



## Avaya Solution & Interoperability Test Lab

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# Application Notes for Aceyus with Avaya Aura® Communication Manager and Avaya Call Management System using Real-Time interfaces – Issue 1.0

### Abstract

These Application Notes describe the configuration steps required to integrate Aceyus with Avaya Call Management System using Real-Time interfaces to capture ACD contact center data from Avaya Aura® Communication Manager. The Real-Time Socket (RT\_Socket) interface is used to obtain real-time data for splits/skills, Vector Directory Numbers (VDNs), and agents. The Generic Real-Time Adherence (Generic-RTA) is used to obtain real-time data for contact center agents. These interfaces are developed and provided by Avaya Professional Services.

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 configuration steps required to integrate Aceyus with Avaya Call Management System (CMS) using Real-Time interfaces to capture ACD contact center data from Avaya Aura® Communication Manager. The Real-Time Socket (RT\_Socket) interface is used to obtain real-time data for splits/skills, Vector Directory Numbers (VDNs), and agents. The Generic Real-Time Adherence (Generic-RTA) is used to obtain real-time data for contact center agents. These interfaces are developed and provided by Avaya Professional Services.

The Aceyus RT Socket and Aceyus RTA GEO are windows services that will be installed in the customer's environment to enable real-time data collection via socket feeds from one or many Avaya CMS servers. The Aceyus RT Socket service receives RT\_Socket feed and the Aceyus RTA GEO receives the Generic-RTA feed. The services are configurable to allow one or more socket feeds of different types based on the feeds that have been configured by Avaya Professional Services on the customer's CMS system. These reports will be sent on individual ports from each CMS to the Aceyus server. These services are installed and supported by the Aceyus Professional Services and support teams. The services require Microsoft .NET Framework and Microsoft Windows Server to operate and will place data in the Aceyus Data Warehouse installed in the customer's environment.

The data streams of ACD contact center real-time data are obtained by Aceyus from Avaya CMS. A TCP client-server model is used for the connection, with Avaya CMS being the "client" and Aceyus being the "server". Aceyus runs a TCP "listener" process to accept the data connection from each real-time feed from Avaya CMS. Avaya CMS can send data to Aceyus every 15 seconds (configurable).

Avaya Professional Services installs and configures the RT\_Socket and Generic-RTA interfaces on Avaya CMS, and provides the TCP port numbers associated with each RT\_Socket and Generic-RTA session to Aceyus for configuration purposes. Aceyus parses the raw data streams received and makes the data available on various output devices. The real-time data can be monitored via customized viewing models.

## 2. General Test Approach and Test Results

The feature test cases were performed manually. Incoming calls were made to the monitored ACD/Skill and VDN groups to enable data streams to be sent to Aceyus. Manual call controls and work mode changes from the Agent telephones were exercised as necessary to populate specific fields in the data streams.

The serviceability test cases were performed manually by stopping and restarting the RT\_Socket interface, and by disconnecting and reconnecting the LAN cable to the Aceyus server.

The verification of all tests included checking of proper display of real-time data at the Aceyus server, and comparing the displayed data with the real-time reports from the Avaya CMS server.

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 this DevConnect Application Note included the enablement of supported encryption capabilities in the Avaya products only (private network side). 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 this Application Note, the interface between Avaya systems and the Aceyus did not include use of any specific encryption features as requested by Aceyus.

## 2.1. Interoperability Compliance Testing

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

The serviceability testing focused on verifying the ability of Aceyus to recover from adverse conditions, such as restarting the RT\_Socket and Generic-RTA interfaces.

## 2.2. Test Results

The test objectives listed in **Section 2.1** were verified and all test cases were executed and passed.

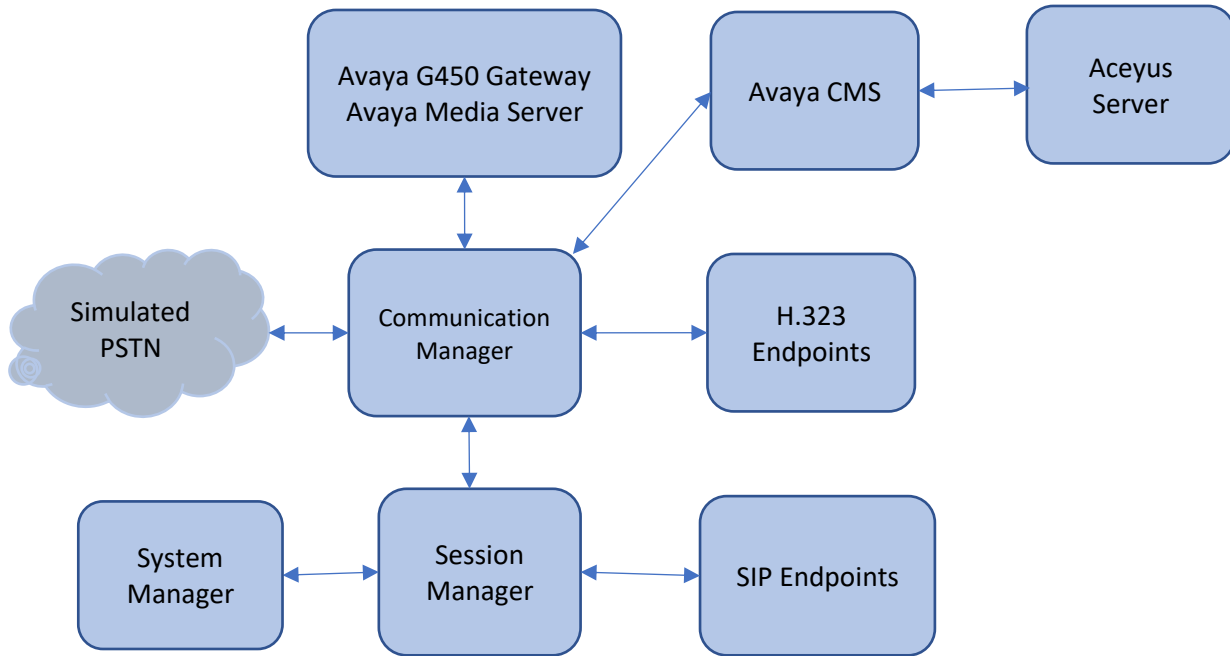
## 2.3. Support

Contact Aceyus for technical support.

- **Web:** [www.aceyus.com](http://www.aceyus.com)
- **Phone:** +1-888-222-3987
- **Email:** [support@aceyus.com](mailto:support@aceyus.com)

### 3. Reference Configuration

**Figure 1** illustrates the configuration used for compliance testing. The network consisted of Communication Manager, Avaya CMS and Aceyus server running on a virtualized environment.



**Figure 1: Network 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	8.0.1.1 SP1FP1
Avaya G450 Media Gateway MGP	40.21.0
Avaya Aura® Session Manager	8.0.1.1
Avaya Aura® System Manager	8.0.1.1
Avaya Call Management System <ul style="list-style-type: none"><li>• RT_Socket</li><li>• Generic-RTA</li></ul>	R18.1 <ul style="list-style-type: none"><li>• 4.5.7</li><li>• 6.3.5</li></ul>
Avaya 96x1 Series IP Deskphones	Various
Aceyus <ul style="list-style-type: none"><li>• Avaya RT Socket Adapter</li><li>• Avaya RTA GEO Adapter</li></ul>	<ul style="list-style-type: none"><li>• R18</li><li>• R18</li></ul>

## 5. Configure Avaya Aura® Communication Manager

This section describes the steps required for Communication Manager to support the configuration in **Figure 1**. The following pages provide step-by-step instructions on how to administer parameters specific to the Aceyus solution only. The assumption is that the appropriate license and authentication files have been installed on the servers, that login and password credentials are available and that the reader has a basic understanding of the administration of Communication Manager. It is assumed that all other connections, (e.g., to PSTN, to LAN) are configured and will not be covered in this document. The reader will need access to the System Access Terminal (SAT). For detailed information on the installation, maintenance, and configuration of Communication Manager, please refer to [1].

