

### Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura ® Communication Manager R6.3 and Avaya Aura® Session Manager R6.3 with Tiger Communications 2020 Pro v5.3.1 – Issue 1.0

### **Abstract**

These Application Notes describe the configuration steps required for Tiger Communications 2020 Pro v5.3.1 to interoperate with Avaya Aura® Communication Manager R6.3 and Avaya Aura® Session Manager R6.3. Tiger Communications 2020 Pro is a call logging system that records Call Detail Records (CDR) output by Avaya Aura® Communication Manager over an IP network 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

These Application Notes describe the compliance-tested configuration using Tiger Communications 2020 Pro v5.3.1 with Avaya Aura® Communication Manager R6.3 and Avaya Aura® Session Manager R6.3. This addresses the Call Detail Recording (CDR) capability of Avaya Aura® Communication Manager.

Tiger Communications 2020 Pro is a Call Accounting and Billing package that utilizes the CDR Link in Avaya Aura® Communication Manager. Tiger Communications 2020 Pro collects, stores, and processes the CDR records to provide usage analysis, call costing and billing capabilities. Avaya Aura® Communication Manager can generate Call Detail Records for intraswitch calls, inbound trunk calls and outbound trunk calls. In addition, split records can be generated for transferred calls and conference calls. Tiger Communications 2020 Pro creates a custom Avaya Communication Manager configuration file to accurately parse the CDR data. For the compliance testing, a customized format was used. Tiger Communications 2020 Pro does not natively support Reliable Session Protocol (RSP); however it is fully supported when used in combination with an IP Buffer.

# 2. Interoperability Compliance Testing

The interoperability compliance testing included feature and serviceability testing. The feature testing evaluated the ability of Tiger 2020 Pro to collect and process CDR records for various types of calls. The source and destination of each call was verified on the Tiger 2020 Pro application. The serviceability testing introduced failure scenarios to see if Tiger 2020 Pro could resume CDR collection after failure recovery.

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. General Test Approach

The general test approach was to manually place intra-switch calls, inbound trunk, outbound trunk calls, transfer calls and forwarded calls to and from telephones controlled by Communication Manager and SIP endpoints registered to Session Manager and verify that Tiger 2020 Pro collects the CDR records and properly classifies and reports the attributes of the call. For serviceability testing, logical links were disabled/re-enabled. Light load testing and link integrity testing were also carried out.

### 2.2. Test Results

All feature and performance tests passed. Tiger 2020 Pro successfully captured and processed call records from Communication Manager. Tiger 2020 Pro also successfully processed the CDR data, performed call costing, and produced call accounting reports, with the following exceptions and observations.

- The CDR from Communication Manager displays transfers between H323 endpoints and SIP endpoints differently, for example, a call from a H323 endpoint A to H323 B endpoint blind transferred by H323 B to Digital endpoint C displays as two calls A-B and B-C. The same call in a SIP scenario displays one call as A-B only. The call to Digital C is not logged.
- A call from H323 endpoint A to H323 endpoint B which is then blind transferred by endpoint B to PSTN reports as two calls, A-B and A-PSTN. The same call flow using SIP endpoints does not present any record for either call A or B. Note this is only in the case of a blind transfer.
- An Inbound PSTN call to H323 endpoint which is then blind transferred to PSTN appears as two call records, PSTN-A and A-PSTN. The same call using a SIP endpoint does not report an outbound call A-PSTN.
- A call from H323 endpoint A to PSTN, connected and blind transferred to H323 endpoint B reports three calls, A-PSTN, A-B and B-PSTN. The same call using SIP endpoints reports the two call legs correctly but does not report any internal call.

**Note**: As shown in **Section 5.2**, the Communication Manager Reliable Session Protocol (RSP) was disabled for compatibility with Tiger 2020 Pro. With RSP disabled, the communication protocol is not as robust and there is a higher chance of loss of CDR records if there is a network failure. Tiger 2020 Pro can fully support Reliable Session Protocol (RSP) when used in combination with an IP Buffer.

