Avaya Solution & Interoperability Test Lab

Application Notes for Symmetrics Contact Center Report & Analysis Suite with Avaya Call Management System – RT Socket Interface and Avaya Aura® Communication Manager – Issue 1.0

Abstract

These Application Notes describe the steps to configure for interoperability compliance testing of Symmetrics Contact Center Report & Analysis Suite in an environment which consists of Avaya Call Management System and Avaya Aura® Communication Manager. Symmetrics uses the Real Time (RT) Socket Interface provided by Avaya Call Management System to gather real time data related to call center.

Symmetrics offers reporting and analysis software applications and professional services. Symmetrics helps customers achieve their performance goals by providing reporting, analysis and information delivery software and services that turn contact center data into usable information, ensuring they can make mission critical decisions in a timely manner.

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

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the steps to configure for interoperability compliance testing of Symmetrics Contact Center Report & Analysis Suite with Avaya Call Management System (CMS) and Avaya Aura® Communication Manager.

Symmetrics offers reporting and analysis software applications and professional services. Symmetrics helps customers achieve their performance goals by providing reporting, analysis and information delivery software and services that turn contact center data into usable information, ensuring they can make mission critical decisions in a timely manner. Symmetrics receives data via RT-Socket feed. During compliance testing, call center data related to VDN and Split/Skill was sent to Symmetrics.

The RT-Socket adapter developed by Avaya Professional Services is installed on CMS. A TCP client-server model is used for the connection, with CMS being the "client", and the Symmetric server being the "server". The Symmetrics server runs a TCP "listener" process to accept data in real-time from CMS.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature test cases were performed manually. Incoming calls were generated to the monitored Split/Skill and VDN groups to enable data streams to be sent to Symmetrics.

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

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on verifying Symmetrics parsing and displaying of Split/Skill and VDN, and Agent data from CMS.

The serviceability testing focused on verifying the ability of the Symmetrics Contact Center Report & Analysis Suite's to recover from adverse conditions, such as power failures and network disconnects.

2.2. Test Results

All test cases were executed and passed.

2.3. Support

Technical support for the Symmetrics solution can be obtained by contacting Symmetrics:

- Web: http://www.symmetrics.com
- Phone number: +1 (604) 688.0882 or +1 (604) 891 5559
- URL: support@symmetrics.com

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya solution consists of a CMS, Communication Manager, Avaya G450 Media Gateway and Symmetrics Contact Center Report & Analysis Suite. The RT-Socket interface developed by Avaya Profession Services is installed on CMS.

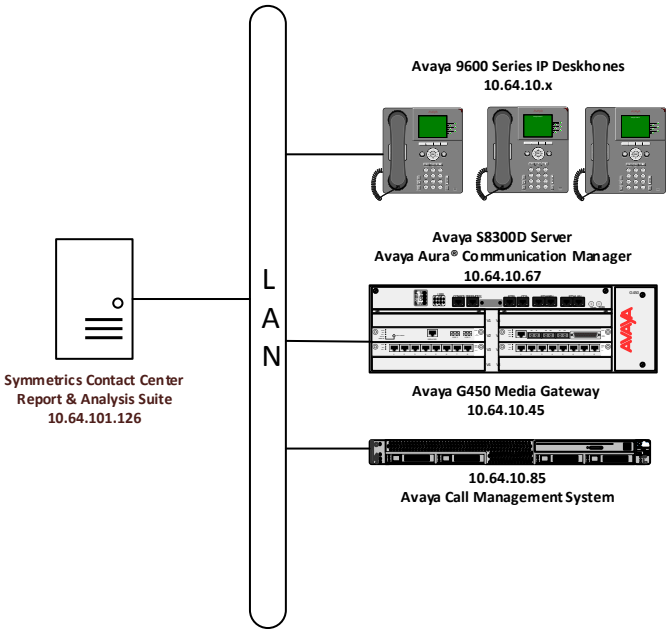


Figure 1: Test Configuration

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 S8300D Server	R6.3 SP112
Avaya Call Management System running on Sun Sparc Enterprise T5120 server	R17 SP3
Symmetrics Contact Center Report & Analysis Suite • Microsoft Windows Server 2008 • Microsoft SQL Server 2008	3.0

5. Configure Avaya Aura® Communication Manager

This section describes the steps for configuring Communication Manager for the Symmetrics Contact Center Report & Analysis Suite solution. The procedures include the following areas:

- Administer adjunct CMS release
- Configure IP node names for CMS
- Configure processor interface channel
- Configure measured Skill
- Configure Vector
- Configure measured VDN
- Configure Agents

The Communication Manager configuration was performed using the System Access Terminal (SAT).