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

- Verify Communication Manager Options
- Administer adjunct CMS release
- Administer processor interface channel
- Administer measured VDN
- Administer measured Skill

The detailed administration of contact center devices such as ACD/Skill, VDN, Vector, and Agents are assumed to be in place. These Application Notes will only cover how to enable ACD/Skill, VDN, and Agent data to be sent to Avaya CMS.

## 5.1. Verify Avaya Aura® Communication Manager Software Options

Log into the System Access Terminal (SAT) to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the “display system-parameters customer-options” command to verify that the **G3 Version** field is set to “V18” on **Page 1**, as shown below.

```
display system-parameters customer-options                               Page 1 of 12
                                OPTIONAL FEATURES

G3 Version: V18                                                    Software Package: Enterprise
Location: 2                                                            System ID (SID): 1
Platform: 28                                                           Module ID (MID): 1

                                USED
Platform Maximum Ports: 48000    69
Maximum Stations: 36000 33
Maximum XMOBILE Stations: 36000 0
Maximum Off-PBX Telephones - EC500: 41000 0
Maximum Off-PBX Telephones - OPS: 41000 9
Maximum Off-PBX Telephones - PBFMC: 41000 0
Maximum Off-PBX Telephones - PVFMC: 41000 0
Maximum Off-PBX Telephones - SCCAN: 0 0
Maximum Survivable Processors: 313 0

(NOTE: You must logoff & login to effect the permission changes.)
```

Navigate to **Page 7**, and verify that the **Call Center Release** field is set to “8.0”, as shown below.

```
display system-parameters customer-options                               Page 7 of 12
                                CALL CENTER OPTIONAL FEATURES

                                Call Center Release: 8.0

ACD? y                                                                Reason Codes? y
BCMS (Basic)? y                                                       Service Level Maximizer? n
BCMS/VuStats Service Level? y                                         Service Observing (Basic)? y
BSR Local Treatment for IP & ISDN? y   Service Observing (Remote/By FAC)? y
Business Advocate? n                                                  Service Observing (VDNs)? y
Call Work Codes? y                                                    Timed ACW? y
DTMF Feedback Signals For VRU? y                                       Vectoring (Basic)? y
Dynamic Advocate? n                                                   Vectoring (Prompting)? y
Expert Agent Selection (EAS)? y                                         Vectoring (G3V4 Enhanced)? y
EAS-PHD? y                                                            Vectoring (3.0 Enhanced)? y
Forced ACD Calls? n                                                   Vectoring (ANI/II-Digits Routing)? y
Least Occupied Agent? y                                               Vectoring (G3V4 Advanced Routing)? y
Lookahead Interflow (LAI)? y                                          Vectoring (CINFO)? y
Multiple Call Handling (On Request)? y   Vectoring (Best Service Routing)? y
Multiple Call Handling (Forced)? y                                       Vectoring (Holidays)? y
PASTE (Display PBX Data on Phone)? y   Vectoring (Variables)? y

(NOTE: You must logoff & login to effect the permission changes.)
```

Note: Values used were specific to this Compliance Test. When integrating with other releases please use the Version information provided for that release.

## 5.2. Administer Adjunct CMS Release

Use the “change system-parameters features” command and navigate to **Page 12**. Set the **Reporting Adjunct Release** field for **CMS** to the software release of the Avaya CMS. In this case, “R18.1” is used to correspond to Avaya CMS software release R18.1.0.1.

```
change system-parameters features                               Page 12 of 19
      FEATURE-RELATED SYSTEM PARAMETERS
AGENT AND CALL SELECTION
      MIA Across Splits or Skills? n
      ACW Agents Considered Idle? y
      AUX Agents Considered Idle (MIA)? n
      AUX Agent Remains in LOA Queue? n
      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): R18.1
      AAPC/IQ (appl ccr):

      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
```



### 5.3. Administer Node Name

Add an IP Address entry in the node names forum with the “change node-names ip” command.

```
change node-names ip                                     Page 1 of 2
                                                    IP NODE NAMES
Name          IP Address
aes8          10.64.110.132
ams8          10.64.110.136
cms18       10.64.110.20
default      0.0.0.0
procr        10.64.110.131
procr6       ::
sm8          10.64.110.135
```

### 5.4. Administer Processor Interface Channel

Assign a new processor interface channel with the “change communication-interface processor-channels” command. Add an entry with the following values, and submit these changes.

- **Enable:** “y”
- **Appl.:** “mis”
- **Mode:** “s” for server mode.
- **Interface Link:** “pv4”
- **Interface Chan:** TCP channel number for Avaya CMS. In this case “5001”.
- **Destination Node:** The node name configured in previous section
- **Destination Port:** “0”
- **Session Local:** **Local Session ID** for the connection to CMS. In this case “1”
- **Session Remote:** **Remote Session ID** for the connection to CMS. In this case “1”

The **Interface Chan** field contains the Avaya CMS TCP channel number, which is defined as part of the Avaya CMS installation. For the compliance testing, the TCP channel number of “5001” was used.

```
change communication-interface processor-channels       Page 1 of 24
PROCESSOR CHANNEL ASSIGNMENT
Proc
Chan Enable  Appl.  Gtwy  Interface  Destination  Session  Mach
          To  Mode  Link/Chan  Node        Port  Local/Remote ID
1:   y   mis   s   pv4 5001  cms18   0   1  1
2:   n
```

## 5.5. Administer Measured VDN

Use the “change vdn n” command, where “n” is the extension of the VDN to be measured by Avaya CMS. Set the **Measured** field to “external” or “both” to enable measurement data on the VDN to be sent to Avaya CMS. Repeat this step for all VDNs that will be monitored by Avaya CMS.

```
change vdn 59101                                     Page 1 of 3
              VECTOR DIRECTORY NUMBER
              Extension: 59101                        Unicode Name? n
              Name*: CC Test VDN
              Destination: Vector Number             1
Attendant Vectoring? n
Meet-me Conferencing? n
Allow VDN Override? n
              COR: 1
              TN*: 1
              Measured: both      Report Adjunct Calls as ACD*? n
Acceptable Service Level (sec): 20

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

SIP URI:

* Follows VDN Override Rules
```

