Avaya Solution & Interoperability Test Lab

Application Notes for Calabrio Workforce Management with Avaya Call Management System – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Calabrio Workforce Management to interoperate with Avaya Call Management System. Calabrio Workforce Management is a work force management solution that provides forecasting, scheduling, and monitoring of work for contact center agents. Calabrio Workforce Management uses the historical call measurement data from Avaya Call Management System to produce forecasts and schedules for contact center agents, and the real-time call measurement data from Avaya Call Management System to check the agent adherence to the schedules.

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.

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1. Introduction

Calabrio Workforce Management is a work force management solution that provides forecasting, scheduling, and monitoring of work for contact center agents. Calabrio Workforce Management uses the historical call measurement data from Avaya Call Management System (CMS) to produce forecasts and schedules for contact center agents, and the real-time call measurement data from Avaya Call Management System to check the agent adherence to the schedules.

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 Workforce Management via three historical adapters developed by Avaya Professional Services.

The historical adapters reside on Avaya Call Management System. Every 30 minutes they generate custom formatted ASCII-text historical reports and distribute them to a FTP server on the Calabrio Workforce Management server using the FTP protocol. Calabrio Workforce Management regularly pulls the historical data from the FTP data repository directory and populates the data into a local database. Contact center users such as supervisors and/or agents can use a web browser to access Calabrio Workforce Management to review any collected data and/or produced forecasts and schedules.

The following are the three customized historical reports used for the Calabrio/Avaya integration.

- Agent Interval Report
- Skill Interval Report
- VDN Interval Report

In addition to the three historical reports, the Calabrio/Avaya integration also includes a real-time connection between Calabrio Workforce Management and Avaya Call Management System, to supply real-time agent state information to Calabrio Workforce Management. The real-time connection is achieved through the Generic Real Time Agent (Generic-RTA) adapter 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 Workforce Management server being the "server". The Calabrio Workforce Management server runs a TCP "listener" process to accept data 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 Workforce Management.

At the end of a measured interval, custom historical reports were generated and transferred to the Calabrio Workforce 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 Workforce 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 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.

2.1. Interoperability Compliance Testing

The feature testing focused on verifying Calabrio Workforce 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 Workforce 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 all the test equipment in an Avaya Lab. The Avaya side equipment included Communication Manager, CMS, and several IP phones. The Calabrio application resided on a VMWare virtual machine running on a blade server. The GUI interface of Calabrio Workforce Management was accessible through a web browser. All calls to and from the public network were routed through an ISDN PRI trunk.
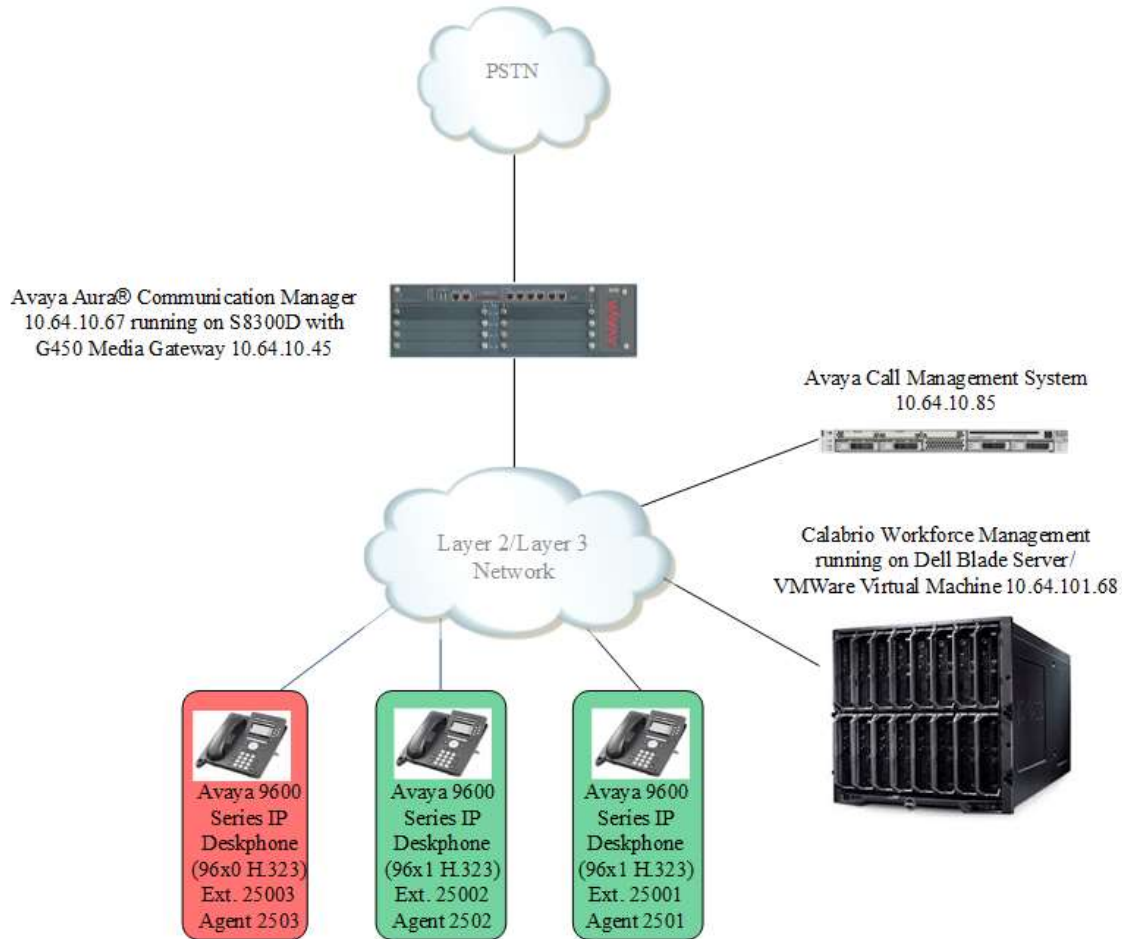
Figure 1: Calabrio Workforce Management with Avaya Call Management System

