



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Enhouse Interactive CTI Connect 8.2 with Avaya Communication Server 1000E R7.6 using Meridian Link Services – Issue 1.0

Abstract

These Application Notes describe the configuration steps for Enhouse Interactive CTI Connect 8.2 to successfully interoperate with Avaya Communication Server 1000E R7.6 using Meridian Link Service (MLS). Enhouse Interactive CTI Connect is a Computer Telephony Integration (CTI) middleware platform that provides call control and monitoring functionality through various application programming interfaces to end user applications.

Readers should pay attention to section 2, in particular the scope of testing as outlined in Section 2.1 as well as the observations noted in Section 2.2, to ensure that their own use cases are adequately covered by this scope and results.

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.

1. Introduction

Enghouse Interactive CTI Connect is computer telephony call control server software capable of connecting a variety of TDM and VoIP telephone switches to distributed computer application environments.

Enghouse Interactive CTI Connect implements a Computer Telephony Interface (CTI) to each of its supported switches. It maps these to a common set of APIs in various programming environments to allow applications to more easily integrate with a broad set of telephony platforms. CTI Connect integrates with Avaya Communication Server 1000E via Meridian Link Service (MLS).

This document focuses on integration using the Meridian Link Protocol. Enghouse Interactive CTI Connect implements the IP message interface to provide Computer Telephony Integration (CTI) for call control, monitoring functionality and application programming interfaces to end user business applications.

2. General Test Approach and Test Results

The general test approach was to validate the ability of CTI Connect to correctly and successfully connect to MLS, handle and control various Communication Server 1000E (CS1000E) endpoints in a variety of call scenarios. See Figure 1 for the network diagram. The various CTI components were configured on the CS1000E.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

Interoperability compliance testing consisted of using CTI Connect to verify successful handling and control of a variety of endpoints as follows:

- Application registration
- Event messages
- Assign, unassign on devices and call monitor channels
- Make/answer internal/external incoming/outgoing call
- Hangup call
- Agent features
- Display endpoint information
- Send DTMF
- Hold/retrieve and reconnect
- CTI invocation of Swap/Hold
- Set, enable and disable call forwarding
- Monitor host route requests
- Conference
- Associate data with calls
- Attended transfer
- Blind transfer
- Identify IP endpoints

2.2. Test Results

All test cases were executed successfully with the following observations.

2.3. Support

For technical support on Enghouse Interactive CTI Connect products, please visit the website at <http://enghouseinteractive.com/> or contact an authorized Enghouse representative at info.ei@enghouse.com.

USA

- Email: EnvoxSupport@enghouse.com
- Website: <http://enghouseinteractive.com/support.php>
- Phone: +1 800.788.9730 Self-Service
- Phone: +1 800.872.2272 Live-Service

EMEA

- Email: EnvoxSupport@enghouse.com
- Website: http://enghouseinteractive.co.uk/support/contact_support/
- Phone: +44 203 357 3001
- Phone: +44 870 220 2205

3. Reference Configuration

Figure 1 below shows Avaya Communication Server 1000E using Meridian Link Services to provide an MLS interface to Enghouse Interactive CTI Connect application.

Note: For the purposes of the compliance test the CtcTest application was used to validate the functions of CTI Connect.