## 5.6. Administer Measured Skill

Use the “change hunt-group n” command, where “n” is the extension of the ACD/Skill group number to be measured by Avaya CMS. On **Page 2** set the **Measured** field to “external” or “both” to enable real-time measurement data on the ACD/Skill group and the associated agents to be sent to Avaya CMS. Repeat this step for all ACD/Skill groups that will be measured by Avaya CMS.

```
change 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
Supervisor Extension:

Controlling Adjunct: none

VuStats Objective:

Multiple Call Handling: none

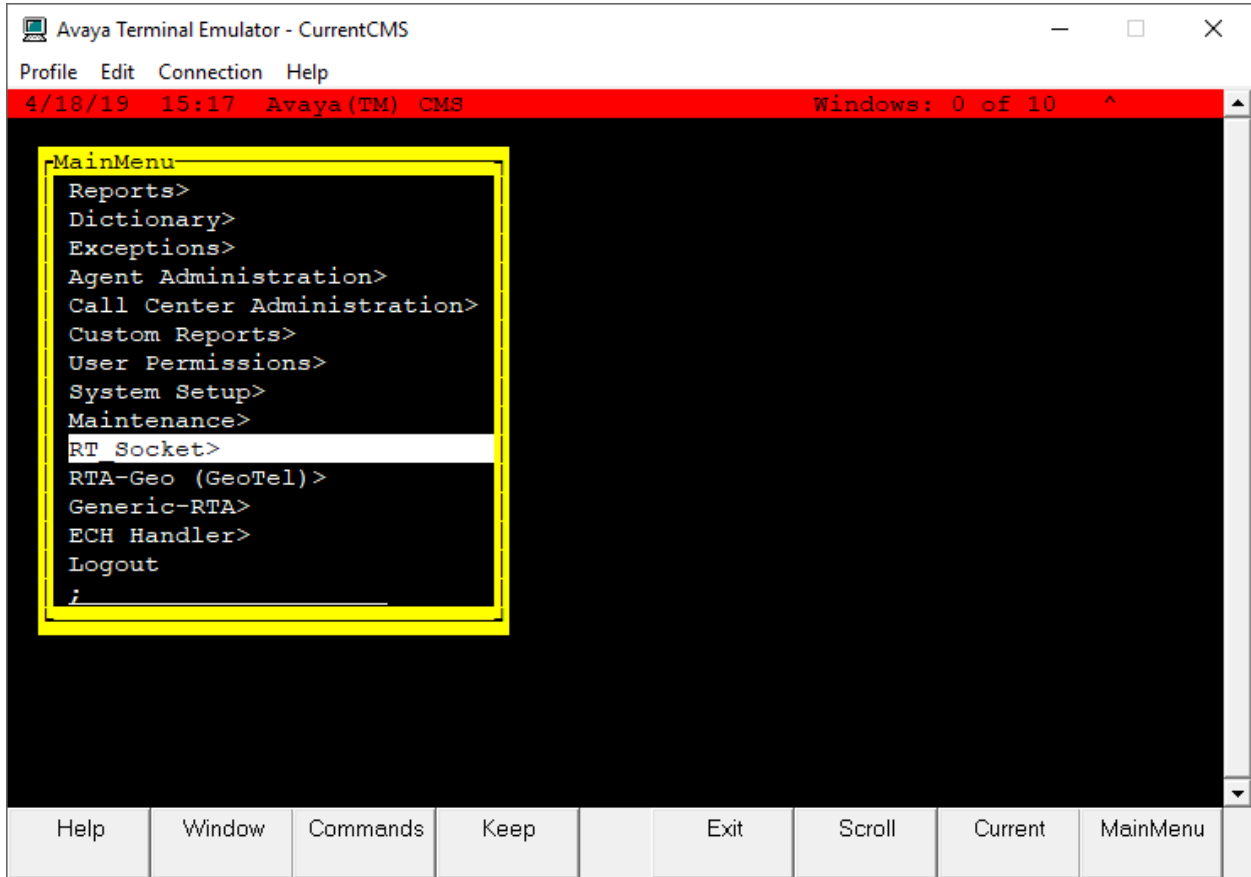
Timed ACW Interval (sec):      After Xfer or Held Call Drops? n
```

## 6. Configure Avaya Call Management System

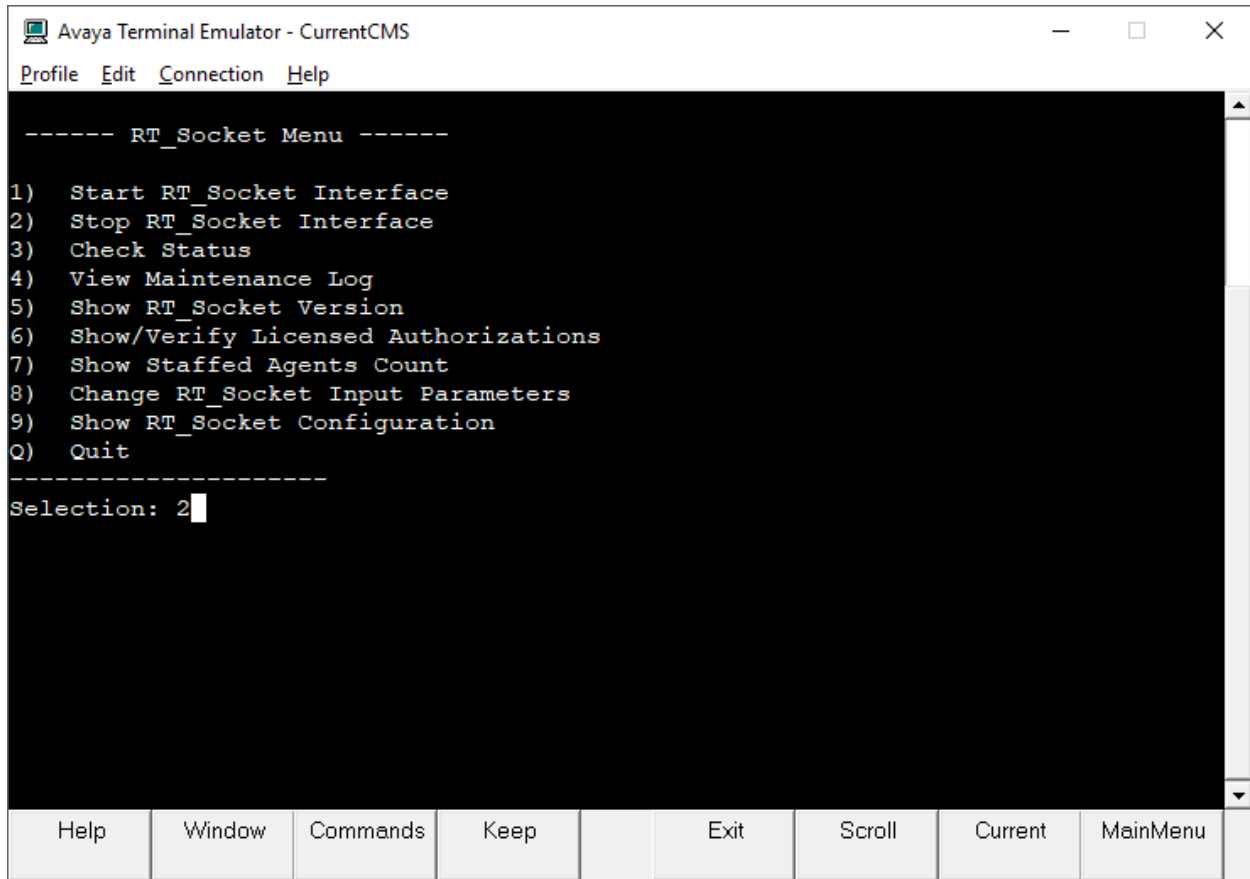
Configuration of the Real Time interfaces is performed by Avaya APS and is outside the scope of these Application Notes. After the interfaces are configured, the user can follow the procedures below to enable the interface.

