



## **Avaya Solution & Interoperability Test Lab**

---

# **Application Notes for Exxcom Precision with Avaya Aura<sup>TM</sup> Communication Manager - Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for Exxcom Precision to successfully interoperate with Avaya Aura<sup>TM</sup> Communication Manager.

Exxcom Precision is call analysis software that collects and reports on Call Detail Record (CDR) information generated by Avaya Aura<sup>TM</sup> Communication Manager. Data is uploaded to the Exxcom operations centre on a daily basis using either an analogue telephone line or a direct internet connection.

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

The objective of this compliance test is to verify that Exxcom Precision 1.20.1 and Exxcom PC Call Logger 22.0.0 can interoperate with Avaya Aura<sup>TM</sup> Communication Manager 5.2. Exxcom PC Call Logger is a data buffer that interoperates with Communication Manager over TCP/IP for the collection of Call Detail Records (CDR), which are then uploaded to Exxcom Precision web server, for call processing. During compliance testing, the CDR collection was verified for two Communication Managers running on Avaya S8730 server and Avaya S8300 server respectively.

## 1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing evaluated the ability of Exxcom Precision and Exxcom PC Call Logger to collect and process CDR records for various types of calls: intra-switch calls (calls between phones on the same site), outbound/inbound calls to/from the PSTN and outbound/inbound calls to/from the phones between the two sites via the IP trunk. The serviceability testing introduced failure scenarios to see if PC Call Logger can resume CDR collection after failure recovery.

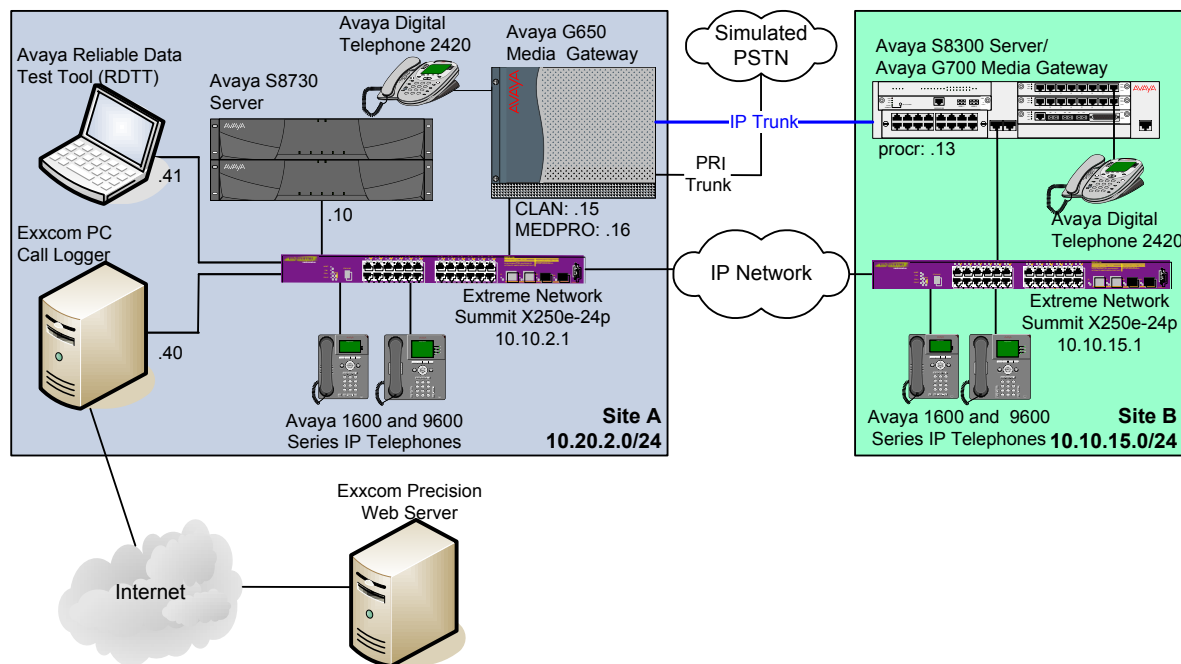
## 1.2. Support

Technical support from Exxcom can be obtained through the following:

Telephone: +44 (0)1462 850912  
E-mail: [support@exxcom.com](mailto:support@exxcom.com)  
Web: <http://www.exxcom.co.uk/>  
Address: Kingsmede House, 1 Southbridge Street  
Sheffield  
Bedfordshire  
United Kingdom

## 2. Reference Configuration

**Figure 1** illustrates a sample configuration that was used to compliance test the interoperability of the Exxcom Precision and PC Call Logger with Avaya Aura™ Communication Manager. The configuration consists of two Avaya servers running Communication Manager. Site A is comprised of an Avaya S8730 Server with a G650 Media Gateway, and has connections to Avaya 1600 Series IP Telephones, Avaya 9600 Series IP Telephones, Avaya 2400 Series Digital Telephone and an ISDN-PRI trunk to the simulated PSTN. Site B is comprised of an Avaya S8300 Server with a G700 Media Gateway, and has connections to Avaya 1600 Series IP Telephones, Avaya 9600 Series IP telephones, an Avaya 2400 Series Digital Telephone and it is connected to the Site A via an H.323 IP trunk. Exxcom PC Call Logger was connected over the LAN to both sites for collecting CDR records. Exxcom Precision web server was located in Exxcom operations center. CDRs were uploaded from the PC Call Logger to the Exxcom operations centre using a secure FTP process via direct Internet connection. In addition, the Avaya Reliable Data Test Tool (RDTT) was connected to compare the records received by RDTT with PC Call Logger.



**Figure 1: Network Diagram of the Compliance Tested Configuration**

### 3. Equipment and Software Validated

The following equipment and software were used for the sample configuration.

Equipment	Software
Avaya S8730 Server	Avaya Aura™ Communication Manager 5.2 (R015x.02.0.947.3) Service Pack 02.0.947.3-17579
Avaya G650 Media Gateway TN2312BP IP Server Interface TN799DP C-LAN Interface TN2302AP IP Media Processor TN2464CP DS1 TN2214CP Digital Line	HW28 FW047 HW16 FW035 HW32 FW120 HW02 FW024 HW10 FW015
Avaya S8300 Server	Avaya Aura™ Communication Manager 5.2 (R015x.02.0.947.3) Service Pack 02.0.947.3-17579
Avaya G700 Media Gateway	29.24.3
Avaya 1616 and 1608 IP Telephones	1.2.1.1 (H.323)
Avaya 9620 and 9630 IP Telephones	3.0 SP1 (H.323)
Avaya 2420 Digital Telephones	-
Extreme Network Summit X250e-24p Switch	12.0.3.16
Exxcom PC Call Logger	22.0.0
Exxcom Precision	1.20.1

## 4. Configure Avaya Aura™ Communication Manager

This section provides the procedures for configuring Call Data Record (CDR) features in Avaya Aura™ Communication Manager. All the configuration changes in Communication Manager are performed through the System Access Terminal (SAT). These steps describe the procedure used for the Avaya S8730 Server. All steps are the same for the other media servers unless otherwise noted. Communication Manager was configured to generate CDR records to the IP address of the Exxcom PC Call Logger server over TCP/IP. For the Avaya S8730 Server, the CDR link originates at the IP address of the C-LAN board that connects to the same network where the PC Call Logger is located. For the Avaya S8300 Server, the CDR link originates at the IP address of the local media server (with node-name – ‘procr’). The highlights in the following screens indicate the value used during the compliance test.

