AVAYA

Avaya Solution & Interoperability Test Lab

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 v6.2.4.4 with Avaya Call Management System R19.0 using Real-Time interfaces to capture ACD contact center data from Avaya Aura® Communication Manager 8.1. 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 RT_Socket interface is developed and provided by Avaya Professional Services.

The Aceyus RT Socket is 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. 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 interface on Avaya CMS, and provides the TCP port numbers associated with each RT_Socket 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 interface.

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**
- **Phone:** +1-888-222-3987
- **Email:** support@aceyus.com

3. Reference Configuration

Figure 1 illustrates the configuration used for compliance testing. The network consisted of System Manager, Session Manager, Communication Manager, Avaya CMS and Aceyus server running on a virtualized environment. The system had SIP trunk connected to SIP Service Provider (PSTN) through Avaya Session Border Controller for Enterprise.
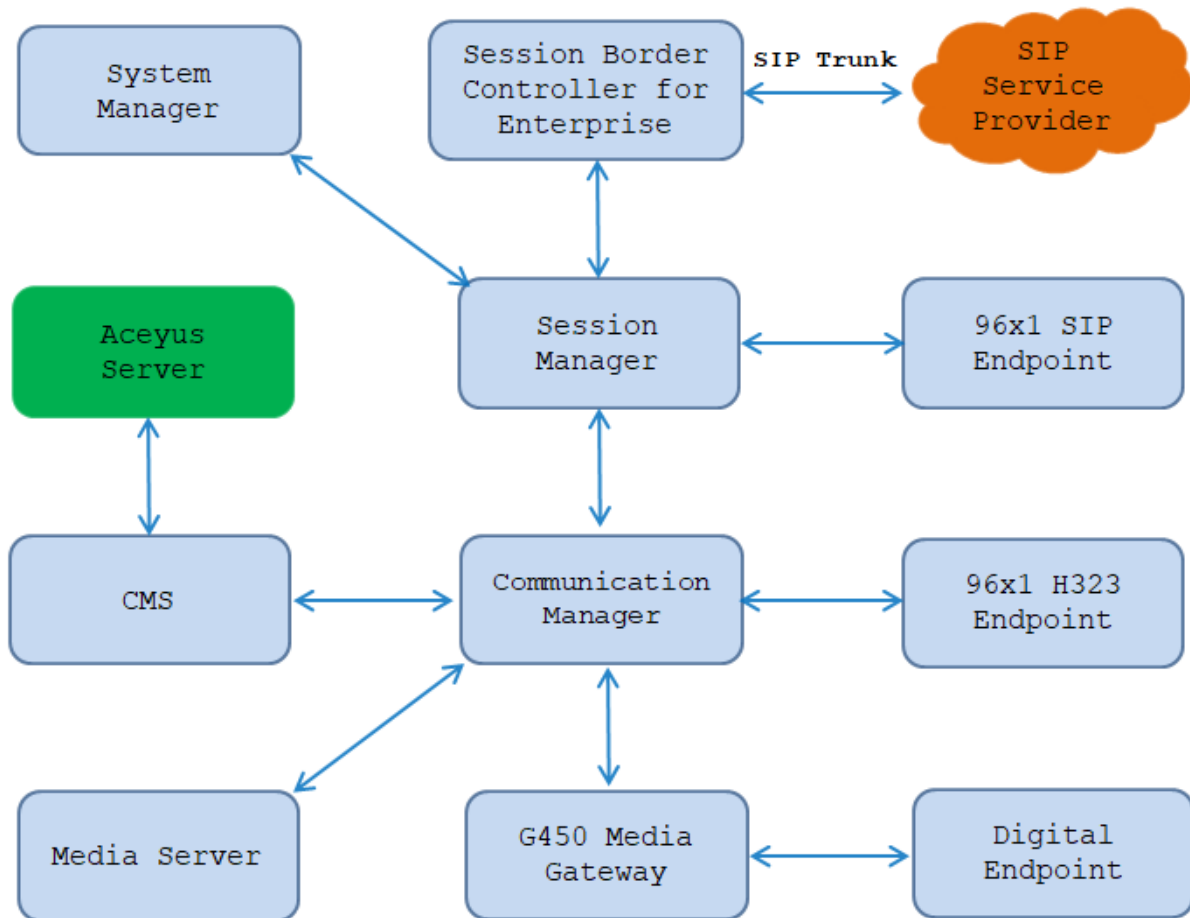