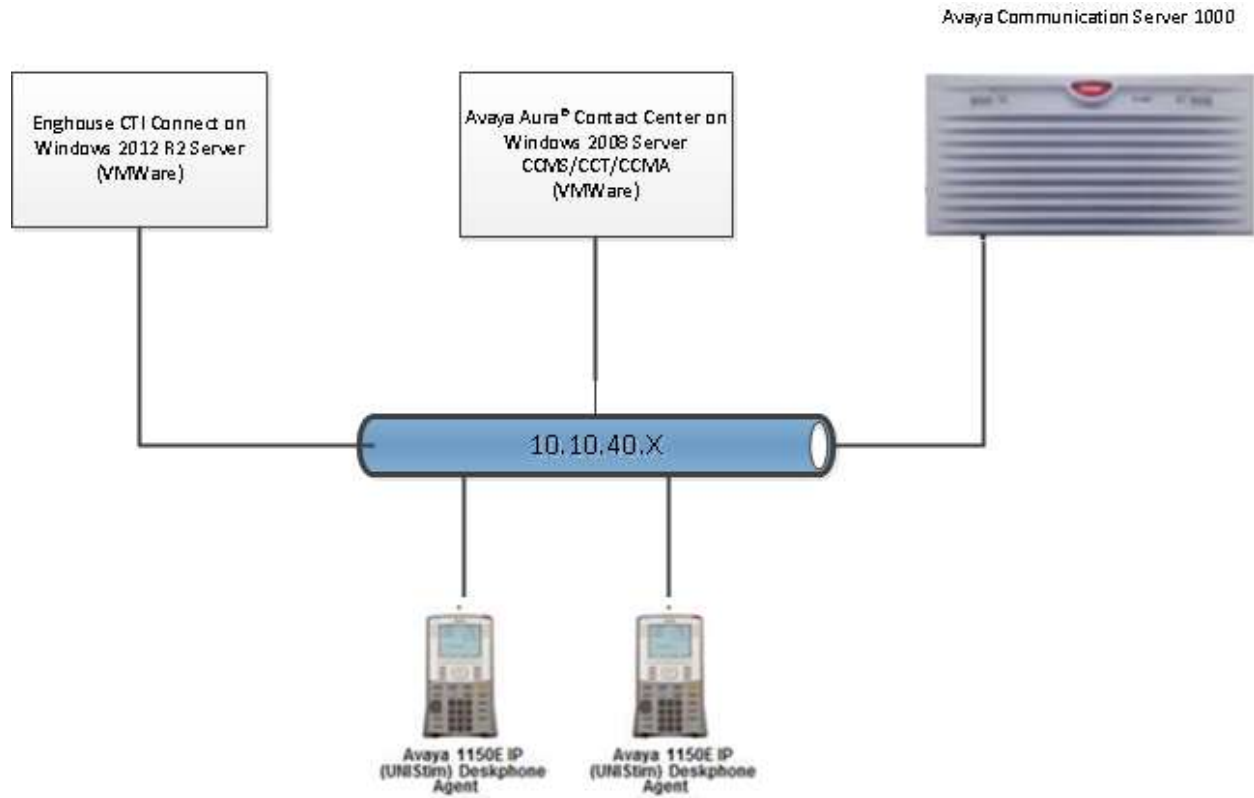


Figure 1: Connection of Enghouse Interactive CTI Connect Application with Avaya Communication Server 1000E using MLS

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Communication Server 1000E running on a CPPM platform	R7.6
Avaya Aura® Contact Center on Windows 2008 R2 Standard SP1	R6.4 SP 14
1150 Unistim Handsets	627C8Y
1140 Unistim Handsets	625C8Y
Enghouse Interactive CTI Connect	R8.2
VmWare Hosted + Microsoft Virtual SAN	Windows 2012 R2

5. Configure Communication Server 1000E

This section is used to detail the configuration used to allow the Communication Server 1000E to interoperate with CTI Connect. It is assumed that a fully functioning CS1000E is in place with the necessary licensing and with Avaya phones already programmed on the CS1000E. For further information on the configuration of CS1000E please see reference [1] in Section 10 of these Application Notes.

PuTTY is used to administer the CS1000E. Using Putty, open an SSH Session to the Node IP address of the CS1000E, log in to the CS1000E Linux application using the appropriate credentials and type cslogin (not shown) to gain access to the PBX command line.

5.1. Create ELAN for Avaya Aura® Contact Center Application

Use the **CHG** command in **LD17** to configure an ELAN to the Contact Center server. Follow the commands shown below to create a new **elan 17**.

LD 17

Prompt Response	Description
>	LD 17 Enter Overlay 17
REQ	chg Change
TYPE	adan Change the Action Device and Number
ADAN	new elan 17 Create New ELAN
CTYP	elan Card type is ELAN
DES	AACC Description for this new ELAN

Use the **CHG** command in **LD17** to configure **VAS** to communicate to the Contact Center server. AT the **ELAN** prompt enter **17** as was configured above. Ensure that **SECU** is set to **yes**.

