



Avaya Solution & Interoperability Test Lab

Application Notes for Korbyt RT-ODBC Data Adapter by RMG Networks with Avaya Call Management System R18 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Korbyt RT-ODBC Data Adapter by RMG Networks to interoperate with Avaya Call Management System via ODBC interface.

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 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 Korbyt RT-ODBC Data Adapter by RMG Networks with Avaya Call Management System (CMS).

As an Avaya contact center reporting product, CMS collects and reports contact center data from the ACD feature (Automatic Call Distributor) of Avaya Aura® Communication Manager. Korbyt RT-ODBC Data Adapter connects to CMS via JDBC interface to gather midnight to previous half-hour data from the h tables.

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.

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

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

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

This test was conducted in a lab environment simulating a basic customer enterprise network environment. The testing focused on the standards-based interface between the Avaya solution and the third-party solution. The results of testing are therefore considered to be applicable to either a premise-based deployment or to a hosted or cloud deployment where some elements of the third-party solution may reside beyond the boundaries of the enterprise network, or at a different physical location from the Avaya components.

Readers should be aware that network behaviors (e.g., jitter, packet loss, delay, speed, etc.) can vary significantly from one location to another, and may affect the reliability or performance of the overall solution. Different network elements (e.g., session border controllers, soft switches, firewalls, NAT appliances, etc.) can also affect how the solution performs.

If a customer is considering implementation of this solution in a cloud environment, the customer should evaluate and discuss the network characteristics with their cloud service provider and network organizations, and evaluate if the solution is viable to be deployed in the cloud.

The network characteristics required to support this solution are outside the scope of these Application Notes. Readers should consult the appropriate Avaya and third-party documentation for the product network requirements. Avaya makes no guarantee that this solution will work in all potential deployment configurations.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

On Communication Manager, relevant skills and Vector Directory Number (VDN) objects are configured to be “measured” for CMS. When a call travels through a “measured” object on Communication Manager, the ACD related data is sent to the CMS. Korbyt RT-ODBC Data Adapter connects to CMS via JDBC interface to gather this data.

The feature test cases were performed manually. Incoming calls were made to the measured VDNs, skills, and agents to generate data for Korbyt RT-ODBC Data Adapter. Manual call control functions such as answer, hold, resume, and disconnect, along with agent work mode changes including login, auto-in, manual-in, after call work, auxwork, and logout were exercised as necessary to populate specific fields in the reports. Additional call scenarios such as call waiting time longer than service level target, abandoned calls, inbound extension calls to an agent in auxwork or after call work mode, and outbound extension calls from an agent in auxwork or after call work mode were also exercised.

The serviceability test cases were performed manually by disconnecting and reconnecting the network connection to the Korbyt RT-ODBC Data Adapter server.

For each field in the tested report, the corresponding CMS report was used to validate the accuracy of data generated by CMS and gathered by Korbyt RT-ODBC Data Adapter.

2.2. Test Results

The Korbyt RT-ODBC Data Adapter successfully passed the compliance test.

