AVAYA

Avaya Solution & Interoperability Test Lab

Application Notes for Calabrio Data Management R11.5 with Avaya Call Management System R19.2 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Calabrio Data Management to interoperate with Avaya Call Management System. Calabrio Data Management is a work force management solution that provides forecasting, scheduling, and monitoring of work for contact center agents. Calabrio Data Management uses the historical call measurement data from Avaya Call Management System (CMS) to produce productivity statistics and call anatomy reports for contact center agents, and the real-time call measurement data from Avaya Call Management System to view agent and queue metrics in real-time. Adding Avaya CMS solutions to the core list of Calabrio Data Management, pre-built solutions, customers can speed up the data collection process and eliminate reporting errors with a single source of information and visualize that data alongside other solutions.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any 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.

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SPOC 1/19/2022

Solution & Interoperability Test Lab Application Notes
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1 of 30
CDM11-CMS19

1. Introduction

On Avaya Aura® Communication Manager, relevant contact center resources consisting of Vector Directory Number (VDN), Skill, and Agent are configured to be "measured" by Avaya Call Management System. When a call travels through a "measured" resource on Avaya Aura® Communication Manager, the call measurement data is sent to Avaya Call Management System, which in turn provides the data to Calabrio Data Management.

The historical adapters reside on Avaya Call Management System. Every 30 minutes they generate custom formatted ASCII-text historical reports and distribute them to an SFTP server. Calabrio Data Management regularly pulls for ECHI data on a scheduled basis from the SFTP data repository directory and populates the data into the Calabrio Data Management data mart. Calabrio Data Management polls Avaya Call Management System source database on a scheduled basis to load Avaya Call Management System data into the Calabrio DataManagement data mart. Contact center users such as supervisors and/or agents can use a web browser to access Calabrio Data Management to review any collected data and/or produce intuitive ad hoc reporting.

The Calabrio/Avaya integration also includes a real-time connection between Calabrio Data Management and Avaya Call Management System, to supply real-time agent state information, real-time skill information and real-time VDN information to Calabrio Data Management. The real-time connection is achieved through the Generic Real Time Agent (Generic-RTA) adapter and RT Socket (Skill & VDN) developed by Avaya Professional Services and installed on Avaya Call Management System. A TCP client-server model is used for the connection, with Avaya Call Management System being the "client", and the Calabrio Data Management server being the "server". The Calabrio Data Management server runs a data collection service which accepts incoming TCP message in real-time from Avaya Call Management System.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature test cases were performed manually. Incoming calls were made within a measured interval to the measured VDNs, Skills, and Agents to enable measurement data to be sent to CMS. Manual call controls and work mode changes from the agent telephones were exercised to populate specific fields in the data stream. In the compliance test, the measured interval is fixed at 30 minutes per requirement of Calabrio Data Management.

At the end of a measured interval, custom historical reports were generated and transferred to the Calabrio Data Management server. Various Calabrio reports were brought up through a web browser to check proper display and correctness of each field against the data in the CMS custom reports.

As calls were made to the agents and work mode changes were performed by the agents, a supervisor user interface supported by Calabrio Data Management was brought up to verify proper display and correctness of the real-time data.

The serviceability test cases were performed manually by forcing solution components to go out of service and come back in service and verifying Calabrio server's ability to recover.

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 this Application Note, the interface between Avaya systems and the Calabrio did not include use of any specific encryption features.

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 feature testing focused on verifying Calabrio Data Management correctly parsing and displaying VDN, Skill, and Agent data from CMS. A number of call center scenarios including agent login, agent mode change, agent logout, incoming call to VDN, abandon call, call waiting in queue, call waiting at agent, hold/resume, transfer, conference, direct agent call, extension call from agent, incoming call to agent extension, and redirect on no answer were exercised and a number of vector commands such as queue-to, busy, disconnect, and route-to were executed to generate data for specific fields in the historical reports and real-time supervisor interface.

The serviceability testing focused on verifying the ability of the Calabrio server to recover from adverse conditions, such as stopping the Generic RTA adapter on CMS, disconnecting the Calabrio server from the network, and rebooting the Calabrio server. The serviceability testing also included recovery of historical data.

2.2. Test Results

All test cases were executed successfully.

2.3. Support

Technical support on Calabrio Data Management can be obtained through the following:
- Phone: 1-800-303-1248
- Email: calabriosupport@calabrio.com

3. Reference Configuration

The compliance test was done with some Calabrio Data Management (CDM) VMware virtual machine servers were installed and configured locally in the DevConnect Lab while the reports and dashboards were configured via CDM cloud. The Avaya side equipment included Communication Manager, CMS, and several IP phones. All calls to and from the public network were routed through Avaya Session Border Controller for Enterprise via SIP trunks.
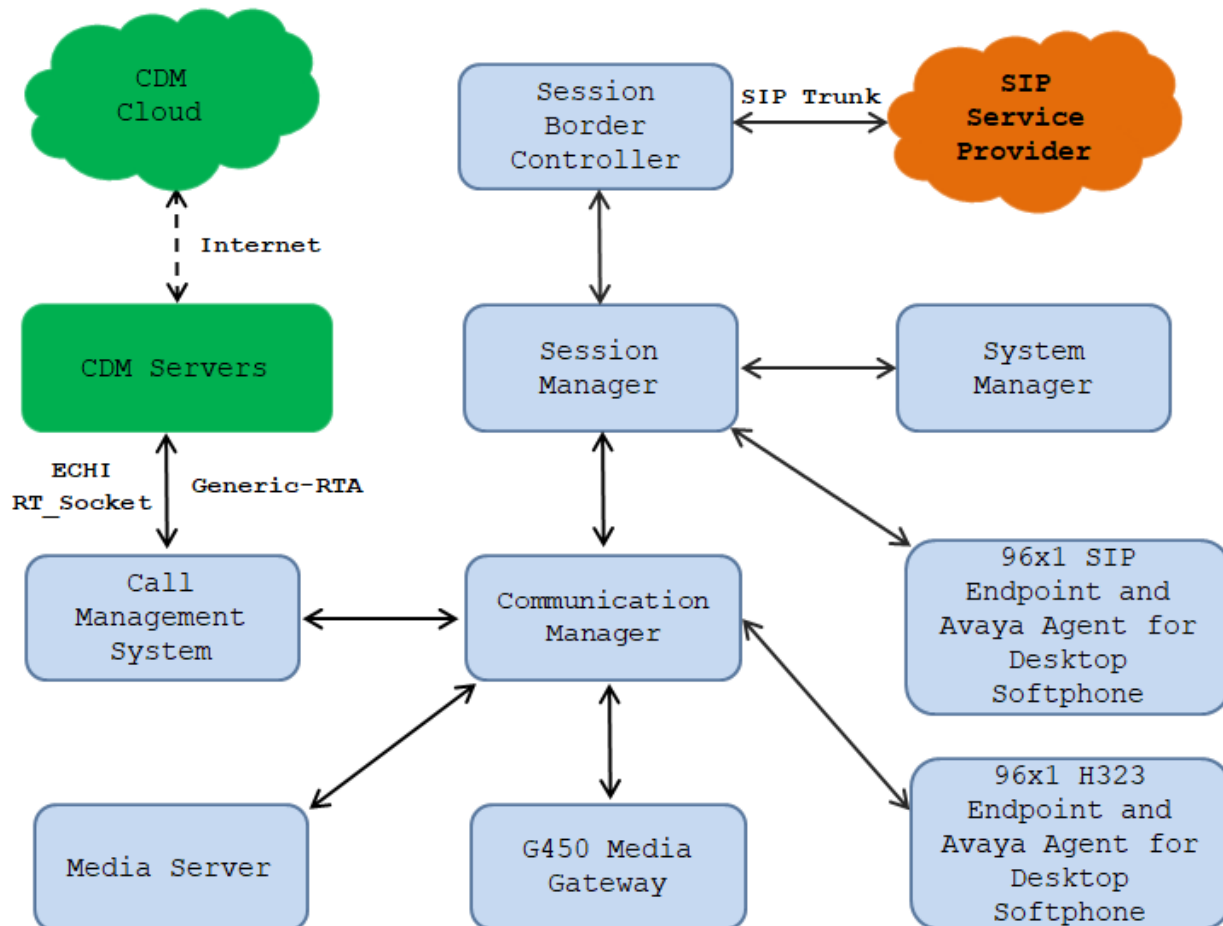