Use the **change node-names ip** command to add a new node name for the Exxcom PC Call Logger server by specifying the **Name** and the **IP Address** of the server. Make a note of the node-name of the C-LAN to be used for the CDR connection.

change node-names ip		Page 1 of 2
IP NODE NAMES		
Name	IP Address	
CLAN	10.20.2.15	
Exxcom	10.20.2.40	
Gateway002	10.20.2.1	
MEDPRO	10.20.2.16	
RDTT	10.20.2.41	
SiteB	10.10.15.13	
aesserver	10.20.2.30	
announce	10.20.2.17	
default	0.0.0.0	
procr	0.0.0.0	

Use the **change ip-services** command to define the CDR link over TCP/IP. To define a primary CDR link, the following information should be provided:

- **Service Type: CDR1** [If needed, a secondary link can be defined by setting Service Type to CDR2.]
- **Local Node: CLAN** [For the Avaya S8730 Server, the Local Node is set to the node name of the C-LAN board. If the Avaya S8300 Server was utilized, set the Local Node to procr.]
- **Local Port: 0** [The Local Port is fixed to 0.]
- **Remote Node: Exxcom** [The Remote Node is set to the node name that was created in the previous step for the Exxcom PC Call Logger server.]
- **Remote Port: 5001** [The Remote Port may be set to a value between 5000 and 64500 inclusive and must match the port configured in the Exxcom PC Call Logger server. During the compliance test, the remote port 5001 was used.]

**Note:** In case when Exxcom PC Call Logger collects CDRs from more than one Communication Manager, requirement is that the same port number is specified for each S8XXX Server.

change ip-services						Page	1 of	3
IP SERVICES								
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port			
CDR1		CLAN	0	Exxcom	5001			

On **Page 3** of the ip-services form, disable the Reliable Session Protocol (RSP) for the CDR link by setting the **Reliable Protocol** field to **n**.

change ip-services						Page	3 of	3
SESSION LAYER TIMERS								
Service Type	Reliable Protocol	Packet Resp Timer	Session Connect Message Cntr	SPDU Cntr	Connectivity Timer			
CDR1	n	30	3	3	60			

Enter the **change system-parameters cdr** command from the SAT to set the parameters for the type of calls to track and the format of the CDR data. The example below shows the settings used during the compliance test. Provide the following information:

- **CDR Data Format: day/month**
- **Primary Out Format: customized**
- **Primary Output Endpoint: CDR1**

The remaining parameters define the type of calls that will be recorded and what data will be included in the record. See reference [1] for a full explanation of each field. The test configuration used some of the more common fields described below.

- **Intra-switch CDR: y** [Allows call records for internal calls involving specific stations. Those stations must be specified in the **inter-switch-cdr** form.]
- **Outg Trk Call Splitting: y** [Allows a separate call record for any portion of an outgoing call that is transferred or conferenced.]
- **Inc Trk Call Splitting: y** [Allows a separate call record for any portion of an incoming call that is transferred or conferenced.]

change system-parameters cdr		Page 1 of 2
CDR SYSTEM PARAMETERS		
Node Number (Local PBX ID): 1	<b>CDR Date Format: day/month</b>	
<b>Primary Output Format: customized</b>	<b>Primary Output Endpoint: CDR1</b>	
Secondary Output Format:		
Use ISDN Layouts? n	Enable CDR Storage on Disk? n	
Use Enhanced Formats? n	Condition Code 'T' For Redirected Calls? n	
Use Legacy CDR Formats? y	Remove # From Called Number? n	
Modified Circuit ID Display? n	<b>Intra-switch CDR? y</b>	
Record Outgoing Calls Only? n	<b>Outg Trk Call Splitting? y</b>	
Suppress CDR for Ineffective Call Attempts? y	Outg Attd Call Record? y	
Disconnect Information in Place of FRL? n	Interworking Feat-flag? n	
Force Entry of Acct Code for Calls Marked on Toll Analysis Form? n	Calls to Hunt Group - Record: group-ext	
Record Called Vector Directory Number Instead of Group or Member? n	Record Agent ID on Incoming? n	
Record Agent ID on Incoming? n	Record Agent ID on Outgoing? y	
<b>Inc Trk Call Splitting? y</b>	Inc Attd Call Record? y	
Record Non-Call-Assoc TSC? n	Call Record Handling Option: warning	
Record Call-Assoc TSC? n	Digits to Record for Outgoing Calls: dialed	
Privacy - Digits to Hide: 0	CDR Account Code Length: 15	