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya S8300D Server running Avaya Aura® Communication Manager	Release 6.3 SP10

Avaya G450 Media Gateway
       DCP MM712
       DS1 MM710
	30.14.0
	HW 5 FW 11
	HW 05 FW 019

Avaya Call Management System	R17.3
Avaya 9600 Series IP Deskphones: 96x1 (H.323) 96xx (H.323)	6.6.0 3.2.5
Calabrio Workforce Management running under Windows Server 2012 R2 Standard	Release 9.3.1.216

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5. Configure Avaya Aura® Communication Manager

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**.

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

For the compliance testing, the following contact center devices were used.

VDN	Skill	Agents
10100	1	2501
10105	2	2502
10110	3	2503

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 10100                                           Page   1 of   3
                          VECTOR DIRECTORY NUMBER

                        Extension: 10100
                            Name*: VDN 1
                      Destination: Vector Number        100
             Attendant Vectoring? n
            Meet-me Conferencing? n
              Allow VDN Override? n
                              COR: 1
                              TN*: 1
                         Measured: both
      Acceptable Service Level (sec): 20

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

For the compliance testing, three VDNs with extensions 10100, 10105, and 10110 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): 20
                      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): 100      After Xfer or Held Call Drops? n
```

For the compliance testing, two Skill groups with group numbers 1, 2 and 3 were configured to be measured. In addition, two agents with extensions 25001, 25002 and 25003 and agent id 2501, 2502 and 2503 were used as available agents for the above Skill groups.

```
list agent-loginID 2501 count 3

                         AGENT LOGINID
Login ID    Name          Extension    Dir Agt  AAS/AUD       COR Ag Pr SO
             Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