5.1. Administer Adjunct CMS Release

Enter the **display system-parameters features** command and navigate to **Page 12**.

- Verify the **CMS (appl mis)** field, under the **REPORTING ADJUNCT RELEASE** section, is set to **R16.1/R16.x/R17.0**.

```
change system-parameters features                              Page  12 of  20
                        FEATURE-RELATED SYSTEM PARAMETERS

  AGENT AND CALL SELECTION
                          MIA Across Splits or Skills? n
                           ACW Agents Considered Idle? y
                           Call Selection Measurement: current-wait-time
    Service Level Supervisor Call Selection Override? n
                                 Auto Reserve Agents: none
       Block Hang-up by Logged-in Auto-Answer Agents? n

  CALL MANAGEMENT SYSTEM
     REPORTING ADJUNCT RELEASE (determines protocol used by appl link)
                                       CMS (appl mis): R16.1/R16.x/R17.0
                                    AAPC/IQ (appl ccr): 5.1/5.2

                                 BCMS/VuStats LoginIDs? y
                     BCMS/VuStats Measurement Interval: hour
            BCMS/VuStats Abandon Call Timer (seconds):
                       Validate BCMS/VuStats Login IDs? n
                              Clear VuStats Shift Data: on-login
                  Remove Inactive BCMS/VuStats Agents? n
```

5.2. Configure IP Node Name for CMS

Enter the **change node-names ip** command, to add an entry for CMS that will be used for connectivity.

- Enter a desired name in **Name** field for CMS, e.g. **CMS**.
- Enter CMS server's IP address in **IP Address** field, e.g. **10.64.10.85**.

```
change node-names ip                                          Page   1 of   2
                                  IP NODE NAMES
    Name                  IP Address
8730TR1                 10.64.10.74
AuraSBC-Inside          10.64.10.112
AuraSM                  10.64.21.31
CMS                     10.64.10.85
```

5.3. Configure Processor Interface Channel

Assign a new processor interface channel by entering the **change communication-interface processor-channels** command. Add an entry with the following values:

- Enable – **y**
- Appl – **mis**
- Mode – **s** for a server mode.
- Interface Link – Link number for data module Ethernet port.
- Interface Chan – TCP channel number for CMS. During the test, channel **5001** is utilized.
- Destination Node – **CMS**; Enter the node name created in previous section.
- Destination Port – **0**
- Session Local – Corresponding channel number in Proc Chan field. During the test, local session **1** is utilized.
- Session Remote – Corresponding channel number in Proc Chan field. During the test, remote session **1** is utilized.

The **Interface Chan** field contains the CMS's TCP channel number, which is defined as a part of the CMS installation. For the compliance testing, the default TCP channel number of **5001** was used.

```
change communication-interface processor-channels              Page   1 of  24
                         PROCESSOR CHANNEL ASSIGNMENT
Proc                  Gtwy      Interface         Destination      Session   Mach
Chan Enable   Appl.    To  Mode Link/Chan       Node       Port  Local/Remote ID
  1:   y    mis            s    pv4 5001  CMS             0      1     1
  2:   n                                                  0
```

5.4. Configure Measured Skill

Enter the **add hunt-group *n*** command; where ***n*** is an unused hunt group number to be measured by CMS. On **Page 1**:

- Enter a descriptive name in **Group Name**.
- Enter a valid extension in **Group Extension**.
- Set **ACD**, **Queue** and **Vector** fields to **y**.

```
add hunt-group 1                                              Page   1 of   4
                                HUNT GROUP

           Group Number: 1                                 ACD? y
             Group Name: Skill 1                         Queue? y
        Group Extension: 11001                          Vector? y
             Group Type: ucd-mia
                     TN: 1
                    COR: 1                       MM Early Answer? n
          Security Code:                   Local Agent Preference? n
 ISDN/SIP Caller Display:

            Queue Limit: unlimited
 Calls Warning Threshold:      Port:
  Time Warning Threshold:      Port:
```

On **Page 2**:

- Set **Skill** to **y**.
- Set **Measured** to **both**.