### 6.1. Enable RT\_Socket Interface

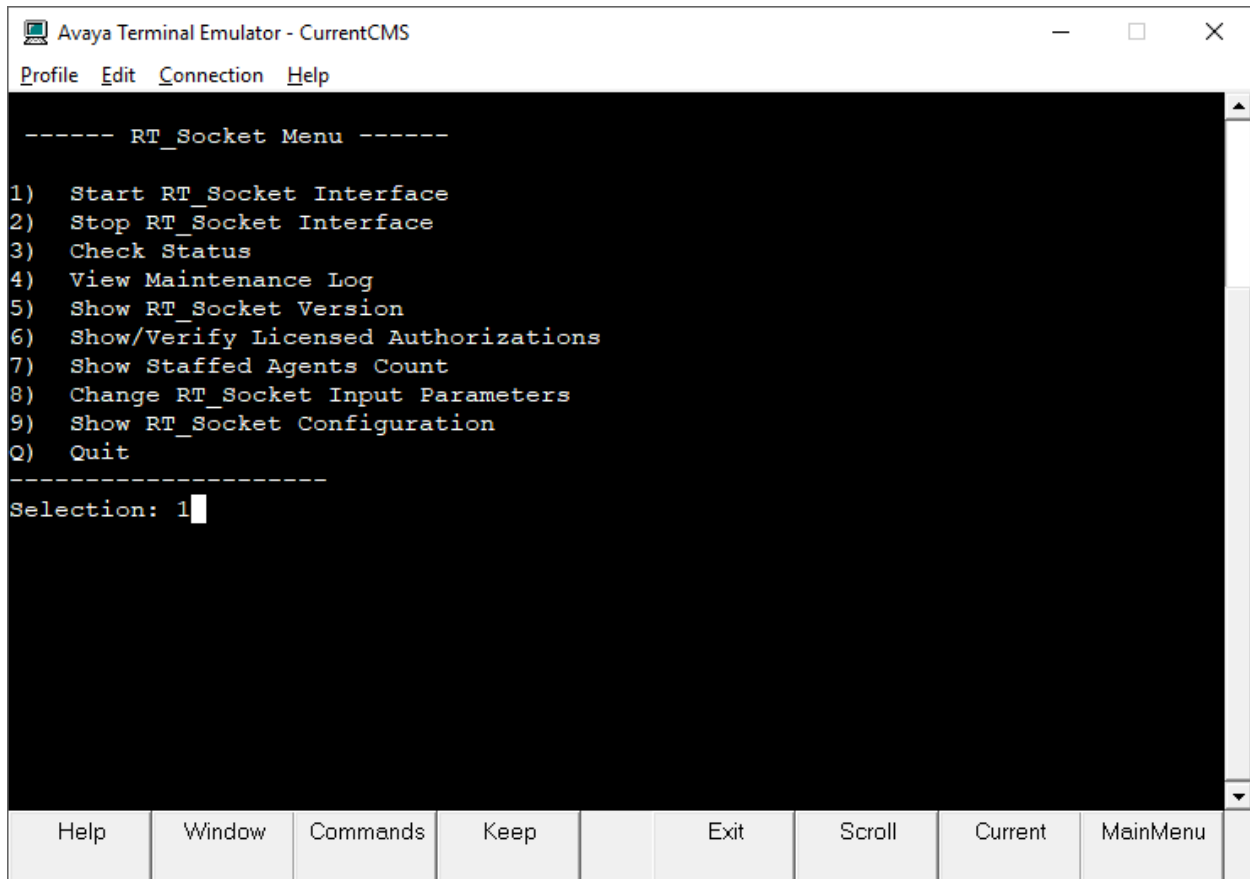
Use a terminal emulator to connect to Avaya CMS, and log in with the proper credentials. The **Main Menu** is displayed. Select **RT\_Socket** from the screen below.



The RT\_Socket interface needs to be stopped and restarted. Enter “2” to stop the interface, followed by the **Enter** key.

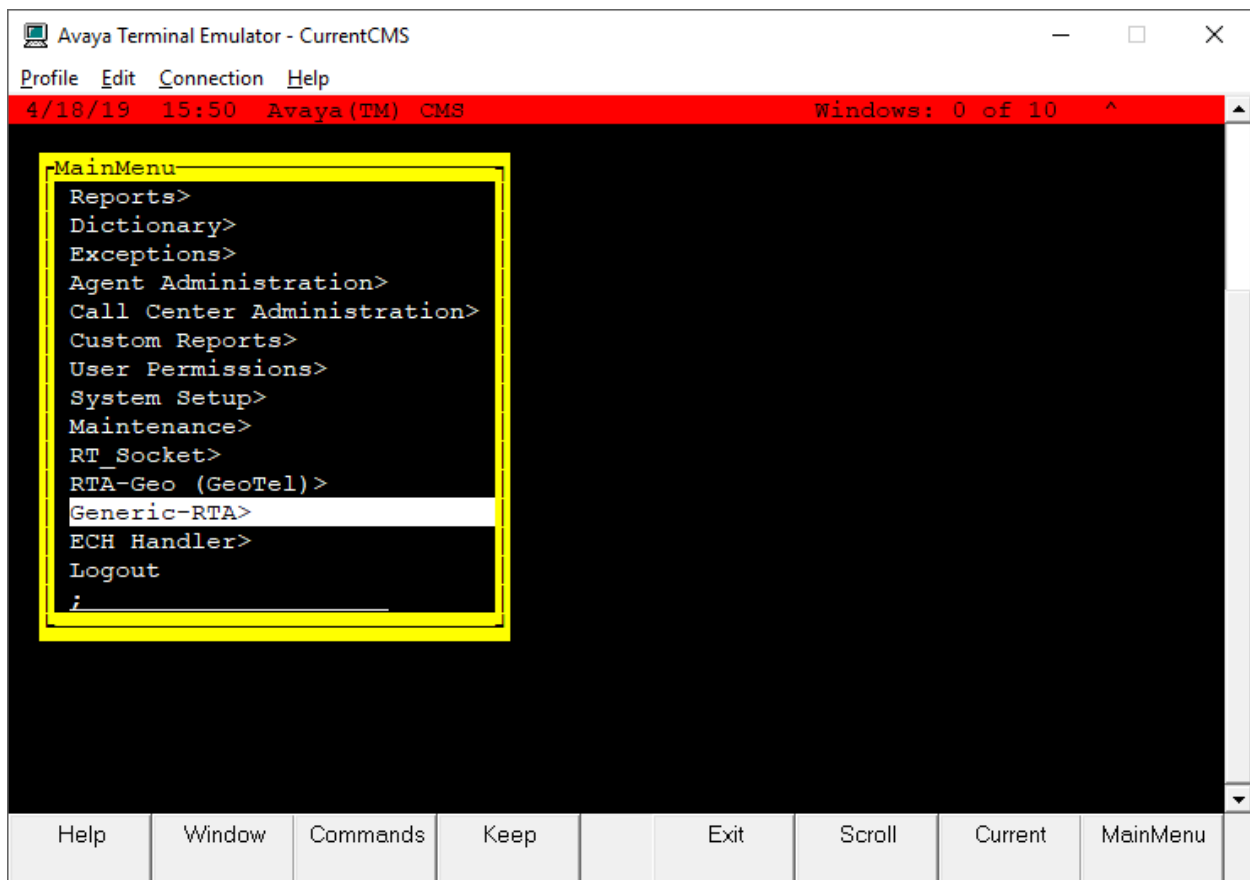


Enter “1” to start the interface, followed by the **Enter** key.

