Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura ® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2 with Tiger Communications 2020 Pro 5.3 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Tiger Communications 2020 Pro 5.3 to interoperate with Avaya Aura® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2. Tiger Communications 2020 Pro 5.3 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

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1. Introduction

These Application Notes describe the compliance-tested configuration using Tiger Communications 2020 Pro 5.3 with Avaya Aura® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2. 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 intra-switch 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.

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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.

- Tiger 2020 Pro was able to resume collecting CDR records after failure, but not for CDR for calls that were placed during the outages between the Communication Manager and Tiger 2020 Pro as only the standard CDR link was used as the Communication Manager Reliable Session Protocol is not supported.
- 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 where the calls goes to the voicemail of endpoint B reports as one call B – Voicemail. The same call from SIP endpoints reports as two call records A-B and A-Voicemail
- 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.
- A call from SIP endpoint A to SIP endpoint B which is then supervised transferred by endpoint B to the PSTN reports as two calls, both of which are B-PSTN. This is incorrect and would result in billing one call against the incorrect extension twice.
- A call from H323 endpoint A to H323 endpoint B where H323 endpoint B is unconditionally forwarded to the PSTN reports as B–PSTN call, which is correct. The same call with SIP endpoints reports as A-PSTN, in which case A would be billed wrongly.
- 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 against A but no call leg against B.

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.

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3. Reference Configuration

An Avaya S8800 Server running Avaya Aura® Communication Manager R6.2 serving H323 endpoints with an Avaya G450 Media Gateway was configured along with Avaya Aura® Session Manager R6.2 hosted on an Avaya S8800 Server providing SIP endpoints. Tiger Communications 2020 Pro was configured on the same IP network for the transfer of CDR data Avaya Aura® Communication Manager.

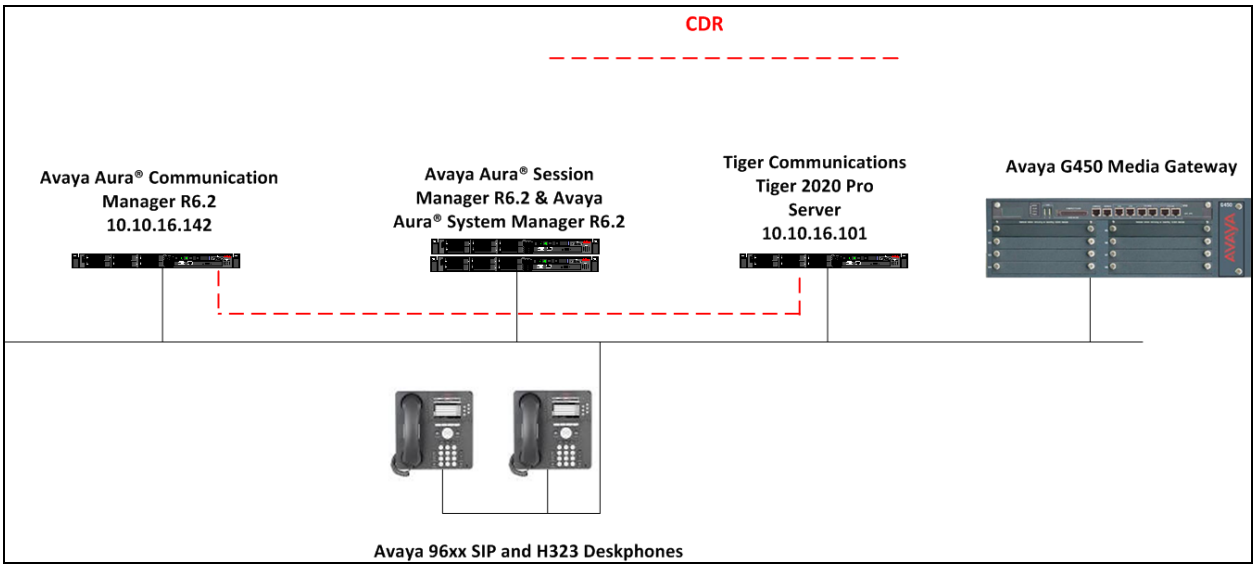

Figure 1: Avaya Aura® Communication and Avaya Aura® Session Manager with Tiger Communications 2020 Pro Solution