Repeat this section for all skill groups that will be monitored by CMS.

```
add hunt-group 1                                              Page   2 of   4
                                HUNT GROUP

                    Skill? y      Expected Call Handling Time (sec): 180
                      AAS? n        Service Level Target (% in sec): 80 in 20
                Measured: both
```

5.5. Configure Vector

Enter the **change vector *n*** command; where ***n*** is an available vector number. On **Page** 1:

- Enter a descriptive name in **Name** field.
- Program the vector to deliver calls to the hunt/skill group number.

```
change vector 1                                                Page   1 of   6
                                  CALL VECTOR

    Number: 1                Name: Call Queue
Multimedia? n      Attendant Vectoring? n    Meet-me Conf? n           Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    2   secs hearing ringback
02 queue-to     skill 1    pri m
```

5.6. Configure Measured VDN

Enter the **add vdn *n*** command; where ***n*** is an unused VDN number. On **Page 1**:

- Enter a descriptive name in **Name** field.
- Enter a vector number configured in previous step for **Destination: Vector Number** field.
- Set **Measured** field to **both**.

```
add vdn 10001                                          Page   1 of   3
                           VECTOR DIRECTORY NUMBER

                             Extension: 10001
                                 Name*: VDN 1 - Incoming Vector
                           Destination: Vector Number        1
                    Attendant Vectoring? n
                   Meet-me Conferencing? n
                     Allow VDN Override? n
                                   COR: 1
                                   TN*: 1
                              Measured: both
        Acceptable Service Level (sec): 20

        VDN of Origin Annc. Extension*:
                            1st Skill*:
                            2nd Skill*:
                            3rd Skill*:
```

6. Configure Avaya Call Management System

This section covers the configuration of CMS. Configuration for RT-Socket is performed by Avaya Professional Services and is not covered in this document.

6.1. Configure ACD for Communication Manager

Telnet or SSH into CMS, using proper credentials.

- Type in **cmssvc** command to view the **Avaya Call Management System Service Menu**.
- Select **4** for **Turn Avaya CMS on or off**.

```
BDL093562F# cmssvc


 Avaya(TM) Call Management System Services Menu

Select a command from the list below.
   1) auth_display Display feature authorizations
   2) auth_set     Authorize capabilities/capacities
   3) run_ids      Turn Informix Database on or off
   4) run_cms      Turn Avaya CMS on or off
   5) setup        Set up the initial configuration
   6) swinfo       Display switch information
   7) swsetup      Change switch information
   8) patch_inst   Install a single CMS patch from CD
   9) patch_rmv    Backout an installed CMS patch
  10) load_all     Install all CMS patches found on CD
  11) back_all     Backout all installed CMS patches from machine
Enter choice (1-11) or q to quit: 4
```

- Select **2** for **Turn off CMS but Leave IDS running**.

```
Select one of the following
  1) Turn on CMS
  2) Turn off CMS but Leave IDS running
  3) Turn off both CMS and IDS
Enter choice (1-3): 2
```

- Wait until CMS is shut down; **CMS is now off** message will be displayed when CMS is shutdown.

```
Notifying users of impending shutdown...
. . . . . .
Proceeding with cms shutdown.

*** Turning off CMS, Please wait  ***
. . . . . .

*** Cleaning up, Please wait ***

*** CMS is now off ***
```