On **Page 2** of the CDR SYSTEM PARAMETERS form, enter the data items in the order that the information should appear in the customized call records sent over the CDR link. For each field in the CDR record, specify the data item and length as shown below.

change system-parameters cdr			Page 2 of 2		
CDR SYSTEM PARAMETERS					
Data Item - Length		Data Item - Length		Data Item - Length	
1: date	- 6	17: in-trk-code	- 4	33: line-feed	- 1
2: space	- 1	18: space	- 1	34:	-
3: time	- 4	19: in-crt-id	- 3	35:	-
4: space	- 1	20: space	- 1	36:	-
5: sec-dur	- 5	21: out-crt-id	- 3	37:	-
6: space	- 1	22: space	- 1	38:	-
7: cond-code	- 1	23: ppm	- 5	39:	-
8: space	- 1	24: space	- 1	40:	-
9: code-dial	- 4	25: isdn-cc	- 11	41:	-
10: space	- 1	26: space	- 1	42:	-
11: code-used	- 4	27: atttd-console	- 2	43:	-
12: space	- 1	28: space	- 1	44:	-
13: dialed-num	- 23	29: vdn	- 5	45:	-
14: space	- 1	30: space	- 1	46:	-
15: clg-num/in-tac	- 15	31: acct-code	- 15	47:	-
16: space	- 1	32: return	- 1	48:	-
Record length = 127					

If the Intra-switch CDR field is set to y in the CDR SYSTEM PARAMETERS form, use the **change intra-switch-cdr** command to define the extensions that will be subject to call detail records. In the INTRA-SWITCH CDR form, enter a specific extension whose usage will be tracked with a CDR record. Add an entry for each additional **Extension** of interest.

change intra-switch-cdr			Page 1 of 3		
INTRA-SWITCH CDR					
		Assigned Members: 4		of 5000 administered	
Extension	Extension	Extension	Extension	Extension	Extension
301					
303					
311					
320					