2501        IP Agent 1    25001                                1   lvl
              1/01    2/01     /       /       /       /       /       /
2502        IP Agent 2    25002                                1   lvl
              1/02    2/02     /       /       /       /       /       /
2503        IP Agent 3    25003                                1   lvl
              2/01    3/01    1/01     /       /       /       /       /
```

6. Configure Avaya Call Management System

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 administered to 30 minutes.

This section provides the procedures for the following:

- Configure Generic-RTA Adapter
- Enable Generic-RTA Adapter
- Check Intra-hour Interval
- Configure Historical Adapters

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

6.1. Configure Generic-RTA Adapter

The Generis-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, 3 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.
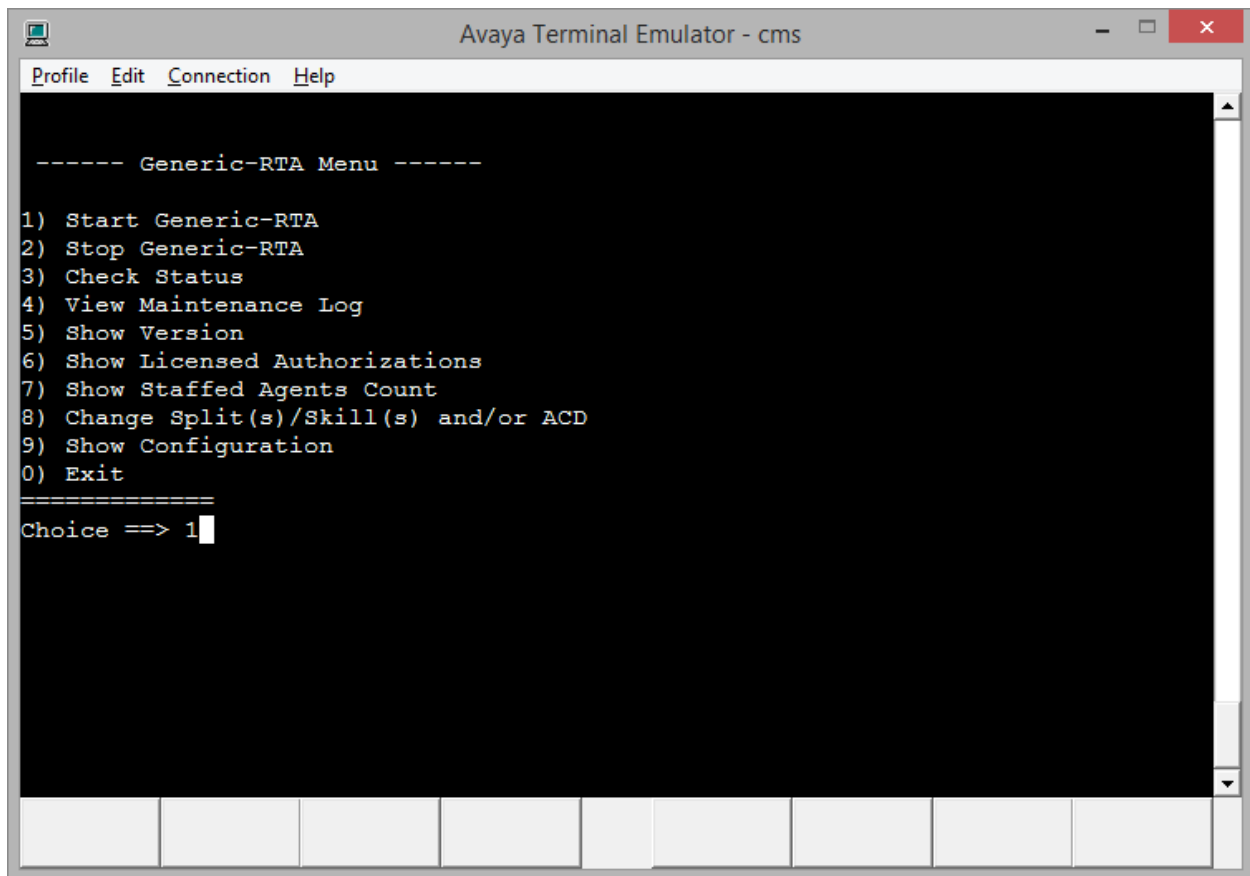
```
#----------------------------- Session 1 -----------------------------
#----------------- (with EXAMPLE settings, NOT defaults) ----------------
HOST1=calabrio                  # the receiving server's host name in /etc/hosts
PORT1=5000                      # the receiving server's port
ACD1=3                          # ACD being monitored
OPTS1=""             # applicable command line options
REPORT1=rta_gen                 # respective custom report name
MONITOR_LIST1="1-999"  # skills to monitor
REFRESH1=15                     # respective report refresh rate
```

6.2. Enable Generic-RTA Adapter

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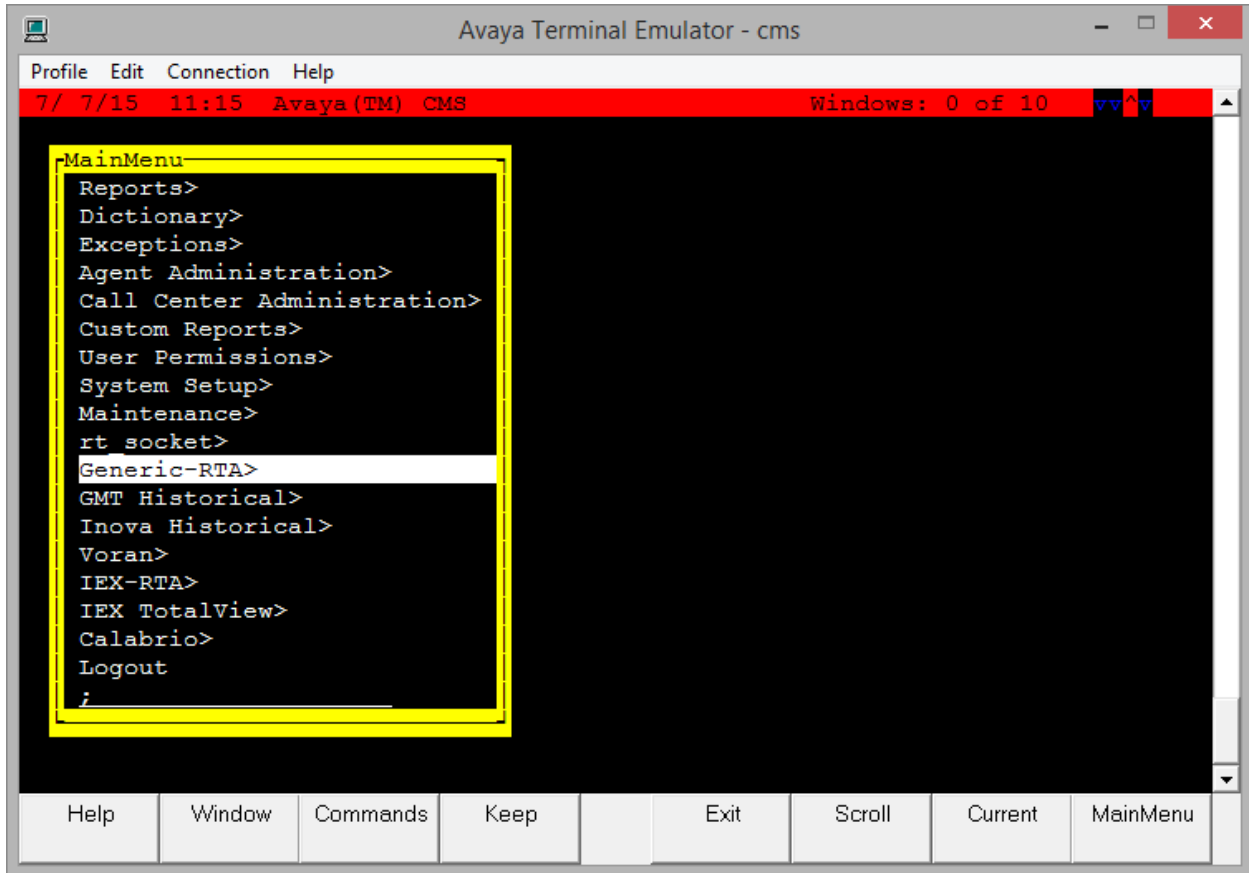
The **Generic-RTA Menu** is displayed. Enter "1" followed by the **Enter** key, to start the interface.