- Type in **cmsadm** command and select **1** for **acd_create**. At each prompt type in information as follows:
    - **Enter switch name:** Type in a descriptive name.
    - **Select the model of switch for this ACD:** Select **6**.
    - For next three prompts, type **y**.
    - **Enter the local port assigned to switch:** Type **1**.
    - **Enter the remote port assigned to switch:** Type **1**.
    - **Select the transport to the switch:** Select **1**.
    - **Enter switch host name or IP Address**: Type in Communication Manager's IP Address.
    - **Enter switch TCP port number:** Set it to default.
    - For rest of the prompts leave the values at default or enter desired values.

```
BDL093562F# cmsadm


 Avaya(TM) Call Management System Administration Menu

Select a command from the list below.
   1) acd_create   Define a new ACD
   2) acd_remove   Remove all administration and data for an ACD
   3) backup       Filesystem backup
   4) pkg_install  Install a feature package
   5) pkg_remove   Remove a feature package
   6) run_pkg      Turn a feature package on or off
   7) run_ids      Turn Informix Database on or off
   8) run_cms      Turn Avaya CMS on or off
   9) passwd_age   Set password aging options
  10) dbaccess     Change Informix DB access permissions
Enter choice (1-10) or q to quit: 1

Information for ACD 3

Enter switch name (up to 20 characters): S8300_TR1

Select the model of switch for this ACD
   1) Communication Mgr 2
   2) Communication Mgr 3.0
   3) Communication Mgr 3.1
   4) Communication Mgr 4/5
   5) Communication Mgr 5.2
   6) Communication Mgr 6.x
Enter choice (1-6): 6

Is Vectoring enabled on the switch? (y/n): y

Is Expert Agent Selection enabled on the switch? (y/n): y

Does the Central Office have disconnect supervision? (y/n): (default: y) y

Enter the local port assigned to switch (1-64): 1

Enter the remote port assigned to switch (1-64): 1
```

```
Select the transport to the switch
   1) TCP/IP
Enter choice (1-1): 1

Enter switch host name or IP Address: 10.64.10.67

Enter switch TCP port number (5001-5999): (default: 5001)

Number of splits/skills (0-8000): (default: 350)

Total split/skill members, summed over all splits/skills (0-1250): (default: 1250)

Number of shifts (1-4): (default: 1)

Enter the start time for shift 1 (hh:mmXM): (default: 8:00 AM)

Enter the stop time for shift 1 (hh:mmXM): (default: 5:00 PM)

Number of agents logged into all splits/skills during shift 1 (0-1250): (default:
1250)

Number of trunk groups (0-2000): (default: 350)

Number of trunks (0-12000): (default: 1000)

Number of unmeasured facilities (0-6000): (default: 500)

Number of call work codes (1-649): (default: 649)

Enter number of vectors (0-999): (default: 350)

Enter number of VDNs (0-20000): (default: 2000)

Updating database.

Computing space requirements and dbspace availability.

ACD S8300_TR1 (3) created successfully.
```

- Type in **cmssvc** command and select **4** from the service menu.
    - Select **1** to **Turn on CMS**.

```
BDL093562F# cmssvc


 Avaya(TM) Call Management System Services Menu

Select a command from the list below.
   1) auth_display Display feature authorizations
   2) auth_set     Authorize capabilities/capacities
   3) run_ids      Turn Informix Database on or off
   4) run_cms      Turn Avaya CMS on or off
   5) setup        Set up the initial configuration
   6) swinfo       Display switch information
   7) swsetup      Change switch information
   8) patch_inst   Install a single CMS patch from CD
   9) patch_rmv    Backout an installed CMS patch
  10) load_all     Install all CMS patches found on CD
  11) back_all     Backout all installed CMS patches from machine
Enter choice (1-11) or q to quit: 4

Select one of the following
  1) Turn on CMS
  2) Turn off CMS but Leave IDS running
  3) Turn off both CMS and IDS
Enter choice (1-3): 1

Please wait for initialization
. .

*** CMS is now up  ***
```

7. Configure Symmetrics Contact Center Report & Analysis Suite

This section describes the steps for configuring for Symmetrics Contact Center Report & Analysis Suite. Symmetrics data engine processes RT streamed data through configured data collectors. Data from CMS is received, parsed, aggregated and available for reporting in real time. Configuration in this section is performed on the server running Symmetrics Contact Center Report & Analysis Suite.

By default, the data collector is running on the server. To verify the state run the following command via a shell prompt. Ensure the state is **active**.

```
$systemctl status cms_rt_collector.service -l
  Active: active (exited) since Sat 2015-12-12 09:16:48 MST;
```

Start the Tomcat server via a shell prompt.

```
$cd %NVISION_HOME%/tomcat/bin
$./startup.sh
```

Generate Profile and Tenant via a shell prompt.

```
$cd %NVISION_HOME%/cms_rt_etl/batch
$./profile_batch.sh %NVISION_HOME%/cms_rt_etl/
%NVISION_HOME%/cms_rt_etl/config/cfg_rt.xml
$./tenant_filter_batch.sh %NVISION_HOME%/cms_rt_etl/
%NVISION_HOME%/cms_rt_etl/config/cfg_rt.xml
```