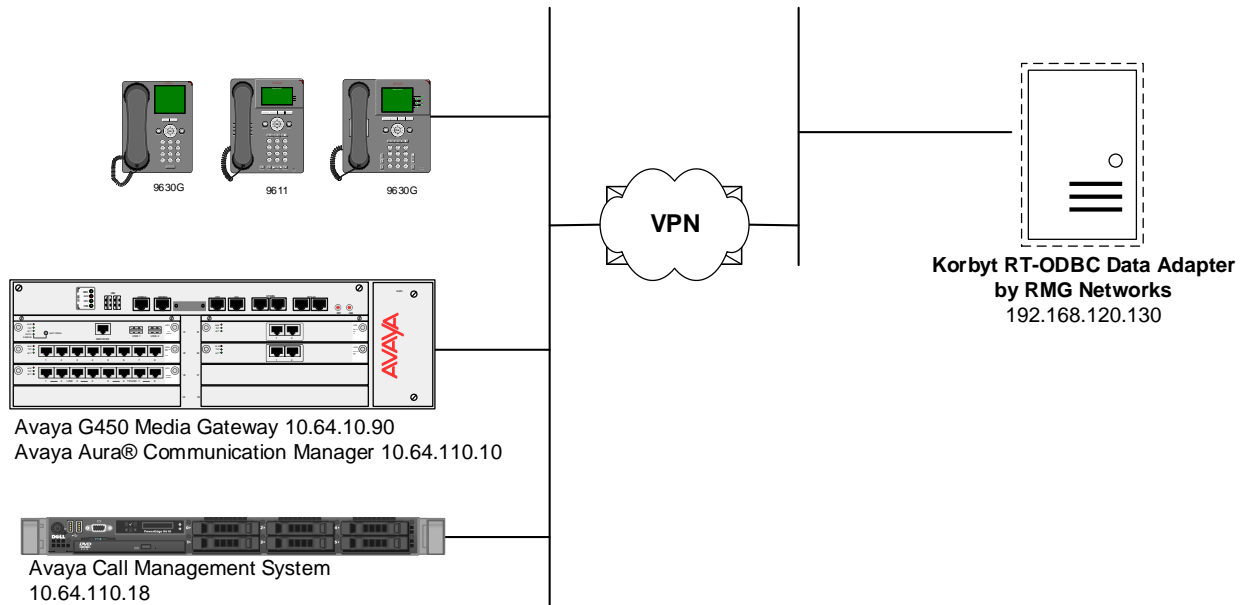
2.3. Support

Technical support from RMG Networks can be obtained through the following:

- **Phone:** 877-789-TECH (8324)
- **Email:** support@rmgnetworks.com

3. Reference Configuration

The figure below shows the compliance testing configuration. Communication Manager, CMS, and 9600 Series IP Deskphones reside in one subnet. Korbyt RT-ODBC Data Adapter connected to CMS via a VPN connection.



Korbyt RT-ODBC Data Adapter with Avaya Call Management System Configuration

4. Equipment and Software Validated

The following equipment and software were used for the test configuration:

Equipment/Software	Version
Avaya Aura® Communication Manager	7.1.3
Avaya G450 Media Gateway	37.19.0
Avaya Call Management System	R18.0.2
RMG Networks Korbyt RT-ODBC Data Adapter	1.4.0

5. Configure Avaya Aura® Communication Manager

This section describes the steps for configuring Communication Manager for the Korbyt RT-ODBC Data Adapter. The procedures include the following areas:

- Administer adjunct CMS release
- Configure IP node names for Call Management System
- 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 **R18**.

```
display 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
      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
```

5.2. Configure IP Node Name for Call Management System

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

- Enter a desired name in **Name** field for Call Management System, e.g. **cms**
- Enter Call Management System's IP address in **IP Address** field, e.g. **10.64.110.18**

```
change node-names ip
```

		Page 1 of 2
		IP NODE NAMES
Name	IP Address	
aes	10.64.110.17	
ams	10.64.110.13	
asm	10.64.110.12	
cms	10.64.110.18	
default	0.0.0.0	

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 Call Management System. 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, session local **2** is utilized.
- Session Remote – Corresponding channel number in Proc Chan field. During the test, session remote **2** is utilized.

The **Interface Chan** field contains the Call Management System’s TCP channel number, which is defined as a part of the Call Management System 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 5002  cms      0    2    2
2:   n
```


5.4. Configure Measured Skill

Enter the **add hunt-group *n*** command; where *n* is an unused hunt group number to be measured by Call Management System. 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**

Repeat this step for all VDNs that will be monitored by Call Management System.