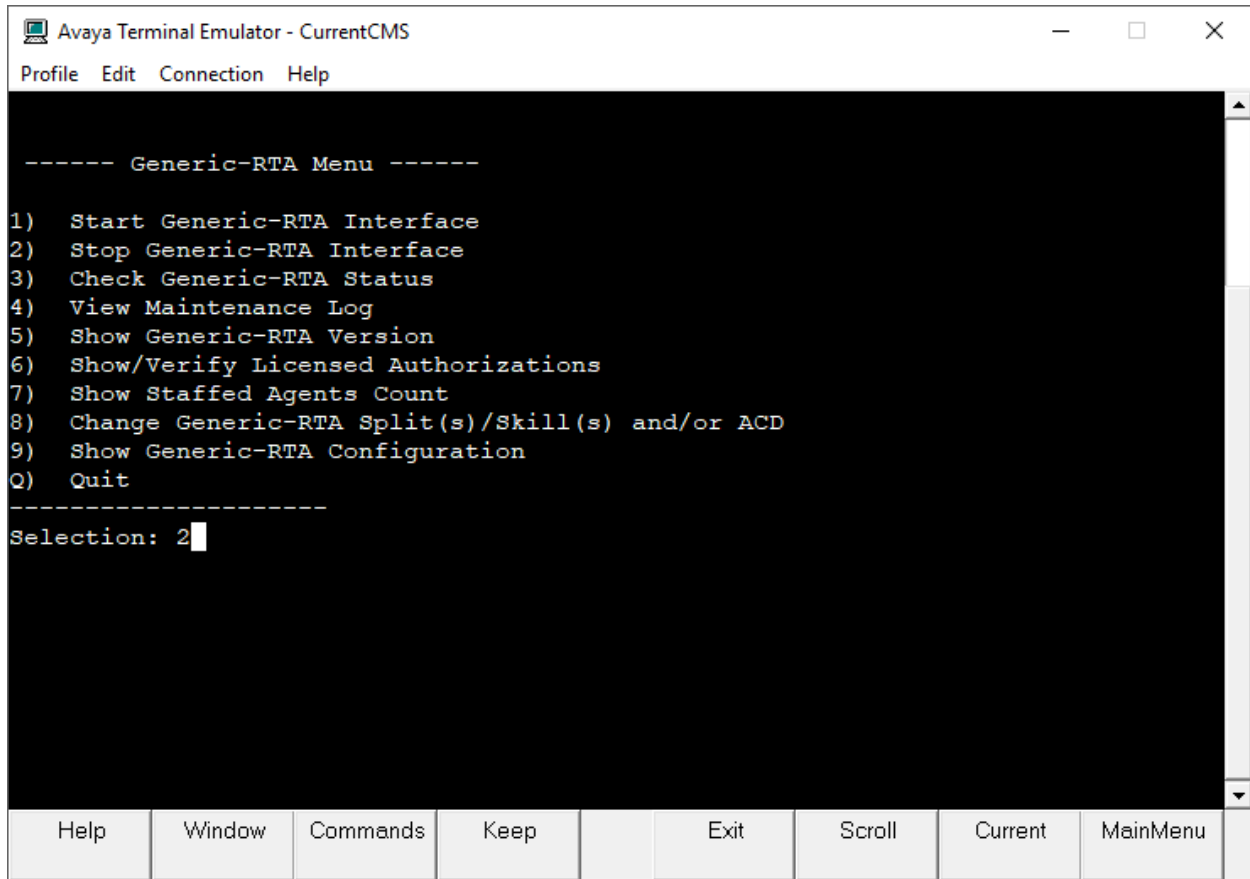


## 6.2. Enable RT\_Socket Interface

Continuing from above, select **Generic-RTA** from the Main Menu.



The Generic-RTA interface needs to be stopped and restarted. Enter “2” to stop the interface, followed by the **Enter** key.



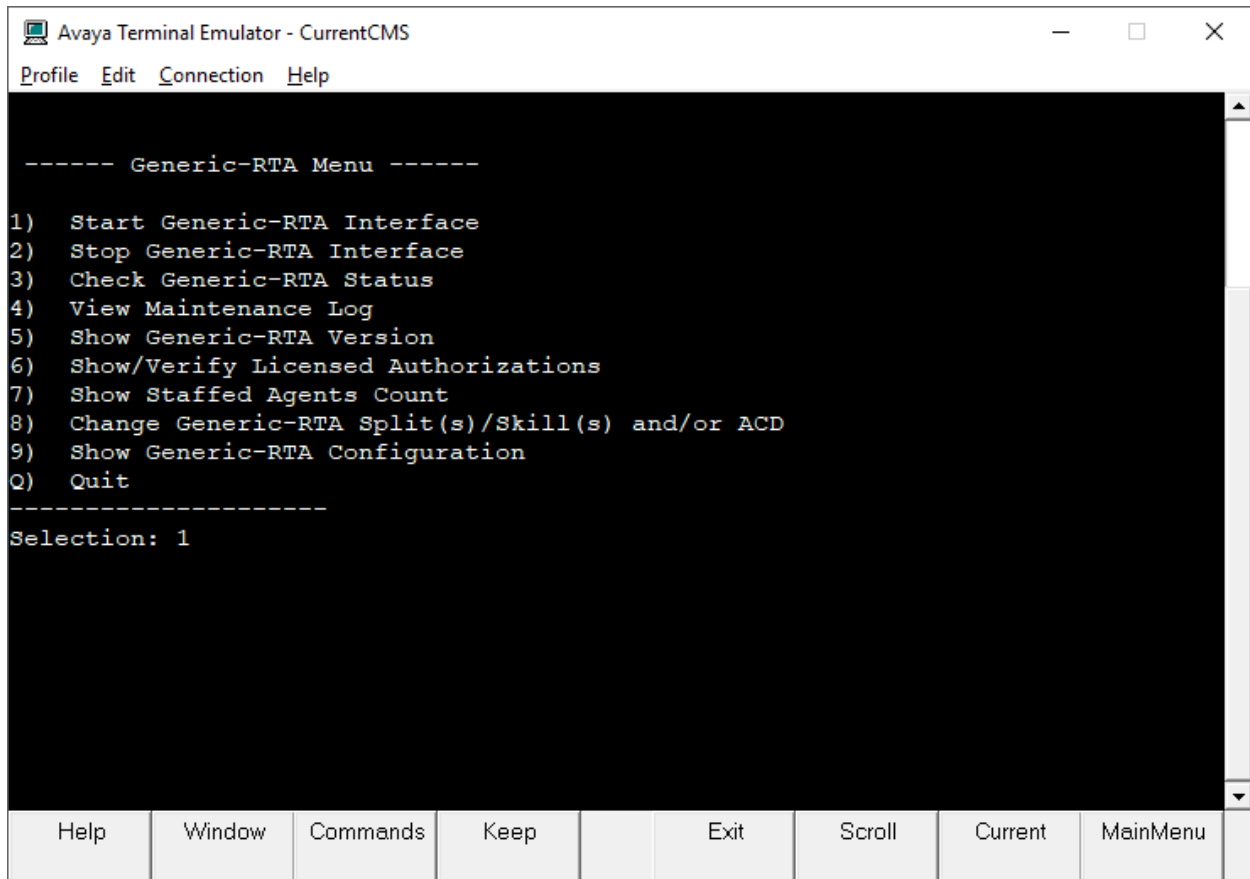
```
Avaya Terminal Emulator - CurrentCMS
Profile Edit Connection Help

----- Generic-RTA Menu -----
1) Start Generic-RTA Interface
2) Stop Generic-RTA Interface
3) Check Generic-RTA Status
4) View Maintenance Log
5) Show Generic-RTA Version
6) Show/Verify Licensed Authorizations
7) Show Staffed Agents Count
8) Change Generic-RTA Split(s)/Skill(s) and/or ACD
9) Show Generic-RTA Configuration
Q) Quit
-----
Selection: 2
```

Help	Window	Commands	Keep		Exit	Scroll	Current	MainMenu
------	--------	----------	------	--	------	--------	---------	----------



Enter “1” to start the interface, followed by the **Enter** key.



```
Avaya Terminal Emulator - CurrentCMS
Profile Edit Connection Help

----- Generic-RTA Menu -----
1) Start Generic-RTA Interface
2) Stop Generic-RTA Interface
3) Check Generic-RTA Status
4) View Maintenance Log
5) Show Generic-RTA Version
6) Show/Verify Licensed Authorizations
7) Show Staffed Agents Count
8) Change Generic-RTA Split(s)/Skill(s) and/or ACD
9) Show Generic-RTA Configuration
Q) Quit
-----
Selection: 1

Help Window Commands Keep Exit Scroll Current MainMenu
```

## 7. Configure Aceyus

Aceyus Professional Services will login to the data collection server (a Windows server) installed in the customer's environment to configure the "Aceyus – Avaya Real-Time Adapter" service. This will include installing the necessary MSSQL database for data to be stored in, configuring the ports where data will be received on from the CMS and selecting the reports that will be sending data (VDN, Vector, Split and /or Agent).

