



Application Notes for Configuring Microcall Call Accounting with Avaya Aura® Communication Manager – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Microcall call accounting to interoperate with Avaya Aura® Communication Manager.

Microcall call accounting is a reporting solution that uses Avaya Reliable Session Protocol (RSP) to collect and process call detail recording from Avaya endpoints and produce detailed reports.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any 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

The overall objective of this interoperability compliance testing is to verify that Microcall call accounting software can interoperate with Avaya Aura® Communication Manager. Microcall call accounting connects to Communication Manager over the local or wide area network using a Call Detail Recording (hereafter referred as CDR) link running on Reliable Session Protocol. Avaya Aura® Communication Manager is configured to send CDR records to Microcall using a specific port.

Microcall provides traditional call collection, rating, and reporting for any size businesses. Microcall can interface with most telephone systems - in particular, with Avaya Aura® Communication Manager - to collect and interpret the detailed records of inbound, outbound, tandem, and internal telephone calls. Microcall then calculates the appropriate charge for local, long distance, international & special calls and allocates them to responsible parties.

During the compliance test, SIP endpoints were included. SIP endpoints registered with Avaya Aura® Session Manager. An assumption is made that Avaya Aura® Session Manager and Avaya Aura® System Manager are already installed and basic configuration have been performed. Only steps relevant to this compliance test will be described in this document.

2. General Test Approach and Test Results

The general test approach was to manually place intra-switch calls, inbound trunk and outbound trunk calls, transfer, conference, and verify that Microcall collects the CDR records, and properly classifies and reports the attributes of the call.

For serviceability testing, physical and logical links were disabled/re-enabled, Avaya Servers were reset, and Microcall connection and its server was restarted.

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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and the Microcall did not include use of any specific encryption features as requested by Microcall.

Encryption (TLS/SRTP) was used internal to the enterprise between Avaya products.

2.1. Interoperability Compliance Testing

The interoperability compliance testing included features and serviceability tests. The feature testing focused on verifying the proper parsing and displaying of CDR data by Microcall for call scenarios including internal, inbound PSTN, outbound PSTN, hold, reconnect, transfer, conference, authorization code, account codes and CDR data on survivable remote server in event of main Communication Manager disconnected. The verification included raw CDR data that sent to Avaya Reliable Data Transport Tool (RTTD) application used to compare with Microcall reports that were processed and generated from the received CDR data.

The serviceability testing focused on verifying the ability of Microcall to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to Microcall.

2.2. Test Results

All executed test cases were verified and passed.

2.3. Support

Technical support on Microcall - Call Accounting Software can be obtained through the following:

- Phone: +1 (800) 622-2285
- Email: information@microcall.com
- Web: <https://www.microcall.com>

3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of Site 1 that includes Avaya Aura® System Manager, Avaya Aura® Session Manager, Avaya Aura® Communication Manager, Local Survivable Processor and Avaya Aura® Media Server running on Virtualized Environment, Avaya G450 Media Gateway that has PRI/T1 trunk to PSTN, Microcall Call Accounting server. Avaya IP Office Server Edition running on Virtualized Environment on the Site 2, Session Manager terminates SIP trunks from both sides.