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on Avaya S8800 Server	R6.2 SP3 build R016x.02.0.823.0-20001
Avaya Aura® Session Manager running on Avaya S8800 Server	R6.2 SP3
Avaya Aura® System Manager running on Avaya S8800 Server	R6.2 SP4
Avaya 9630 IP Deskphone	• H323 S3.105S • SIP 2.6.8.4
Tiger Communications 2020 Pro running on Generic Server	V5.3.0.0 • Definity.exe Version: 10.2.1.0 • Collection.exe Version: 10.2.1.0

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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   1 of   2
                                  IP NODE NAMES
    Name                  IP Address
aesserver62             10.10.16.96
clan                    10.10.16.31
cmm                     10.10.16.142
cms                     10.10.16.175
default                 0.0.0.0
devconiq52all           10.10.16.125
gateway                 10.10.16.1
medprotn2302            10.10.16.32
procr                   10.10.16.142
procr6                  ::
sm62sigint              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-services                                            Page   1 of   4

                                  IP SERVICES
 Service      Enabled     Local          Local       Remote       Remote
   Type                   Node           Port        Node         Port
AESVCS         y          procr          8765
PMS                       procr          0           tiger        5004
CDR1                      procr          0           tiger        9000
```


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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-services                                              Page   3 of   4

                                SESSION LAYER TIMERS
  Service      Reliable  Packet Resp   Session Connect  SPDU  Connectivity
   Type        Protocol      Timer       Message Cntr    Cntr     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                                    Page   1 of   2
                            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 Enhanced Formats? n     Condition Code 'T' For Redirected Calls? n
      Use Legacy CDR Formats? n                Remove # From Called Number? n
Modified Circuit ID Display? n                             Intra-switch CDR? y
                 Record Outgoing Calls Only? n    Outg Trk Call Splitting? y
  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: 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                 Inc Attd Call Record? n
  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
```


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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. Confirm that the **Record length** matches as expected by Tiger 2020 Pro. Refer to **Section 6.2** for specific information.

```
display 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:                   -
 2: time              - 4   18: attd-console     - 4   34:                   -
 3: space             - 2   19: bcc              - 1   35:                   -
 4: space             - 2   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           - 1   42:                   -
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           - 11  30:                  -     46:                   -
15: ppm               - 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-cdr                                        Page   1 of   3
                            INTRA-SWITCH CDR

                               Assigned Members:   5    of 5000   administered
   Extension          Extension          Extension          Extension
   5000
   6000
   6001
   6002
   6003
```


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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 Number: 1                     Group Type: sip           CDR Reports: y
  Group Name: TRUNK TO SM62               COR: 1        TN: 1        TAC: 701
   Direction: two-way        Outgoing Display? y
 Dial Access? n                                    Night Service:
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                  Page   1 of   1



                                    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
```


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6. Configure Tiger Communications 2020 Pro

The configuration information provided in this section describes the steps required to set up 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]
```


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```
Name=D:\tig2020\Network\SwitchConf\Definity\CM4_Standard.conf
```


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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]
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
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
#           1
# 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
```


