



Avaya Solution & Interoperability Test Lab

Application Notes for Aceyus with Avaya Aura® Communication Manager and Avaya Call Management System with RT_Socket Interface – Issue 1.1

Abstract

These Application Notes describe the configuration steps required to integrate Aceyus with Avaya Call Management System using the Real-Time Socket interface to capture ACD call 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. This interface is provided by Avaya Professional Services.

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 using the Real-Time Socket interface to capture ACD call 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. This interface is provided by Avaya Professional Services.

The Aceyus - Avaya CMS Real-Time Adapter is a windows service that will be installed in the customer's environment to enable real-time data collection via socket feed from one or many Avaya CMS servers. The service is 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. This service is installed and supported by the Aceyus Professional Services and support teams. The service requires Microsoft .NET 4.0 and Microsoft Windows Server 2008 or higher to operate and will place data in the Aceyus Data Warehouse installed in the customer's environment.

The data streams of ACD call 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 the RT_Socket interface of Avaya CMS. Avaya CMS can send data to Aceyus every 15 seconds (configurable).

Avaya Professional Services installs and configures the RT_Socket interface on Avaya CMS, and provides the TCP port number associated with each RT_Socket session to Aceyus for configuring Aceyus. 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

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.

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.

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 interface interfaces.

2.2. Test Results

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

2.3. Support

Contact Aceyus for technical support.

- **Web:** www.aceyus.com
- **Phone:** 888-222-3987 – Option 2 (Monday – Friday 7am – 7pm CT for P2, P3, P4, and 24 x 7 for P1)
- **Email:** support@aceyus.com

Priority Definitions:

<p>Critical Priority (P1)</p> <p>Produces an emergency situation in which the Production Aceyus Software is inoperable, produces incorrect results, or fails catastrophically, or a mainline function of such Aceyus Software is inoperative, causing significant impact on Licensee’s business operation (for example, Licensee’s production network is down, causing critical impact to business operation if service is not restored quickly.) Problem will be worked on a substantially continuous basis until acceptable workaround is provided.</p>	<p>High Priority (P2)</p> <p>Produces a serious situation in which the Production Aceyus Software is inoperable, produces incorrect results, or fails catastrophically, or a mainline function of such Aceyus Software is inoperative, causing a major impact on Licensee’s business operations (for example, the Licensee’s network is severely degraded impacting significant aspects of business operations).</p>
<p>Medium Priority (P3)</p> <p>Produces a non-critical situation in which the Production Aceyus Software produces incorrect results, or a feature of such Aceyus Software is inoperative, causing a minor impact on Licensee’s business operations (for example, Licensee’s network performance is degraded; network functionality is noticeably impaired, but most business operations continue). Aceyus will use commercially reasonable efforts to provide a mutually acceptable workaround if the problem has not been resolved in the next release of the relevant Aceyus Software.</p>	<p>Low Priority (P4)</p> <p>General questions and/or inquiries causing little or no impact on Licensee’s business operations. Aceyus will use commercially reasonable efforts to provide a mutually acceptable workaround if the problem has not been resolved in the next release of the relevant Aceyus Software.</p>

3. Reference Configuration

Figure 1 illustrates the configuration used for compliance testing. The network consisted of Communication Manager running on an S8300D blade that was installed in the G450 Media gateway, Avaya Call Management System and Aceyus.

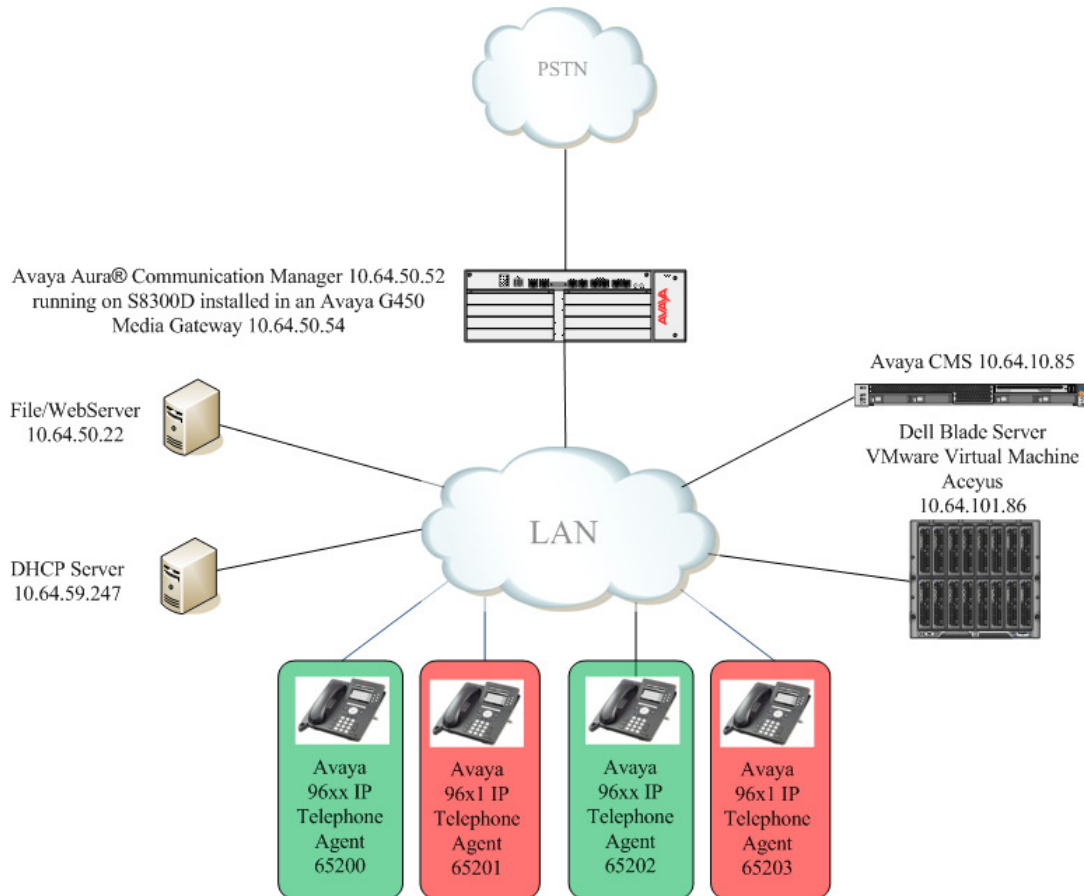


Figure 1: Network Configuration

4. Equipment and Software Validated

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

Equipment	Software/Firmware
<i>Avaya PBX Products</i>	
Avaya S8300D Server running Avaya Aura® Communication Manager	Avaya Aura® Communication Manager 6.2
Avaya G450 Media Gateway MGP	HW 2 FW 31.20.0
<i>Avaya Aura® Session Manager</i>	
Avaya Aura® Session Manager HP Proliant DL360 G7	6.3
Avaya Aura® System Manager HP Proliant DL360 G7	6.3
<i>Avaya Call Management System</i>	
CMS server on SUN SPARC Enterprise T5120	R16.3
<i>Avaya Endpoints</i>	
Avaya 96xx Series IP Telephones	H.323 3.1SP2
Avaya 96x1 Series IP Telephones	SIP 6.2
<i>Aceyus Products</i>	
Aceyus Avaya CMS Real-Time Interface	4.5