## 3. Reference Configuration

**Figure 1** shows an Avaya Aura® Communication Manager R6.3 serving H323 endpoints with an Avaya G430 Media Gateway along with an Avaya Aura® Session Manager R6.3 providing SIP endpoints. Tiger Communications 2020 Pro was configured on the same IP network for the transfer of CDR data from Avaya Aura® Communication Manager.

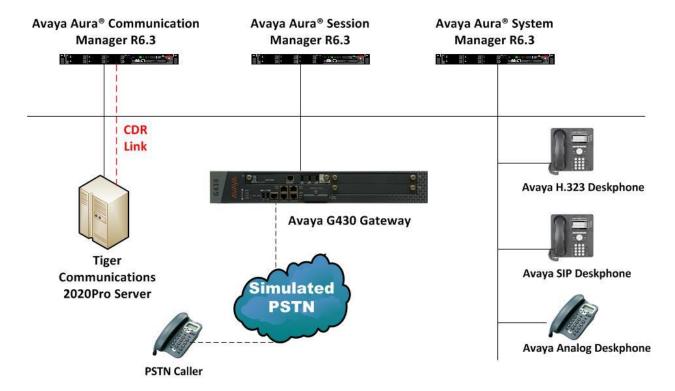


Figure 1: Avaya Aura® Communication and Avaya Aura® Session Manager with Tiger Communications 2020 Pro Solution

# 4. Equipment and Software Validated

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

Equipment/Software	Release/Version				
Avaya Aura® System Manager running on Avaya S8800 Server	System Manager 6.3.0 - FP2 Build No 6.3.0.8.5682-6.3.8.1814 Software Update Revision No: 6.3.3.5.1719				
Avaya Aura® Communication Manager running on Avaya S8800 Server	R6.3 SP1 R016x.03.0.124.0				
Avaya Aura® Session Manager running on Avaya S8800 Server	Session Manager R6.3 (SP3) SM 6.3.3.0.633004				
Avaya G430 Gateway	R6.3				
Avaya 9630 IP Deskphone	<ul><li>H323 S3.105S</li><li>SIP 2.6.8.4</li></ul>				
Tiger Communications 2020 Pro running on Generic Server	V5.3.1  • Definity.exe Version: 10.3.1.0  • Collection.exe Version: 10.4.1.0				

# 5. Configure Avaya Aura® Communication Manager

This section describes the steps for configuring Call Detail Recording (CDR) links, CDR system parameters, and intra-switch CDR extensions on Communication Manager. The steps are performed through the System Access Terminal (SAT) interface.

## 5.1. Configure IP Node Names

Enter the **change node-names ip** command. Create a new node name and IP address for the Tiger 2020 Pro server used to collect the call detail records from Communication Manager. The node name configured below will be used in the ip-services form to specify the remote node of the CDR links.

change node-names	ip		Page	<b>1</b> of	2
		IP NODE NAMES			
Name	IP Address				
aesserver63	10.10.16.96				
clan	10.10.16.31				
cmm	10.10.16.142				
cms	10.10.16.175				
default	0.0.0.0				
gateway	10.10.16.1				
procr	10.10.16.142				
procr6	::				
sm63sigint	10.10.16.148				
tiger	10.10.16.101				

# 5.2. Configure IP Services

Enter the **change ip-services** command. On **Page 1** of the **IP SERVICES** screen, define a primary CDR link by setting the **Service Type** to **CDR1**. Set **Local Node** to **procr** and **Remote Node** to **tiger** as configured above. The **Local Port** is fixed at "0" and the **Remote Port** may be set to a value between 5000 and 64500, inclusive, but must match the port configured on the Tiger 2020 Pro, in this case **9000**.

change ip-s	services				Page 1 of	4
			IP SERVICES			
Service	Enabled	Local	Local	Remote	Remote	
Type		Node	Port	Node	Port	
AESVCS	У	procr	8765			
PMS		procr	0	tiger	5004	
CDR1		procr	0	tiger	9000	