Via a shell prompt, verify the **collector.properties** file contains parameters as follows:

```
$cd /symmetrics/cms_rt_collector/config
$less collector.properties
tenancy_cms_group=cms_group
tenancy_cms_group_min=group_min
tenancy_cms_group_max=group_max
tenant_cms_skill=skill
tenant_cms_vdn=vdn
tenancy_is_applied=true
collector_workers=1
server_timezone=UTC
cms_interval=30
```

Continuing from above, verify the **db.properties** file contains parameters as follows:

```
$less db.properties
host=127.0.0.1
port=27017
db=rt_cms
pool_size=1
rt_msg_current=rt_msg_current
rt_msg_previous=rt_msg_previous
rt_msg_skill=rt_msg_skill
rt_msg_vdn=rt_msg_vdn
rt_cms_tenant=rt_cms_tenant
rt_cms_profile=rt_cms_profile
ttl_expire_after_seconds_skill=86400
ttl_expire_after_seconds_vdn=86400
ttl_expire_after_seconds_agent=86400
ttl_expire_after_seconds_agent_skill=432000
ttl_expire_after_seconds_agent_cumulative=3600
rt_cfg=rt_cfg
```

Create an excel file with column attributes as shown in the table below. Once the data is entered, save it as **collector_config.xlsx** under **%NVISION_HOME%/cms_rt_etl/config/collector** folder. If the file already exists, edit the file and input the rows as needed.

Attribute	Description	Value
data_type	Data type	avaya_cms
data_src	Data source	cms_src
acd	ACD value	1
msg_type	Message type	Skill, vdn
host	Localhost	127.0.0.1
port	Collector Ports used for tcp message generation	5001,5000
status	Current status	Active, inactive

Below is an example of the file attribute values used during compliance test.

data_type	data_src	acd	msg_type	host	port	status
avaya_cms	cms_src	1	all	127.0.0.1	5000	active
avaya_cms	cms_src	1	skill	127.0.0.1	5001	active

Create an excel file with column attributes as shown in the table below. Once the data is entered, save it as **collector_config.xlsx** under **%NVISION_HOME%/cms_rt_etl/config/collector/ TWC** folder. If the file already exists, edit the file and input the rows as needed.

Attribute	Description	Value
data_src	Data source	cms_src
acd	Acd	1
cms_group	CMS group	skill,vdn,tenant
group_min	Minimum ID	1,11,31,etc
group_max	Maximum ID	15850000000 ,etc
desc	description	TWC

Below is an example of the file attribute values used during compliance test.

data_src	acd	cms_group	group_min	group_max	desc
cms_src	1	vdn	11	9	
cms_src	1	tenant	1		TWC
cms_src	1	skill	11	15	
cms_src	1	skill	31	40	

Create an excel file with column attributes as shown in the table below. Once the data is entered, save it as **profile_config.xlsx** under **%NVISION_HOME%/cms_rt_etl/config/profile** folder. If the file already exists, edit the file and input the rows as needed.

Attribute	**Description**	**Value**
Data_src	Data source	Cms_src
acd	acd	1
Profile_key	Cms group	Skill,vdn
Profile_attribute	Profile attribute	Skill_name
Profile_id	Profile ID	15850000000 ,etc
Profile_value	Profile value	Test name,etc

Below is an example of the file attribute values used during compliance test.

data_src	**acd**	**profile_key**	**profile_attribute**	**profile_id**	**profile_value**
cms_src	1	skill	skill_name	1	Cms1 Skill 1
cms_src	1	skill	skill_name	2	Skill 2
cms_src	1	skill	skill_name	3	Skill 3
cms_src	1	skill	skill_name	4	Skill 4
cms_src	1	skill	skill_name	5	Skill 5
cms_src	1	skill	skill_name	6	Skill 6
cms_src	1	skill	skill_name	7	Skill 7
cms_src	1	skill	skill_name	8	Skill 8

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, CMS and Symmetrics Contact Center Report & Analysis Suite.