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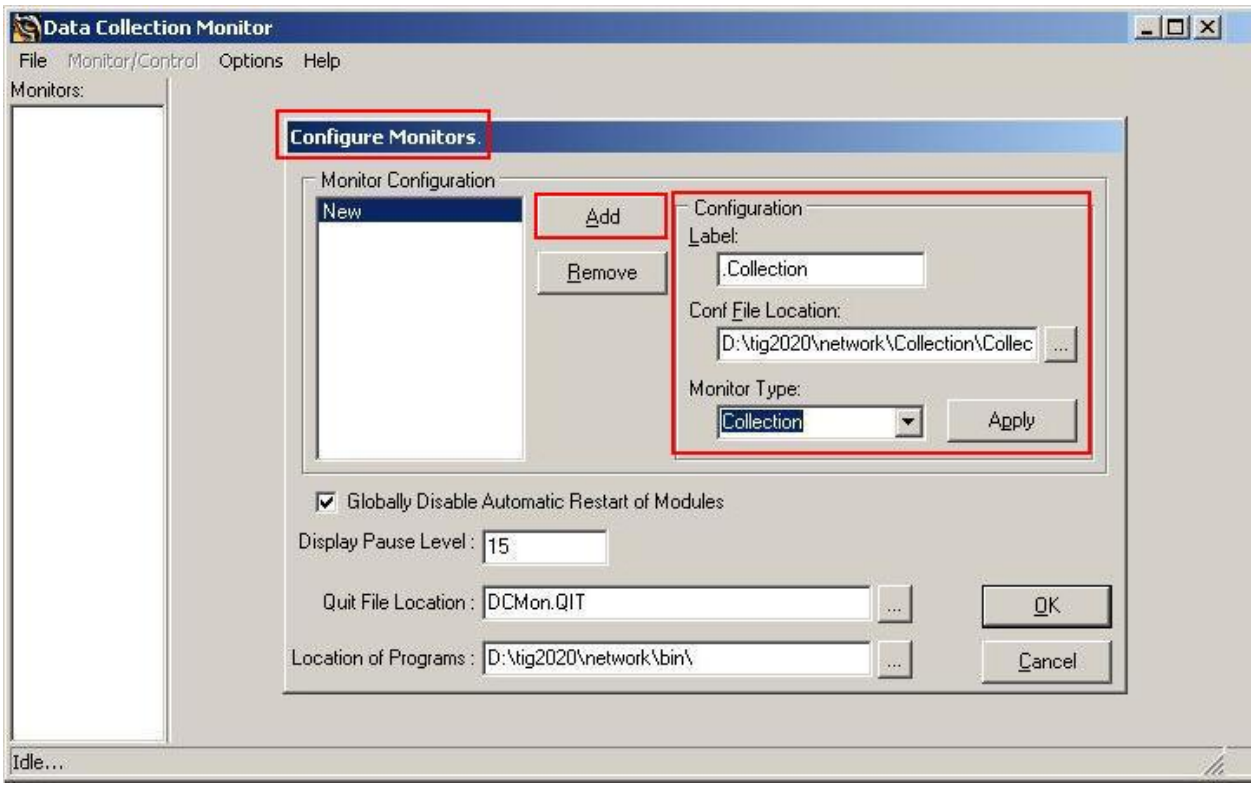
6.3. Configure Data Collection

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. On the main Data Collection Monitor screen toolbar, click on **Options → 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**.