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

change ip-se	rvices				Page 3 of	4
Service Type	Reliable Protocol	SESSION Packet Resp Timer	N LAYER TIMERS Session Connect Message Cntr	SPDU Cntr	Connectivity Timer	
CDR1	n	30	3	3	60	

### 5.3. Configure CDR System Parameters

Enter the **change system-parameters cdr** command and set the following:

- **CDR Date Format**: Set to **day/month**. The date format will be used for the date stamp that begins each new day of call records or in the customized CDR output formats (see below).
- Primary Output Format: Set to customized.
- Primary Output Endpoint: Set to CDR1.
- Use Enhanced Formats: Set to n
- **Intra-switch CDR**: Set to **y** so that CDR records will be generated for calls to/from extensions that are assigned intra-switch CDR.
- Outg Trk Call Splitting / Inc Trk Call Splitting: Set to y if a separate CDR record is desired for any portion of an outgoing/incoming call that is transferred or conferenced.

```
change system-parameters cdr
                                                                                   1 of
                                  CDR SYSTEM PARAMETERS
 Node Number (Local PBX ID):
                                                             CDR Date Format: day/month
       Primary Output Format: customized Primary Output Endpoint: CDR1
    Secondary Output Format:
             Use ISDN Layouts? n
                                                          Enable CDR Storage on Disk? y
        Use ISDN Layouts? n Enable CDR Storage on Disk? y
Use Enhanced Formats? n Condition Code 'T' For Redirected Calls? n
                                              Remove # From Called Number? n
       Use Legacy CDR Formats? n
Modified Circuit ID Display? n
                                                                      Intra-switch CDR? y
  Record Outgoing Calls Only? n
Suppress CDR for Ineffective Call Attempts? y
Disconnect Information in Place of FRL? n

Outg Trk Call Splitting? y
Outg Attd Call Record? y
Interworking Feat-flag? n
 Force Entry of Acct Code for Calls Marked on Toll Analysis Form? n
                                      Calls to Hunt Group - Record: member-ext
Record Called Vector Directory Number Instead of Group or Member? n
Record Agent ID on Incoming? n Record Agent ID on Outgoing? y
  Inc Trk Call Splitting? y

Record Non-Call-Assoc TSC? n

Record Call-Assoc TSC? n

Digits to Record for Outgoing Calls: dialed
                                                Call Record Handling Option: warning
   Privacy - Digits to Hide: 0
                                                      CDR Account Code Length: 15
```

As **Primary Output Format** is set to **customized**, **Page 2** of the **CDR SYSTEM PARAMETERS** screen must be configured according to requirements defined by the Tiger 2020 Pro Implementation Engineer. Enter the data items in the order and length shown below. Each **Data Item length** is taken from the **Node1.conf** file on Tiger 2020 Pro (Refer to **Section 6.2** for specific information). For example sec-dur below is length 5 and this comes from the following entry in the **Node1.conf** file SEC\_DUR=1:14.5,I.

disp	olay system-param	eters	cdr				Page	2	of	2
			CDI	R SYSTEM PARAME	ETERS					
	Data Item - Len	igth		Data Item - I	Length		Data Item	_	Len	gth
1:	date	- 6	17:	in-trk-code	- 4	33:				_
2:	time	- 4	18:	attd-console	- 4	34:				-
3:	space	- 2	19:							-
	space		20:	clg-pty-cat	- 2	36:				-
5:	sec-dur	- 5	21:	feat-flag	- 1	37:				-
6:	cond-code	- 1	22:	node-num	- 2	38:				-
7:	code-dial	- 4	23:	vdn	- 8	39:				-
8:	code-used	- 4	24:	bandwidth	- 2	40:				-
9:	dialed-num	- 18	25:	tsc_ct	- 4	41:				-
10:	clg-num/in-tac	- 15	26:	return						-
11:	auth-code	- 7	27:	line-feed	- 1	43:				_
12:	in-crt-id	- 3	28:		_	44:				_
13:	out-crt-id	- 3	29:		_	45:				_
14:	isdn-cc				_	46:				_
15:	ppm	<b>-</b> 5	31:		_	47:				-
16:	acct-code	- 15	32:		_	48:				_
	Record length = 135									