LD 17

Prompt Response	Description
>	LD 17 Enter Overlay 17
REQ	chg Change
TYPE	vas Value added service
VAS	new Create new VAS
VSID	17 VAS ID
ELAN	17 ELAN number
SECU	yes Security

5.2. Enable IPIE feature for IP call recording

Type **LD 17**, to gain access to overlay LD 17 to enable the Enhanced Unsolicited Status Message (USM) IE (**IPIE**) under the System Parameters (PARM) gate opener as shown in the screen below, at the prompt **IPIE** type **YES**, then return to the end.

Prompt Response	Description
>	LD 17 Enter Overlay 17
REQ	chg Change
TYPE	PARM Parameters
.....	Return until IPIE
IPIE	YES
.....	Return to END

5.3. Configure the Associated Set Assignment (AST) & Enable class of service RECA for Agents IP Phone

Using CLI, issue overlay LD 20 to enable the recoding allowed (RECA) class of service for agents IP Phone that needs to be recorded as shown in screen below. AST is set for key 0 and key 3, so as both these keys are monitored.

>ld 20

Prompt	Response	Description
>LD 20	Enter Overlay 20	
REQ	CHG	Make a change
TYPE	1150	Type of Phone Set to change
TN	100 0 0 7	Terminal Number
ECHG	Yes	Make a specific change
ITEM	cls reca	Change Class of Service RECA (Recording allowed)
ITEM	AST 00 03	Monitor Keys 00 and 03
ITEM	RETURN to end	

6. Configure Avaya Aura® Contact Center

This document assumes that CCMS of Contact Center has been pre-configured and that the MLS protocol is running successfully. Also, assumption is made that Contact Center communicates properly with the Communication Server 1000 using the Application Module Link (AML). For more information on how to install and configure the Contact Center please refer to **Section 10 [2]**.

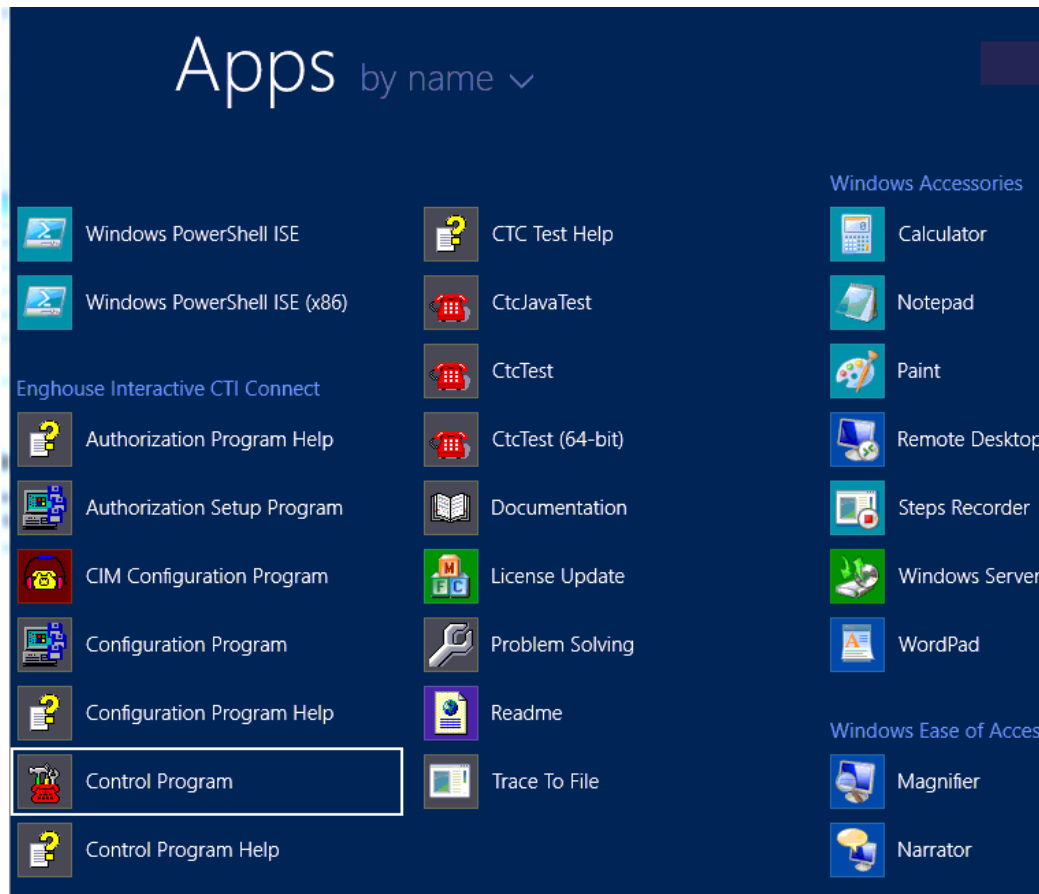
7. Configuration of Enghouse Interactive CTI Connect 8.2