## 5. Configure Exxcom PC Call Logger and Precision Web Server

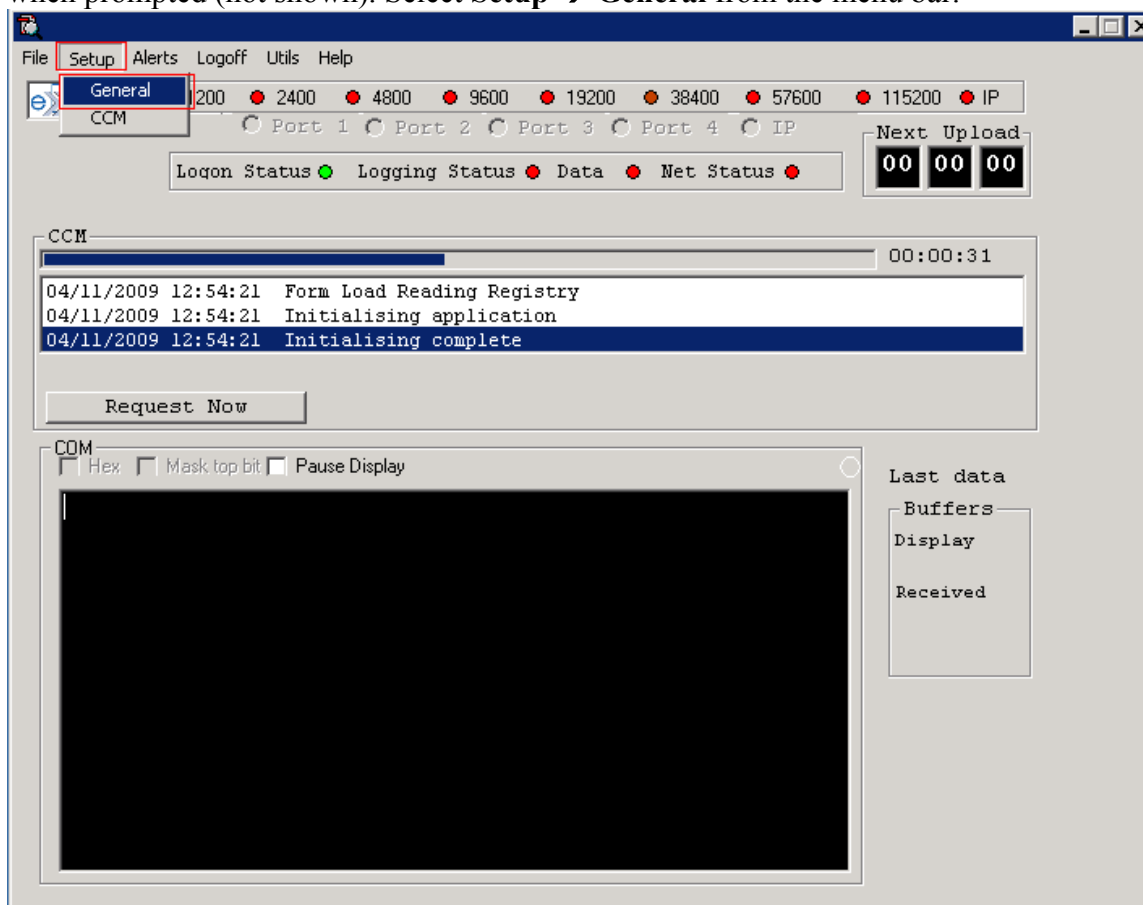
This section provides the procedures for configuring Exxcom PC Call Logger and Precision web server for the purpose of this compliance testing and these procedures fall into following areas:

- Configure CDR link from PC Call Logger to Communication Manager
- Configure upload link from PC Call Logger to Precision web server
- Configure Precision web server

Please note that it is expected that the installer is familiar with the basic configuration of the Exxcom PC Call Logger as the focus of these Application Notes is on the configuration of the CDR interface. For all other provisioning information, such as software installation, installation of optional components, basic configuration of Exxcom PC Call Logger, etc., refer to the Exxcom product documentation in reference [2].

### 5.1 Configure CDR Link from PC Call Logger to Communication Manager

On the PC running Exxcom PC Call Logger, select **Start → Programs → Exxcom PC Call Logger → Exxcom PC Call Logger**. Select **Login** from the menu bar and enter the password when prompted (not shown). Select **Setup → General** from the menu bar.



On the **User Setup Options** screen that appears, select the **IP Logging** tab. Check the **IP Enabled** and the **Initiate Connection** checkboxes and configure the fields as follows.

- **Host IP:** For the Avaya S8730 Server, enter the IP address of the Communication Manager C-LAN board; In this case that was **10.20.2.15**. If Avaya S8300 Server was utilized, enter the IP address of the procr.
- **Host Port:** Enter the **Port** number as configured on the CDR link in **Section 4**; in this case value **5001** was specified.

The screenshot shows the 'User Setup Options' dialog box with the 'IP Logging' tab selected. The 'Generic' section contains the following fields:

Generic	
Ip Enabled	<input checked="" type="checkbox"/>
Initiate Connection	<input checked="" type="checkbox"/>
Host IP	10.20.2.15
Host Port	5001

The 'Display' section contains the following options:

Display	
<input type="checkbox"/> Hex	
<input type="checkbox"/> Mask Top Bit	

At the bottom of the dialog are 'Exit' and 'Save' buttons.

On the **User Setup Options** screen, select the **Upload** tab. Set **1** in the **Upload every** field and select **min(s)** radio button. This ensures CDR data upload is performed every minute.

The screenshot shows the 'User Setup Options' dialog box with the 'Upload' tab selected. The 'Upload every' field is set to '1' and the 'min(s)' radio button is selected. The 'Data Encryption' and 'Data Compression' sections are also visible.

