Client Name or IP Address    Client Link

            01         192.45.30.231                  3
```

Figure 8: Add Client

4. Configure Avaya Communication Manager

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

- Administer CTI link
- Administer call vector for adjunct routing

4.1. Administer CTI Link

Prior to any administration, verify that the **ASAI Link Core Capabilities** customer option is set to "y" on Page 3 using the "display system-parameters customer-options" command, as shown in **Figure 9** below. If the **ASAI Link Core Capabilities** is not set to "y", then contact the Avaya sales team or business partner for a proper license file. The system license file controls the settings on the customer-options form.

Also verify that the **ASAI Link Plus Capabilities** customer option is set to "y", for applications that utilizes the Adjunct Routing, Selective Listening, Switch Classified Outbound Calls, and/or ISDN Redirecting Number information.

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

    Abbreviated Dialing Enhanced List? y           Audible Message Waiting? y
        Access Security Gateway (ASG)? n               Authorization Codes? y
        Analog Trunk Incoming Call ID? y Backup Cluster Automatic Takeover? n
 A/D Grp/Sys List Dialing Start at 01? y                         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? y
          ASAI Link Core Capabilities? y                       DCS (Basic)? y
          ASAI Link Plus Capabilities? y                  DCS Call Coverage? y
       Async. Transfer Mode (ATM) PNC? n                 DCS with Rerouting? y
  Async. Transfer Mode (ATM) Trunking? y
             ATM WAN Spare Processor? n    Digital Loss Plan Modification? n
                                  ATMS? y                          DS1 MSP? n
                  Attendant Vectoring? n             DS1 Echo Cancellation? n



        (NOTE: You must logoff & login to effect the permission changes.)
```

Figure 9: System Parameters Customer Options

Add a CTI link using the "add cti-link n" command, where "n" is an available CTI link number, and set the following values shown in **Figure 10:**

- **CTI Link:** An available CTI link number
- **Extension:** An available extension number
- **Type:** "ASAI"
- **Port:** Corresponding MAP-D circuit pack board location and port number administered for this link from **Figure 6**
- **Name:** A descriptive name for the CTI link

Note that the actual values for the CTI Link, Extension, Port, and Name fields may vary. The rest of the field values may be left at their defaults. Submit these changes.

```
add cti-link 7                                                  Page   1 of   2
                                    CTI LINK
 CTI Link: 7
Extension: 24137
     Type: ASAI
     Port: 03A1901                                                   COR: 1
     Name: Map-D DLG Link

BRI OPTIONS
               XID? n      Fixed TEI? y    TEI: 1
       MIM Support? n
                         CRV Length: 2
```

Figure 10: CTI Link

4.2. Administer Call Vector for Adjunct Routing

This configuration step is only needed for applications that utilize the routing functions that Envox CT Connect can provide. Modify a vector to send adjunct route request to the CTI links defined previously in **Figure 10**. Note that the vector in **Figure 11** below is a sample vector only and can be modified as needed for different call treatments.

```
change vector 123                                               Page   1 of   3
                                   CALL VECTOR

    Number: 123              Name: CTConnect Route
Multimedia? n                                Meet-me Conf? n           Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? n   Holidays? n
 Variables? n   3.0 Enhanced? n
01 adjunct      routing link 7
02 wait-time    30  secs hearing ringback
03 route-to     number 22721            with cov n if unconditionally
04
```

Figure 11: Vector for Adjunct Routing

Add a Vector Directory Number (VDN) as shown in **Figure 12** below, and set the Vector Number field to the same call vector number assigned in **Figure 11**.

```
add vdn 55123                                                 Page   1 of   2
                            VECTOR DIRECTORY NUMBER

                             Extension: 55123
                                  Name: VDN Route CT Connect
                        Vector Number: 123

                  Meet-me Conferencing? n
                    Allow VDN Override? n
                                   COR: 1
                                    TN: 1
                              Measured: none


         VDN of Origin Annc. Extension:
                             1st Skill:
                             2nd Skill:
                             3rd Skill:
```

Figure 12: VDN for Adjunct Routing

5. Configure Envox CT Connect

This section provides the procedures for configuring the Envox CT Connect server. CT Connect uses a GUI based configuration program to configure communication links between the CT Connect server and switches.

Bring up the Configuration Program by selecting **Start > All Programs > Envox CT Connect Server > Configuration Program** as shown in **Figure 13**.