## 5.4. Configure Intra-Switch CDR

If Intra-switch CDR is enabled in the previous section, enter the command **change intra-switch-cdr** and enter the **Extension** numbers for which intra-switch calls will generate CDR data, in this case extensions 6000-6003 and 5000.

change intra-switch	<b>Page 1</b> of 3					
	INTRA-SWITCH CDR					
	<del>-</del>		of 5000 administered			
Extension	Extension	Extension	Extension			
5000						
6000						
6001						
6002						
6003						

### 5.5. Configure Trunk Group CDR Flag

For each trunk group for which CDR records are desired, enter the command **change trunk-group n**, where **n** is the trunk group number, and set **CDR Reports** to **y**.

The example below depicts the trunk group connected to the Session Manager in the sample configuration. Configure similarly for other trunk groups as required e.g. PSTN.

```
change trunk-group 1
                                                         Page
                                                               1 of 21
                             TRUNK GROUP
                               Group Type: sip
                                                       CDR Reports: y
Group Number: 1
 Group Name: TRUNK TO SM62
                                      COR: 1
                                                   TN: 1 TAC: 701
  Direction: two-way Outgoing Display? y
                                             Night Service:
Dial Access? n
Queue Length: 0
Service Type: public-ntwrk Auth Code? n
                                          Member Assignment Method: auto
                                                 Signaling Group: 1
                                                Number of Members: 30
```

### 5.6. Configure Off-PBX-Telephone Configuration Set

Because the Avaya SIP endpoints are administered as off-pbx-telephone stations, the configuration-set used by the SIP endpoints should be changed. Enter the command **change off-pbx-telephone configuration-set 1** and set the value of **CDR for Calls to EC500 Destination** to **n**. where 1 is the default configuration-set assigned to the SIP EC500 stations.

```
change off-pbx-telephone configuration-set 1
                                                                            1
                                                              Page
                                                                     1 of
                                     CONFIGURATION SET: 1
                         Configuration Set Description:
                                  Calling Number Style: network
                                  CDR for Origination: phone-number
                    CDR for Calls to EC500 Destination? n
                          Fast Connect on Origination? n
                          Post Connect Dialing Options: dtmf
                         Cellular Voice Mail Detection: timed (seconds): 4
                                         Barge-in Tone? n
                          Calling Number Verification? y
            Call Appearance Selection for Origination: primary-first
                                      Confirmed Answer? n
Use Shared Voice Connections for Second Call Answered? n
Use Shared Voice Connections for Second Call Initiated? n
```

## 6. Configure Tiger Communications 2020 Pro

The configuration information provided in this section describes the setup of Tiger 2020 Pro to collect CDR records generated by Communication Manager over a TCP/IP link.

### 6.1. Configure Node1.conf

On the Tiger 2020 Pro server, modify the D:\tig2020\network\Switch\Node1\Node1.conf file. In the [Switch] section ensure the Type field is set to Definity. In the [Input] section enter the Address of the Communication Manager procr interface in this case 10.10.16.142 and the Port number 9000 configured in Section 5.2. The CreateAs field is set to Server. The [FieldDefsFile] section should point to the location of the field definition file. This was named CM4\_standard.conf. For the purposes of the Compliance test Node1.conf was saved as D:\tig202\network\Switch\AvayaCM\AvayaCM.conf.