**User Setup Options**

Comms | IP Logging | Dialup | Modem Errors | **Upload** | Site Data | Logging

Upload

Upload every:  ☐ Hour(s) ☒ min(s)

☐ Daily at:

Retain Data for:

Data Encryption

☐ Encrypt Data

Data Compression

☐ Compress Data

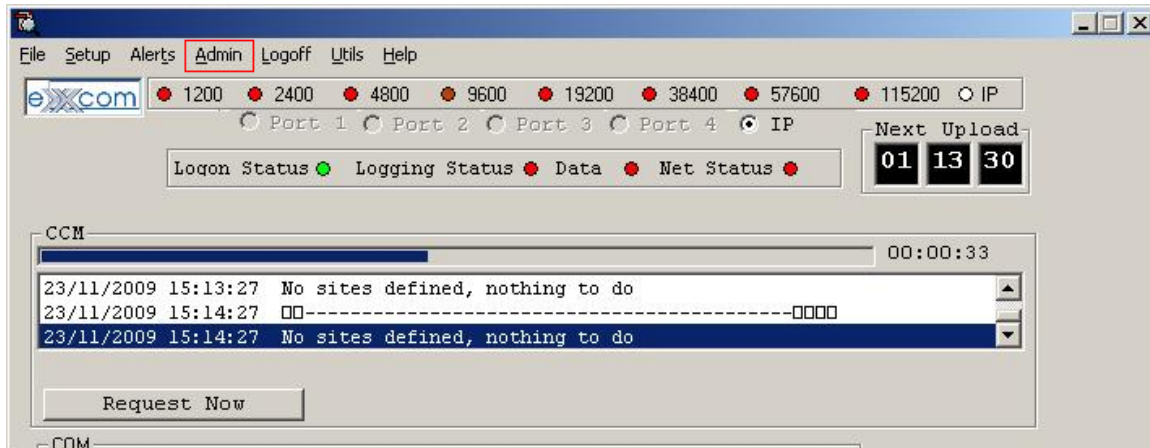
Exit Save

On the **User Setup Options** screen, select the **Site Data** tab. Enter the name of the client site in the **Client Site ID**; in this case that was **Avaya\_Exxcom**. This value is used when creating log, configuration and data files. When completed, select **Save** and then **Exit**.

The screenshot shows a window titled "User Setup Options" with a dark blue header bar. Below the header is a tabbed interface with seven tabs: "Comms", "IP Logging", "Dialup", "Modem Errors", "Upload", "Site Data", and "Logging". The "Site Data" tab is selected and highlighted with a red border. Inside the "Site Data" tab, there are two input fields. The first is labeled "Site Id" and contains the text "Client Site ID" followed by a text box with the value "Avaya\_Exxcom". The second is labeled "Application Caption" and contains a text box with the value "App Caption". At the bottom of the window, there are two buttons: "Exit" and "Save", both of which are highlighted with red borders.

## 5.2 Configure Upload Link from PC Call Logger to Precision Web Server

On the Exxcom PC Call Logger application, started in **Section 5.1**, press **Ctrl+x** in order to view the **Admin** tab. Click on the **Admin** tab, once it is visible.



On the **Logon** tab of the **Internet Setup** window that appears, specify password provided by the Exxcom engineer in **Please enter the exxcom daily password** field and click **Verify**.