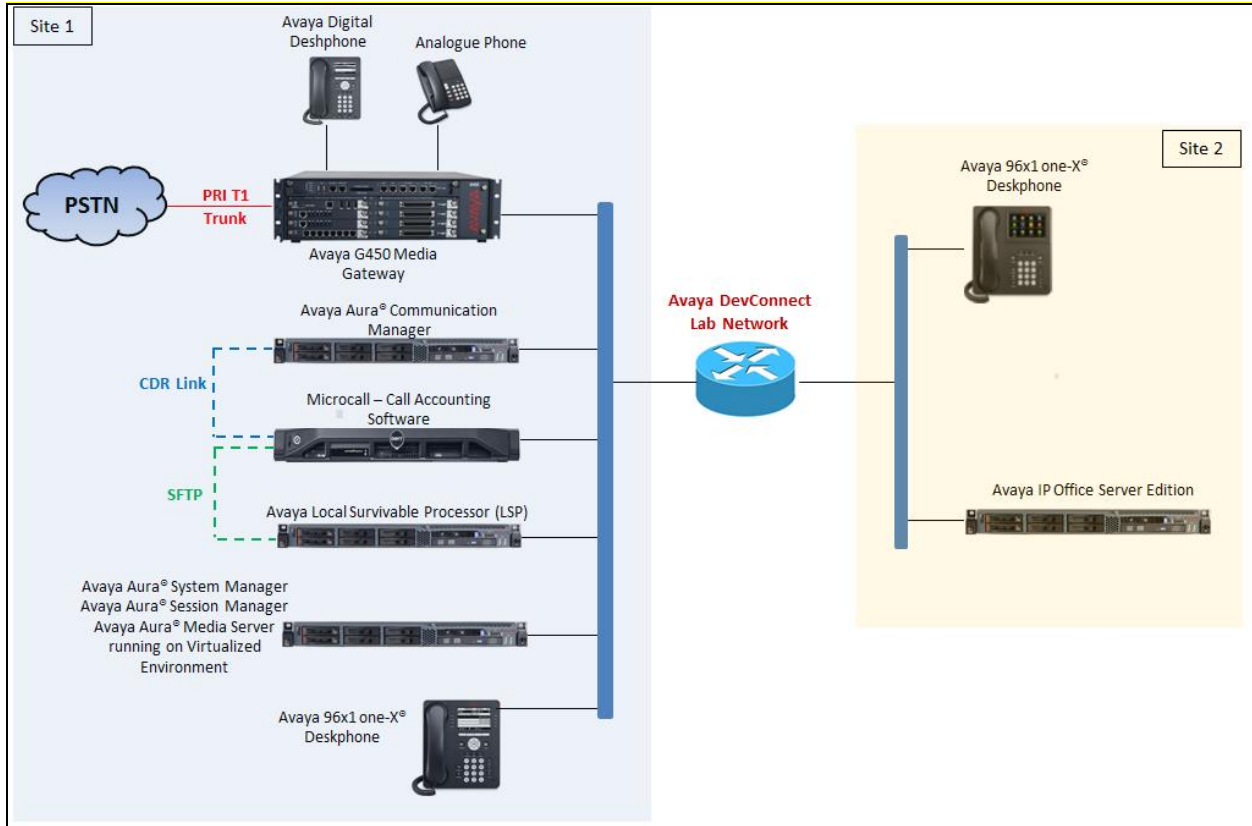


Figure 1: Test Configuration Diagram

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 Virtualized Environment	8.0 R018x.00.0.822.0 Patch 24826
Avaya Aura® System Manager running on Virtualized Environment	8.0 Build 8.0.0.0.931077
Avaya Aura® Session Manager running on Virtualized Environment	8.0 Build 8.0.0.0.800035
Avaya Aura® Media Server running on Virtualized Environment	8.0.0.150
Avaya G450 Media Gateway <ul style="list-style-type: none">• MGP	40.10.0
Avaya 96x1 IP Deskphones	H.323 6.6604 SIP 7.1.3
Avaya 1416 Digital Deskphone	FW1
Microcall – Call Accounting Software	6.2

5. Configure Avaya Aura® Communication Manager

This section describes the procedure for configuring call detail recording (CDR) in Communication Manager. These steps are performed through the System Access Terminal (SAT). Communication Manager will be configured to generate CDR records using RSP over TCP/IP to the IP address of the server running Microcall call accounting software.

5.1. Configure Node-Names IP

Use the **change node-names ip** command to create a new node name, for example, **Microcall**. This node name is associated with the **IP Address** of the server running the Microcall application. Also, take note of the node name – “procr”. It will be used in the next step. The “procr” entry on this form was previously administered.

```
change node-names ip                                     Page 1 of 2
```

IP NODE NAMES	
Name	IP Address
AMS1	10.33.1.30
CMS18	10.33.1.20
RDTT	10.10.98.86
Microcall	10.10.97.59
default	0.0.0.0
lsp	10.33.1.17
procr	10.33.1.6
procr6	::

5.2. Configure IP Services

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

- **Service Type: CDR1** - If needed, a secondary link can be defined by setting Service Type to CDR2.
- **Local Node: procr**.
- **Local Port: 0** - The local Port is fixed to 0 because Avaya Communication Manager initiates the CDR link.
- **Remote Node: Microcall** - The Remote Node is set to the node name previously defined.
- **Remote Port: 9000** - The Remote Port may be set to a value between 5000 and 64500 inclusive and must match the port configured in the Microcall application.

```
change ip-services                                     Page 1 of 4
```

IP SERVICES					
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port
AESVCS	y	procr	8765		
CDR1		procr	0	Microcall	9000
CDR2		procr	0	RDTT	9001

On **Page 3** of the ip-services form, enable the Reliable Session Protocol for the primary CDR link that is configured for Microcall by setting the **Reliable Protocol** field to “y”

change ip-services						Page 3 of 4
Service Type	Reliable Protocol	SESSION LAYER TIMERS				
		Packet Resp Timer	Session Connect Message Cntr	SPDU Cntr	Connectivity Timer	
CDR1	y	30	3	3	60	
CDR2	y	30	3	3	60	

5.3. Configure System Parameters CDR

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 Date Format:** “month/day”
- **Primary Output Format:** “expanded”
- **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 [2] for a full explanation of each field. The test configuration used some of the more common fields described below.