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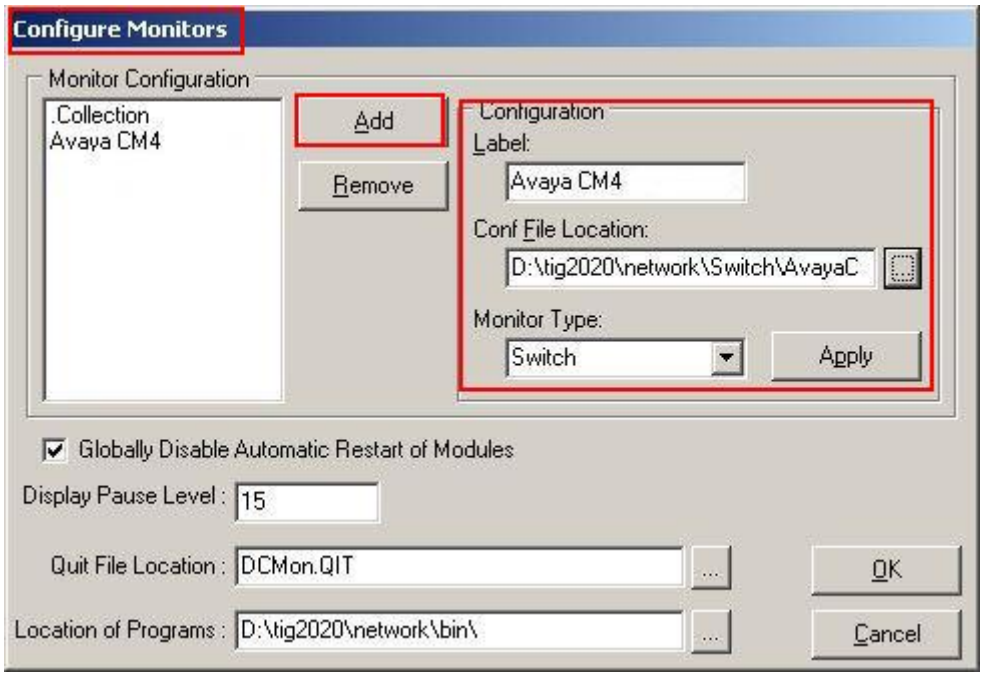
Click on the **Add** button. In the **Label** field enter a descriptive name for the switch monitor type. In the **Conf File Location** field enter or browse to the location of the **AvayaCM.conf** file shown in **Section 6.1**. The **AvayaCM.conf** file for this compliance testing was located at D**:\tig2020\network\Switch\AvayaCM**. 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**



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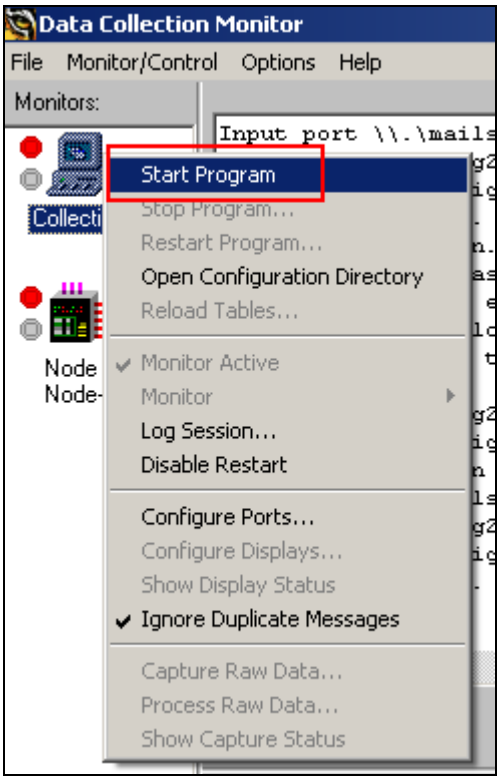
6.4. Start Data Collection

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**.



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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**.