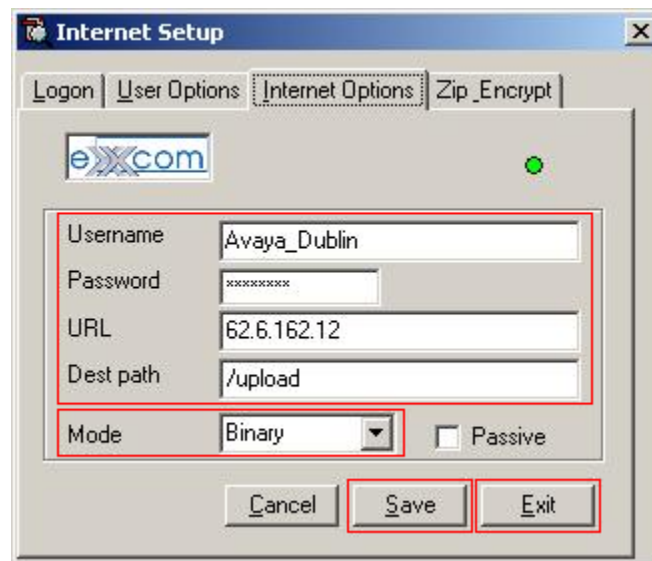
**Note:** Exxcom daily password should be specified using upper case.



After successful verification of the Exxcom daily password the indicator turns to green. Click on the **Internet Options** tab.



On the **Internet Options** tab that appears specify **Username**, **Password**, **URL** and **Dest path** as instructed by the Exxcom engineer and select the **Binary** from the **Mode** drop down list. When completed, select **Save** and then **Exit**.



### 5.3 Configure Precision web server

Precision web server configuration is not exposed in these application notes as that configuration is always performed by the Exxcom engineer.

## 6. General Test Approach and Test Results

The general test approach was to manually place intra-switch calls, inter-switch calls, inbound and outbound PSTN trunk calls to and from telephones attached to the Avaya Media Servers, and verify that Exxcom PC Call Logger collects the CDR records, uploads to Precision web server which then properly classifies and reports the attributes of the call. For serviceability testing, logical links were disabled/re-enabled, and media servers were rebooted.

All executed test cases were passed. The Exxcom PC Call Logger successfully collected the CDR records from Avaya Aura<sup>TM</sup> Communication Manager via CDR link for all types of calls generated including intra-switch calls, inbound / outbound PSTN trunk calls, inbound/outbound inter-switch IP trunk calls, transferred calls, and conference calls. For serviceability testing, the Exxcom PC Call Logger was able to resume collecting CDR records after failure recovery including buffered CDR records for calls that were placed during the outages. Following observation was made during serviceability testing:

- Exxcom PC Call Logger does not currently support CDR link with Reliable Protocol, therefore records generated while PC Call Logger server was disconnected from the LAN were lost.

## 7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Aura<sup>TM</sup> Communication Manager and Exxcom PC Call Logger.

### 7.1 Verify Communication Manager

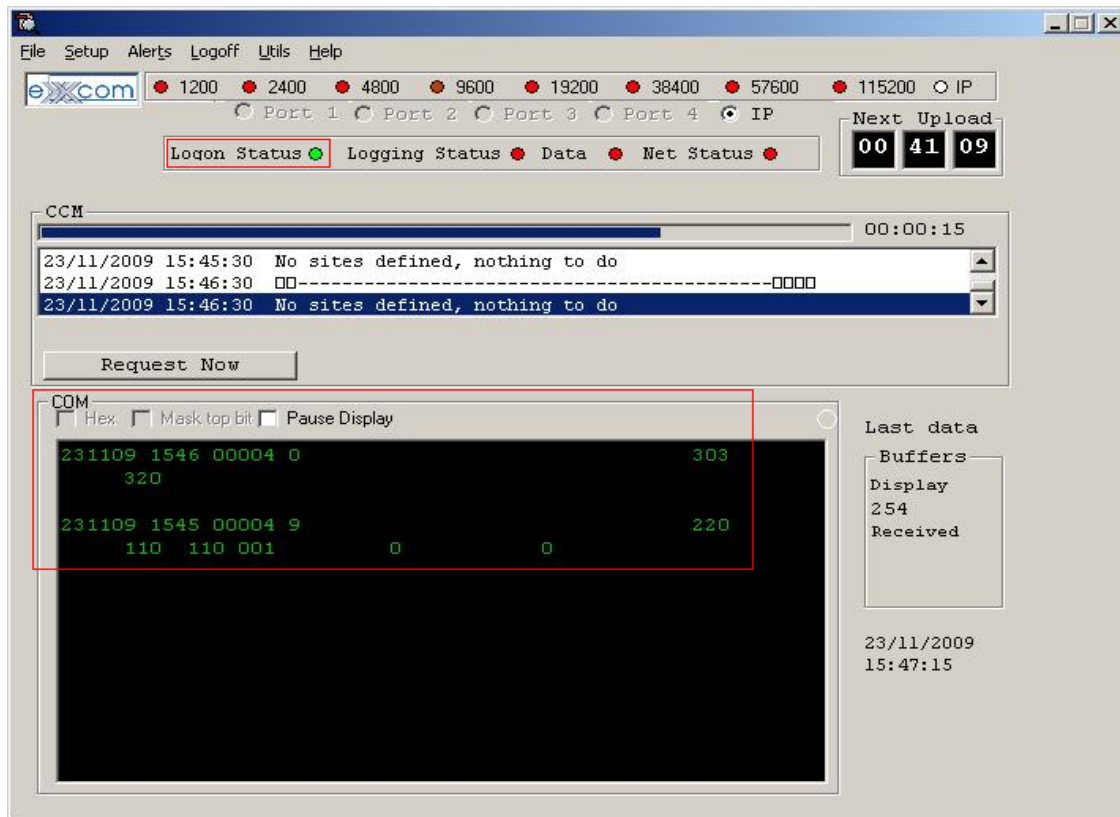
On the SAT, enter the **status cdr-link** command to verify that the **Primary CDR Link State** is **up**.