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 and 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 “V16” on **Page 1**, as shown below.

```
display system-parameters customer-options                               Page 1 of 11
                                OPTIONAL FEATURES

G3 Version: V16                                                    Software Package: Enterprise
Location: 2                                                            System ID (SID): 1
Platform: 28                                                           Module ID (MID): 1

                                USED
Platform Maximum Ports: 6400 142
Maximum Stations: 2400 34
Maximum XMOBILE Stations: 2400 0
Maximum Off-PBX Telephones - EC500: 9600 3
Maximum Off-PBX Telephones - OPS: 9600 19
Maximum Off-PBX Telephones - PBFMC: 9600 0
Maximum Off-PBX Telephones - PVFMC: 9600 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 6**, and verify that the **Call Center Release** field is set to “6.0”, as shown below.

```
display system-parameters customer-options                               Page 6 of 11
                                CALL CENTER OPTIONAL FEATURES

                                Call Center Release: 6.0

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? y                                                  Service Observing (VDNs)? y
Call Work Codes? y                                                    Timed ACW? y
DTMF Feedback Signals For VRU? y                                       Vectoring (Basic)? y
Dynamic Advocate? y                                                    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
Lookahead Interflow (LAI)? y                                           Vectoring (G3V4 Advanced Routing)? y
Multiple Call Handling (On Request)? y   Vectoring (CINFO)? y
Multiple Call Handling (Forced)? y                                         Vectoring (Best Service Routing)? y
PASTE (Display PBX Data on Phone)? y   Vectoring (Holidays)? y
(NOTE: You must logoff & login to effect the permission changes.)   Vectoring (Variables)? y
```

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, “R16.1/R16.x” is used to correspond to Avaya CMS software release R16.3.

```
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
      Call Selection Measurement: predicted-wait-time
Service Level Supervisor Call Selection Override? n
      Auto Reserve Agents: all
      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
      AAPC/IQ (appl ccr): 5.1/5.2/7.0

      BCMS/VuStats LoginIDs? y
      BCMS/VuStats Measurement Interval: hour
      BCMS/VuStats Abandon Call Timer (seconds): 10
      Validate BCMS/VuStats Login IDs? n
      Clear VuStats Shift Data: on-login
      Remove Inactive BCMS/VuStats Agents? n
```

5.3. 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:** Blank
- **Destination Port:** “0”
- **Session Local:** **Local Session ID** for the connection to CMS. In this case “4”.
- **Session Remote:** **Remote Session ID** for the connection to CMS. In this case “4”.

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 To	Mode	Interface Link/Chan	Destination Node	Port	Session Local/Remote	Mach ID
1:		y	ccr		s	pv4 5002 iq1		0	1 1	
2:		y	mis		s	pv4 5001 cms		0	4 4	

5.4. 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 66101                                                             Page 1 of 3
                                VECTOR DIRECTORY NUMBER

                                Extension: 66101
                                Name*: VDN 66101
                                Destination: Vector Number                21
                                Attendant Vectoring? n
                                Meet-me Conferencing? n
                                Allow VDN Override? n
                                COR: 1
                                TN*: 1
                                Measured: both
                                Acceptable Service Level (sec): 10
                                Service Objective (sec): 20
                                VDN of Origin Annc. Extension*:
                                1st Skill*:
                                2nd Skill*:
                                3rd Skill*:

* Follows VDN Override Rules
```

5.5. 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.

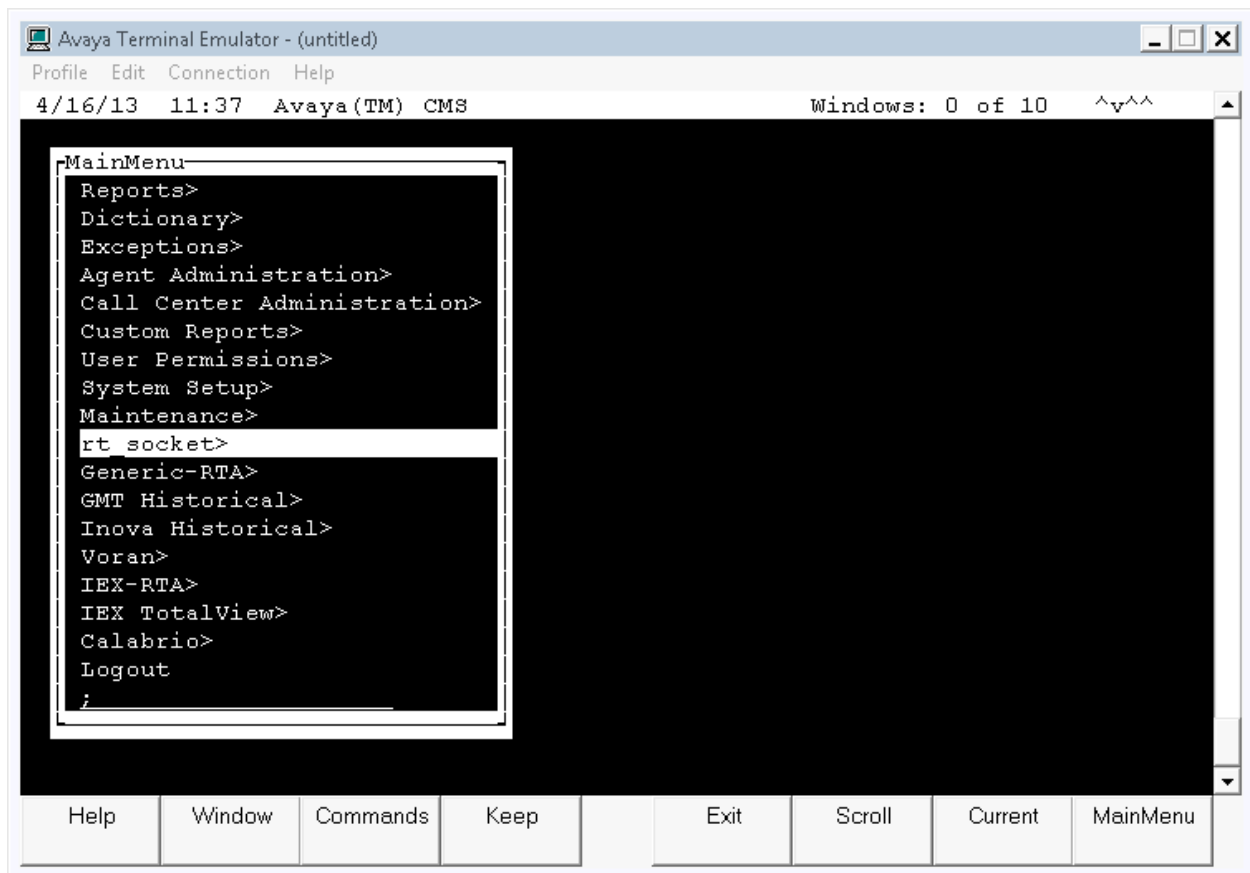
```
change hunt-group 20                                     Page 2 of 4
                                                         HUNT GROUP
Skill? y          Expected Call Handling Time (sec): 2
AAS? n           Service Level Target (% in sec): 10 in 60
Measured: both Service Objective (sec): 60
Supervisor Extension: Service Level Supervisor? y
                  Activate on Oldest Call Waiting? y
                  Call Selection Override? n
Controlling Adjunct: none Level 1 Threshold (sec): 2
                  Level 2 Threshold (sec): 5
                  Dynamic Threshold Adjustment? n
VuStats Objective:
Multiple Call Handling: none Dynamic Queue Position? y
Timed ACW Interval (sec): After Xfer or Held Call Drops? n
```