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

- Launch configuration program
- Administer link
- Administer switch type
- Administer IP address and Application ID
- Administer advanced link settings
- Administer trace settings
- Enabling Switch link

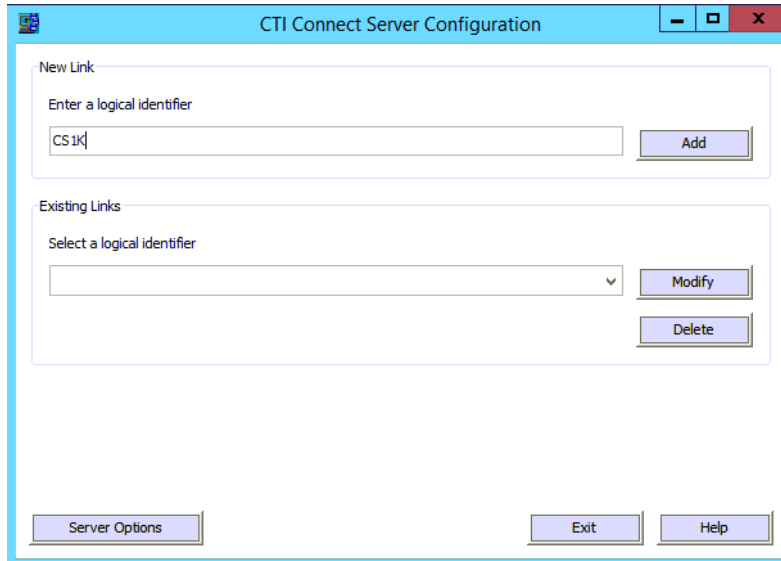
7.1. Launch Configuration Program

CTI Connect uses a GUI based configuration program to configure the MLS connection between the CTI Connect server and the CS1000E. From the Windows 2012R2 CTI Connect server, launch the configuration program by selecting **Control Program** from the **Enghouse Interactive CTI Connect** and select the link **CS1K** created under the configuration program as shown below.



7.2. Administer Link

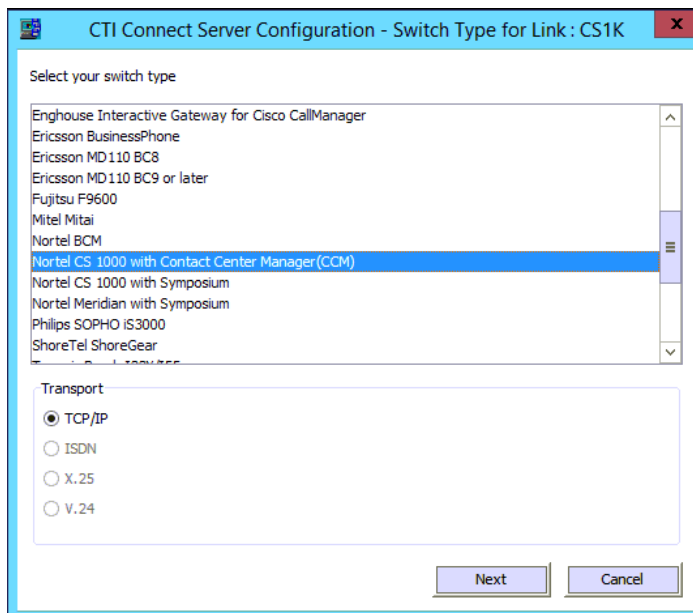
The **CTI Connect Server Configuration** screen is displayed. In the **Enter a Logical Identifier** field, enter a descriptive name, in this case **CS1K** and click **Add**.