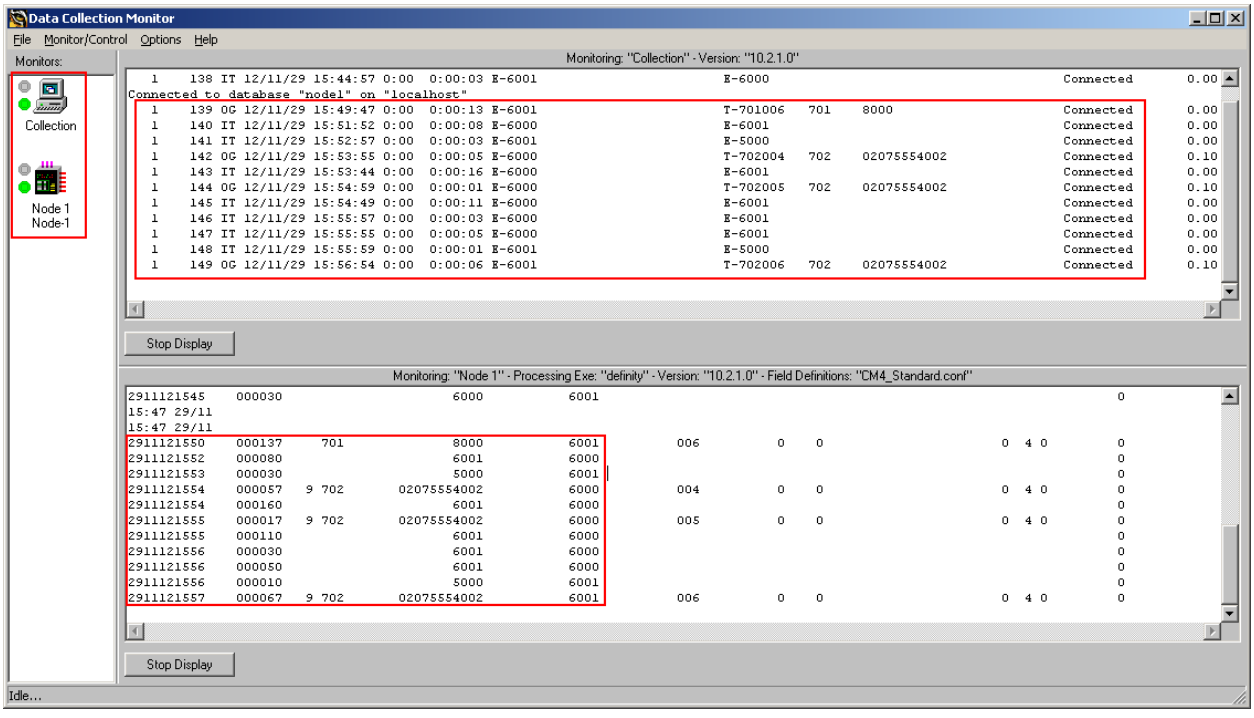
```
status cdr-link
                                CDR LINK STATUS
                    Primary                         Secondary

       Link State: up                               CDR not administered

      Date & Time: 2012/12/01 16:24:10              0000/00/00 00:00:00
  Forward Seq. No: 0                                0
 Backward Seq. No: 0                                0
CDR Buffer % Full:   0.00                             0.00
      Reason Code: OK
```

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.



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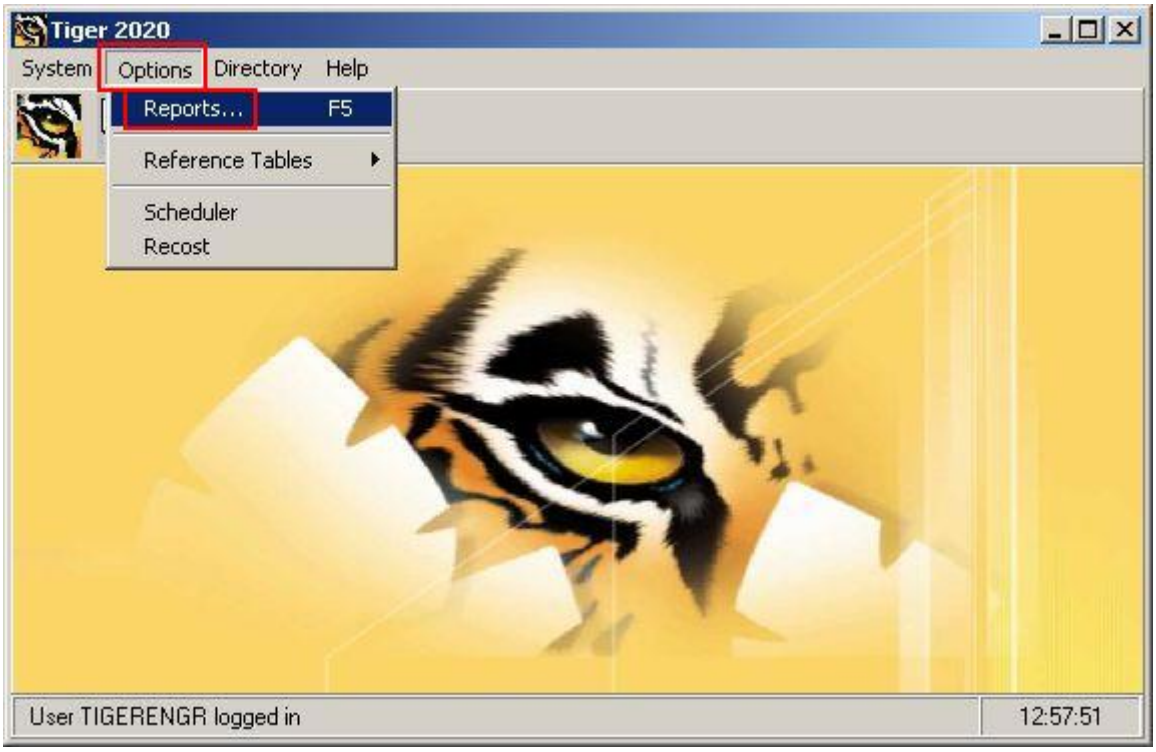
7.3. Verify Report/Billing Information Accuracy