## 8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, Avaya Call Management System, and Aceyus.

### 8.1. Verify Avaya Aura® 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 5.4**. 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

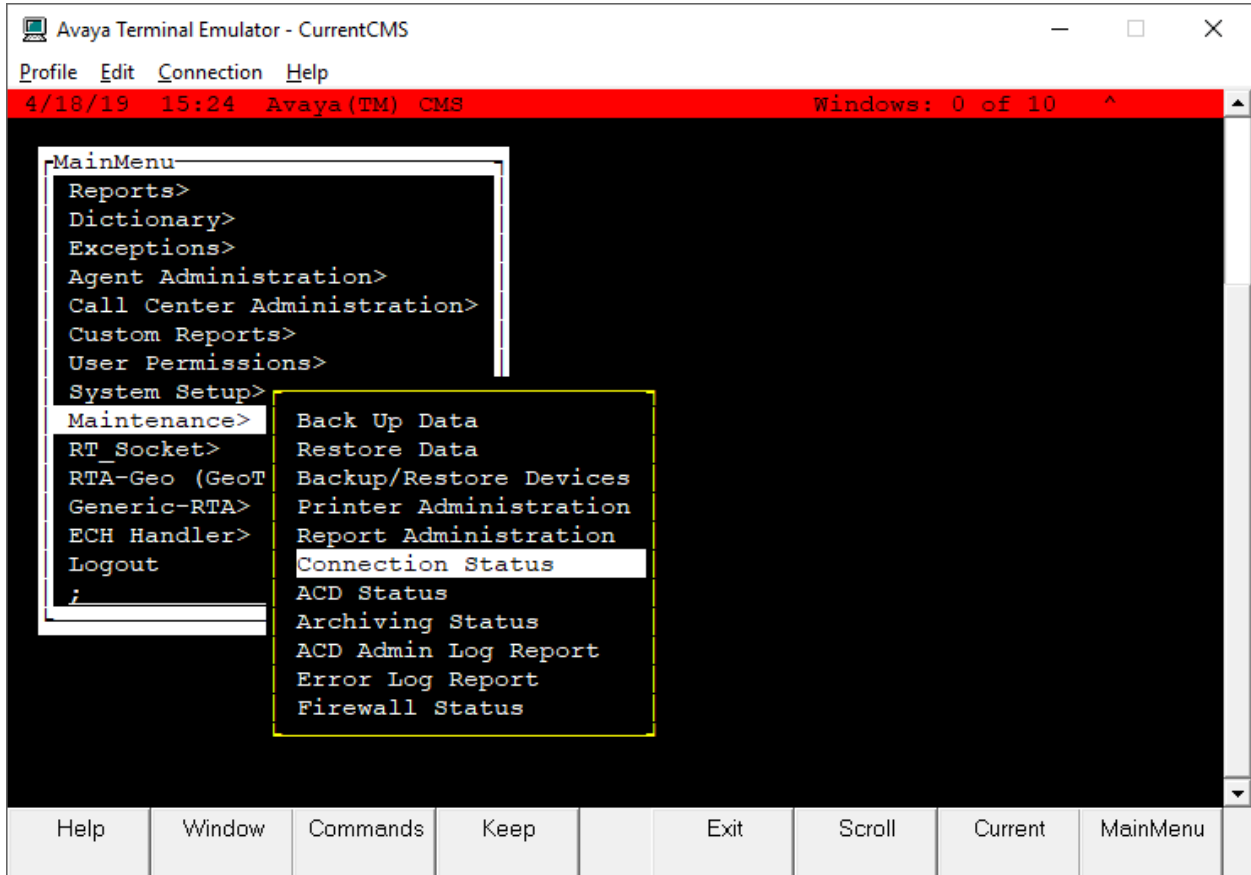
      Channel Number: 1
Session Layer Status: In Service
Socket Status: TCP connected
      Link Number: pv4
      Link Type: processor ethernet
      Message Buffer Number: 0