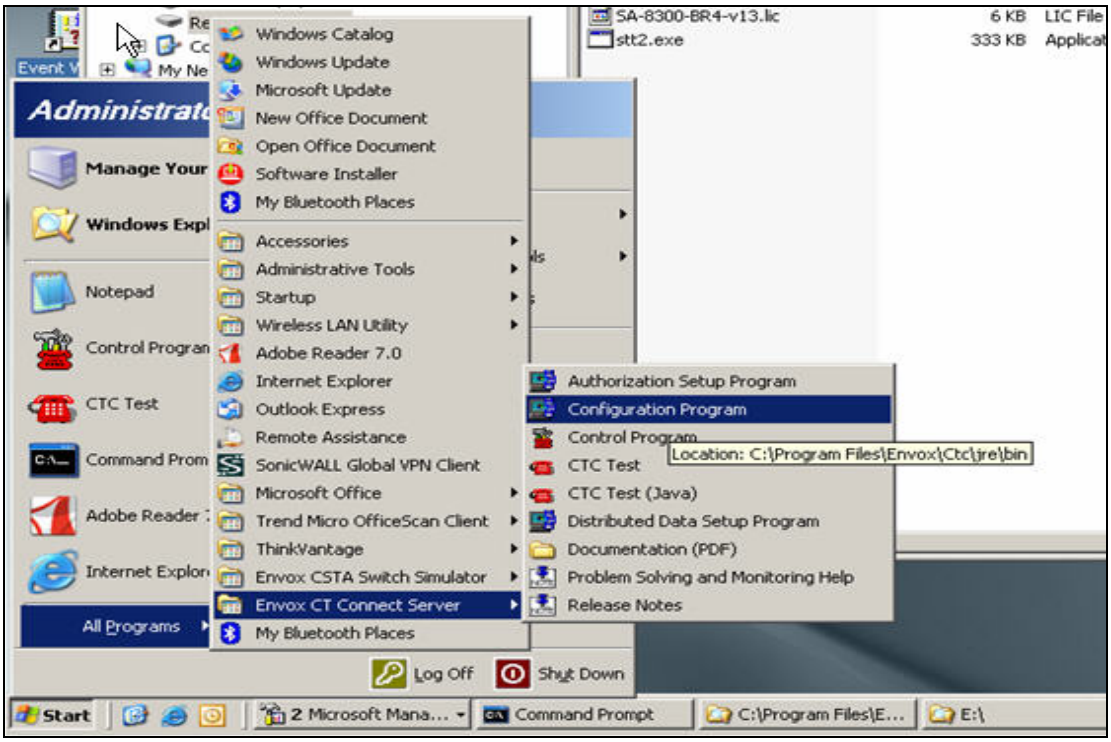

Figure 13: Start Configuration Program

In the Server Configuration screen shown in **Figure 14**, enter a descriptive name for the **Enter a Logical Identifier** field. In this case, "asai" is used. Note that the actual name may vary. Click on the **Add** button.

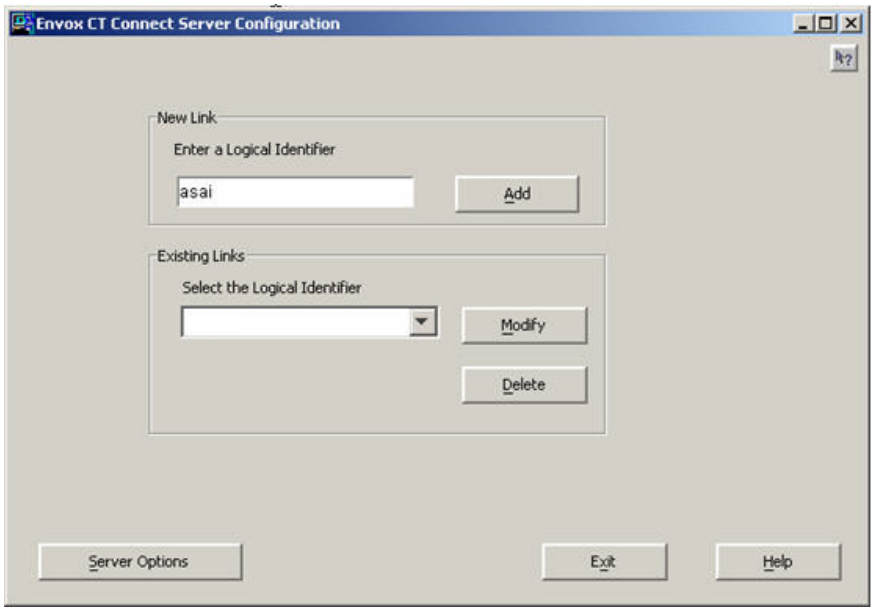

Figure 14: Server Configuration

Next, the Configuration Program displays the Switch Type screen as shown in **Figure 15**. Select **Avaya Communication Manager** from the list and click **Next**.