Figure 1: Calabrio Data Management with Avaya Call Management System

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5 of 30
CDM11-CMS19

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on Virtual Environment	8.1.3 (8.1.3.2.0.890.26989)
Avaya G450 Media Gateway	41.34.0
Avaya Aura® Media Server running on Virtual Environment	8.0 (8.0.2.163)
Avaya Call Management System • Avaya Real-Time Agent • Avaya Real-Time Socket • Avaya External Call History Handler	19.2.0 6.3.15 4.5.19 1.10.8
Avaya Aura® System Manager running on Virtualized Environment	8.1.3 (8.1.3.0.1011784)
Avaya Aura® Session Manager running on Virtualized Environment	8.1.3 (8.1.3.0.813014)
Avaya Session Border Controller for Enterprise	8.1.2 (8.1.2.0-37-21065)
Avaya 9611G IP Deskphone (SIP)	7.1.9.0.8
Avaya Agent for Desktop Softphone (H.323 and SIP)	2.0.6.0.10
Avaya 9641G IP Deskphone (H.323)	6.8304
Calabrio Data Management running in Windows Server 2016 Calabrio Data Management Historical: Calabrio Data Management Realtime:	11.6.1.060 Master-229

5. Configure Avaya Aura® Communication Manager

This section provides the procedures for how to enable VDN, Skill, and Agent measurement data to be sent to CMS. The procedures include the following areas:

- Administer measured VDN
- Administer measured Skill and Agent

The detailed administration of contact center resources and connectivity between Communication Manager and CMS are not the focus of these Application Notes and will not be described. For administration of contact center resources and connectivity to CMS, refer to the appropriate documentation listed in **Section 10**.

5.1. Administer measured VDN

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

For the compliance testing, three VDNs with extensions 3340, 3341, and 3342 were configured to be measured.

5.2. Administer Measured Skill and Agent

Use the "change hunt-group n" command, where "n" is the number of the Skill group to be measured by CMS. Navigate to **Page 2**, and set the **Measured** field to "both" to enable measurement data on the Skill group and the associated Agents to be sent to CMS. Repeat this step for all Skill groups that will be measured by 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
```

For the compliance testing, two Skill groups with group numbers 1 and 2 were configured to be measured. In addition, four agents with extensions 3301, 3302, 3401 and 3402 and agent id 1000, 1001, 1002 and 1003 were used as available agents for the above Skill groups.

```
list agent-loginID                                            Page   1
                         AGENT LOGINID
Login ID       Name            Extension    Dir Agt  AAS/AUD   COR AgPr SO
               Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

1000           Agent 1000      3301                                   1    lvl
                1/01     /       /        /        /        /         /
1001           Agent 1001      3401                                   1    lvl
                1/01     /       /        /        /        /         /
1002           Agent 1002      3302                                   1    lvl
                1/01     /       /        /        /        /         /
1003           Agent 1003      3402                                   1    lvl
                1/01    2/01     /        /        /        /         /
```

6. Configure Avaya Call Management System

This section provides the procedures for the following:
- Configure Generic-RTA Adapter
- Configure RT_Socket Adapter
- Check Intra-hour Interval
- Configure External Call History Interface

Note that no special procedure is required to enable the customized historical data interface.

The connectivity between CMS and Communication Manager is assumed to be in place and will not be described. In addition, these Application Notes assume the intra-hour interval is already configured to be 30 minutes.

6.1. Configure Generic-RTA Adapter

The Generic-RTA 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_gen**. In the **rta.conf** file, select a Session number and configure the following items:

- **HOST**: hostname of the Calabrio server which is defined in /etc/hosts.
- **PORT**: Receiving port on Calabrio server to receive data.
- **ACD**: ACD that sources the real-time data, 1 in this case, as preconfigured.
- **REFRESH**: real-time report refresh rate in seconds.

The following screenshot shows how the adapter was configured in the test configuration.

```
#----------------------------- Session 1 ------------------------------
HOST1=10.33.1.74
PORT1=7003
ACD1=1
OPTS1=""
REPORT1=rta_gen
MONITOR_LIST1="1-1999"
REFRESH1=5
EXT_CLINT_LIC1=no
ENCRYPTED1=no
DEST_APP1="Calabrio"
#----------------------------- Session 2 ------------------------------
```

Use Avaya Terminal Emulator to connect to CMS, and log in with proper credentials. Enter "cms" at the command prompt to display the **MainMenu** screen. Select the option that corresponds to the customized real-time agent interface created by Avaya Professional Services for Calabrio, in this case the option is **Generic-RTA**. Note that the actual option name may vary. Press the **Enter** key.

```
10/ 1/21  09:53  Avaya(TM) CMS
  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>                x
  x Maintenance>                 x
  x CALA-RTA>                    x
  x Generic-RTA>                 x
  x RT_Socket>                   x
  x Calabrio>                    x
  x ECH Handler>                 x
  x Logout                       x
  x ;                            x
  mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj
```

The **Generic-RTA Menu** is displayed. Enter "1" followed by the **Enter** key, to start the interface.

```
 ------ 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
```

The system will prompt for the session number. Enter the session number selected in **Section 6.1** and the **Enter** key. Press the **Enter** key followed by "Q" to return to the CMS **MainMenu**.

```
Generic-RTA session 1 is not running.
Generic-RTA session 2 is running, not encrypted, and not connected.