```
                              Avaya Terminal Emulator - cms          _  □  ×

 Profile  Edit  Connection  Help


   ------ Generic-RTA Menu ------

1) Start Generic-RTA
2) Stop Generic-RTA
3) Check Status
4) View Maintenance Log
5) Show Version
6) Show Licensed Authorizations
7) Show Staffed Agents Count
8) Change Split(s)/Skill(s) and/or ACD
9) Show Configuration
0) Exit
=============
Choice ==> 1
```

The system will prompt for the session number. Enter the session number selected in **Section 6.1** and the **Enter** key.
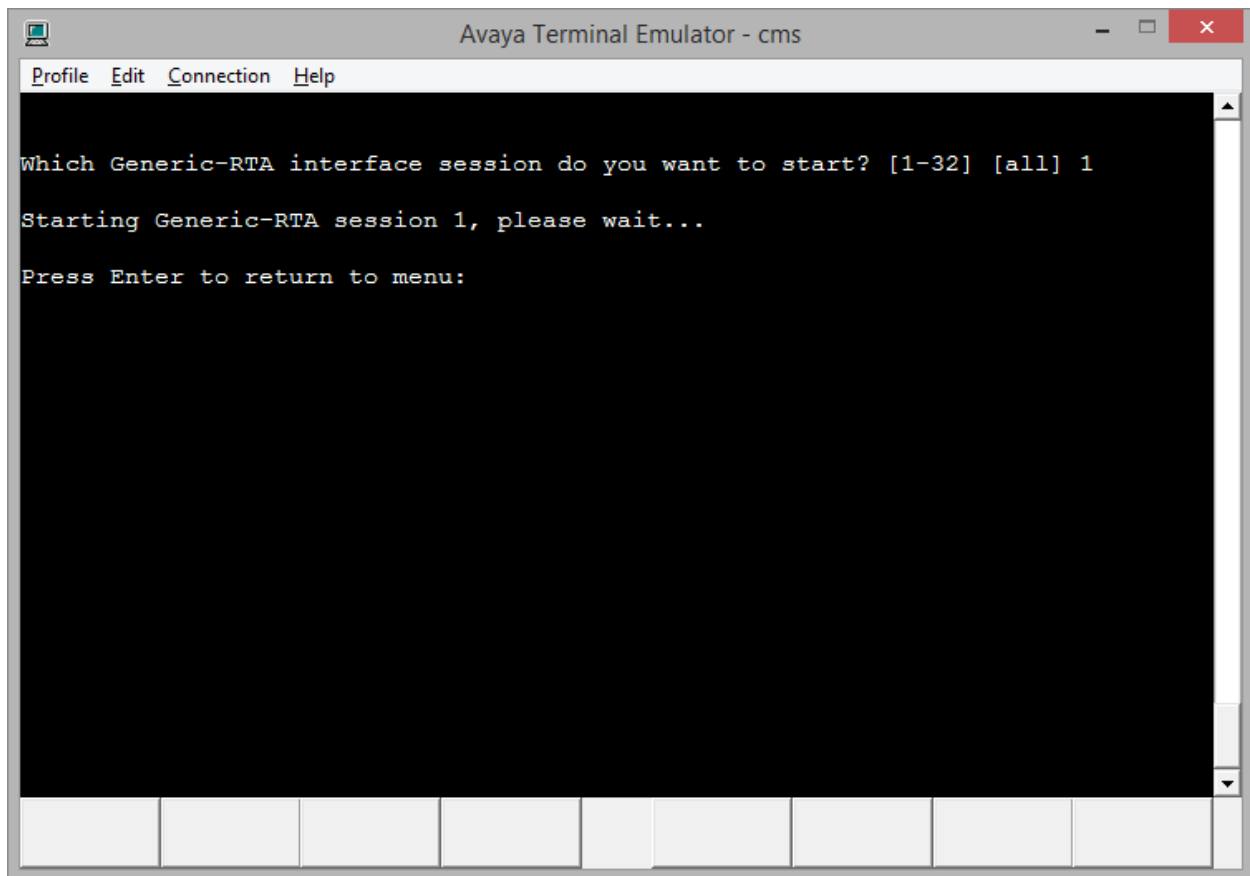
Press the **Enter** key followed by "0" to return to the CMS **MainMenu**.