      Last Failure: Far end sent disconnect
                  At: 04/15/19 10:22
```

## 8.2. Verify Avaya Call Management System

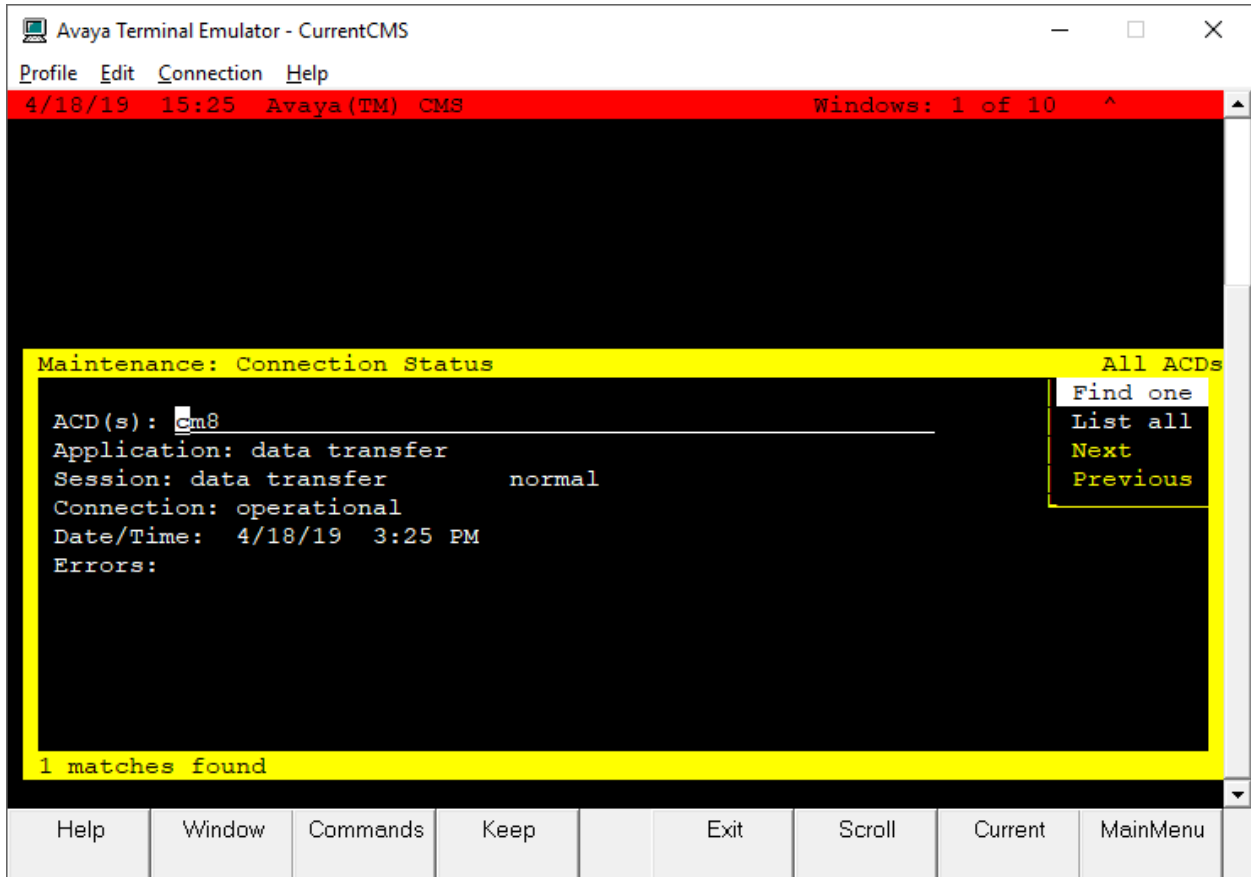
### 8.2.1. Connection Status

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



Enter the corresponding **ACD(s)** number, which is provided by Avaya Professional Services. For the compliance testing, the corresponding switch connection is ACD system “1”. Tab over to **Find one** and press **Enter**.

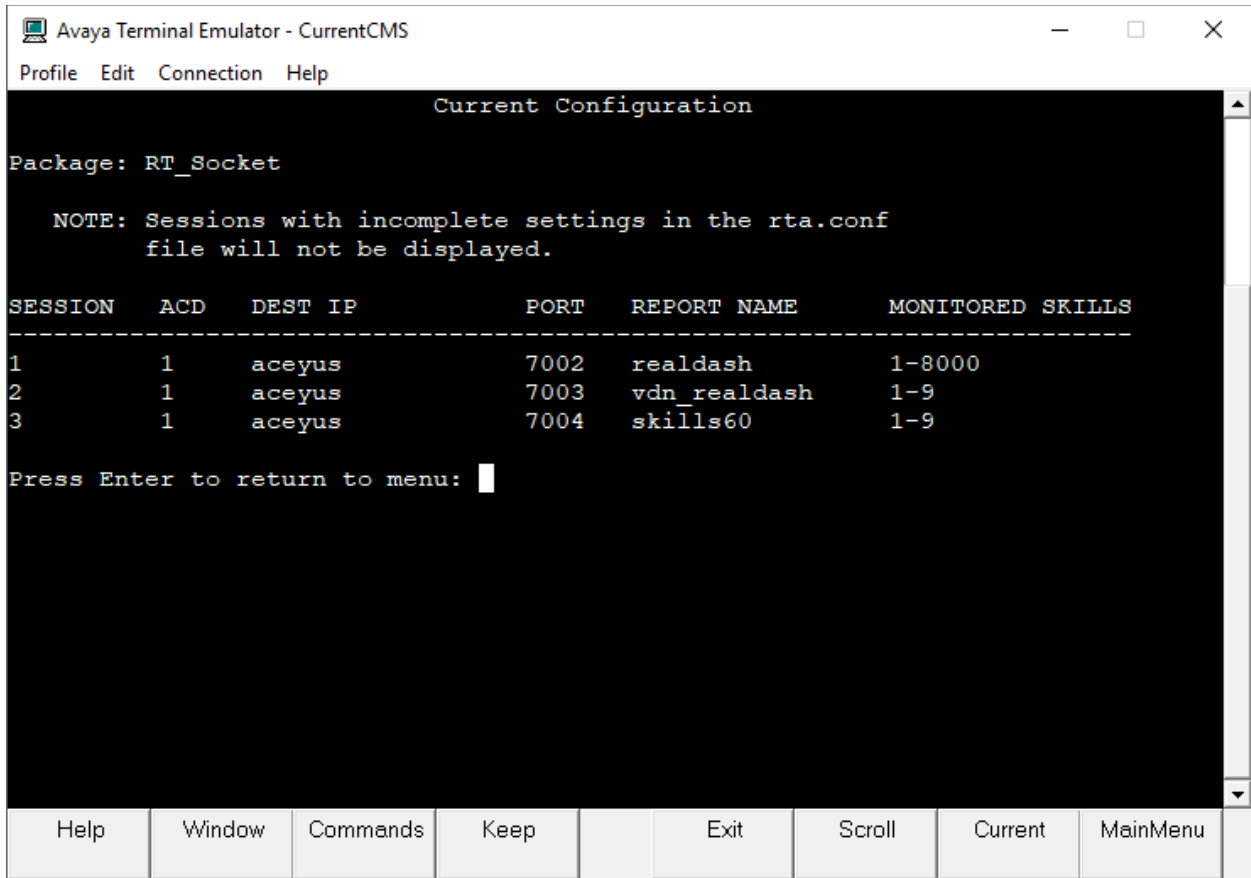
The switch connection status is displayed. Check the status in the **Session** and **Connection** fields, as shown below.



### 8.2.2. RT\_Socket

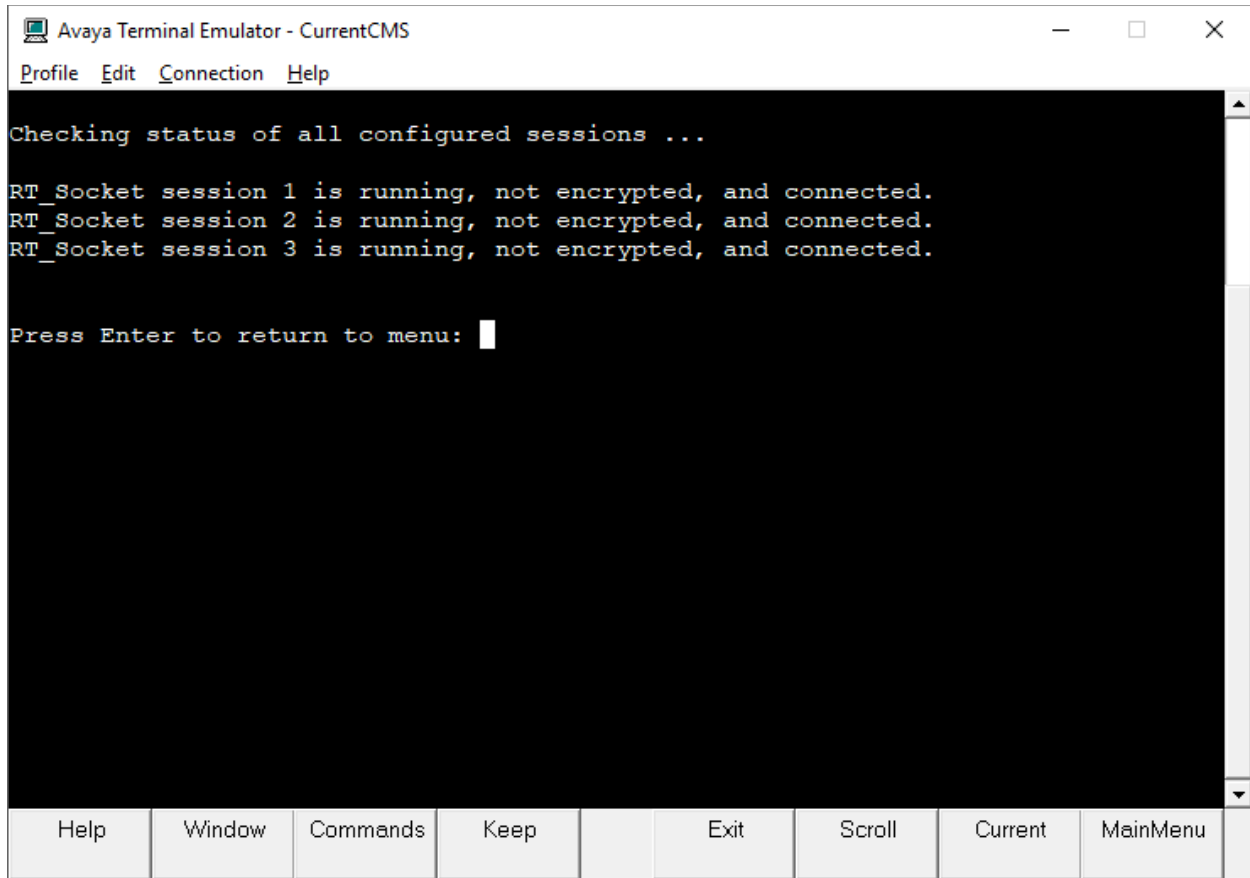
From the **MainMenu**, verify the configuration and status of the connection between CMS and Aceyus by selecting **RT\_Socket** and entering “9” from the RT\_Socket Menu.

For compliance testing sessions 1-3 were used with Aceyus.



Press Enter to return to the menu.

From the RT\_Socket Menu select “3” to display the status of the sessions. Verify the sessions are **running** and **connected**.



The screenshot shows a terminal window titled "Avaya Terminal Emulator - CurrentCMS". The window has a menu bar with "Profile", "Edit", "Connection", and "Help". The terminal output is as follows:

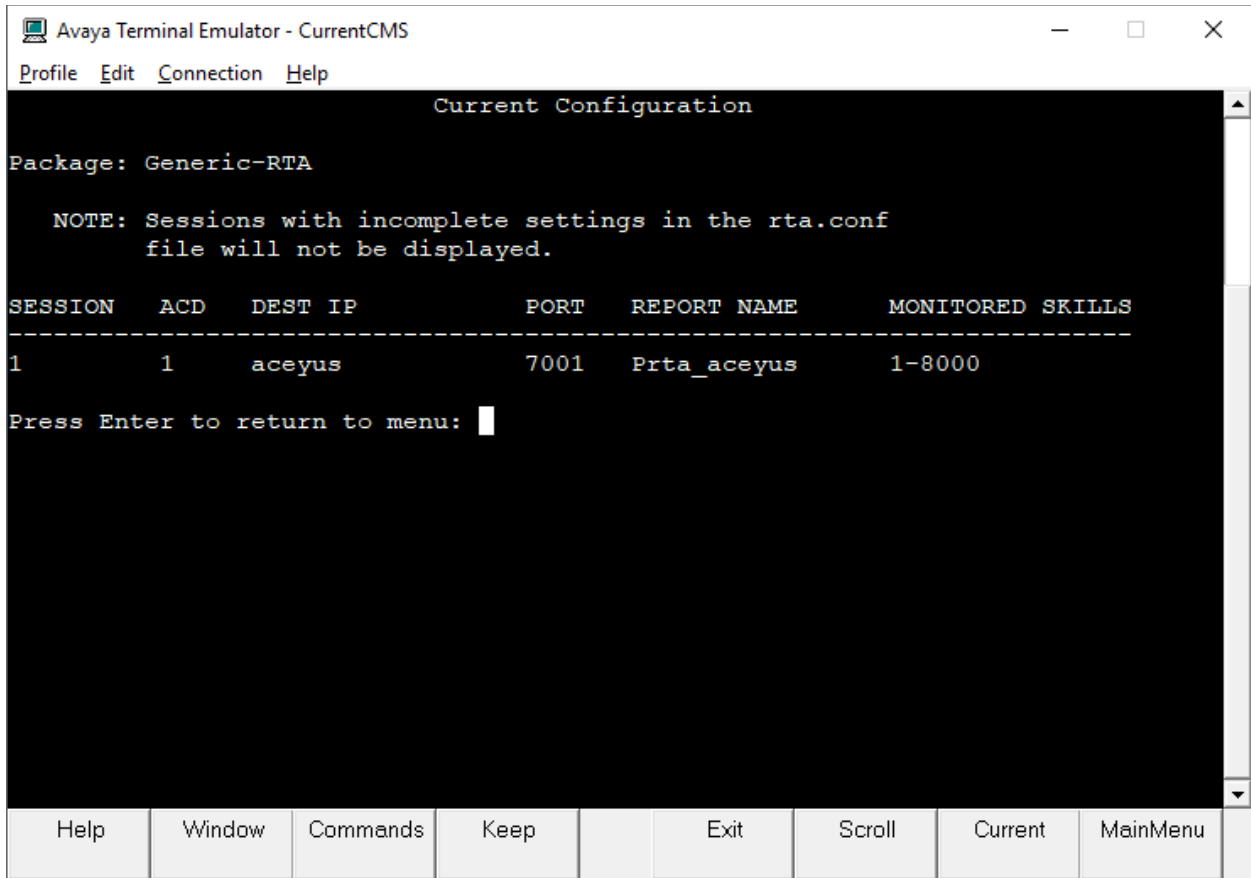
```
Checking status of all configured sessions ...  
RT_Socket session 1 is running, not encrypted, and connected.  
RT_Socket session 2 is running, not encrypted, and connected.  
RT_Socket session 3 is running, not encrypted, and connected.  
  