Which Generic-RTA session(s) do you want to start?
  Input range must be between 1 and 32.
  Input entries allowed:
    - Enter a single session number (e.g. 5).
    - Enter a range of session numbers separated by a dash (e.g. 6-11).
    - Enter 'all' or just press Enter to select ALL configured sessions.
    - Enter 'q' or 'Q' to quit.
Enter Generic-RTA session(s) to start: 1
Starting session(s): 1

Starting Generic-RTA session 1, please wait ...
WARN: License VALUE_ACMS_GENERIC_REAL_TIME is in the 30-day grace period.
Verify that the WebLM interface is working correctly.
WARN: License VALUE_ACMS_GENERIC_REAL_TIME_ADDL_SESSIONS is in the 30-day
grace period.
Verify that the WebLM interface is working correctly.

License check:  Successful

Press Enter to return to menu:
```

6.2. Configure Real-Time Socket Adapter

The Generic-RTA 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/rt_socket**. In the **rta.conf** file, select a Session number and configure the following items:

- **HOST**: hostname of the Calabrio server which is defined in /etc/hosts.
- **PORT**: Receiving port on Calabrio server to receive data.
- **ACD**: ACD that sources the real-time data, 1 in this case, as preconfigured.
- **REFRESH**: real-time report refresh rate in seconds.

There were two sessions configured in the rt_socket adapter: one for skill with the report name "tvi1" and another one for VDN with the report name "vdnrpt" as shown in the table below.

```
#----------------------------- Session 1 ------------------------------
HOST1=10.33.1.74
PORT1=7020
ACD1=1
OPTS1=""
REPORT1=tvi1
MONITOR_LIST1="1-2000"
REFRESH1=5
EXT_CLINT_LIC1=no
ENCRYPTED1=no
DEST_APP1="Calabrio"
#----------------------------- Session 2 ------------------------------
HOST2=10.33.1.74
PORT2=7010
ACD2=1
OPTS2=""
REPORT2=vdnrpt
MONITOR_LIST2="1-1999"
REFRESH2=5
EXT_CLINT_LIC2=no
ENCRYPTED2=no
DEST_APP2="Calabrio"
```

Use Avaya Terminal Emulator to connect to CMS, and log in with proper credentials. Enter "cms" at the command prompt to display the **MainMenu** screen. Select the option that corresponds to the customized real-time agent interface created by Avaya Professional Services for Calabrio, in this case the option is **RT_Socket**. Note that the actual option name may vary. Press the **Enter** key.

```
10/ 1/21  09:53  Avaya(TM) CMS
  lMainMenuqqqqqqqqqqqqqqqqqqqqqqqk
  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>                x
  x Maintenance>                 x
  x CALA-RTA>                    x
  x Generic-RTA>                 x
  x RT_Socket>                   x
  x Calabrio>                    x
  x ECH Handler>                 x
```

```
 x Logout                    x
 x ;                         x
 mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj
```

The **RT_Socket Menu** is displayed. Enter "1" followed by the **Enter** key, to start the interface.

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

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

The system will prompt for the session number. Enter the session number 1-2 as configured for Calabrio and the **Enter** key. Press the **Enter** key followed by "Q" to return to the CMS **MainMenu**.

```
Current Status of Configured Sessions:
--------------------------------------
RT_Socket session 1 is not running.
RT_Socket session 2 is not running.
RT_Socket session 3 is running, not encrypted, and connected.

Which RT_Socket session(s) do you want to start?
  Input range must be between 1 and 32.
  Input entries allowed:
    - Enter a single session number (e.g. 5).
    - Enter a range of session numbers separated by a dash (e.g. 6-11).
    - Enter 'all' or just press Enter to select ALL configured sessions.
    - Enter 'q' or 'Q' to quit.
Enter RT_Socket session(s) to start: 1-2
Starting session(s):  1 2

Starting RT_Socket session 1, please wait ...
WARN: License VALUE_ACMS_3RD_PARTY_REAL_TIME is in the 30-day grace period.
Verify that the WebLM interface is working correctly.
WARN: License VALUE_ACMS_3RD_PARTY_REAL_TIME_ADDL_SESSIONS is in the 30-day
grace period.
Verify that the WebLM interface is working correctly.

License check:  Successful

Starting RT_Socket session 2, please wait ...
WARN: License VALUE_ACMS_3RD_PARTY_REAL_TIME is in the 30-day grace period.
Verify that the WebLM interface is working correctly.
WARN: License VALUE_ACMS_3RD_PARTY_REAL_TIME_ADDL_SESSIONS is in the 30-day
grace period.
Verify that the WebLM interface is working correctly.

License check:  Successful
```

6.3. Check Intra-hour Interval

From the **MainMenu** screen, select **System Setup** → **Storage Intervals** and press **Enter**.

```
10/ 1/21  10:05  Avaya(TM) CMS


 lMainMenuqqqqqqqqqqqqqqqqqqqqqk
 x Reports>                     x
 x Dictionary>                  x
 x Exceptions>                  x
 x Agent Administration>        x
 x Call Center Administration> x
 x Custom Reports>              x
 x User Permissilqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
 x System Setup>x Switch Setup                x
 x Maintenance> x Pseudo-ACD Setup            x
 x CALA-RTA>    x Load Pseudo-ACD Data        x
 x Generic-RTA> x Data Storage Allocation     x
 x RT_Socket>   x Free Space Allocation       x
 x Calabrio>    x Storage Intervals           x
 x ECH Handler> x Main Menu Addition          x
 x Logout       x CMS State                   x
 x ;            x Data Collection             x
 mqqqqqqqqqqqqqqx External Application Status  x
                x Data Summarizing            x
                x Migrate Data                x
                x Data Summarization Time Zone x
                mqqqqqqqqqqqqqqqqqqqqqqqqqqqqj
```

The **System Setup: Storage Intervals** screen is displayed. Make certain that the administered **intra-hour interval** for the historical data is "30 minutes", as it is required by Calabrio Data Management.

```
                  System Setup:  Storage Intervals       interopcm
                  Intrahour interval (Select one):    x Modify
                        < >  15 minutes            mqqqqqqqq
                        <x>  30 minutes
                        < >  60 minutes

                  Data summarizing time:  12:35 AM
                  Switch time zone offset (-23 to +23): 0

                  Week start day       Week stop day
                  (Select one):        (Select one):
                   <x> Sunday           < > Sunday
                   < > Monday           < > Monday
                   < > Tuesday          < > Tuesday
                   < > Wednesday        < > Wednesday
                   < > Thursday         < > Thursday
                   < > Friday           < > Friday
                   < > Saturday         <x> Saturday

                  Daily start time:  12:00 AM
                  Daily stop time:   11:59 PM
```

6.4. Configure External Call History Handler

The external call history interface is configured through a configuration file named **ech.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/ech**. In the **ech.conf** file, select a Session number and configure the following items:

- **ASCII_READY1**: **Yes**
- **ASCII_SYNONYMS1=yes**
- **ASCII_USER_ID1="calabrio"** # FTP/SFTP login ID
- **ASCII_USER_PW1="Avaya123"** # FTP user password (not used for SFTP)
- **ASCII_FTP_HOST1=calab1** # receiving server - must be in /etc/hosts
- **ASCII_FTP_PORT1=21** # FTP/SFTP Port Number.