6. Configure Avaya Call Management System

Configuration of the RT_Socket interface 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.

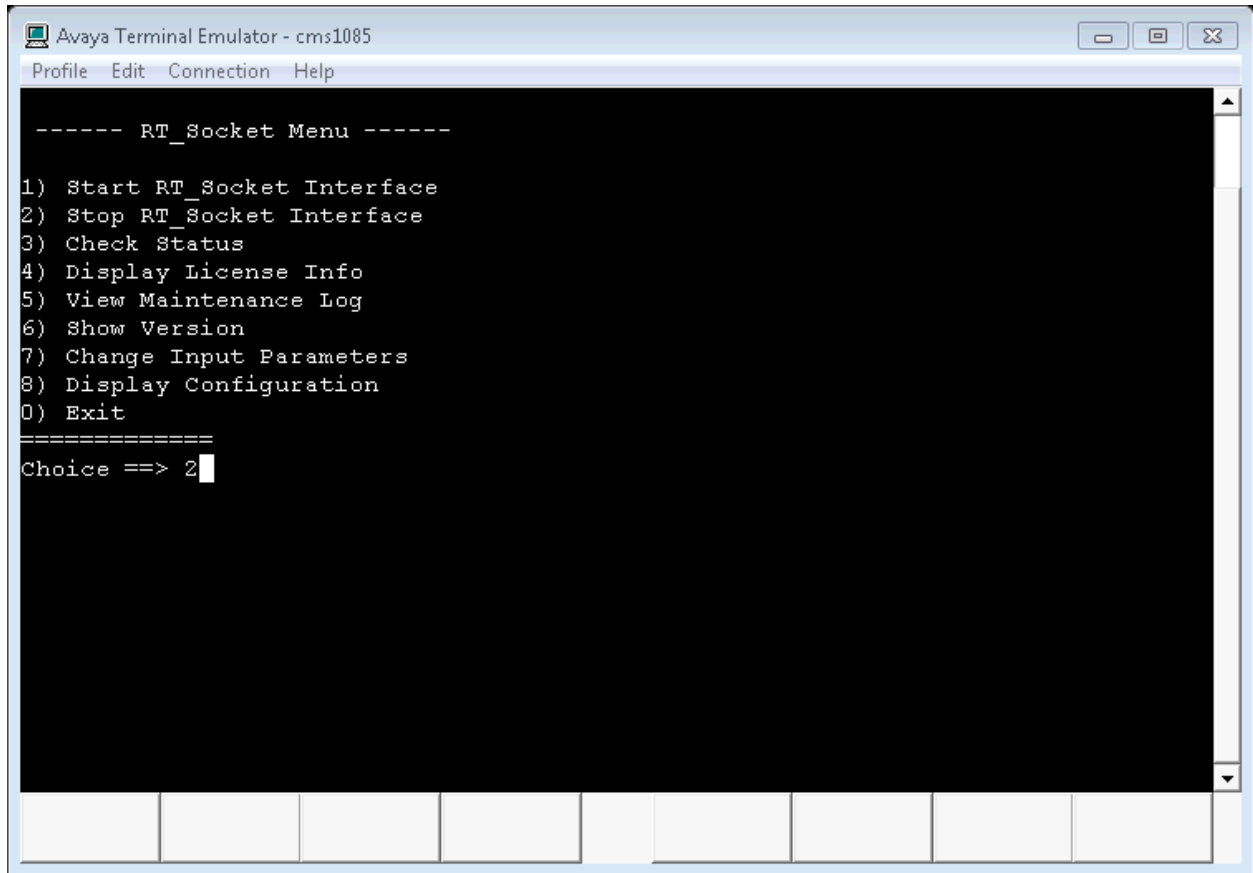


The screenshot shows a terminal window titled "Avaya Terminal Emulator - (untitled)". The window has a menu bar with "Profile", "Edit", "Connection", and "Help". The status bar at the top shows "4/16/13 11:37 Avaya(TM) CMS" and "Windows: 0 of 10 ^v^^". The main display area shows a "MainMenu" with the following options:

```
MainMenu
Reports>
Dictionary>
Exceptions>
Agent Administration>
Call Center Administration>
Custom Reports>
User Permissions>
System Setup>
Maintenance>
rt_socket>
Generic-RTA>
GMT Historical>
Inova Historical>
Voran>
IEX-RTA>
IEX TotalView>
Calabrio>
Logout
;
```