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**.



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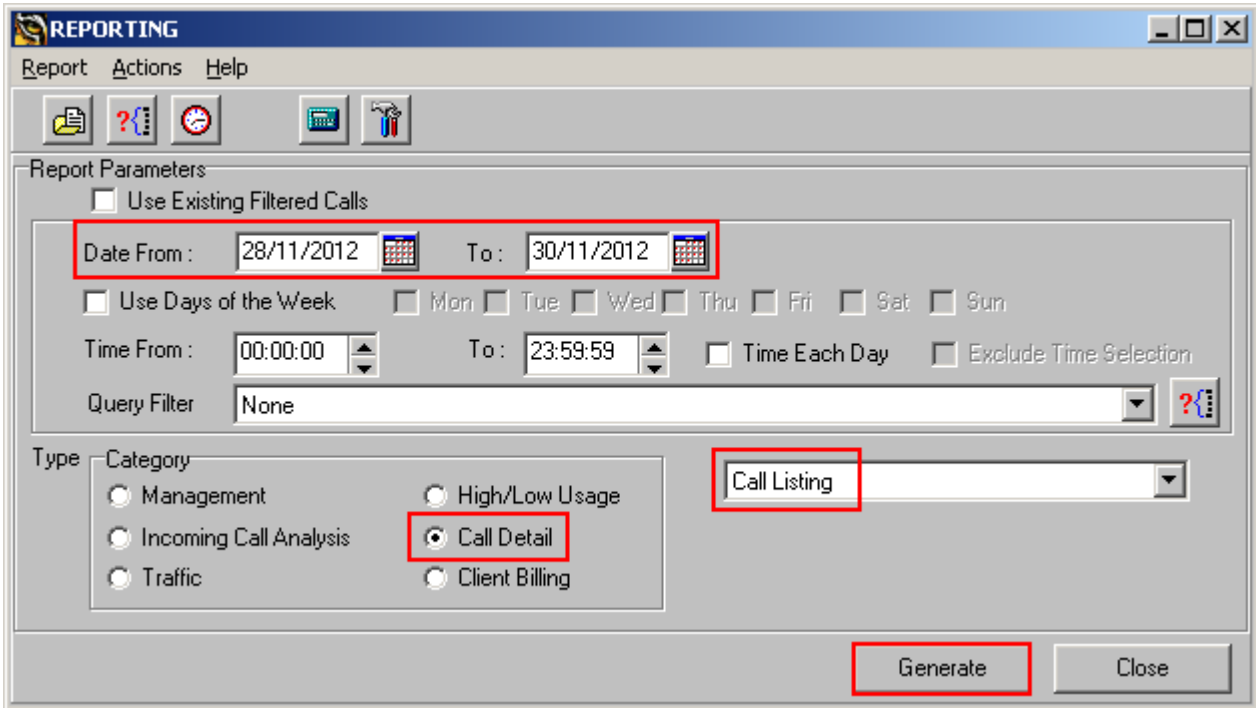
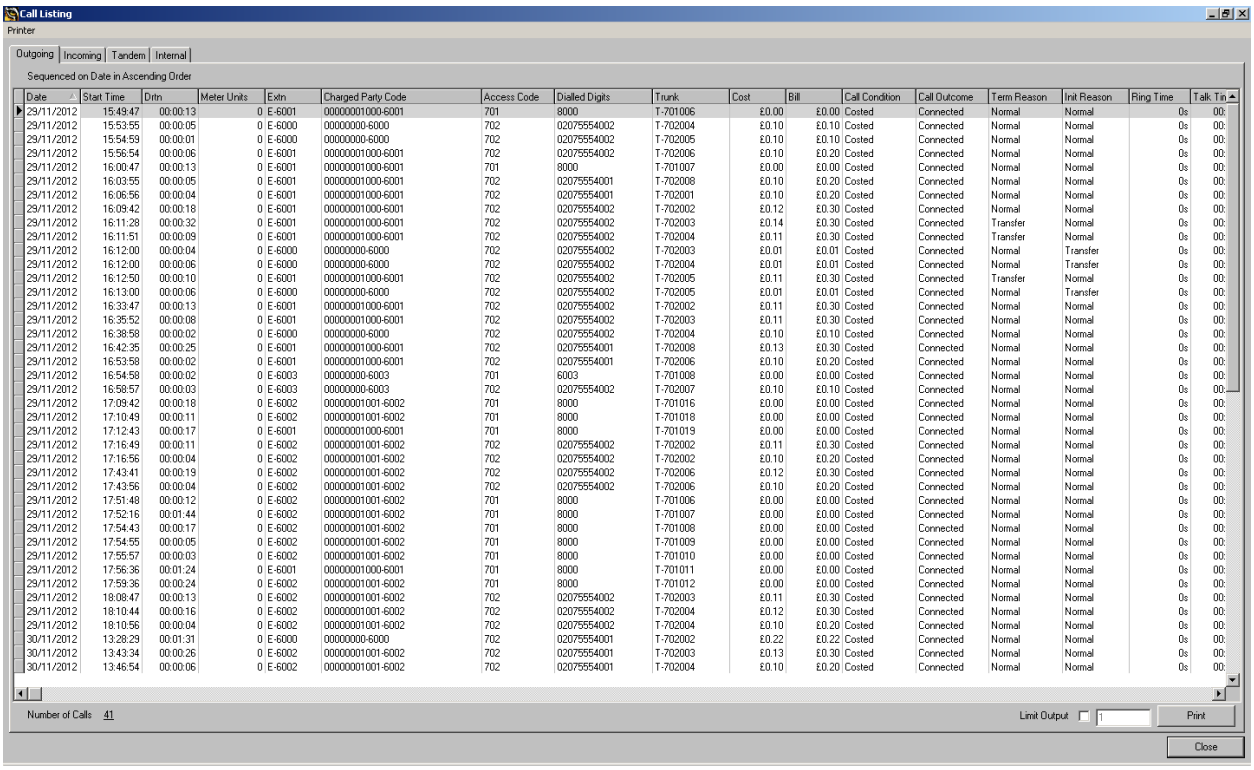
On the **REPORTING** screen, select date and time range, press the **Call Detail** radio button and select **Call Listing** from the drop down list. Click on the **Generate** button.



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



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8. Conclusion

These Application Notes describe the required configuration steps for Avaya Aura® Communication Manager and the Tiger Communications 2020 Pro 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 http://support.avaya.com.

- *Administering Avaya Aura® Communication Manager, Release 6.2, 03-300509, Issue 7.0 December 2012*
- *Administering Avaya Aura® Session Manager, Release 6.2, 03-603324, July 2012*

Tiger 2020 Pro Product information is available from http://www.tigercomms.com

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