8.1. Verify from Communication Manager

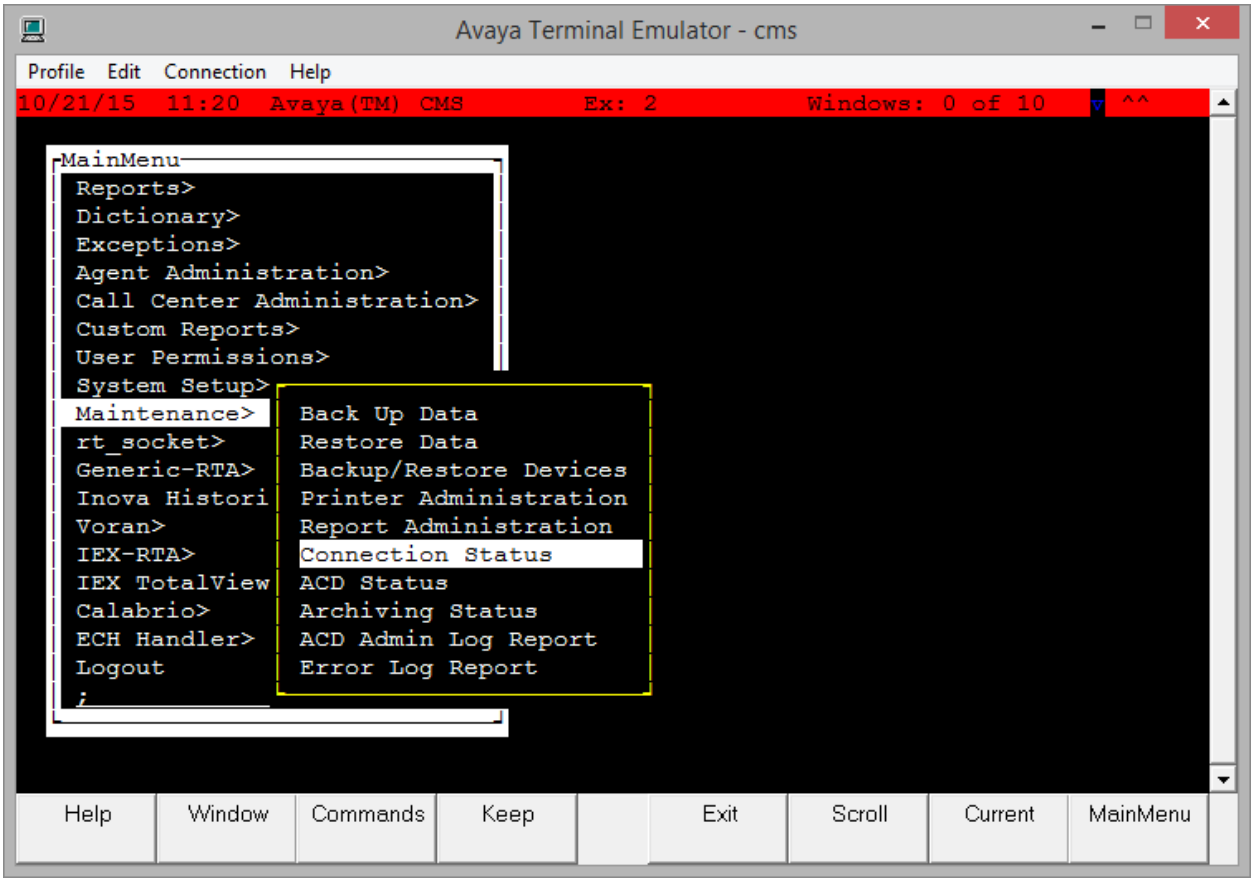
Verify the status of the processor interface channel by using the **status processor-channels n** command, where **n** is the processor channel number from **Section 5.3**. Verify that the **Session Layer Status** is **In Service**, and that the **Socket Status** is **TCP connected**, as shown below

```
status processor-channels 1
                        PROCESSOR-CHANNEL STATUS

          Channel Number: 1
    Session Layer Status: In Service
           Socket Status: TCP connected
             Link Number: pv4
               Link Type: processor ethernet
   Message Buffer Number: 0

            Last Failure: Far end sent disconnect
                      At: 10/19/14 09:32
```