# [Switch] Type=Definity

Revision=1.0

MaxCallHoldTime=120000

MaxTandemHoldOn=30000

MaxSectionHoldOn=7200000

RecordDiscardBlacklistHoldOn=3600000

MaxLineLength=2000

BreakYear=1980

CustomerId=

NodeId=2

DiscardDuplicateRecords=1

DiscardOutgoingWithNoCalledDigits=0

CallTimeType=0

SequenceNumberDays=7

SequenceNumbersHeld=7

DefaultLatency=0

DiversionChargedPartyRule=0

TransferChargedPartyRule=0

QueueDeviceIsUnanswered=0

SkipHostNameLookup=1

### [Input]

Name=AvayaCM Socket Input

Type=Socket

Direction=Input

Protocol=TCP

Address=10.10.16.142

### Port=9000

#### CreateAs=Server

Mode=Stream

Sharing=readwrite

BufferSize=1024

TimeOut=200

Sharing=none

Blocking=0

NormalReadResetInterval=1200000

InitialReadResetInterval=3600000

### [FieldDefsFile]

Name=D:\tig2020\Network\SwitchConf\Definity\CM4 Standard.conf

### 6.2. View Contents of CM4\_Standard.conf

The field definition file contains the fields that match the configured fields in the customized CDR parameters on Communication Manager in **Section 5.3**.

```
[FieldDefs]
[FieldDefs]

DATE_END_DAY=1:0.2,I  # Day part of End Date

DATE_END_MONTH=1:2.2,I  # Month part of End Date

DATE_END_YEAR=1:4.2,I  # Year part of End Date

TIME_END_HOUR=1:6.2,I  # Hour part of End Time

TIME_END_MIN=1:8.2,I  # Minute part of End Time

SEC_DUR=1:14.5,I  # Duration in seconds

COND_CODE=1:19.1,C  # Condition Code

CODE_DIAL=1:20.4,C  # Access Code Dialled

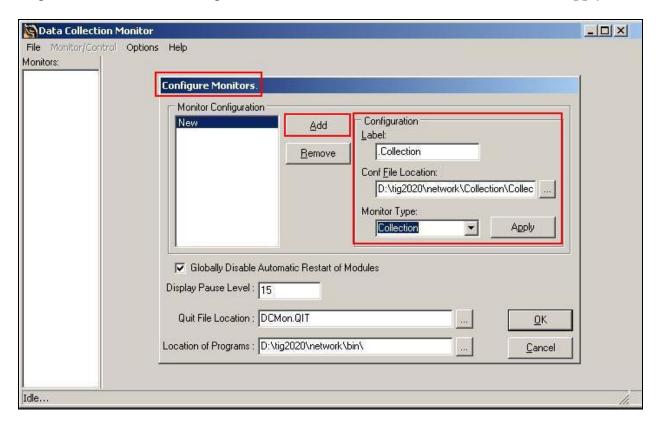
CODE_USED=1:24.4,C  # Access Code Used

DIALED_NUM=1:28.18,C  # Dialed digits
 CLG NUM IN TAC=1:46.15,C # Calling Number or Incoming Trunk Group Access
 Code
AUTH_CODE=1:61.7,C  # Authorisation Code
IN_CRT_ID=1:68.3,C  # Incoming Circuit Id
OUT_CRT_ID=1:71.3,C  # Outgoing Circuit Id
ISDN_CC=1:74.11,C  # ISDN Call Charge
PPM=1:85.5.C  # Meter_Units
# ISDN_CC=1:/4.11,C # ISDN Call Charge
PPM=1:85.5,C # Meter Units
ACCT_CODE=1:90.15,C # Account Code
IN_TRK_CODE=1:105.4,C # Incoming Trunk Code
ATTD_CONSOLE=1:109.4,C # Console Number
BCC=1:113.1,C # ISDN Bearer Capability Class
CLG_PTY_CAT=1:114.2,C # Calling Party Category
FEAT_FLAG=1:116.1,C # ISDN Feature Flag
NODE_NUM=1:117.2,C # Node Number
VDN=1:119.8,C # Vector Directory Number
BANDWIDTH=1:127.2,C # Number of 64Kbps channels used
TSC_CT=1:129.4,C # Packet count
 # Date Record Format
 # 01234567890
 # HH:MM DD/MM
 # 13:45 25/10
 DATEREC HOUR=2:0.2,I  # Hour part of time
 DATEREC_HMSEP=2:2.1,F=: # Time separator
DATEREC_MIN=2:3.2,I # Minute part of time
DATEREC_DAY=2:6.2,I # Day part of date
 DATEREC DMSEP=2:8.1,F=/ # Date separator
 DATEREC MONTH=2:9.2,I  # Month part of date
```