```
add hunt-group 1                                     Page 1 of 4
                                                    HUNT GROUP
    Group Number: 1                                ACD? y
      Group Name: Skill 1                          Queue? y
    Group Extension: 23001                          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**

```
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 **add vector *n*** command; where *n* is an unused 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: Intradiem Vector 1
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
03 wait-time      30      secs hearing ringback
```

5.6. Configure Measured VDN

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

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

```
add vdn 22001                                     Page 1 of 3
                                           VECTOR DIRECTORY NUMBER
Extension: 22001
Name*: VDN 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*:
```

5.7. Configure Agents

Enter the **add agent-loginID *n*** command; where *n* is a valid extension in the provisioned dial plan. On **Page 1**:

- In **Name** field, type in a desired agent's name
- In **Password** and **Password (enter again)** type in a desired password.

```
add agent-loginID 5001                                     Page 1 of 2
                                     AGENT LOGINID
Login ID: 5001                                           AAS? n
Name: CC Agent 1                                         AUDIX? n
TN: 1           Check skill TNs to match agent TN? n
COR: 1
Coverage Path:                                           LWC Reception: spe
Security Code:                                           LWC Log External Calls? n
Attribute:                                               AUDIX Name for Messaging:
                                     LoginID for ISDN/SIP Display? n
                                     Password:
                                     Password (enter again):
                                     Auto Answer: station
AUX Agent Remains in LOA Queue: system                   MIA Across Skills: system
AUX Agent Considered Idle (MIA): system                  ACW Agent Considered Idle: system
Work Mode on Login: system                               Aux Work Reason Code Type: system
                                                         Logout Reason Code Type: system
Maximum time agent in ACW before logout (sec): system
Forced Agent Logout Time: :
WARNING: Agent must log in again before changes take effect
```

On **Page 2**:

- Set **SN** (Skill Number) to a hunt group, e.g. **1**, configured in **Section 5.4**
- Set **SL** (Skill Number) to a skill level, e.g. **1**

Note: Hunt group **1** was previously configured and its configuration is not shown in this application notes.

```
add agent-loginID 2501                                     Page 2 of 2
                                     AGENT LOGINID
Direct Agent Skill:                                       Service Objective? n
Call Handling Preference: skill-level                     Local Call Preference? n
SN  RL SL          SN  RL SL
1:  1      1      16:
```

6. Configure Avaya Call Management System

This section covers the configuration of Call Management System.

6.1. Configure ACD for Communication Manager

Telnet or SSH into Call Management System, using proper credentials and log in as root.

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

```
(acms)-(root)=# 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) uninstall   Remove the CMS rpm from the machine
 9) patch_rmv   Backout an installed CMS patch
10) back_all    Backout all installed CMS patches from machine
11) security    Administer CMS security features
Enter choice (1-11) or q to quit:
```

- Select **2, 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, acd_create**, from the service menu. 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 **3**
 - For next three prompts, type **y**
 - **Enter the local port assigned to switch:** Type **2**
 - **Enter the remote port assigned to switch:** Type **2**
 - **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 port from **Section 5.3**
 - For rest of the prompts leave the values at default or enter desired values

```

acms)-(root)=# 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): cm

Select the model of switch for this ACD
  1) Communication Mgr 5.2
  2) Communication Mgr 6.x
  3) Communication Mgr 7.x
Enter choice (1-3): 3

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): 2

Enter the remote port assigned to switch (1-64): 2