- **Enable CDR Storage on Disk?** Set to “y”, this field must be enabled so that CDR data can be saved into a file in the local survivable processor when the main Communication Manager becomes inactive
- **Use Legacy CDR Formats?** Set to “n” - Allows CDR formats to use 4.x CDR formats. If the field is set to “y”, then CDR formats utilize the 3.x CDR formats
- **Intra-switch CDR** set to “y” - Allows call records for internal calls involving specific stations. Those stations must be specified in the INTRA-SWITCH CDR form.
- **Record Outgoing Calls Only?** Set to “n” - Allows incoming trunk calls to appear in the CDR records along with the outgoing trunk calls
- **Inc Trk Call Splitting?** Set to “y” - Allows a separate call record for any portion of an incoming call that is transferred or conferenced
- **Call Account Code Length** Set to “5” - The length may be set to a value between 1 and 15. However, during the compliance test, “5” was used

```
change system-parameters cdr
                          CDR SYSTEM PARAMETERS

Node Number (Local PBX ID):                CDR Date Format: month/day
Primary Output Format: expanded             Primary Output Endpoint: CDR1
Secondary Output Format: unformatted        Secondary Output Endpoint: CDR2
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? 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? y
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: 5
Remove '+' from SIP Numbers? y

```

5.4. Configure Intra-Switch CDR

If the **Intra-switch CDR** field is set to “y” on Page 1 of the **system-parameters cdr** form, then use the **change intra-switch-cdr** command to define the extensions that will be subject to call detail records. In the Assigned Members field, enter the specific extensions whose usage will be tracked.

```

change intra-switch-cdr                                     Page 1 of 3
                                     INTRA-SWITCH CDR
Assigned Members: 15 of 5000 administered
Extension      Extension      Extension      Extension
3301
3302
3303
3401
3402
Use 'list intra-switch-cdr' to see all members, 'add intra-switch-cdr' to add
new members and 'change intra-switch-cdr <ext>' to change/remove other members

```


5.5. Configure Off-PBX-Telephone Configuration Set

SIP endpoints and off-pbx-telephone stations will be automatically created in Communication manager when SIP endpoints were created in Session Manager. However, the off-pbx-telephone configuration-set form needs to be modified in order to call records of SIP endpoint are generated correctly. Enter **change off-pbx-telephone configuration-set 1** and set **CDR for Origination** to “none” and disable the **CDR for Calls to EC500 Destination?** to “n”.

```
change off-pbx-telephone configuration-set 1                               Page 1 of 1

                                CONFIGURATION SET: 1

                                Configuration Set Description:
                                  Calling Number Style: network
                                  CDR for Origination: none
                                  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
                                  Provide Forced Local Ringback for EC500? n
                                  Apply Ringback upon Receipt of: Call-Proceeding

                                Location to Route Incoming Overlap Calls: station-location-if-set
```

5.6. Enable CDR in Trunk Group

Enter the command **change trunk-group <id>** which the <id> is the trunk number that needs to be modified. Set **CDR Report** field to “y” to enable call record for calls going in and out from this trunk group. Note that this field is set to “y” by default.

```
change trunk-group 1                                                    Page 1 of 21

                                TRUNK GROUP

                                Group Number: 1                        Group Type: sip                CDR Reports: y
                                  Group Name: For-Private                COR: 1                        TN: 1                        TAC: #01
                                  Direction: two-way                    Outgoing Display? n
                                  Dial Access? n                        Night Service:
                                Queue Length: 0
                                Service Type: tie                        Auth Code? n
                                                                Member Assignment Method: auto
                                                                Signaling Group: 1
                                                                Number of Members: 14
```