The screenshot shows the 'CTI Connect Server Configuration' window. It has a title bar with a minus, maximize, and close button. The main area is divided into two sections: 'New Link' and 'Existing Links'. In the 'New Link' section, there is a text input field labeled 'Enter a logical identifier' containing the text 'CS1K', and an 'Add' button to its right. The 'Existing Links' section has a dropdown menu labeled 'Select a logical identifier' which is currently empty, and 'Modify' and 'Delete' buttons to its right. At the bottom of the window, there are three buttons: 'Server Options', 'Exit', and 'Help'.

7.3. Administer Switch Type

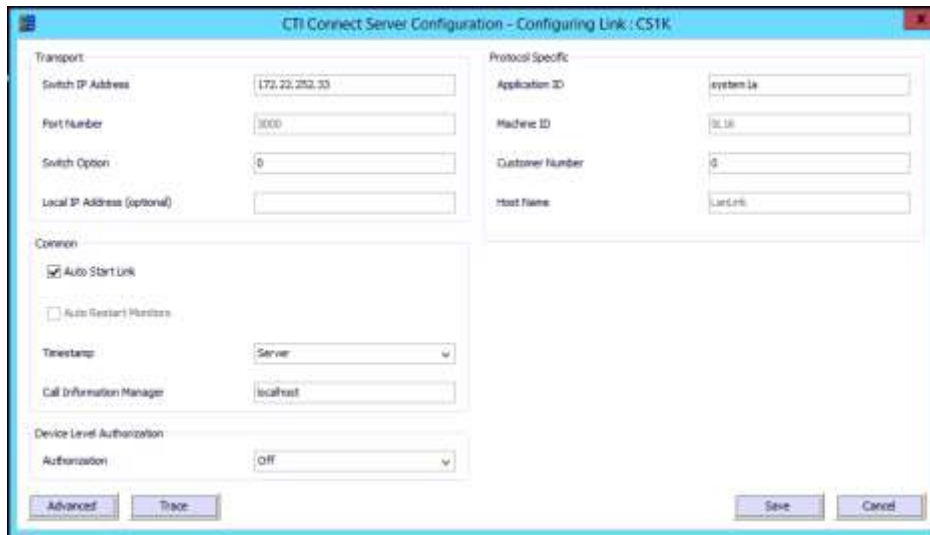
In the **Select your Switch Type** list, select **Avaya Nortel CS 1000 with Contact Center Manager (CCM)** and click **Next**.



The screenshot shows the 'CTI Connect Server Configuration - Switch Type for Link: CS1K' window. It has a title bar with a close button. The main area is divided into two sections: 'Select your switch type' and 'Transport'. The 'Select your switch type' section has a list box containing several switch types, with 'Nortel CS 1000 with Contact Center Manager (CCM)' selected and highlighted in blue. The 'Transport' section has four radio buttons: 'TCP/IP' (selected), 'ISDN', 'X.25', and 'V.24'. At the bottom of the window, there are two buttons: 'Next' and 'Cancel'.

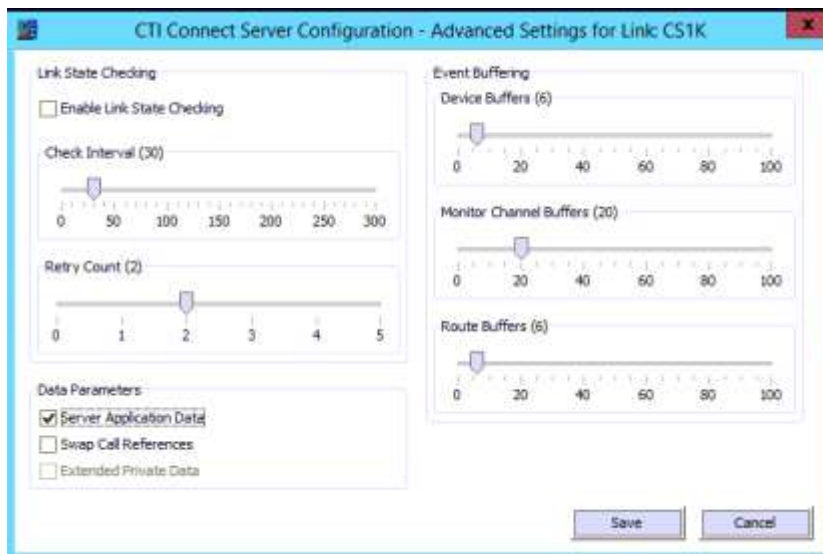
7.4. Administer IP address and Application ID

Enter the IP address of the MLS Host and its Port Number (default 3000). Also, add a name entry for the **Application ID** which may be used to associate the location system with CtiConnect. In this example, System1a. Accept the defaults as below and click **Save**.