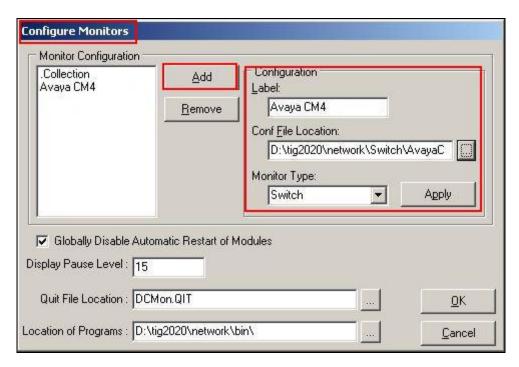
### 6.3. Configure Data Collection

On the Tiger 2020 Pro server, navigate to d:\tig2020\network\bin and click on **dcmon.exe** file to launch the Tiger 2020 Pro data collection configuration (not shown). On the main Data Collection Monitor screen toolbar, click on **Options \rightarrow Configure**.

There are two types of monitor types to be configured - one for the collection which interfaces with the Tiger 2020 database and one for the switch which interfaces with Communication Manager. In the **Configure Monitors** dialog box click the **Add** button. In the **Label** field enter a descriptive name for the collection monitor type. In the **Conf File Location** field enter or browse to the location of the **collection.conf** file. The **collection.conf** file for this compliance testing was located at **D:\tig2020\network\collection**. For the **Monitor Type** select **Collection** from the drop down list. The rest of the parameters can be left with their default values. Click **Apply**.

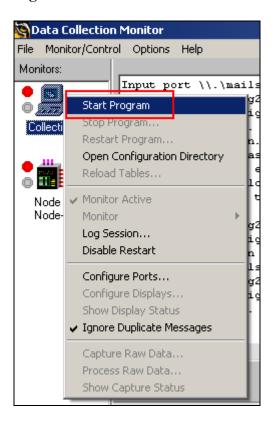


Click on the **Add** button. In the **Label** field enter a descriptive name for the switch monitor type. In the **Conf File Location** field enter or browse to the location of the **AvayaCM.conf** file shown in **Section 6.1**. The **AvayaCM.conf** file for this compliance testing was located at **D:\tig2020\network\Switch\AvayaCM**. For the **Monitor Type** select **Switch** from the drop down list. The rest of the parameters can be left with their default values. Click **Apply**.



### 6.4. Start Data Collection

In the main **Data Collection Monitor** screen, right click on the collection monitor icon labeled **Collection** and select **Start Program**. Do the same for the switch monitor icon labeled **Node1**.



### 7. Verification

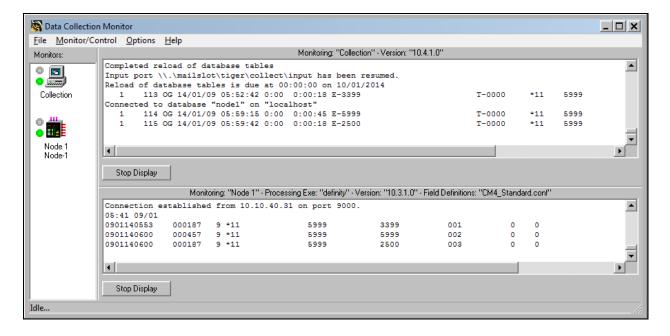
The following steps may be used to verify the configuration.