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

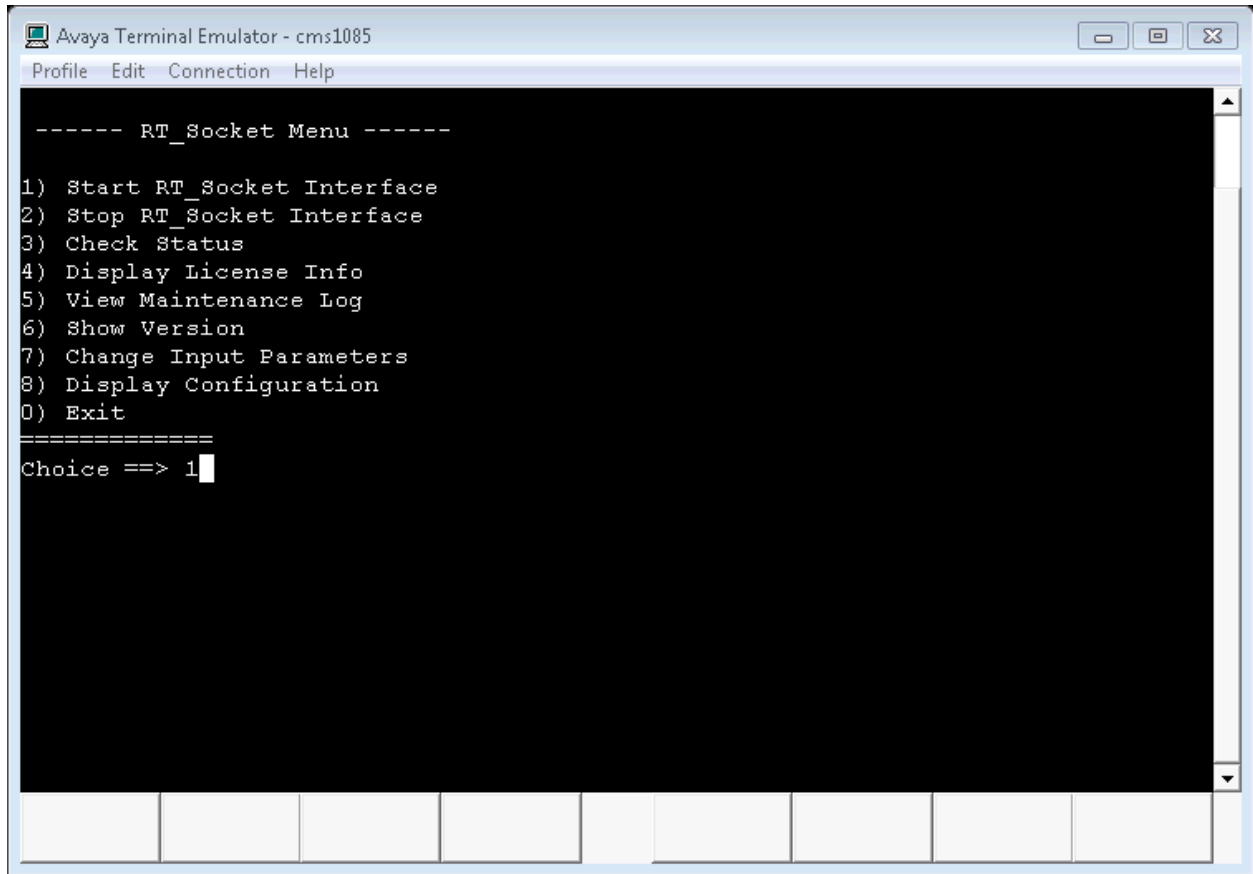
The RT_Socket interface needs to be stopped and restarted. Enter “2” to stop the interface, followed by the **Enter** key.



```
Avaya Terminal Emulator - cms1085
Profile Edit Connection Help

----- RT_Socket Menu -----
1) Start RT_Socket Interface
2) Stop RT_Socket Interface
3) Check Status
4) Display License Info
5) View Maintenance Log
6) Show Version
7) Change Input Parameters
8) Display Configuration
9) Exit
0) Exit
=====
Choice ==> 2
```

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



```
Avaya Terminal Emulator - cms1085
Profile Edit Connection Help

----- RT_Socket Menu -----

1) Start RT_Socket Interface
2) Stop RT_Socket Interface
3) Check Status
4) Display License Info
5) View Maintenance Log
6) Show Version
7) Change Input Parameters
8) Display Configuration
0) Exit

=====
Choice ==> 1
```

Enter “0” to exit from this screen, followed by the **Enter** key.

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 that 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 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 2
                        PROCESSOR-CHANNEL STATUS

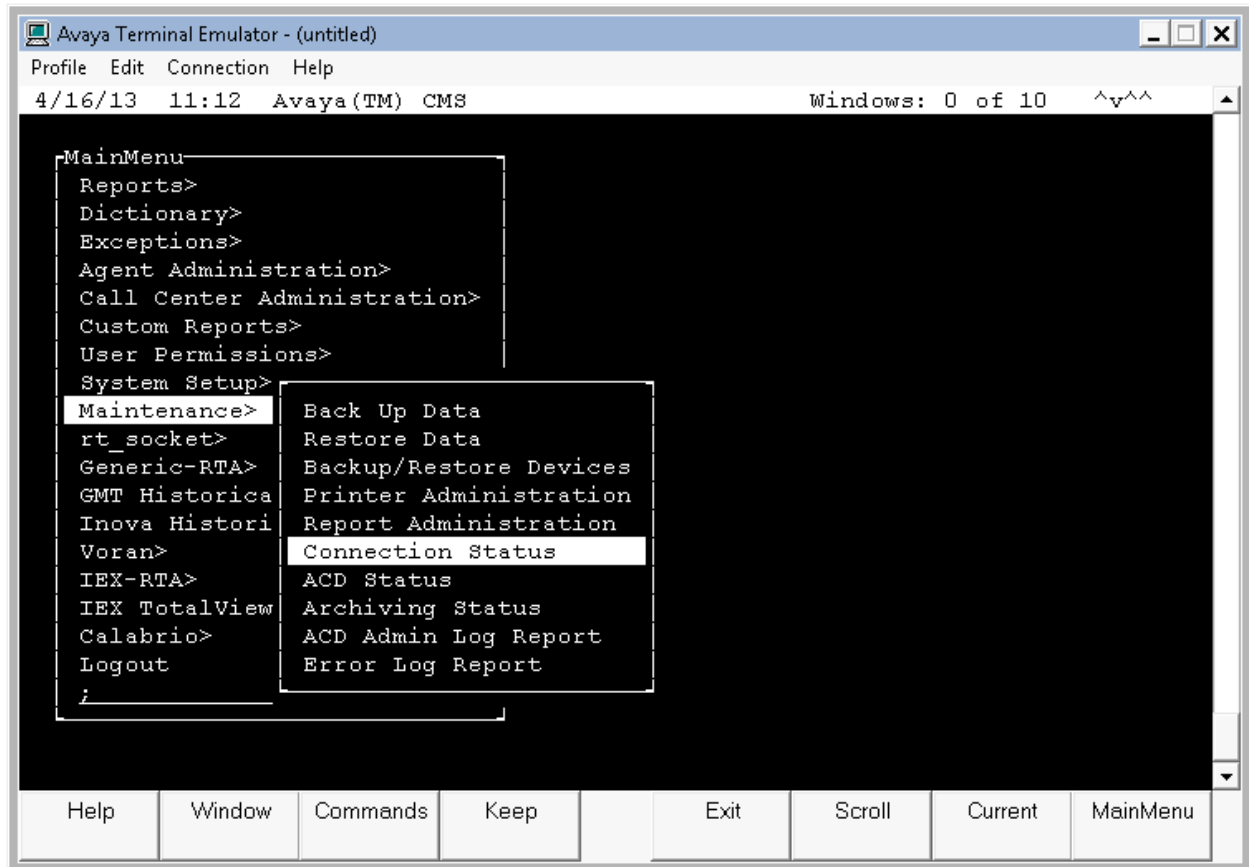
      Channel Number: 2
      Session Layer Status: In Service
      Socket Status: TCP connected
      Link Number: pv4
      Link Type: processor ethernet
      Message Buffer Number: 0