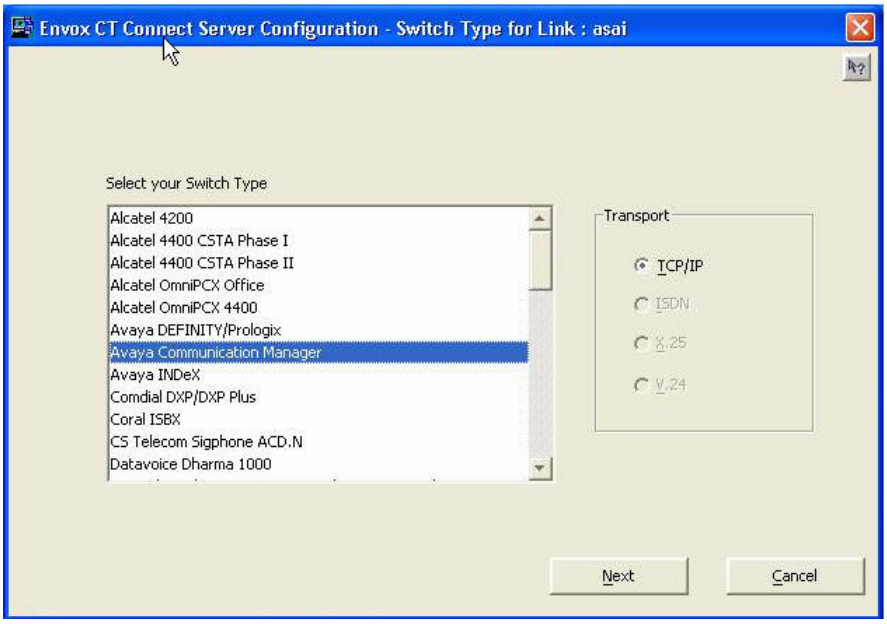

Figure 15: Switch Type

The Configuration Program then displays the Avaya TCP/IP Link screen, as shown in **Figure 16**. Enter the following values:

- **Switch IP Address:** Corresponding IP address of the MAP-D circuit pack
- **Link Number:** Link number on CT Connect used for connectivity to MAP-D circuit pack
- **Maximum Monitor:** Maximum monitored channels specified in the CT Connect license

Note that the **Switch IP Address** should match the **Host IP Address** of the MAP-D circuit pack administered on the This Host screen back in **Figure 4**, and the **Link Number** should match the **Client Link** administered on the MAP-D DLG Add Client screen back in **Figure 8**. Accept the default value for the remaining fields and click on **Save**.

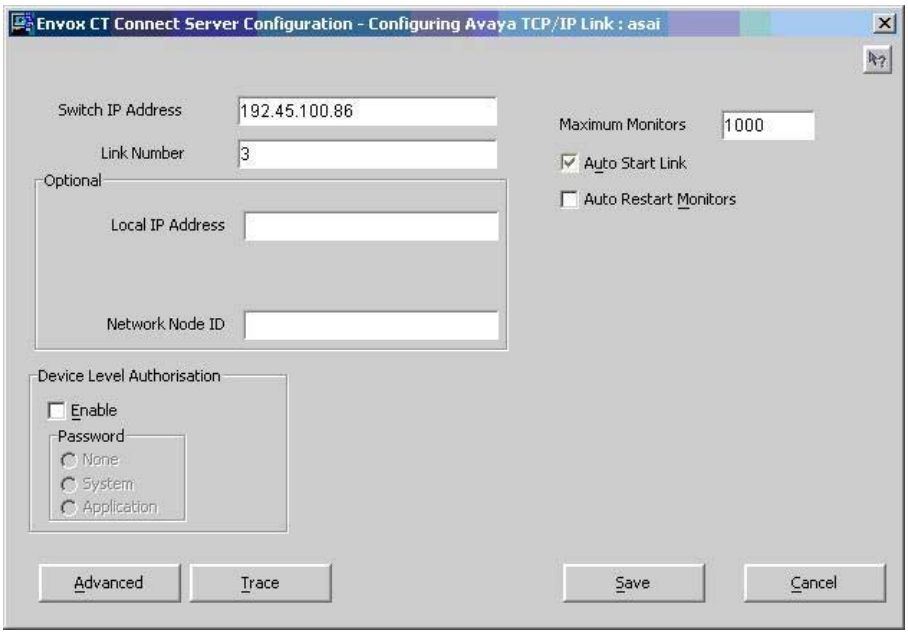

Figure 16: Avaya TCP/IP Link

6. Interoperability Compliance Testing

The Interoperability compliance test included both feature functionality and serviceability testing.

The feature functionality testing focused on verifying Envox CT Connect handling of ASAI messages in the areas of domain control, call control, event notification, routing, value query, request feature, and set value. Testing also included rainy day scenarios to verify successful handling of negative acknowledgements.