```

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

Enter switch host name or IP Address: 10.64.110.10

Enter switch TCP port number (5001-5999): (default: 5001) 5002

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**

```
(acms)-(root)=# 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) uninstall    Remove the CMS rpm from the machine
 9) patch_rmv    Backout an installed CMS patch
10) back_all     Backout all installed CMS patches from machine
11) security     Administer CMS security features
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 RMG Korbyt RT-ODBC Data Adapter

This section describes how to configure Korbyt RT-ODBC Data Adapter on the server running it. Configuration in this section is performed by an RMG Engineer.

The adapter is configured through the Korbyt CMS server.

1. **Name:** Unique name to identify the adapter
2. **Split/Skill, Agent, VDN TCP Listening Port:** The port to listen for the split/skill, agent, or vdn data from rt-socket.
3. **Split, Agent, VDN Label Name:** The leading label that indicates the line is split/skill, agent, or vdn data
4. **Split, Agent, VDN End of Data Marker:** The string that identifies the EOD (end of data)
5. **Include Agent Data:** Indicates if Agent data will be included
6. **Include VDN Data:** Indicates if the VDN data will be included
7. **ACD Number:** The ACD the report is sending data for. This is also used for the database connection
8. **Remove Expired:** Indicates if data should be removed when it is no longer receiving data from the rt-socket.
9. **Data Separator:** The character that delimits the data.
10. **Quote Character:** The character that identifies the data is a string
11. **Data Escape Character:** The character that escapes the data in a string
12. **Maximum Number of Records:** The maximum number of records that would be sent by any one socket connection (ex. 1250 split/skills)
13. **Database Server host:** The hostname or IP address of the Avaya Informix Database. Due to possible name resolution errors, the IP address is preferable.