      Last Failure: None
      At:
```

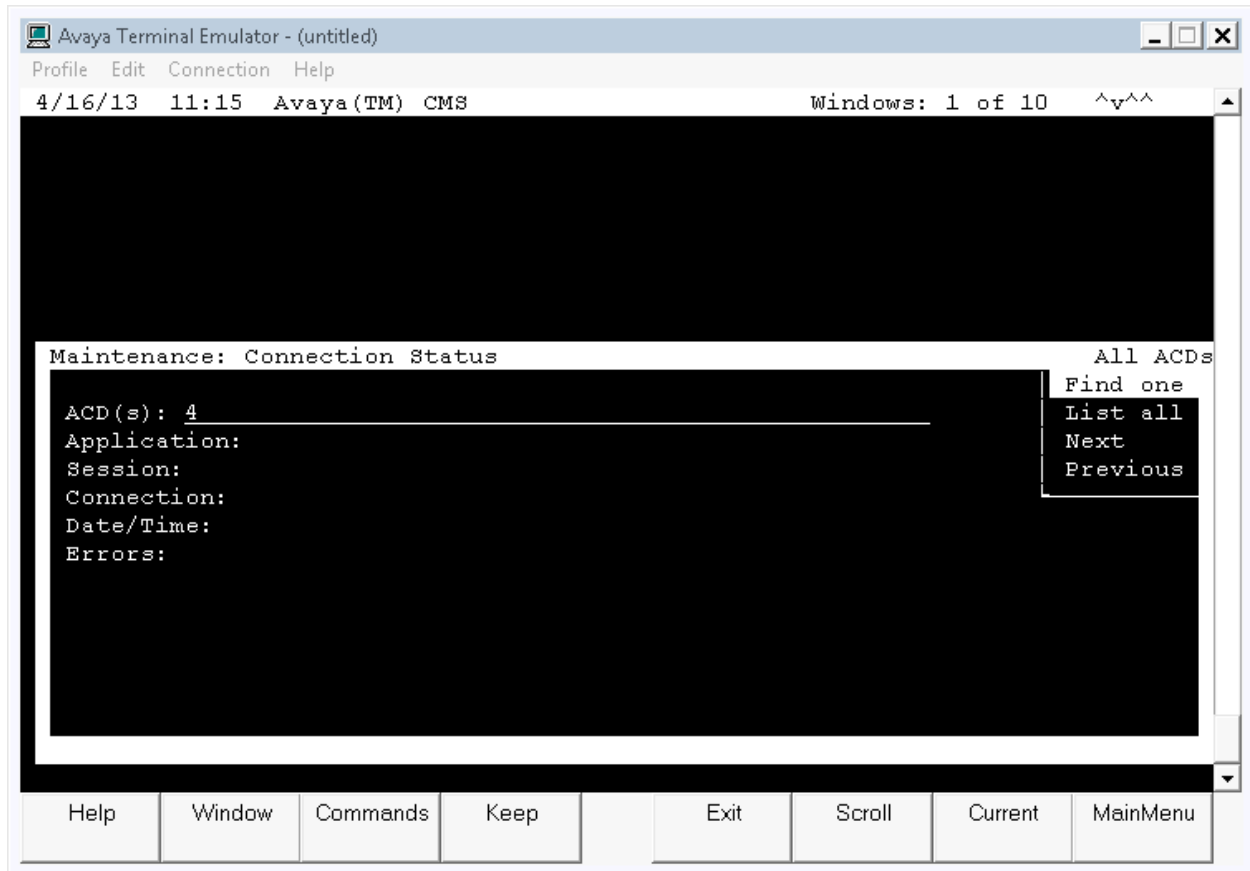
8.2. Verify Avaya Call Management System

8.2.1. Connection Status

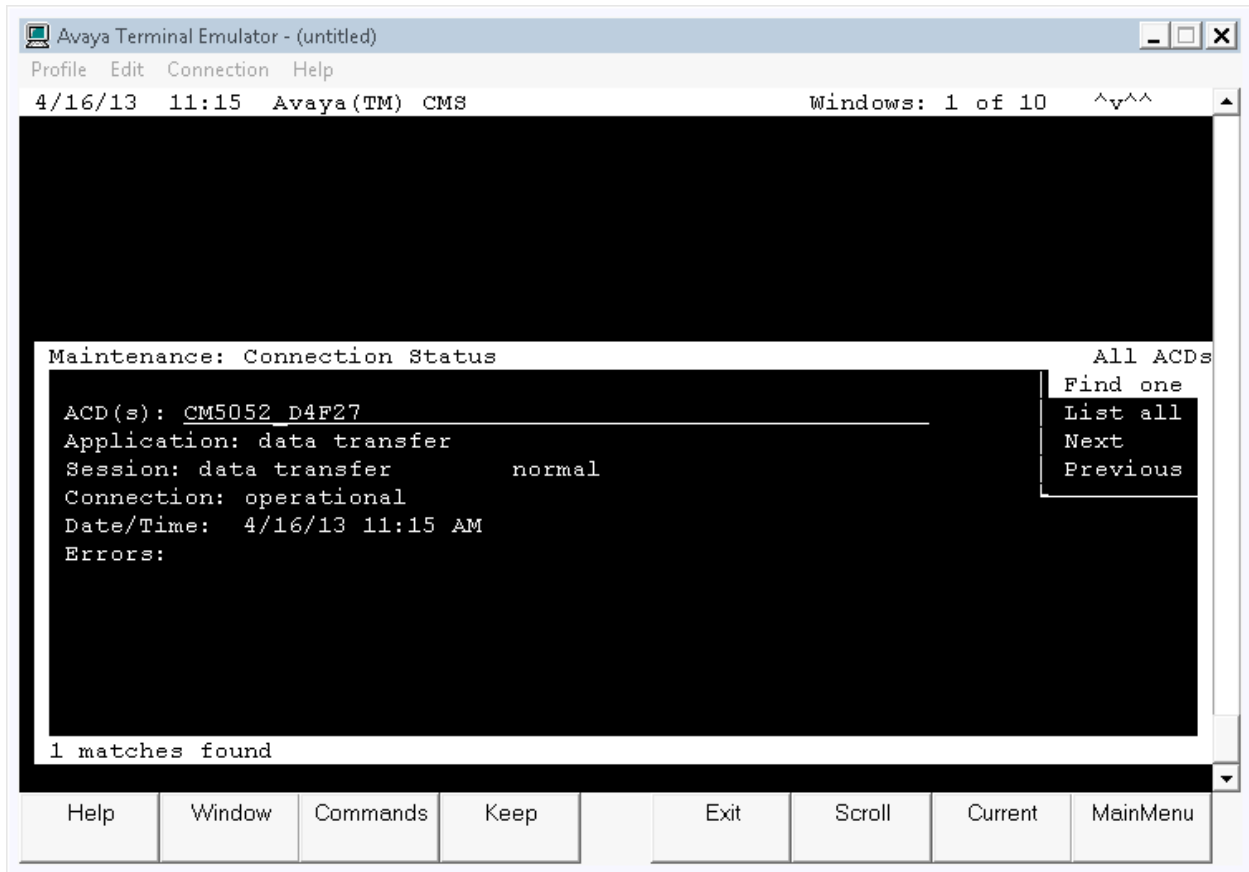
From the **MainMenu**, verify the status of the connection to Communication Manager by selecting **Maintenance** → **Connection Status**, as shown below.



Enter the corresponding **ACD(s)** number, which is provided by Avaya Professional Services. For the compliance testing, the corresponding switch connection is ACD system "4". Tab over to **Find one** and press **Enter**.