```
##### First ASCII data feed configuration items #####
ASCII_READY1=yes       # Is this ASCII feed being used?
ASCII_SYNONYMS1=yes  # Send Explorer2 format synonyms (.dat files)?
ASCII_USER_ID1="calabrio"  # FTP/SFTP login ID
ASCII_USER_PW1="Avaya123"  # FTP user password (not used for SFTP)
ASCII_FTP_HOST1=calab1   # receiving server - must be in /etc/hosts
ASCII_FTP_PORT1=21   # FTP/SFTP Port Number to be used (FTP=21, SFTP=22)
ASCII_TO_DIR1=.      # receiving directory
ASCII_CD1=no         # 'no' if we do not need to 'cd' on the receiving machine
DELIMITER1=pipe      # choices: 'comma' or 'pipe'
DATETIME1=2          # '2' yields |YYYY-MM-DD hh:mm:ss| (1 field)
                     # '1' yields |MM/DD/YYYY|hh:mm:ss| (2 fields), rarely
used
APPEND1=no           # Does the customer want the CMS's hostname/uname
                     # appended to each ECH record?
HDR_FLAG1=0          # '0' = do not include header, '1' = include header
CUSTOM_NAME1=no      # 'yes' to use chrYYYYMMDDhhmmss when file is
transferred
ASCII_SSH1=no        # If 'yes', use 'sftp' instead of 'ftp'.
LDC1=no              # If 'yes', use local directory copy (overrides
sftp/ftp)
R16FILTER1=no        # convert R16/16.2 data file to R12-R15 Extended format
R16dot3FILTER1=no    # convert R16.3 data file to R16 format, disables
R16FILTER
R17FILTER1=no        # convert R17 data file to R16.3 format
R18FILTER1=no        # convert R18 data file to R17 format
R18STD1=yes           # 'yes' is R18 Standard format, 'no' is R18 CA Format
R18dot1FILTER1=no    # convert R18.1 ECD or R19 data file to R18 format
CA1=no               # set to 'yes' if used for Contact Analyzer
UUI_HEX1=yes         # 'yes' = ASAIUUI in hex notation (default, recommended)
                     # 'no' = convert ASAIUUI value to an ASCII string
SUB_CHAR1=""         # substitute character for non-printable characters
                     # not supported with R15 and earlier - set to ""
UNIX2DOS1=no         # convert files to DOS format before transferring
```

7. Calabrio Data Management (CDM)

7.1. Supported modes

The following modes are supported by Calabrio Data Management.
- On Premise: CMS Reports and Dashboards are available via CDM on-premises
- Hybrid: CMS Reports and Dashboards are available via CDM Cloud

Note: During the compliance test, the CDM servers were installed and configured locally in the DevConnect Lab while the reports and dashboards were displayed via CDM cloud.

7.2. Minimum Requirements

CDM is scalable supporting customers from small to large. Please see below CDM's minimum requirements.

- Historical

Description	Database	Application
Server Role	Database	Application
Operating System Version	CentOS/Redhat 7.9 (x86_64)	CentOS/Redhat 7.9 (x86_64)
Processor (Cores)	8	8
RAM (Memory)	64 GB	64 GB
Storage	850 GB	200 GB
Database Version	PostgresSQL 11	Not Required

- Real-time

Description	Real Time Application	Real Time Data Store	Real Time Management Server
Server Role	Application	Data Store	Application
Operating System Version	CentOS 7.9/Redhat (x86_64)	CentOS 7.9/Redhat (x86_64)	CentOS 7.9/Redhat (x86_64)
Processor (Cores)	8	8	2
RAM (Memory)	64 GB	64 GB	4 GB
Storage	200 GB	800 GB	250 GB
Database Version	Not Required	Not Required	Not Required

The customer is also required to complete the following prerequisites

Prerequisite	On Prem	Hybrid
Setup required Linux servers	×	×
Provide SSL Certificates for Application servers	×	×
Provide access to an SFTP location for ECHI data files	×	×
Provide a Remote Mount Share location for CDM Data Contributions	×	
Provide an SMTP to be used by CDM to send emails	×	
Provide database connection details for CMS source	×	×

7.3. Install CDM Software

On Premise
- Deploy the SSL certificate
- Install the latest version of the CDM Software
- Configure the Remote Mount Share (on prem only)
- Configure the SMTP (on prem only)
- Create Required Data Management UDM and LBA accounts