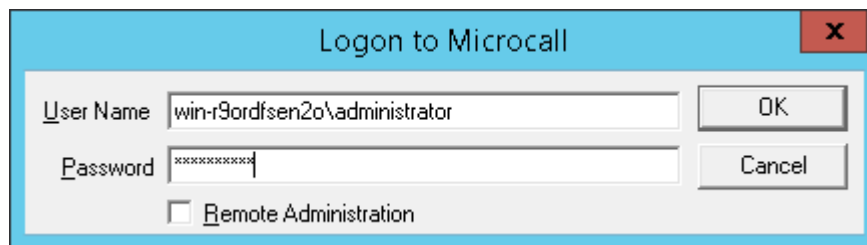
6. Configure Microcall – Call Accounting Software

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

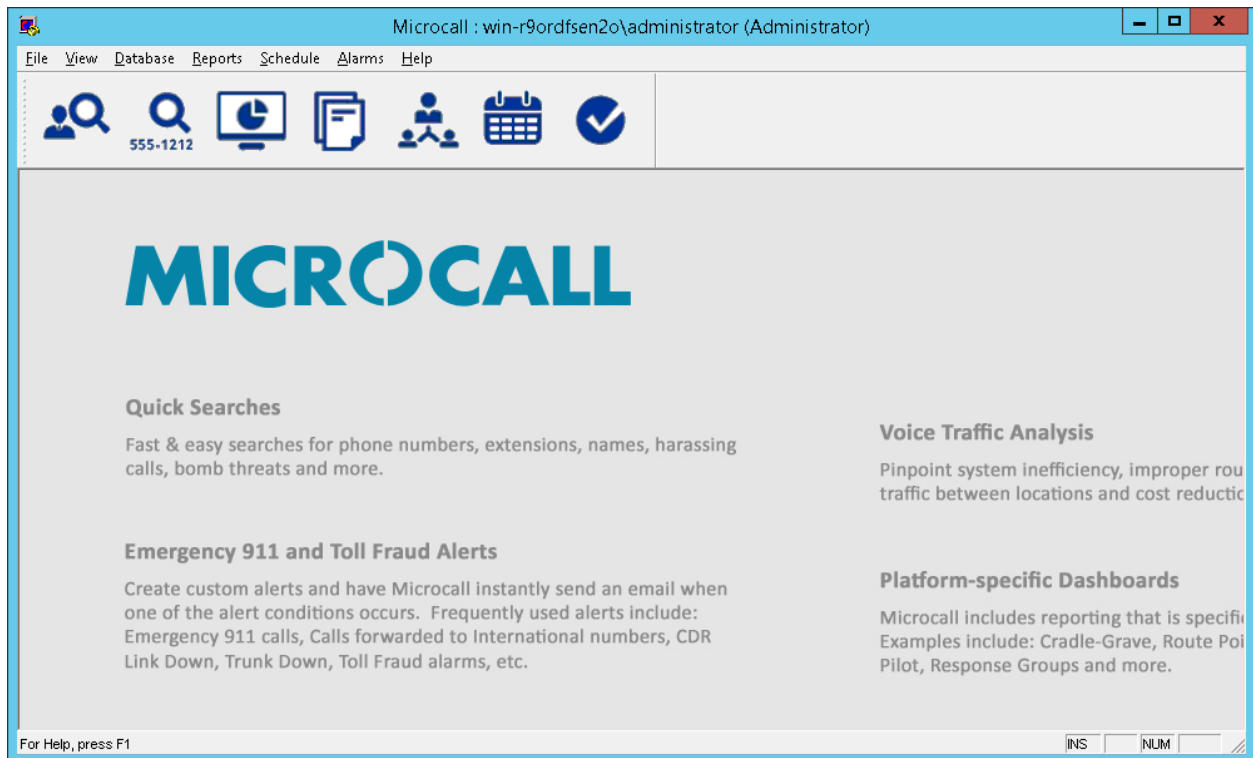
- Configure Data Source
- Verify CDR Data