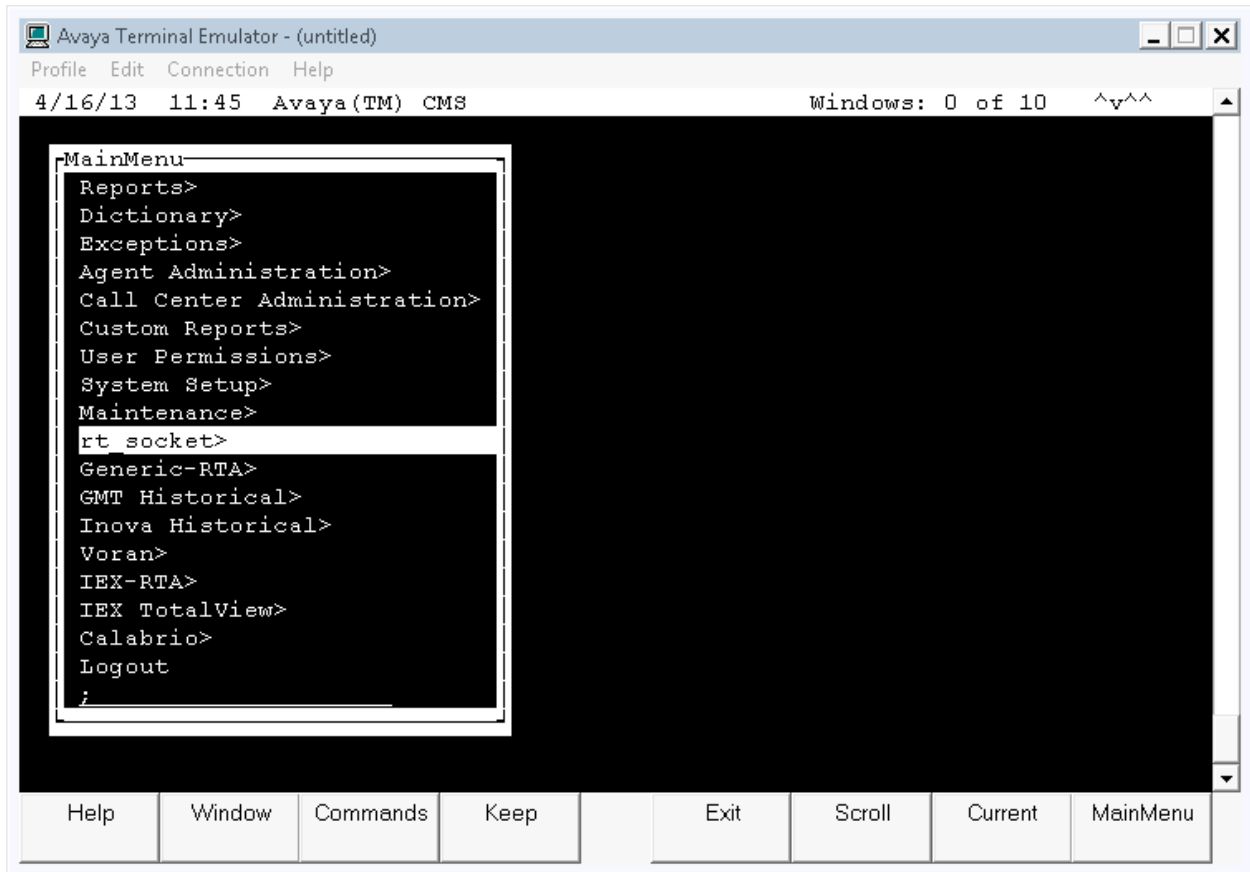


The switch connection status is displayed. Check the status in the **Session** and **Connection** fields, as shown below.

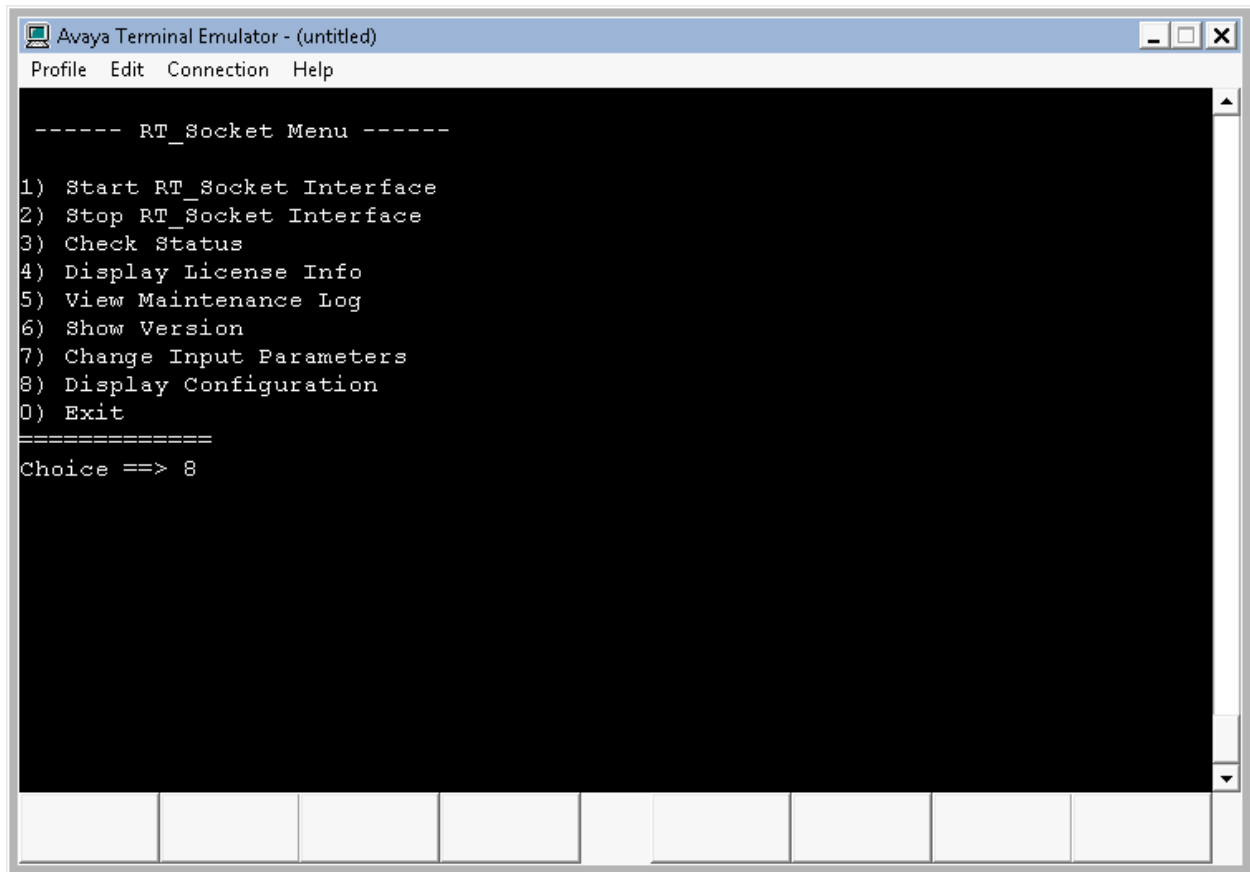


8.2.2. RT_Socket

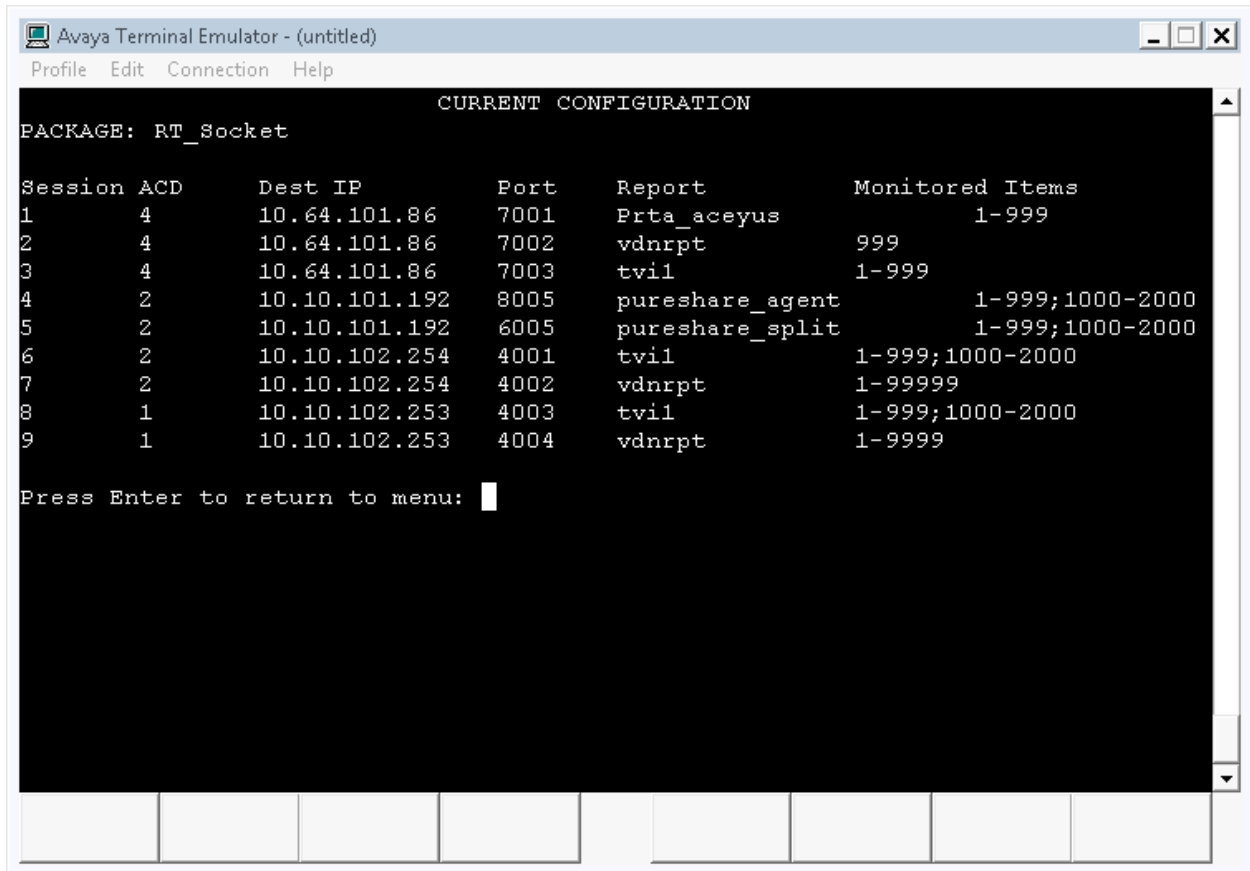
From the **MainMenu**, verify the configuration and status of the connection between CMS and Aceyus by selecting **rt_socket** , as shown below.



From the RT_Socket Menu select “8” to display the configuration.



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