Figure 1: Network Configuration

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	8.1.2.0.0-FP2 (patch 26095)
Avaya G450 Media Gateway MGP	41.24.0
Avaya Aura® Media Server	8.0.2.93
Avaya Aura® Session Manager	8.1.2.0.812039
Avaya Aura® System Manager	8.1.2.0.0611097 (Feature Pack 2)
Avaya Session Border Controller for Enterprise	8.1.0.0.14-18490
Avaya Call Management System • RT_Socket	R19.0 • 4.5.13
Avaya 96x1 Series IP Deskphones	7.1.8.0.9 (SIP) 6.8304 (H.323)
Avaya 9408 Digital Deskphone	20.06
Aceyus Software Version	v6.2.4.4

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 the references in Section 10.

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

- Verify Communication Manager software options
- Administer adjunct CMS release
- Administer node name
- 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/R19.0" is used to correspond to Avaya CMS software release R19.0.

```
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/R19.0
                             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 form with the "change node-names ip" command.

```
change node-names ip                                           Page   1 of   2
                                IP NODE NAMES
    Name                 IP Address
AMS1                 10.33.1.30
CMS19                10.33.1.18
RDTT                 10.33.100.16
default              0.0.0.0
interopASM           10.33.1.12
interopASMB          10.33.1.22
procr                10.33.1.6
```

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              Gtwy        Interface        Destination     Session   Mach
Chan Enable   Appl.   To  Mode Link/Chan      Node       Port Local/Remote ID
  1:   y      mis          s   pv4 5001   CMS19            0     1     1
  2:   n                                                   0     0     0
```

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 3340                                                Page   1 of   3
                         VECTOR DIRECTORY NUMBER

                         Extension: 3340                     Unicode Name? n
                            Name*: Contact Center 1
                       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.

The RT-Socket adapter is configured through a configuration file named **rta.conf** located in the directory where the adapter software is installed. In the compliance test configuration, the path to the directory was **/export/home/pserv/rta_socket**. In the **rta.conf** file, select a Session number and configure the following items:

- **HOST:** IP address or hostname of the Aceyus server which is defined in /etc/hosts
- **PORT:** port for the TCP/IP connection
- **ACD:** ACD that sources the real-time date
- **REFRESH:** real-time report refresh rate

The following screenshot shows how the RT_Socket adapter was configured in the test configuration. Note that in the compliance test, Aceyus used three sessions with different ports to connect to the CMS server to collect different data feeds.

```
#----------------------------- Session 1 -----------------------------
#----------------- (with EXAMPLE settings, NOT defaults) ----------------
HOST1=aceyus                    # The receiving server's host name in /etc/hosts
                                # If this is an encrypted session, the HOST
                                # variable should set to 'localhost'
PORT1=6000                      # The receiving server's port
ACD1=1                          # ACD being monitored
OPTS1=""                        # Applicable command line options
REPORT1=realdash                # Respective custom report name
MONITOR_LIST1="1-2000"          # Skills to monitor
REFRESH1=5                      # Respective report refresh rate
EXT_CLINT_LIC1=no               # Force use of CLINT External License (yes/no)
                                #   (CMS R19 and later systems only.)
ENCRYPTED1=no                   # Secure encrypted connection (yes/no)
                                # When ENCRYPTED=yes, additional stunnel
                                # configuration will be required and the HOST
                                # variable above should be set to 'localhost'
                                #   (Linux-based systems only.)
DEST_APP1="Name Goes Here"    # Destination app notes (human-readable)
#----------------------------- Session 2 -----------------------------
HOST2=aceyus
#HOST2=localhost
PORT2=7000
ACD2=1
OPTS2=""
REPORT2=vdn_realdash
#REPORT2=vdnrpt
MONITOR_LIST2="1-4000"
REFRESH2=5
EXT_CLINT_LIC2=no
```

```
ENCRYPTED2=no
DEST_APP2="Name Goes Here"    # Destination app notes (human-readable)
#----------------------------- Session 3 -----------------------------
HOST3=aceyus
PORT3=7001
ACD3=1
OPTS3=""
REPORT3=logonskills
MONITOR_LIST3="1-2000"
REFRESH3=5
EXT_CLINT_LIC3=no
ENCRYPTED3=no
DEST_APP3="Name Goes Here"    # Destination app notes (human-readable)
```