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

6.1. General Test Approach

All feature functionality and serviceability test cases were performed manually. The verification included both human checking of proper states at the telephone sets, and of capturing ASAI message traces and analyzing them with the Envox CT Connect test tool. The same test tool was also used to initiate certain test scenarios from Envox CT Connect.

6.2. Test Results

All feature functionality test cases passed successfully.

All serviceability test cases were completed, with an observation that when the link was down for more than 15 seconds, the Envox CT Connect server began to lose the control/monitor associations, such that not all associations can automatically be re-established by the server upon link recovery. The workaround for this is for the client applications to re-initiate the control/monitor associations, upon receiving the link recovery notification from the CT Connect server.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Multi-Application Platform for Definity, Avaya Communication Manager, and Envox CT Connect.

7.1. Verify Multi-Application Platform for Definity

From the MAP-D Main Menu, verify the status of the administered DLG link by selecting **DLG Port Status/Control**. A sample of the displayed DLG port status is shown in **Figure 17** below:

```
                         DLG Port Status/Control

         DEFINITY         TCP/IP         DLG       Messages Messages  Message
           Port         Connection     Service        to      from    Period
 Port      State          State         State      DEFINITY DEFINITY (minutes)

   1  CONNECTED        ESTABLISHED  in service           24       32     30
   4  NOT CONNECTED    UNREACHABLE  in service            0        0     30
```

Figure 17: DLG Port Status/Control

7.2. Verify Avaya Communication Manager

Verify the status of the administered CTI link using the "status bri-port" command as shown in **Figure 18**. In this case, "3a1901" is used as the port number, which corresponds to the administered MAP-D port number that was previously shown in **Figure 10**.

```
status bri-port 3a1901
                            STATUS BRI-PORT


             Port: 03A1901                            Version: 4
    Service State: in-service           Active NCA-TSC Count:
Maintenance Busy?: no
    Layer 1 State: activated

       TEI Value  Layer2 State    Endpt Extension    Endpt SPID  Service SPID?

Link1     1       l3-established        24137

Link2

Link3
```

Figure 18: Status BRI Port

7.3. Verify Envox CT Connect

To verify the status of the administered CTI link, bring up the Control Program by selecting **Start > All Programs > Envox CT Connect Server > Control Program**. Check the **Link State** associated with the administered **Logical Identifier**, as shown in **Figure 19**. In this case, "ASAI" is used as the Logical Identifier, which was administered back in **Figure 14**.

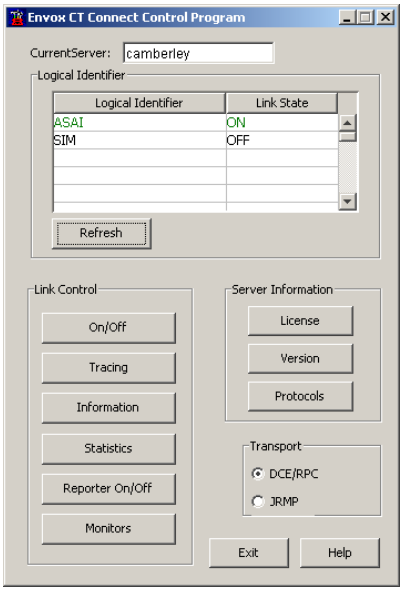

Figure 19: Control Program

8. Support

For technical support on Envox CT Connect, contact the regional Envox support center or the local Envox distributor.

9. Conclusion

These Application Notes describe the configuration steps required for Envox CT Connect 6.1 to successfully interoperate with Avaya Communication Manager 3.0 using Avaya Multi-Application Platform for Definity. All feature functionality and serviceability test cases were completed.

The one observation from the interoperability testing is that when the link was down for more than 15 seconds, the Envox CT Connect began to lose the control/monitor associations, such that the associations cannot be automatically re-established by the server upon link recovery. The workaround for this is for the client applications to re-initiate the control/monitor associations, upon receiving the link recovery notification from the CT Connect server.

10. Additional References

This section references the product documentations that are relevant to these Application Notes.

- *Avaya CallVisor ASAI Applications Over MAPD*, Document ID 02-300357, Issue 1, June 2005, available at http://support.avaya.com
- *Envox CT Connect 6.1 Installation and Configuration*, Software/Version Envox CT Connect 6.1, available at http://www.envox.com

10.1. Glossary

Technical Term	Definition as it pertains to this document.
ASAI	Adjunct Switch Application Interface
CTI	Computer Telephony Integration
DLG	Definity LAN Gateway
MAP-D	Multi-Application Platform for Definity
PSTN	Public Switched Telephone Network
VDN	Vector Directory Number

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.