```
Avaya Terminal Emulator - (untitled)
Profile Edit Connection Help

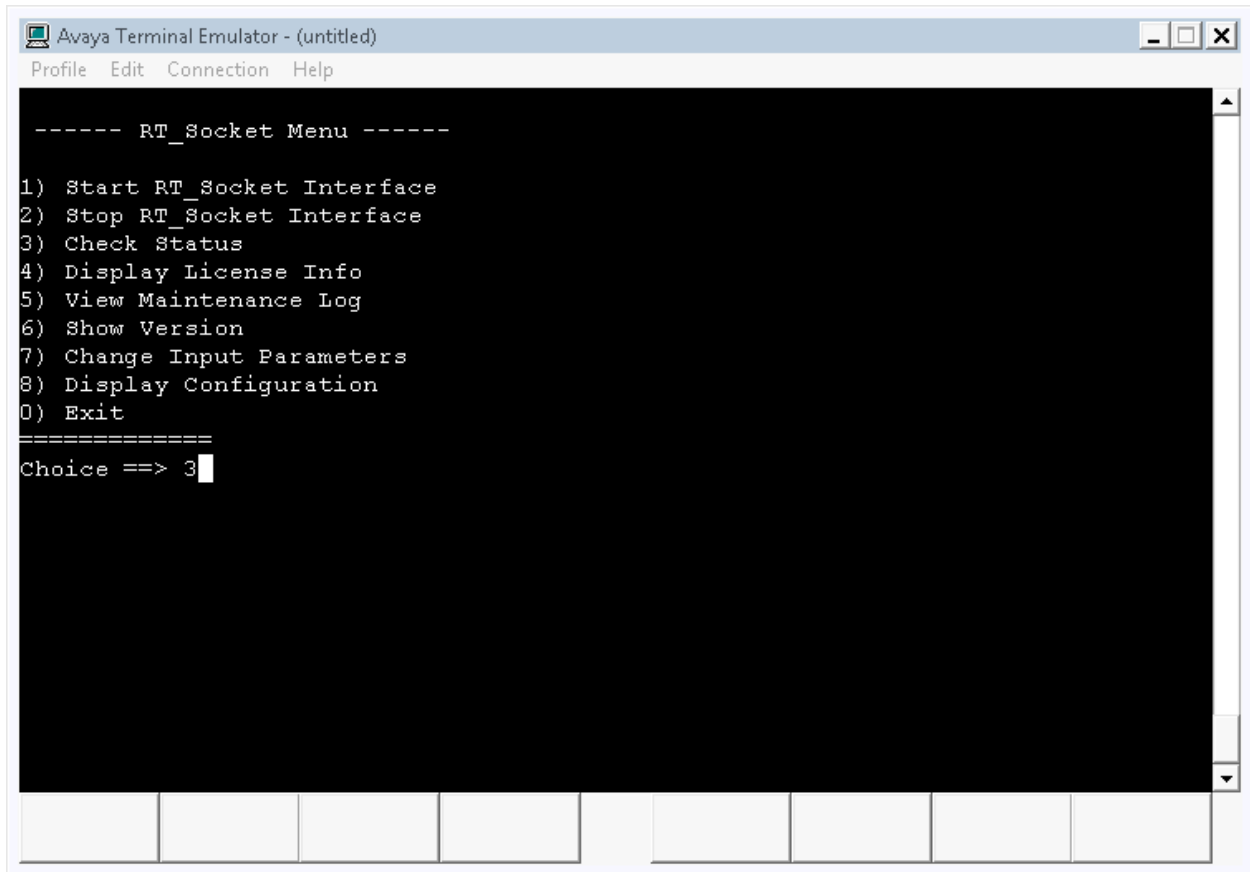
CURRENT CONFIGURATION
PACKAGE: RT_Socket