Press Enter to return to menu: █
```

At the bottom of the terminal window, there is a toolbar with buttons for "Help", "Window", "Commands", "Keep", "Exit", "Scroll", "Current", and "MainMenu".

### 8.2.3. Generic-RTA

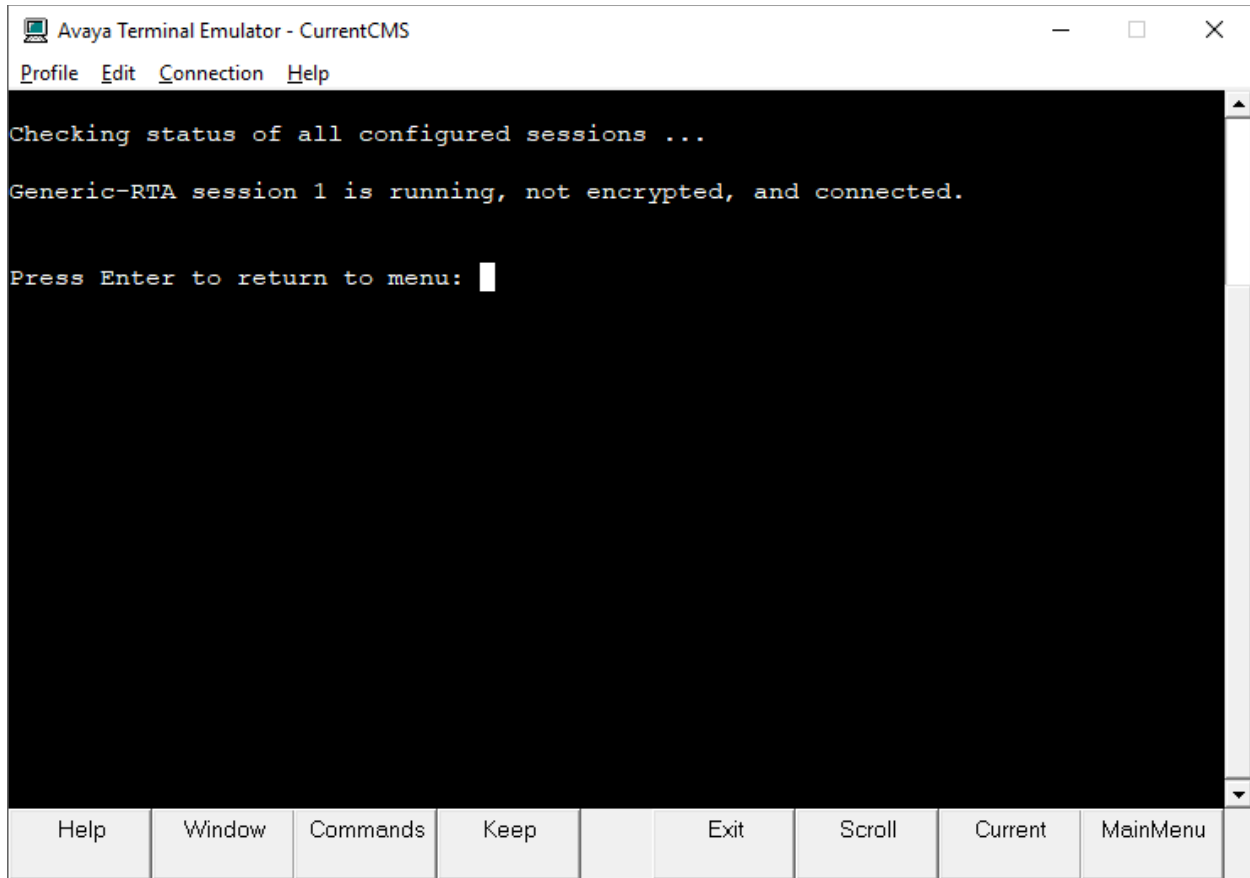
From the **MainMenu**, verify the configuration and status of the connection between CMS and Aceyus by selecting **Generic-RTA** and entering “9” from the Generic-RTA Menu.

For compliance testing session 1 was used with Aceyus.



Press Enter to return to the menu.

From the Generic-RTA Menu select “3” to display the status of the sessions. Verify the session is **running** and **connected**.





### 8.3. Verify Aceyus

Once configured Aceyus will start the adapters and monitors the data being received on the ports from CMS using the Aceyus feed monitoring page – further information on this page is given to the customer post configuration for monitoring.

After all feeds are connected and the format is verified, Aceyus will open a real-time report on CMS and validate the data being received on the socket feed matches CMS.

If the Aceyus reporting package is also installed, Aceyus will run reports similar to Avaya CMS reports, in the Aceyus environment. These reports can be used to compare and validate reporting data.

## 9. Conclusion

These Application Notes describe the configuration steps required for Aceyus to successfully interoperate with Avaya Aura® Communication Manager using the Real-Time Socket interface and the Generic Real-Time Adherence interface of Avaya Call Management System. All feature and serviceability test cases were completed successfully.

## 10. References

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

- [1] *Administering Avaya Aura® Communication Manager* Release 8.0.1, Issue 3, December 2018.
- [2] *Avaya Call Management System - Switch Connections, Administration, and Troubleshooting* Release 18.1, August 2018.
- [3] *Aceyus – CMS Adapter Install Guide*

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