- Provision Tenant with CMS and ECHI adapters

Hybrid
- Deploy the SSL certificate
- Install the latest version of the CDM Software
- Create Required Data Management UDM accounts
- Provision Tenant with CMS and ECHI adapters
- Deploy ground agent to allow on prem to cloud communication

7.4. Deploy CMS Adapter

CDM agency service processes batch jobs on a scheduled basis to load data in to CDM reporting models. For hybrid mode ground agent is used to allow the data to flow from on premise to CDM cloud.

On-premise Architecture
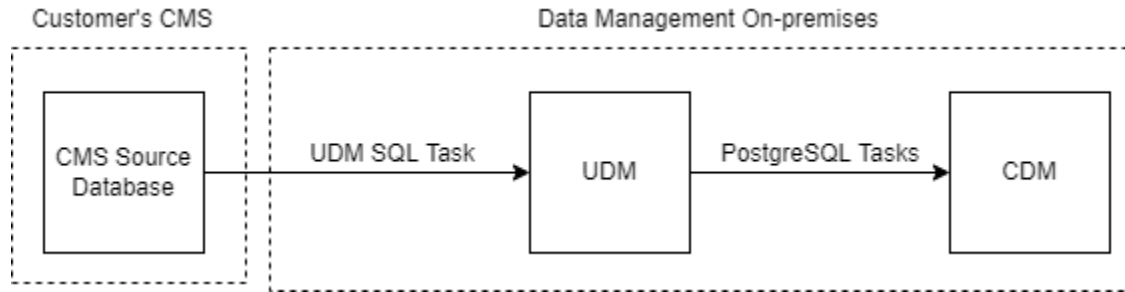
Hybrid Architecture
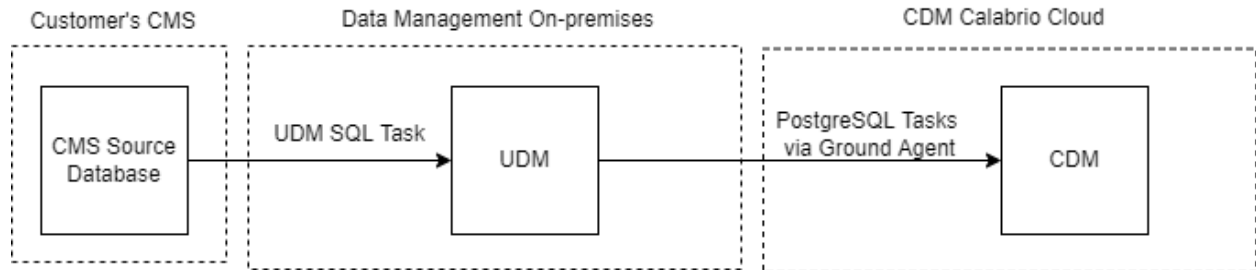
7.4.1. CMS UDM SQLTask

The CMS UDM SQL task uses the below details to connect and load CMS data from the customers CMS Source data into Data Management UDM. The CMS UDM task is scheduled to run on a scheduled interval.

- Avaya CMS Database Hostname
- Avaya CMS Database Port
- Avaya CMS Database Name
- Avaya CMS Database User
- Avaya CMS Database Password

7.5. Deploy ECHI Adapter

ECHI data is loaded into UDM from the ECHI files placed on the Customer's SFTP server. The ECHI data is then loaded into Data Management via the Postgres Tasks. For hybrid mode ground agent is used to allow the data to flow from on premise to CDM cloud.

On-premise Architecture
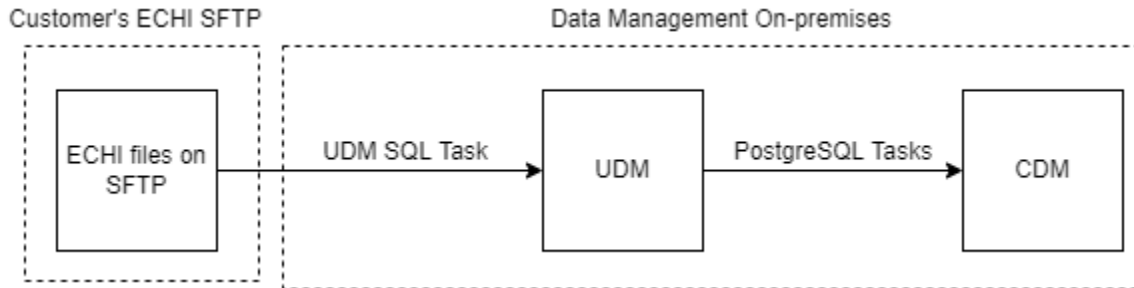
Hybrid Architecture
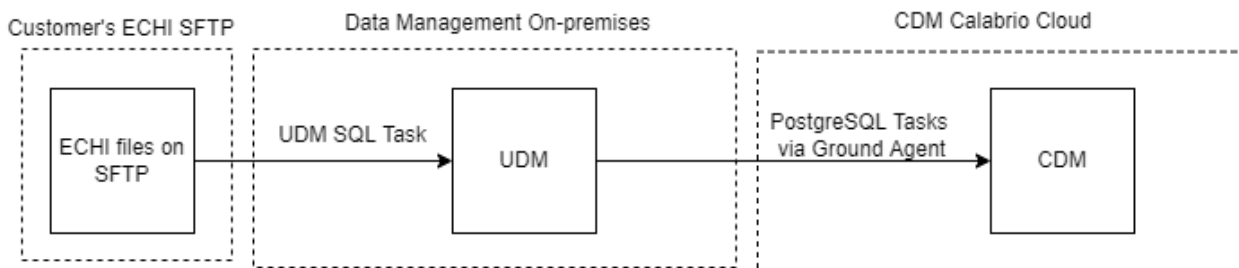
7.5.1. ECHI UDM Task

The ECHI UDM task uses the below details to connect and consume the ECHI files from the ECHI SFTP and load the data from the files into Data Management UDM. The ECHI UDM task is scheduled to run hourly. The ECHI files must be provided in ASCII format with pipe delimiter.

- ECHI Handler Package
- FTP Type
- FTP Server
- FTP Port
- FTP Location
- FTP User
- FTP Password

7.5.2. CMS/ECHI Reporting

The latest version of the CMS Data Library will be uploaded into the CMS LBA account. The Data Library contains the default CMS reports and dashboards and the below data Sets.

- Agent Aux Code Interval
- Agent Group
- Agent Interval
- Agent Login Logout
- Echi
- Split Interval
- VDN Interval

Each dataset above is configured with a PostgreSQL task to connect to UDM and load the required data into Data Management.

7.6. Deploy CMS Real-time Adapter

CMS TCP messages are pushed to Realtime Application where they are received by real-time application and written to message queue. Real-time application workflows push CMS real-time message data to real-time data repository. Real-time reports are accessible through CDM reporting application.

On-premise Architecture
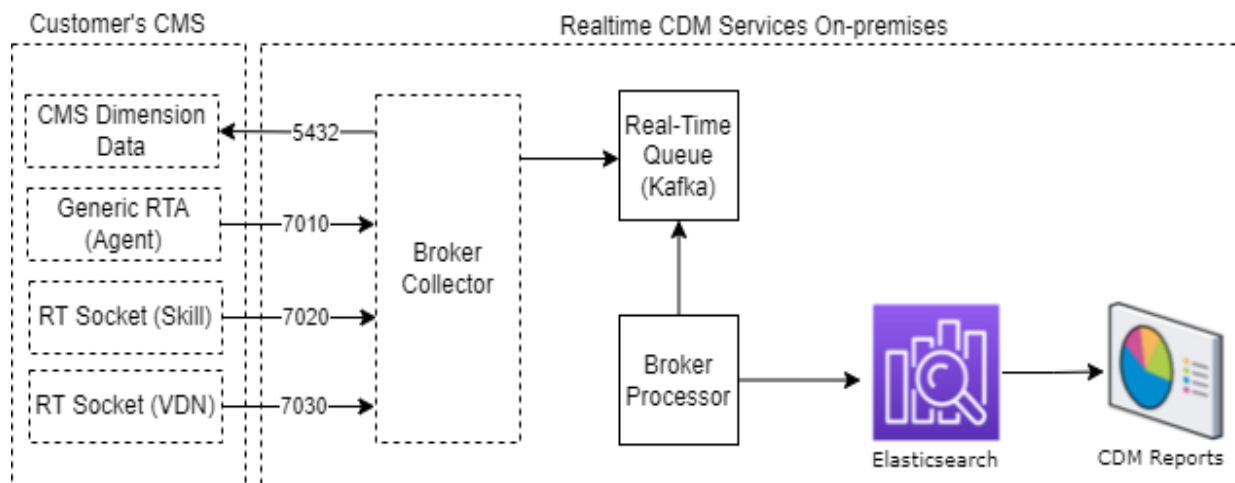
Hybrid Architecture
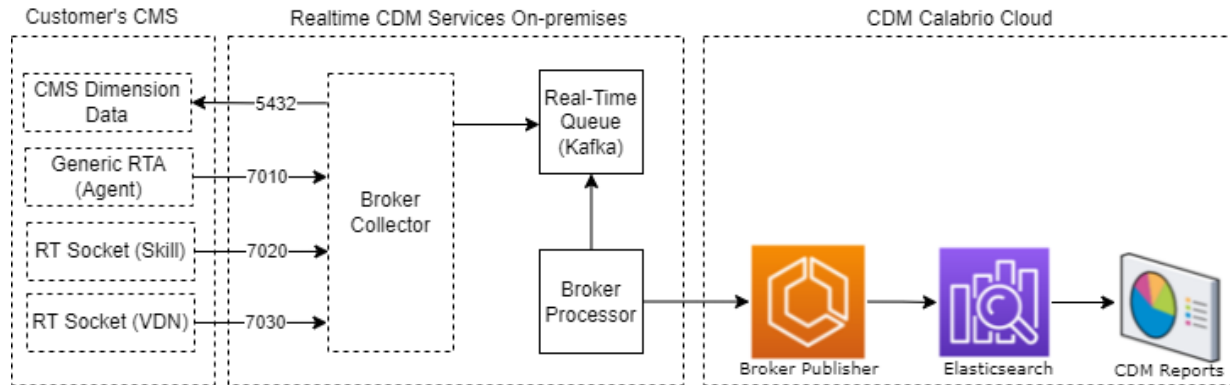
7.7. Elasticsearch real-time data repository

CMS Realtime Data is stored in Elasticsearch.

7.8. Broker Collector

The collector is configured to listen on dedicated ports for TCP messages. The customer will need to push agent, split and VDN TCP messages to the Real-time Application on configured ports. Please see the below table for the default ports used.

RT Component	RT Message Type	RT Destination Server	Default RT Destination Port
Generic RTA	Agent	Realtime Application	7010
RT Socket	Split	Realtime Application	7020
RT Socket	VDN	Realtime Application	7030

7.9. Broker Processor

The processor is configured to collect data from Kafka and loads this data into Elasticsearch.

7.10. Data Management

CMS RT data is viewed via the CMS reports and dashboards. Default content delivered out of the box with the option to build custom content.

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of CMS and Calabrio Data Management.

8.1. Verify Call Management System

From the CMS server, follow the procedures in **Section 6.1** to display the **MainMenu**. Verify the status of the connection to Communication Manager by selecting **Maintenance Connection Status**, and press the **Enter** key.