6.1. Configure Data Source

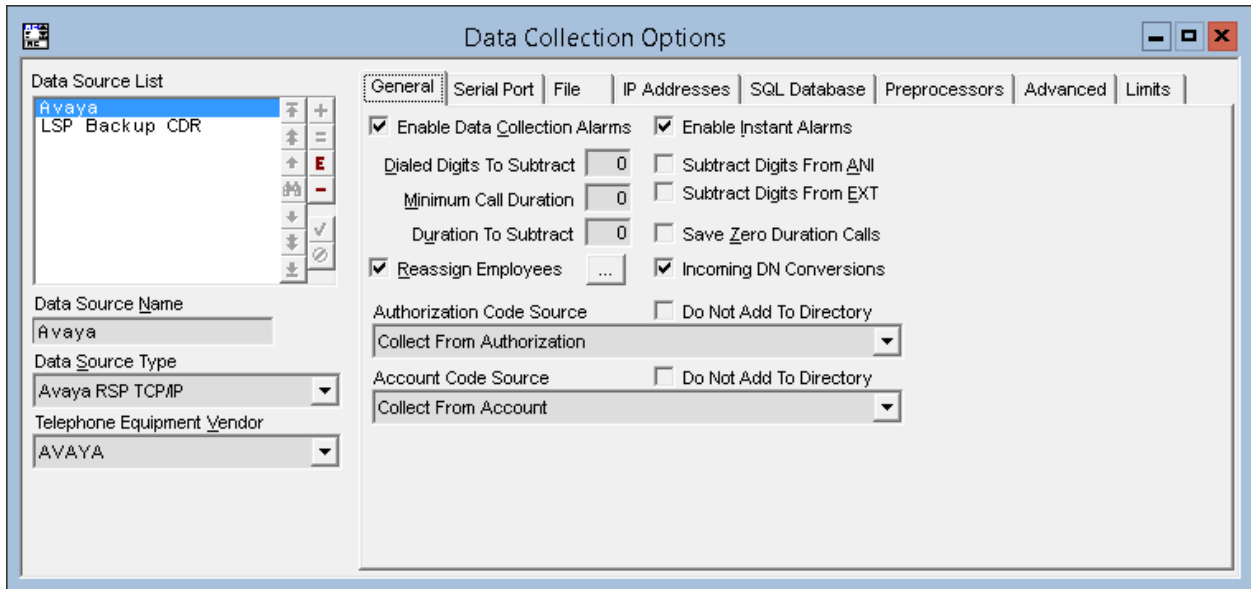
Open the Microcall application by double-click on the Microcall icon on the desktop. The **Logon to Microcall** window is displayed. Enter an appropriate password to log on.



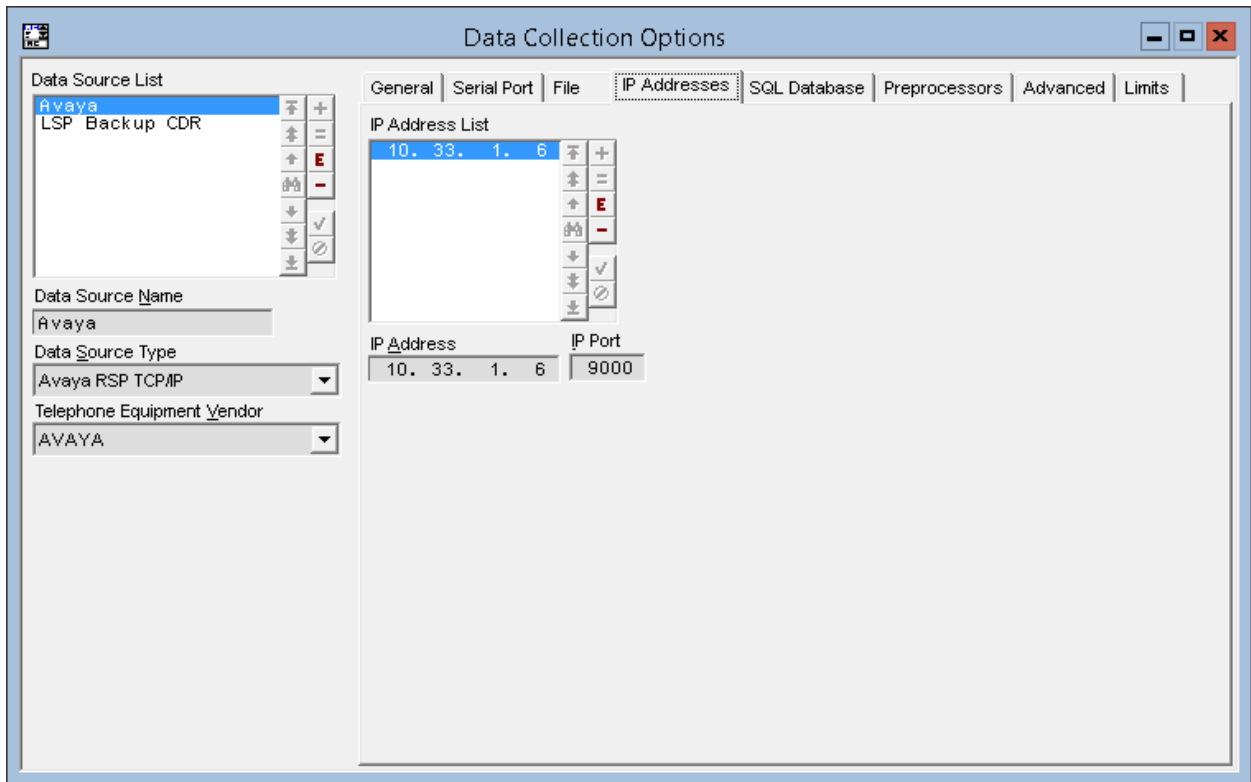
The Microcall window is displayed as shown below.