### 7.1. Verify Avaya Aura® Communication Manager CDR Link Status

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

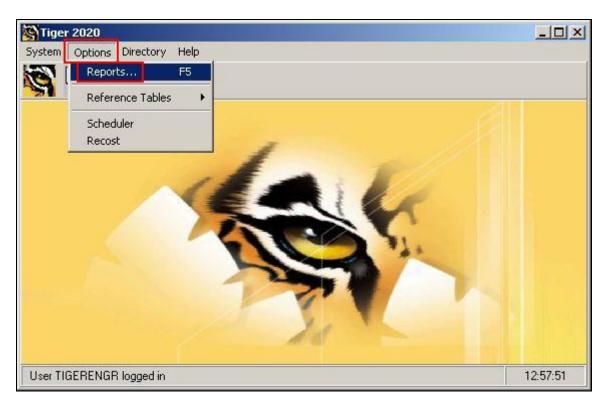
### 7.2. Verify Data Collect Monitor Status

Place a call and verify that Tiger 2020 Pro received the CDR record for the call and then processed the call. Compare the values of data fields in the CDR record with the expected values and verify that the values match as shown below. Verify that the **Collection** and **Node-1** display a green status symbol indicating they are online. Confirm that the raw data in the bottom pane is tabulated accordingly for the database in the top pane.

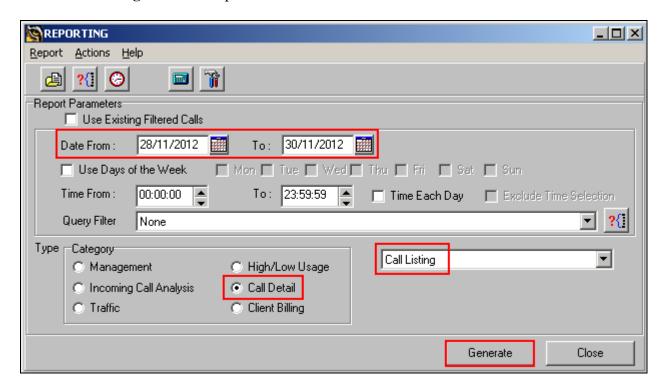


## 7.3. Verify Report/Billing Information Accuracy

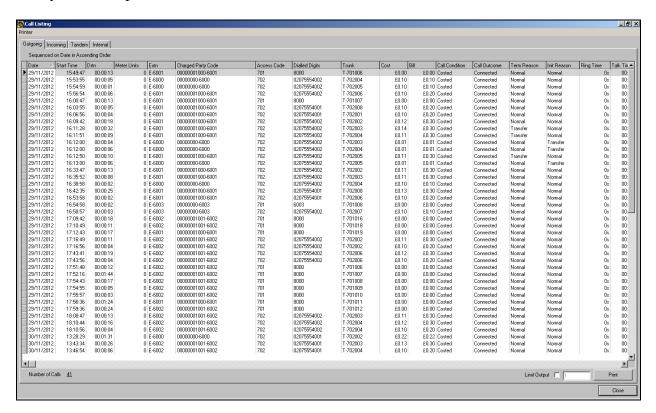
On the Tiger 2020 Pro server, click on **Start** → **Programs** → **Tiger 2020** → **Tiger 2020** which executes the tigersys.exe. Click **System** → **Login** and enter the appropriate user name and password (not shown). On the Tiger 2020 screen tool bar, click **Options** → **Reports**.



On the **REPORTING** screen, select date and time range, press the **Call Detail** radio button and select **Call Listing** from the drop down list. Click on the **Generate** button.



Verify that the report shown is indicative of the actual call traffic.



## 8. Conclusion

These Application Notes describe the required configuration steps for Avaya Aura® Communication Manager R6.3 and the Tiger Communications 2020 Pro v5.3.1 to collect Call Detail records from Avaya Aura® Communication Manager. All test cases completed successfully with the observations and exceptions noted in **Section 2.2**.

### 9. Additional References

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

Avaya product documentation can be found at <a href="http://support.avaya.com">http://support.avaya.com</a>.

- Administering Avaya Aura® Communication Manager, Release 6.3, 03-300509
- Administering Avaya Aura® Session Manager, Release 6.3, 03-603324

Tiger 2020 Pro Product information is available from <a href="http://www.tigercomms.com">http://www.tigercomms.com</a>

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