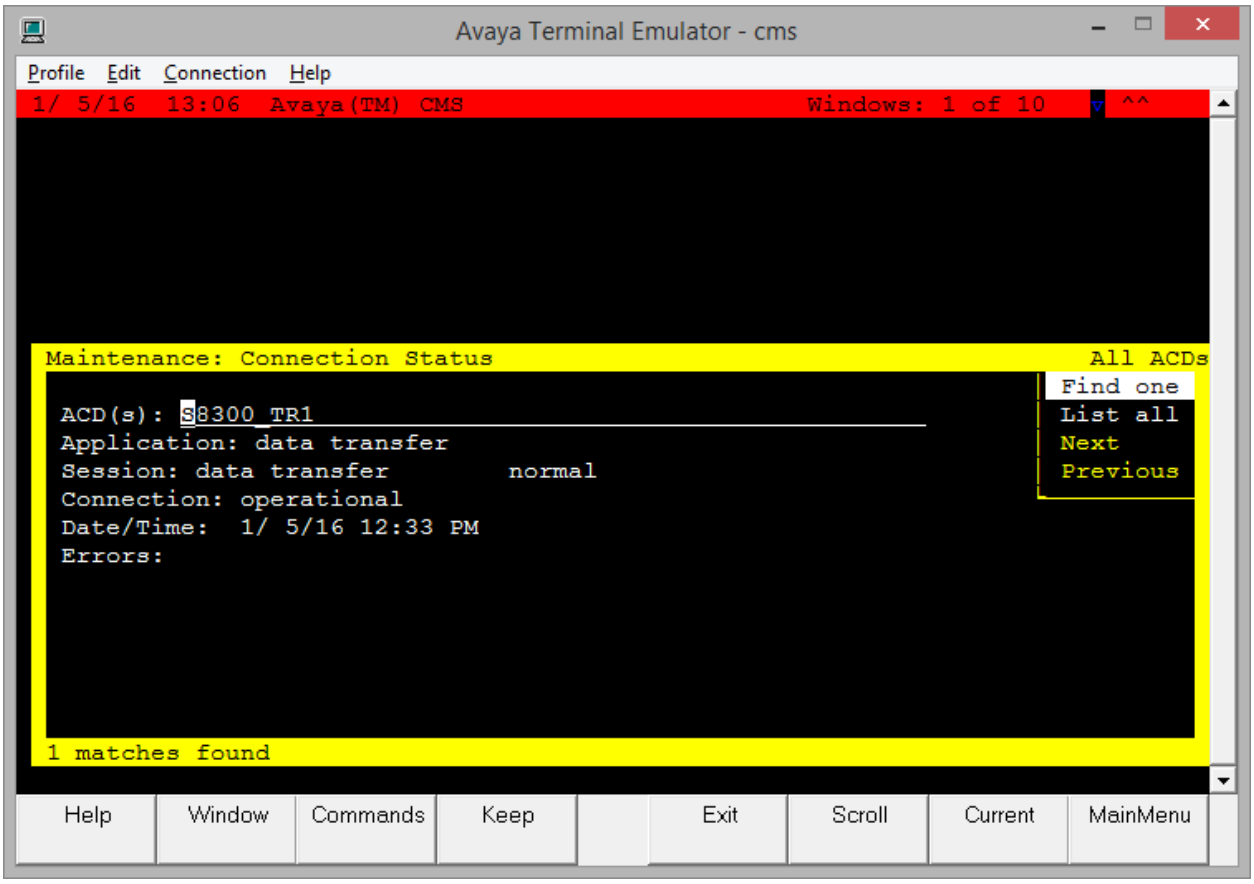
8.2. Verify from Call Management System

Connect to CMS using Avaya Terminal Emulator.

From the **MainMenu**, verify the status of the connection to Communication Manager by selecting **Maintenance → Connection Status**, as shown below.



Type in the name of **ACD**, S8300_TR1 in this case, and select **Find one**. Ensure the **Connection** is in **operational** state.



8.3. Verify Symmetrics Contact Center & Analysis Suite

Place a few ACD calls and verify that the data associated to those calls is successfully delivered to Symmetrics. Data should be available in the Symmetrics database.

9. Conclusion

These Application Notes describe the configuration steps required for Symmetrics Contact Center Report & Analysis Suite to successfully interoperate with Communication Manager using the RT-Socket interface of Call Management System. All feature test cases were completed successfully.

10. Additional References

This section references the documentation relevant to these Application Notes.

[1] *Administering Avaya Aura® Communication Manager*, August 2015, Document Number 03-300509, Release 6.3.
[2] *Avaya Call Management System Administration*, July 2015, Release 17.

Additional Avaya product documentation is available at http://support.avaya.com.
Additional Symmetrics product documentation may be found at http://www.symmetrics.com

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.