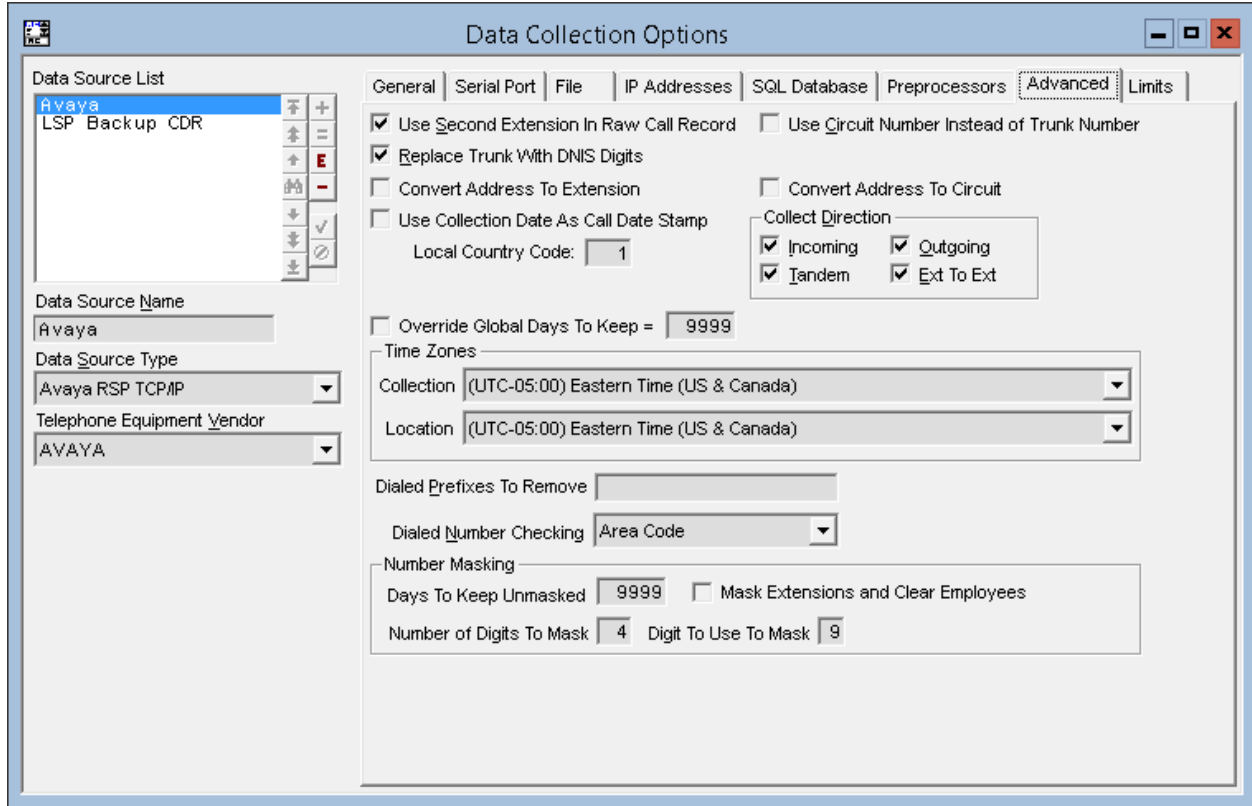
From the Microcall window above, navigate to **File → Data Collection Options → Data Source** (not shown). The **Data Collection Options** window is displayed. In the compliance test, the Data Source Name “Avaya” was created and uses Avaya RSP TCP/IP.



In the **IP Address** tab, enter the IP address **10.33.1.6** of “procr” and port **9000** as configured in **Section 5.1** in Communication Manager.



In the **Advanced** tab, select all directions in the **Collection Direction** section.