7.5. Administer Advanced Link Settings

In the **Advanced** settings, under **Data Parameters**, enable the Server Application Data and click **Save**.



7.6. Administer Trace Settings

In the **Configuration Settings, under Trace**, enable the Auto Start Trace in both the CTCFULL trace and NET trace file settings and click **Save**.



7.7. Enabling the switch link

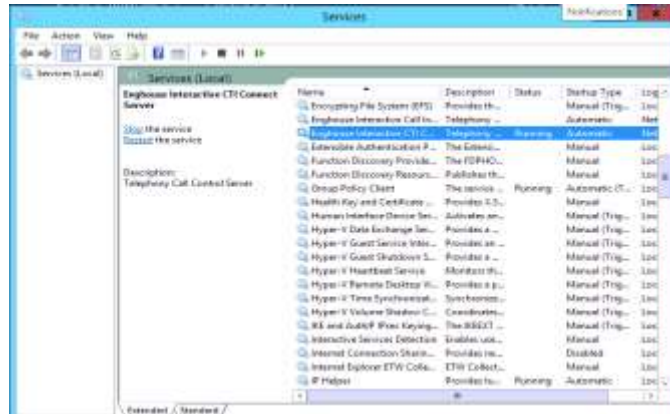
From your Windows 2012 R2 Server desktop screen, open **Control Program** and select the link **CS1K** created under the configuration program. Under the Link Control section, click the On/Off button to activate the link to the PBX.

8. Verification Steps

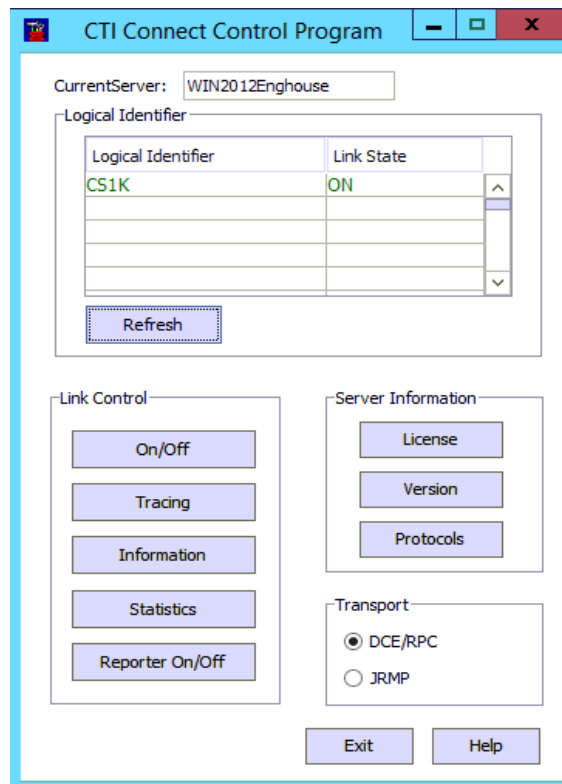
The correct configuration of the solution can be verified as follows:

8.1. Verify Enghouse Interactive CTI Connect

From the Windows server services, ensure the Enghouse Interactive CTI Service is running.



From the Enghouse CTI Connect server desktop, locate **Enghouse Interactive CTI Connect _ Control Program** to load the **CTI Connect Control Program** screen. Ensure that the **Link State** associated with the administered **Logical Identifier** from **Section 7.2** in this case **CS1K** is **ON**.