```
10/ 4/21  10:21  Avaya(TM) CMS
Windows: 0 of 10   ^

 lMainMenuqqqqqqqqqqqqqqqqqqqqqqqqk
 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 CALA-RTA>    x Restore Data           x
 x Generic-RTA> x Backup/Restore Devices x
 x RT_Socket>   x Printer Administration x
 x Calabrio>    x Report Administration  x
 x ECH Handler> x Connection Status      x
 x Logout       x ACD Status             x
 x ;            x Archiving Status       x
 mqqqqqqqqqqqqqqx ACD Admin Log Report   x
                x Error Log Report       x
                x Firewall Status        x
                x License Status         x
                mqqqqqqqqqqqqqqqqqqqqqqqqj
```

In the **Maintenance: Connection Status** dialog box, enter the corresponding ACD(s) number followed by the Enter key. For the compliance testing, the corresponding switch connection is ACD "1". Select **Find one** in the right window and press Enter.
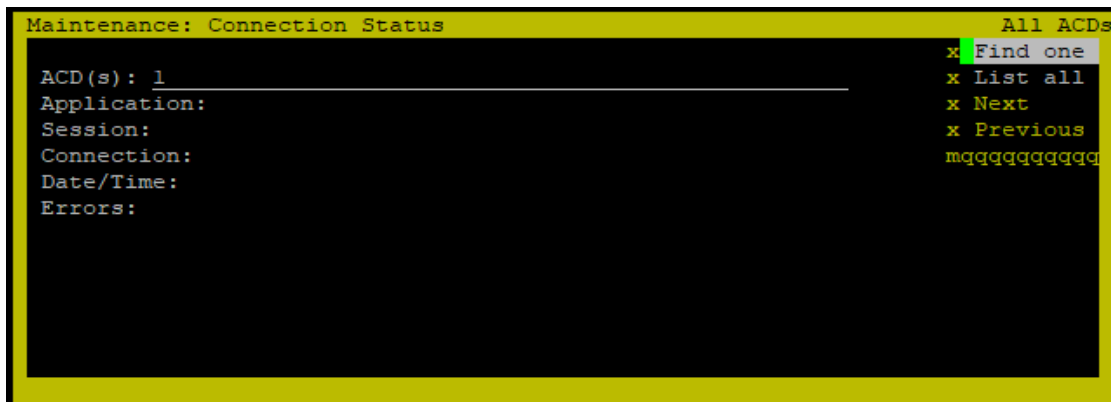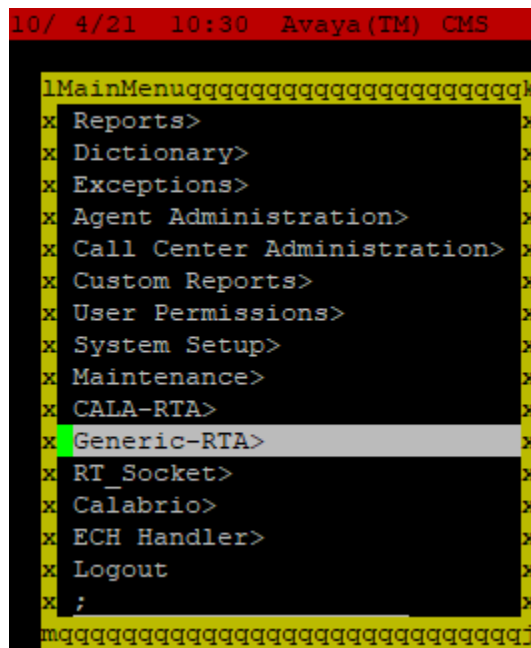
The Maintenance: Connection Status dialog box is updated with status information. Verify that the Session status is "**data transfer**" and "**normal**", and that the **Connection** status is "**operational**", as shown below.
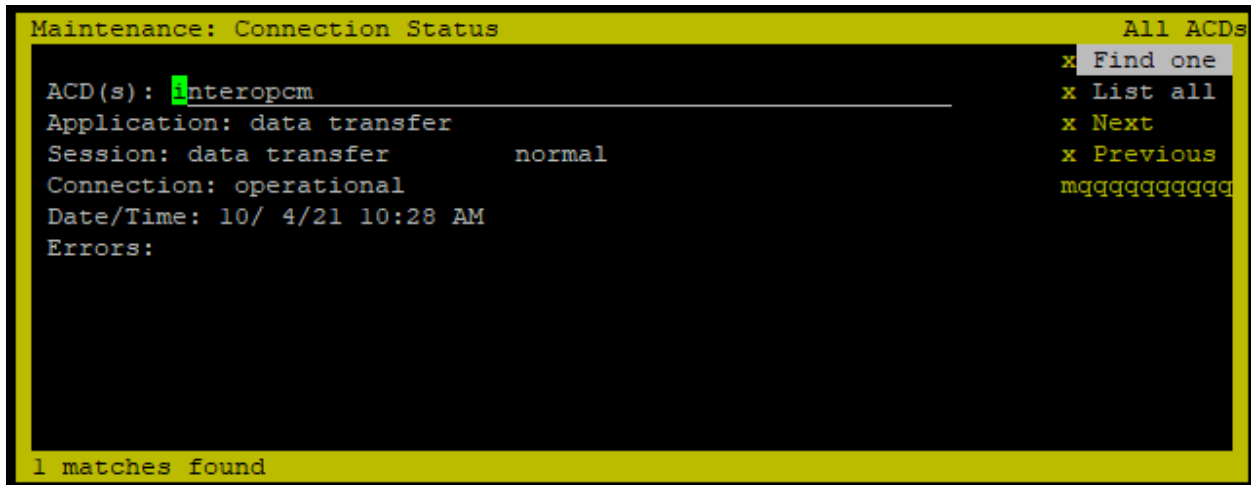
8.2. Verify Call Management System Real-Time Adapter

From the **MainMenu** screen, select the **Generic-RTA** option and press Enter.

The **Generic-RTA** Menu is displayed. Enter **3** to check the status of the Generic RTA session.