6.2. Verify CDR Data

The raw CDR data can be verified by selecting **Test Microcall** from the **View** menu, the **Test Microcall** window displays all CDR records that Microcall receives from Communication Manager CDR.

The screenshot shows the 'Test Microcall' application window with the following menu and toolbar options: File, Edit, View, Help; PRINT, FIND, SCROLL, CLEAR VIEW, RAW DATA, PROCESSED DATA, ALARMS, TEST MICROCALL.

Date/Time	Duration	Extension	Employee	Trunk	Phone Number	Place Called	Call Type	Dir	Cost\$	Call ID
0009 0006 7 9 #04 6149674303# 3303 1 002 4 0 M 0 0 10.0										
Status: RECORD ACCEPTED										
11/11/2018 00:08:24	00:00:36	3303	UNASSIGNED	4	614-967-4303	COLUMBUS	OH LOCAL	OUT	0.00	166AD2BC
Raw Data: 0010 0005 0 3403 3401 88888 1 10.0										
Status: RECORD ACCEPTED										
11/11/2018 00:09:30	00:00:30	3401	UNASSIGNED	99999999	3403		ALL OTHERS	EXT	0.00	166AD2BD
Raw Data: 0012 0013 9 3303 6149674303 1 002 0 #04 0 0 0 0 10.0										
Status: RECORD ACCEPTED										
11/11/2018 00:10:42	00:01:18	3303	UNASSIGNED	4	614-967-4303	COLUMBUS	OH INCOMING ANI	IN	0.00	166AD2BE
Raw Data: 0012 0003 7 #01 4800000 3303 1 000 4 0 M 0 0 10.0										
Status: RECORD ACCEPTED										
11/11/2018 00:11:42	00:00:18	3303	UNASSIGNED	1	480-0000	BELLEVILLE	ON LOCAL	OUT	0.00	166AD2BF
Status: DATE STAMP ACCEPTED: 11 12 = 11/12/18										


7. Verification Steps

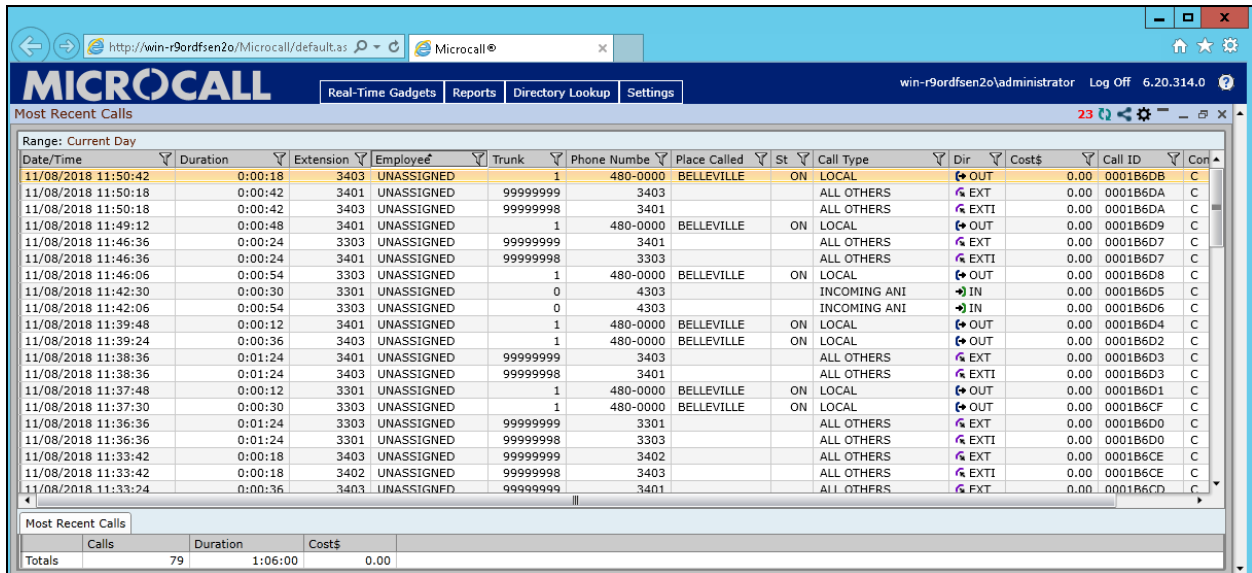
The following steps may be used to verify the configuration:

- Check the CDR status, by running the “status cdr” command in Communication Manager. The status should be **up** for the primary CDR.

```

status cdr-link
                                CDR LINK STATUS
                                Primary                Secondary
Link State: up                    up
Date & Time: 2018/10/10 12:10:56    2018/10/12 02:23:11
Forward Seq. No: 0                  62
Backward Seq. No: 0                 0
CDR Buffer % Full: 0.00              0.08
Reason Code: OK                     OK
  
```

- Make several different types of calls such as between local stations, outgoing call via SIP trunk, and incoming call via PSTN and verify that call records were collected from Microcall and shown up in the report as shown below.
- The real-time report can be launched from the main menu by selecting the screen icon  (View information in real-time and launch reports in a browser), the internet browser is opened, select **Real-Time Gadgets** → **All Call**.



Date/Time	Duration	Extension	Employee	Trunk	Phone Number	Place Called	St	Call Type	Dir	Cost\$	Call ID	Cor
11/08/2018 11:50:42	0:00:18	3403	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6DB	C
11/08/2018 11:50:18	0:00:42	3401	UNASSIGNED	99999999	3403			ALL OTHERS	EXTI	0.00	0001B6DA	C
11/08/2018 11:50:18	0:00:42	3403	UNASSIGNED	99999998	3401			ALL OTHERS	EXTI	0.00	0001B6DA	C
11/08/2018 11:49:12	0:00:48	3401	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6D9	C
11/08/2018 11:46:36	0:00:24	3303	UNASSIGNED	99999999	3401			ALL OTHERS	EXTI	0.00	0001B6D7	C
11/08/2018 11:46:36	0:00:24	3401	UNASSIGNED	99999998	3303			ALL OTHERS	EXTI	0.00	0001B6D7	C
11/08/2018 11:46:06	0:00:54	3303	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6D8	C
11/08/2018 11:42:30	0:00:30	3301	UNASSIGNED	0	4303			INCOMING ANI	IN	0.00	0001B6D5	C
11/08/2018 11:42:06	0:00:54	3303	UNASSIGNED	0	4303			INCOMING ANI	IN	0.00	0001B6D6	C
11/08/2018 11:39:48	0:00:12	3401	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6D4	C
11/08/2018 11:39:24	0:00:36	3403	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6D2	C
11/08/2018 11:38:36	0:01:24	3401	UNASSIGNED	99999999	3403			ALL OTHERS	EXTI	0.00	0001B6D3	C
11/08/2018 11:38:36	0:01:24	3403	UNASSIGNED	99999998	3401			ALL OTHERS	EXTI	0.00	0001B6D3	C
11/08/2018 11:37:48	0:00:12	3301	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6D1	C
11/08/2018 11:37:30	0:00:30	3303	UNASSIGNED	1	480-0000	BELLEVILLE	ON	LOCAL	OUT	0.00	0001B6CF	C
11/08/2018 11:36:36	0:01:24	3303	UNASSIGNED	99999999	3301			ALL OTHERS	EXTI	0.00	0001B6D0	C
11/08/2018 11:36:36	0:01:24	3301	UNASSIGNED	99999998	3303			ALL OTHERS	EXTI	0.00	0001B6D0	C
11/08/2018 11:33:42	0:00:18	3403	UNASSIGNED	99999999	3402			ALL OTHERS	EXTI	0.00	0001B6CE	C
11/08/2018 11:33:42	0:00:18	3402	UNASSIGNED	99999998	3403			ALL OTHERS	EXTI	0.00	0001B6CE	C
11/08/2018 11:33:24	0:00:36	3403	UNASSIGNED	99999999	3401			ALL OTHERS	EXTI	0.00	0001B6CD	C

Most Recent Calls	Calls	Duration	Cost\$
Totals	79	1:06:00	0.00

8. Conclusion

These Application Notes describe the procedures for configuring Microcall – Call Accounting Software with Avaya Aura® Communication Manager. Testing was successful with some observations noted in the test result section; refer to **Section 2.2** for details.

9. Additional References

This section references the Avaya and Microcall documentation that are relevant to these Application Notes. Product documentation for Avaya Aura® Communication Manager, including the following, is available at: <http://support.avaya.com/>

[1] *Administering Avaya Aura® Communication Manager*, Document 03-300509, Issue 10, Release 8.0, August 2018

[2] *Avaya Aura® Communication Manager Feature Description and Implementation*, Document 555-245-205, Issue 9.0, Release 8.0, August 2018

The Microcall – Call Accounting Software is available from Microcall website. Visit <https://www.microcall.com/>

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