Session ACD    Dest IP      Port  Report      Monitored Items
1       4           10.64.101.86 7001 Prta_aceyus 1-999
2       4           10.64.101.86 7002 vdnrpt      999
3       4           10.64.101.86 7003 tvil        1-999
4       2           10.10.101.192 8005 puershare_agent 1-999;1000-2000
5       2           10.10.101.192 6005 puershare_split 1-999;1000-2000
6       2           10.10.102.254 4001 tvil        1-999;1000-2000
7       2           10.10.102.254 4002 vdnrpt      1-999999
8       1           10.10.102.253 4003 tvil        1-999;1000-2000
9       1           10.10.102.253 4004 vdnrpt      1-9999

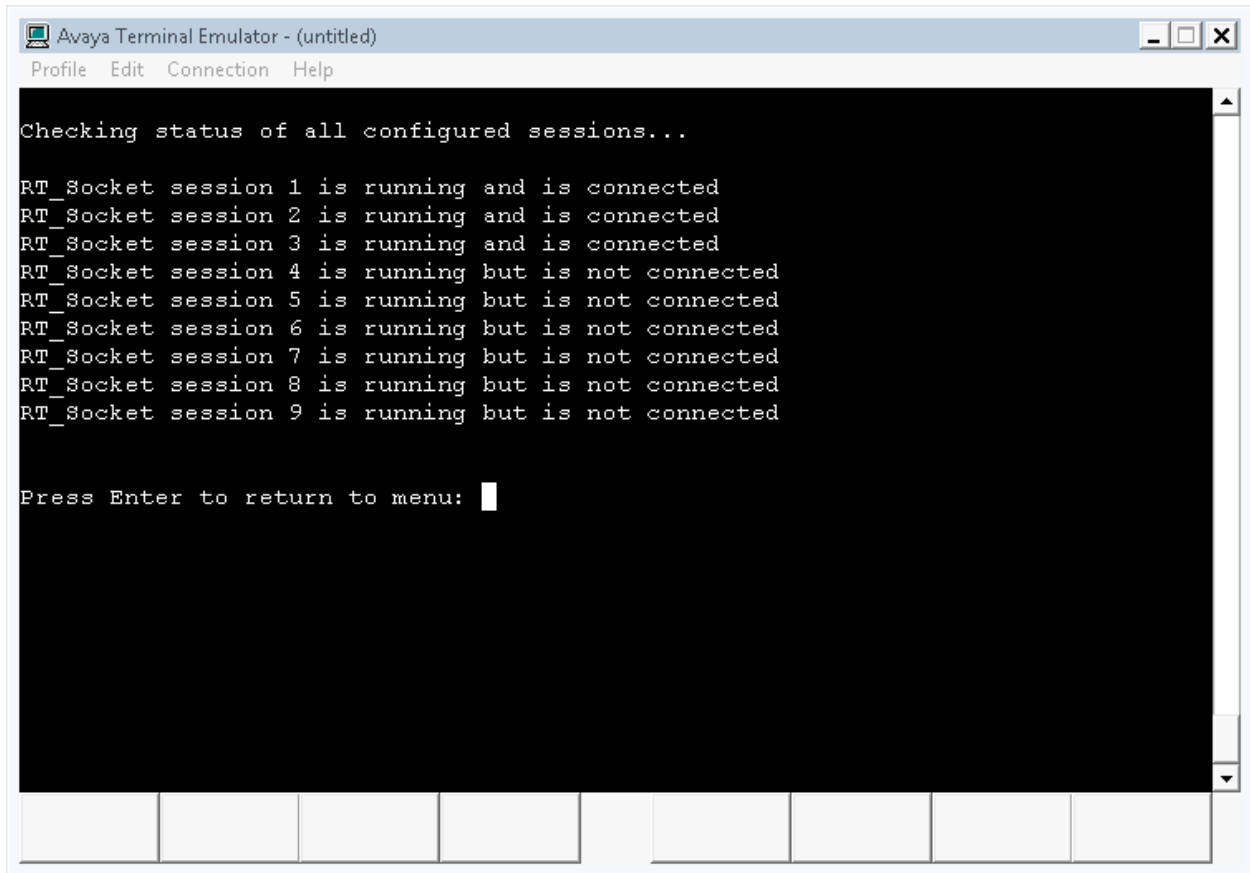
Press Enter to return to menu: █
```

Press Enter to return to the menu.

From the RT_Socket Menu select “3” to display the configuration.



Sessions 1-3 are running and connected.

A screenshot of the Avaya Terminal Emulator window. The title bar reads "Avaya Terminal Emulator - (untitled)". The menu bar includes "Profile", "Edit", "Connection", and "Help". The main terminal area has a black background with white text. The text displays the status of nine sessions. Sessions 1, 2, and 3 are running and connected. Sessions 4 through 9 are running but not connected. At the bottom of the terminal area, it says "Press Enter to return to menu:" followed by a cursor. Below the terminal area is a numeric keypad with buttons for digits 0-9 and function keys like "F1" through "F12".

```
Avaya Terminal Emulator - (untitled)
Profile Edit Connection Help

Checking status of all configured sessions...

RT_Socket session 1 is running and is connected
RT_Socket session 2 is running and is connected
RT_Socket session 3 is running and is connected
RT_Socket session 4 is running but is not connected
RT_Socket session 5 is running but is not connected
RT_Socket session 6 is running but is not connected
RT_Socket session 7 is running but is not connected
RT_Socket session 8 is running but is not connected
RT_Socket session 9 is running but is not connected

Press Enter to return to menu: █
```

Press Enter to return to the menu.

Enter "0" and press Enter to return to the MainMenu.

8.3. Verify Aceyus

Once configured Aceyus will start the adapter and monitor 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 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* Document Number 03-300509
- [2] *Avaya Call Management System Administration*, December 2011, Release 16.3.
- [3] *Aceyus – CMS Adapter Install Guide*, Version 4.5.5 April 2013

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