14. **Database Server port:** The port that is used to connect to the database instance.
15. **User Name:** The username for authenticating to the Informix database
16. **Password:** The password for authenticating to the Informix database
17. **Database name:** The name of the database instance
18. **Refresh interval:** The interval to check for updates to the hsplit/hagent/hvdm tables in the database

Below is a sample screen capture of the fields.

CREATE ADAPTER USING TEMPLATE

Name :

Select Template : Avaya RT Socket data adapter

Split/Skill TCP listening port	<input type="text" value="7001"/>
Split End of data marker	<input type="text" value="F3JEND_OF_RECORDS"/>
Split label name	<input type="text" value="SKILL"/>
Include Agent Data	<input type="radio"/> True <input checked="" type="radio"/> False
Agent TCP listening port	<input type="text" value="7002"/>
Agent End of data marker	<input type="text" value="F3JEND_OF_RECORDS"/>
Agent label name	<input type="text" value="AGENT"/>
Include VDN Data	<input type="radio"/> True <input checked="" type="radio"/> False
VDN TCP listening port	<input type="text" value="7003"/>
VDN End of data marker	<input type="text" value="F3JEND_OF_RECORDS"/>
VDN label name	<input type="text" value="VDN"/>
ACD Number	<input type="text" value="1"/>
Remove Expired	<input type="radio"/> True <input checked="" type="radio"/> False
Data Separator	<input type="text" value=" "/>
Quote character	<input type="text" value=""/>
Data escape character	<input type="text" value="\"/>
Maximum number of records	<input type="text" value="1000"/>
Database server host	<input type="text"/>
Database server port	<input type="text" value="50001"/>
User name	<input type="text"/>
Password	<input type="password"/>
database name	<input type="text"/>
Refresh Interval	<input type="text" value="00:15:00"/>

8. Verification Steps

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

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

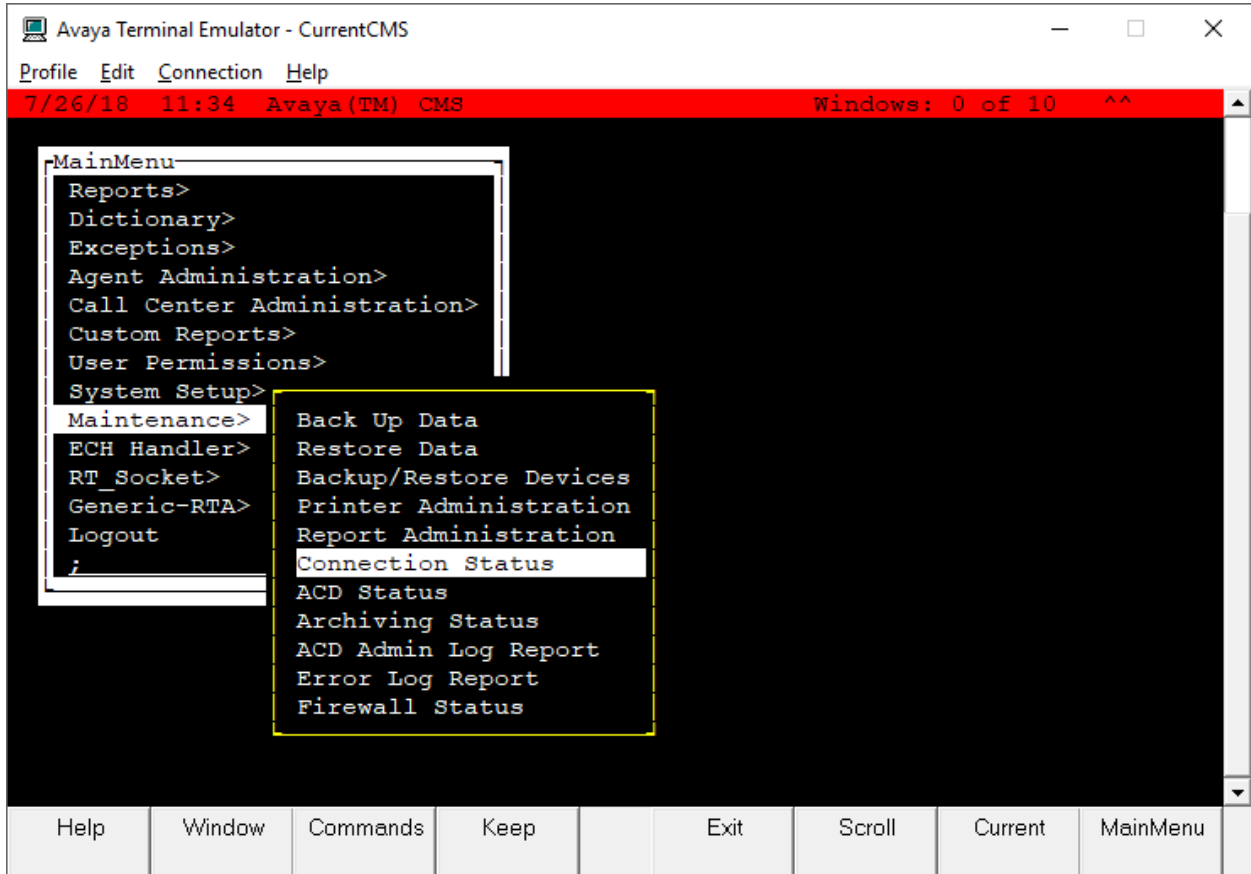
```
status processor-channels 1
                          PROCESSOR-CHANNEL STATUS