Using the CtcTest Tool, create a monitor on the required endpoint, in this case **3000**. Place a call to the monitored endpoint from another endpoint, in this case **3017**. Use the CtcTest tool to answer the call by executing the **answer** command. Ensure that the call is answered and CtcTest can be used to complete the full variety of supported call control scenarios.

```
CtcTest (64-bit)
Copyright © 2015 Enghouse Interactive. All rights reserved
      CTC TEST Program Version 8.2
ctcTest> assign 3000 localhost csik
ctcTest> setmon on
ctcTest> getevent
ctcTest>
Event status
DN : 3000
Return Status : ctcSuccess
Channel Identifier : 3143264
The call reference is: 0xc7809201
The state is RECEIUE and the event was INBOUND_CALL on channel 1
with qualifier 28
The type is 0x8
The Other party is DN 3017
The Other party is the Calling Device
The Other party dialing plan is 8
The Originating party trunk is 0x6501 and group is 0
Timestamp: 2-Sep-2015 09:50:30:461
ctcTest> ans
Event status
DN : 3000
Return Status : ctcSuccess
Channel Identifier : 3143264
The call reference is: 0xc7809201
The state is INITIATE and the event was OFFHOOK on channel 1
with qualifier 43
Timestamp: 2-Sep-2015 09:50:33:679
ctcTest> ctcTest>
Event status
DN : 3000
Return Status : ctcSuccess
Channel Identifier : 3143264
The call reference is: 0xc7809201
The state is ACTIVE and the event was TP_ANSWERED on channel 1
with qualifier 0
The type is 0x8
The Other party is DN 3017
The Other party is the Calling Device
The Other party dialing plan is 8
The Originating party trunk is 0x6501 and group is 0
Timestamp: 2-Sep-2015 09:50:33:742
ctcTest> hang
```

```
CtcTest (64-bit)
ctcTest> setagentstatus logi /logi=7501 /data=1234

Event status
DN : 3907
Return Status : ctcSuccess
Channel Identifier : 2618256
The call reference is: 0x0
The state is UNKNOWN and the event was AGENT_LOGGED_ON on channel 1
with qualifier 0
The ACD group is: 3333
The agent-ID is: 1234
The Agent Mode is Login
Timestamp: 26-Aug-2015 15:51:29:013
ctcTest> ctcTest>

Event status
DN : 3907
Return Status : ctcSuccess
Channel Identifier : 2618256
The call reference is: 0x0
The state is UNKNOWN and the event was AGENT_MODE_CHANGE on channel 1
with qualifier 0
The ACD group is: 3333
The agent-ID is: 1234
The Agent Mode is In Service
Timestamp: 26-Aug-2015 15:51:29:060
ctcTest>

Event status
DN : 3907
Return Status : ctcSuccess
Channel Identifier : 2618256
The call reference is: 0x0
The state is UNKNOWN and the event was AGENT_MODE_CHANGE on channel 1
with qualifier 0
The ACD group is: 3333
The agent-ID is: 1234
The Agent Mode is Not Ready
Timestamp: 26-Aug-2015 15:51:29:076
ctcTest>
ctcTest>
ctcTest>
ctcTest>
ctcTest> setag rdy
```

9. Conclusion

These Application Notes describe the configuration steps required for Enghouse Interactive CTI Connect 8.2 to successfully interoperate with Avaya Communication Server 1000E R7.6 using MLS. All feature functionality and serviceability test cases were completed successfully as outlined in **Section 2.2**.

10. Additional References

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

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

[1] Avaya Communication Server 1000 Documents:

Software Input Output Reference — Administration Avaya Communication Server 1000 R7.6
NN43001-611, 06.03

Avaya Communication Server 1000 Co-resident Call Server and Signaling Server Fundamentals,
R7.6 NN43001-509, 04.03

[2] Avaya Aura® Contact Center 6.4 documents:

Avaya Aura® Contact Center Planning and Engineering (NN44400-210)

Avaya Aura® Contact Center Installation (NN44400-311)

Avaya Aura® Contact Center Server Administration (NN44400-610)

Avaya Aura® Contact Center Overview (NN44400-111)

Avaya Aura® Contact Center Fundamentals (NN44400-110)

Avaya Aura® Contact Center Manager Administration – Client Administration (NN44400-611)

[3] Product documentation for Enghouse Interactive CTI Connect can be obtained by visiting the following website, www.enghouseinteractive.com

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