```
 ------ 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:3
```

Verify that the session is running and is connected.

```
Current Status of Configured Sessions:
--------------------------------------
Generic-RTA session 1 is running, not encrypted, and connected.
Generic-RTA session 2 is running, not encrypted, and not connected.


Press Enter to return to menu:
```

8.3. Verify Avaya Call Management Real-Time Socket Adapter

From the **MainMenu** screen, select the **RT_Socket** option (not shown) and press Enter. The **RT_Socket** Menu is displayed (not shown), enter **3** to check the status of the RT_Socket session.

Verify that the session is running and is connected.

```
Current Status of 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:
```

8.4. Verify Avaya Call Management System Historical Adapters

From the **MainMenu** screen, select the **ECH Handler** option and press **Enter**.

```
10/ 4/21  10:36  Avaya(TM) CMS


  lMainMenuqqqqqqqqqqqqqqqqqqqqqk
  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>               x
  x Maintenance>                x
  x CALA-RTA>                   x
  x Generic-RTA>                x
  x RT_Socket>                  x
  x Calabrio>                   x
  x ECH Handler>                x
  x Logout                      x
  x ;                           x
  mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj
```

The **ECH Handler Menu** menu is displayed.

```
--- ECH Handler Menu ---

1) Display ECH Handler Version
2) List Data Feeds
3) View Maintenance Log
4) Display/Verify ECH Handler License Information
5) ASCII Data File Recovery
Q) Quit
==============
Selection:3
```

Enter **3** followed by the **Enter** key, to display the maintenance log of ECH adapter. Verify that
the call data files are generated and uploaded to the ftp server successfully.

```
_____
2021-10-07 21:30:01 INFO ech_copy.sh: Calling ech_copy
2021-10-07 21:30:01 ech_copy - Moving chr0320 to
/cms/ech_data/daily/chr0320.136
2021-10-07 21:30:02 ech_copy - License check: Successful
2021-10-07 21:30:03 INFO ech_handler: ech_handler called
2021-10-07 21:30:03 INFO ech_handler: Queueing synonyms for ASCII send
(session: 1)
2021-10-07 21:30:04 INFO get_synonyms.shl: Called (session: 1)
2021-10-07 21:30:04 INFO get_synonyms.shl: agname.dat: file size 0 (session:
1)
2021-10-07 21:30:04 INFO get_synonyms.shl: split.dat: file size 0 (session:
```