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

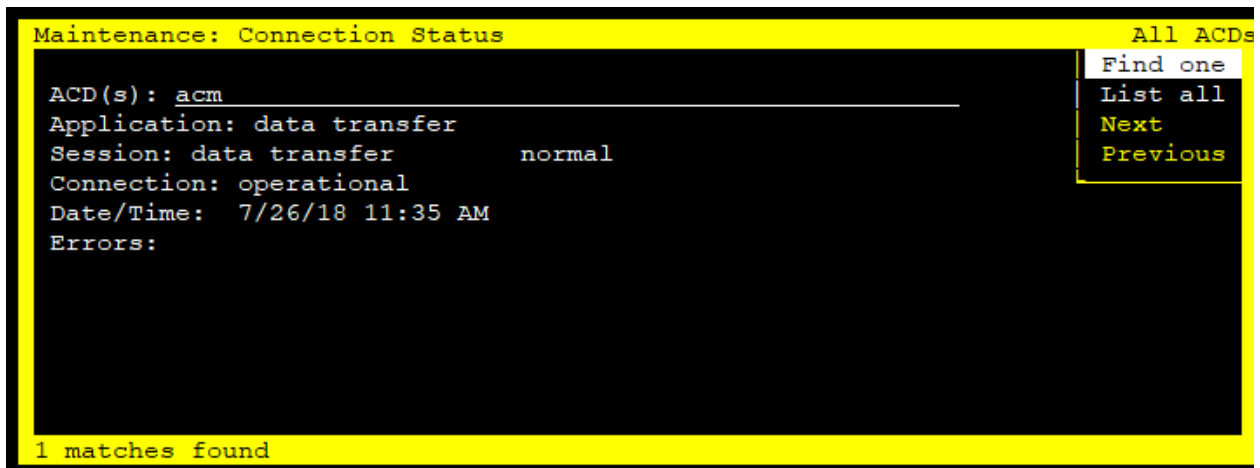
      Last Failure: Far end sent disconnect
      At: 07/26/18 11:21
```

8.2. Verify from Call Management System

Connect to Call Management System using Avaya Terminal Emulator. From the **MainMenu**, verify the status of the connection to Communication Manager by selecting **Maintenance** → **Connection Status**, as shown below.



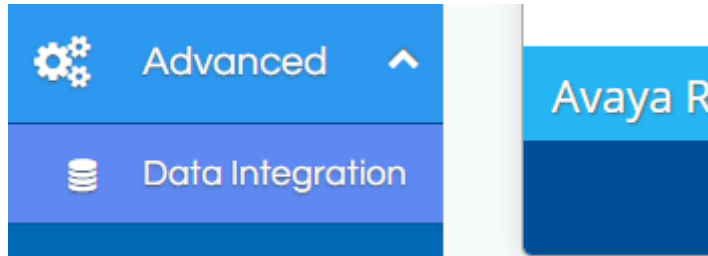
Type in the **ACD** name and verify the **Connection** state is **operational**.



8.3. Verify Korbyt RT-ODBC Data Adapter

This section describes how to verify proper functionality of Korbyt RT-ODBC Data Adapter.

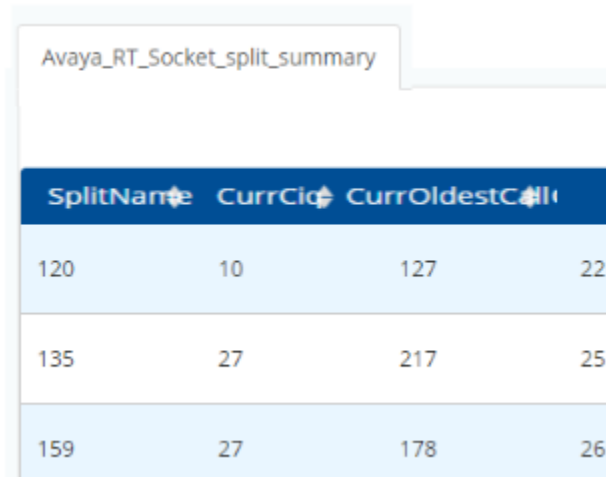
1. Log into the server running Korbyt RT-ODBC Data Adapter.
2. Navigate to the **Data Integration Portal**.



3. From the **Data Adapter**, select **Preview Data**.



4. From here you will see a preview of the data currently in the data store. Screen capture below is for informational purposes only.



SplitName	CurrCic	CurrOldestCall	
120	10	127	22
135	27	217	25
159	27	178	26

9. Conclusion

These Application Notes describe the configuration steps required for Korbyt RT-ODBC Data Adapter 1.4.0 to interoperate with CMS Release R18 via JDBC interface. Compliance testing based upon the specified configuration has been completed successfully.

10. Additional References

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

- [1] *Administering Avaya Aura® Communication Manager*, Release 7.1.3, Issue 7, May 2018, Document Number 03-300509, available at <http://support.avaya.com>.
- [2] *Avaya Call Management System Software Installation, Maintenance, and Troubleshooting for Linux®*, Release 18.0.2, February 2018, available at <http://support.avaya.com>

Documentation related to Korbyt RT-ODBC Data Adapter may be directly obtained from RMG Networks.

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