status cdr-link	
CDR LINK STATUS	
Primary	Secondary
Link State: up	CDR not administered
Date & Time: 2009/11/20 14:54:3	0 /0 /0 0: 0: 0
Forward Seq. No: 0	0
Backward Seq. No: 0	0
CDR Buffer % Full: 0.00	0.00
Reason Code: OK	

## 7.2 Verify Exxcom PC Call Logger

Open the Exxcom PC Call Logger application (see **Section 5** for details). Verify that the **Logon Status** indicator is green. Place a call to an extension for which CDR records should be produced. Verify that the raw CDR data appears in the **COM** terminal screen.

**Note:** If the COM terminal is not shown after login, press **Ctrl** and **K**, and it will appear.





## 7.3 Verify Exxcom Precision

On Exxcom Precision generate report for the previously generated CDR records.

Location		Report Type										Date
Avaya		Selected Call Details								23 Nov 2009		(Yesterday)
Avaya_10.20.2.15												
Call Date	Call Time	Status	Duration	Ring	From	To	Access	Dialled Number	Description	Type	Calc'd Cost	
23 Nov 2009	15:45:56	NA	0:00:04	0	E320	E303					0.00	
23 Nov 2009	15:46:56	NA	0:00:04	0	E311	T110/2		110220			0.00	
Number Of Calls				Total Duration				Total Calc'd Cost				
2				0:00:08								
<b>Key For STATUS Column:</b>												
N = New												
A = Answered												
L = Lost												
D = Diverted												
B = Busy												
T = Transferred												
R = Returned												
F = Failed												
P = Pickup												
Requested By Dave Moore. Generated On 24 Nov 2009												

## 8. Conclusion

These Application Notes describe the configuration steps required for Exxcom Precision and Exxcom PC Call Logger to successfully interoperate with Avaya Aura<sup>TM</sup> Communication Manager.

## 9. Additional References

This section references the product documentation relevant to these Application Notes.

- [1] *Administering Avaya Aura<sup>TM</sup> Communication Manager*, Release 5.2, Issue 5.0, May 2009, Document Number 03-300509, available at <http://support.avaya.com>.
- [2] Exxcom product documentation is available on request from Exxcom or can be found at <http://www.exxcom.co.uk>

---

**©2009 Avaya Inc. All Rights Reserved.**

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

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 DevConnect Program at [devconnect@avaya.com](mailto:devconnect@avaya.com).