```
1)
2021-10-07 21:30:04 INFO get_synonyms.shl: vdn.dat: file size 0 (session: 1)
2021-10-07 21:30:04 INFO get_synonyms.shl: aux_rsn.dat: file size 0 (session:
1)
2021-10-07 21:30:04 INFO get_synonyms.shl: tkgrp.dat: file size 0 (session:
1)
2021-10-07 21:30:04 INFO get_synonyms.shl: vector.dat: file size 0 (session:
1)
2021-10-07 21:30:04 INFO get_synonyms.shl: loc_id.dat: file size 0 (session:
1)
2021-10-07 21:30:05 INFO get_synonyms.shl: tenant.dat: file size 0 (session:
1)
2021-10-07 21:30:05 INFO ech_handler: Converting and queueing ASCII file
(session: 1)
2021-10-07 21:30:05 INFO ech_handler: Using pcallrecR18.1 (session: 1)
2021-10-07 21:30:05 INFO ech_handler: Done
2021-10-07 21:31:02 INFO ascii_ftp: Called (Session: 1)
2021-10-07 21:31:11 INFO ascii_ftp: FTP'ed acd.dat to calab1 (Session: 1)
2021-10-07 21:31:12 INFO ascii_ftp: FTP'ed chr0320.136 to calab1 (Session: 1)
2021-10-07 21:31:14 INFO ascii_ftp: FTP'ed cwc.dat to calab1 (Session: 1)
2021-10-07 21:31:14 INFO ascii_ftp: Done (Session: 1)
```

8.5. Verify Calabrio Data Management

Prior to verifying Calabrio Data Management, make calls to the measured resources on Communication Manager, to enable measurement data to be sent to CMS.
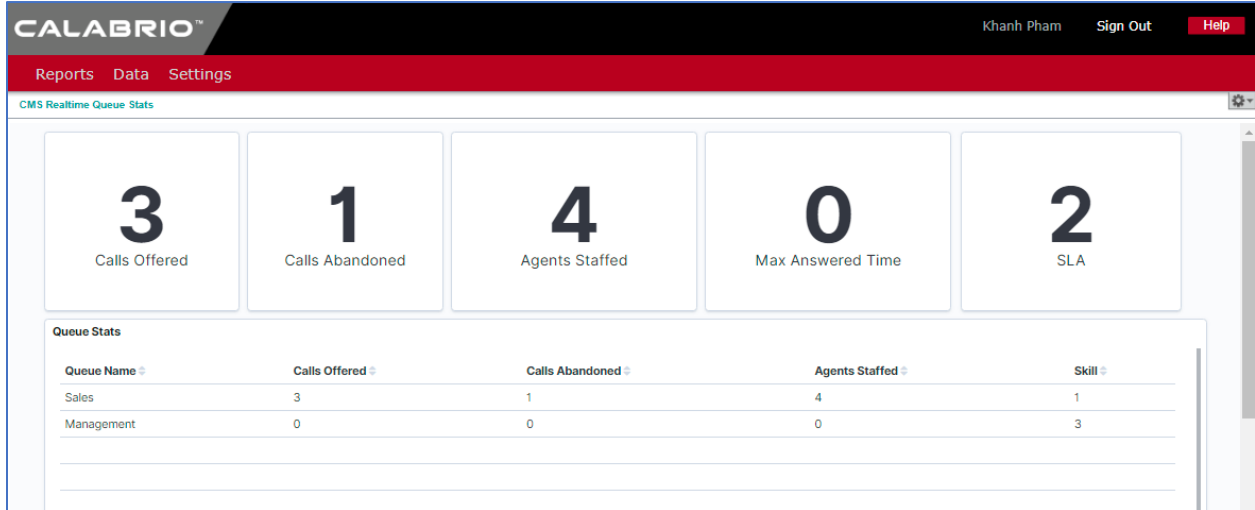
8.5.1. Verify Real-Time Agent Data

From the Calabrio Data Management web-based administration interface, click **Dashboard** (not shown), and verify the agent states under the **Reports → CMS Realtime Agent Stats**.

KP; Reviewed:
SPOC 1/19/2022

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27 of 30
CDM11-CMS19
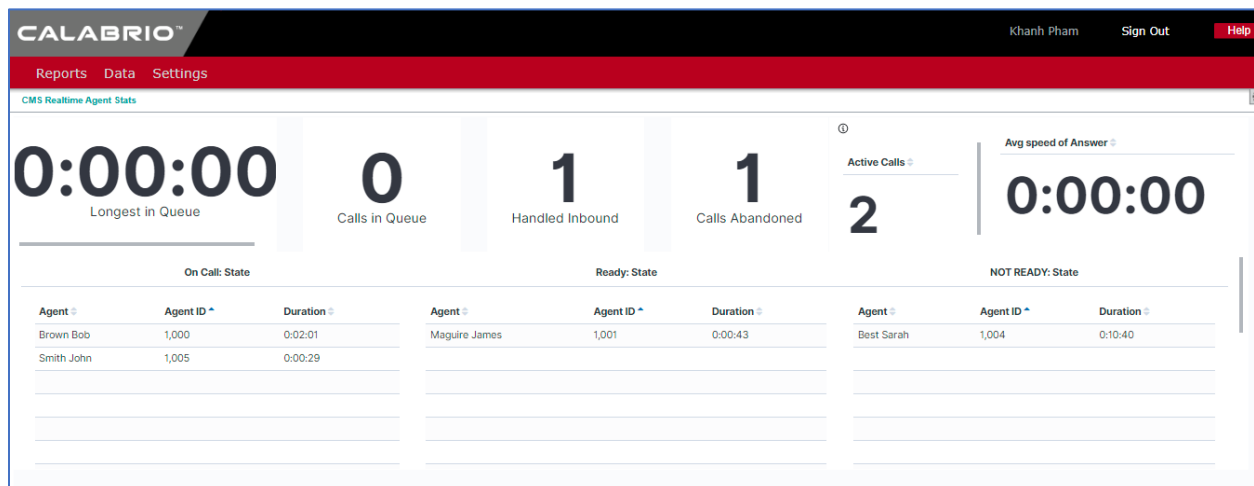
8.5.2. Verify Real-Time Queue Data

From the Calabrio Data Management web-based administration interface, click **Dashboard** (not shown), and verify the agent states under the **Reports → CMS Realtime Queue Stats**.

8.5.3. Verify Call Historical Report

From the Calabrio Data Management web-based administration interface, click **Dashboard** (not shown), and verify the agent states under the **Reports → CMS Historical → Agent's Time in Aux**. The sample below shows one of call historical reports for the agent's time in auxiliary.
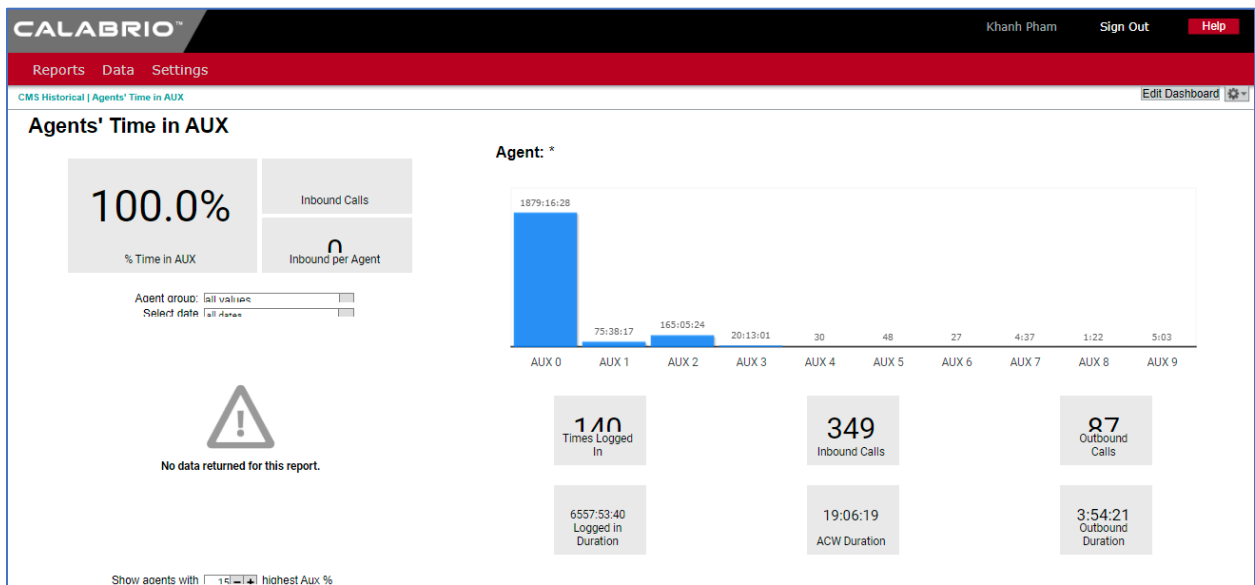
9. Conclusion

These Application Notes describe the configuration steps required for Calabrio Data Management R11.5 to interoperate with Avaya Call Management System R19.2, via the real-time agent, Real-Time Socket and external call history call data adapters provided by Avaya Professional Services. All feature and serviceability test cases were completed successfully.

10. Additional References

Product documentation for Avaya products may be found at http://support.avaya.com.

[1] Administering Avaya Aura® Communication Manager, Release 8.1.x, Issue 12, July 2021.
[2] Administering Avaya Aura® Session Manager, Release 8.1.x, Issue 10, September 2021.
[3] Administering Avaya Call Management System, Release 19.x, Issue 11, March 2021.

Product documentation related to Calabrio Data Management can be obtained directly from Calabrio.