6.1. Enable RT-Socket Adapter

From the folder where the RT_Socket adapter installed, run the command "./menurta", the **RT_Socket Menu** is displayed.

```
------ RT_Socket Menu ------

1) Start RT_Socket Interface
2) Stop RT_Socket Interface
3) Check Status
4) View Maintenance Log
5) Show RT_Socket Version
6) Show/Verify Licensed Authorizations
7) Show Staffed Agents Count
8) Change RT_Socket Input Parameters
9) Show RT_Socket Configuration
Q) Quit
--------------------
Selection: 1
```

Enter the option "1" followed by the **Enter** key, to start the interface select the option [all] to start all three sessions.

```
------ RT_Socket Menu ------

1)  Start RT_Socket Interface
2)  Stop RT_Socket Interface
3)  Check Status
4)  View Maintenance Log
5)  Show RT_Socket Version
6)  Show/Verify Licensed Authorizations
7)  Show Staffed Agents Count
8)  Change RT_Socket Input Parameters
9)  Show RT_Socket Configuration
Q)  Quit
---------------------
Selection: 1

Which RT_Socket session do you want to start? [1-32] [all]
Starting rt_socket session 1.  Please wait ...

Press Enter to return to menu:
```

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 **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: None
                    At:
```

8.2. Verify Avaya Call Management System

8.2.1. Connection Status

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

```
6/14/20  10:08  Avaya(TM) CMS
Windows: 0 of 10   ^

  lMainMenuqqqqqqqqqqqqqqqqqqqqqqk
 x Reports>                    x
 x Dictionary>                 x
 x Exceptions>                 x
 x Agent Administration>       x
 x Call Center Administration> x
 x Custom Reports>             x
 x User Permissions>           x
 x System Setup>lqqqqqqqqqqqqqqqqqqqqqqqqk
 x Maintenance> x Back Up Data            x
 x Logout       x Restore Data            x
 x ;            x Backup/Restore Devices x
mqqqqqqqqqqqqqqqx Printer Administration x
               x Report Administration  x
               x Connection Status      x
               x ACD Status             x
               x Archiving Status       x
               x ACD Admin Log Report   x
               x Error Log Report       x
               x Firewall Status        x
               x License Status         x
               mqqqqqqqqqqqqqqqqqqqqqqqqj
```

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.

```
Maintenance: Connection Status                          All ACDs
                                                    x Find one
ACD(s): 1nteropcm_____      x List all
Application: data transfer                          x Next
Session: data transfer          normal              x Previous
Connection: operational                             mqqqqqqqqq
Date/Time:  6/14/20 10:21 AM
Errors:




 1 matches found
```

8.2.2. RT_Socket

From the RT_Socket Menu, 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.

```
Current Configuration

Package: RT_Socket

   NOTE: Sessions with incomplete settings in the rta.conf
         file will not be displayed.

SESSION   ACD   DEST IP          PORT   REPORT NAME       MONITORED SKILLS
------------------------------------------------------------------------
1         1     aceyus           6000   realdash          1-2000
2         1     aceyus           7000   vdn_realdash      1-4000
3         1     aceyus           7001   logonskills       1-2000
4         1     localhost        7003   tvi1              1-2000
```

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.**

```
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.
RT_Socket session 4 is not running.


Press Enter to return to menu:
```

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 of Avaya Call Management System. All feature and serviceability test cases were completed successfully.

10. Additional References

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

[1] *Administering Avaya Call Management System*, Release 19.1 Issue 2, May 2020
[2] *Avaya Call Management System Call History Interface*, Release 19.1 Issue 1, February 2020
[3] *Avaya Call Management System Custom Reports*, Release 19.1 Issue 1, February 2020
[4] *Administering Avaya Aura® Communication Manager*, Release 8.1.x, Issue 6, March 2020

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