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6.3. Check Intra-Hour Interval

From the **MainMenu** screen, select **System Setup** → **Storage Intervals** and press **Enter**.
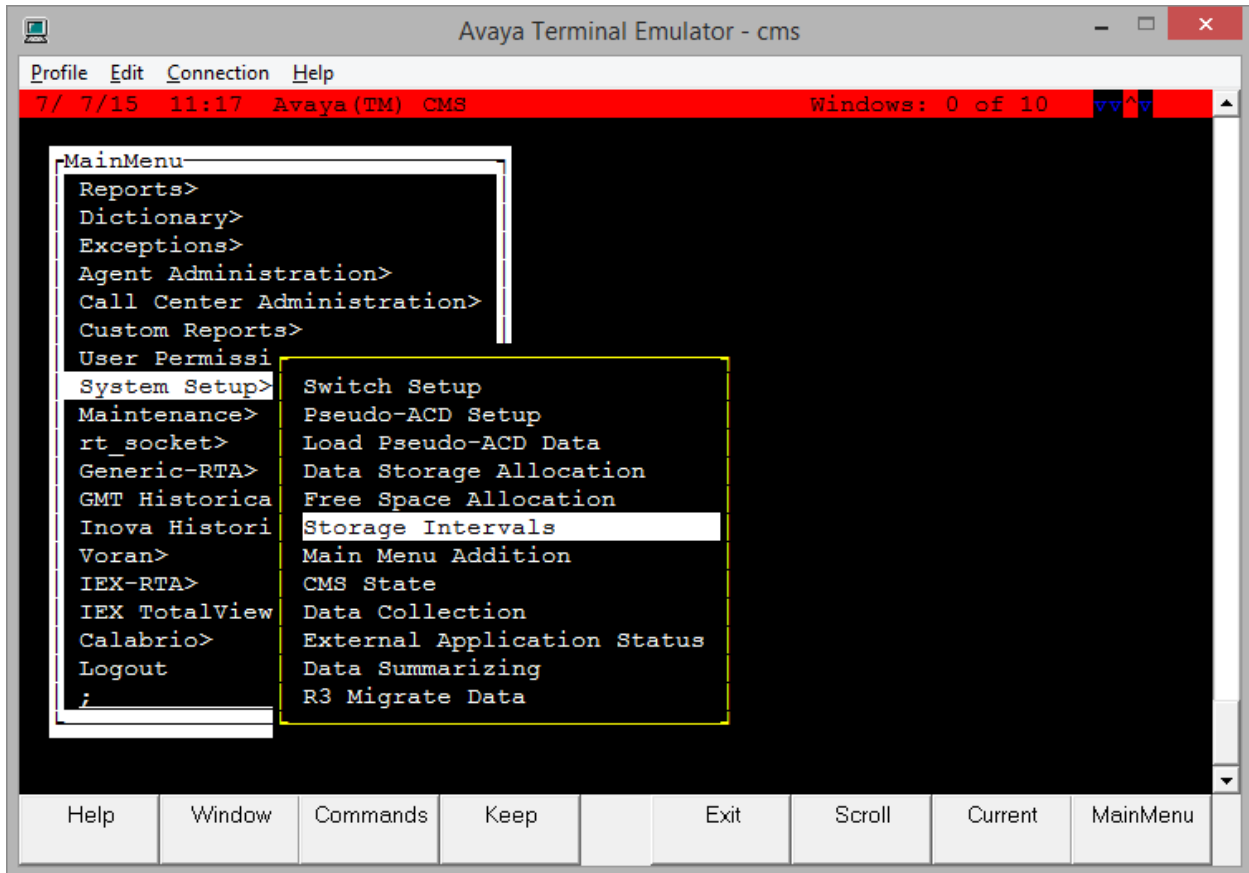
The **System Setup: Storage Intervals** screen is displayed. Make certain that the administered **intra-hour interval** for the historical data is "30 minutes", as it is required by Calabrio Workforce Management.

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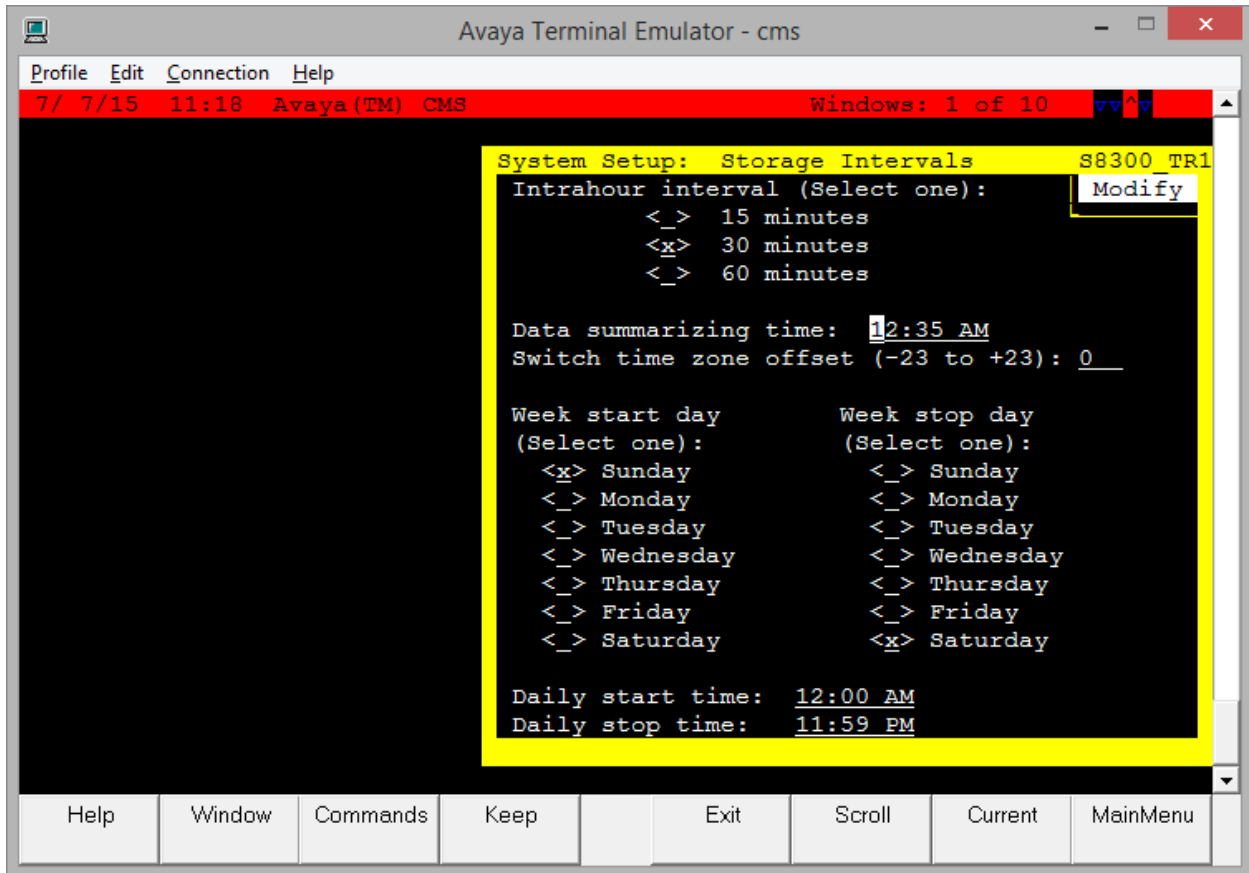
7. Configure Calabrio Workforce Management

This section provides the procedures for configuring Calabrio Workforce Management. The procedures include the following areas:

- Administer Real-Time Interface Port
- Administer Historical Report Directory
- Administer Skills
- Administer Teams
- Administer Agents
- Administer DNs

Note that configuration of Calabrio Workforce Management is typically performed by the Calabrio deployment engineers. The procedural steps presented in these Application Notes are for informational purposes.

7.1. Administer Real-Time Interface Port

From the Calabrio Workforce Management server, open a Windows Explorer window, and navigate to the directory **C:\Program Files (x86)\Calabrio\WFO_WFM\bin**. Double click the **postinstall** file.
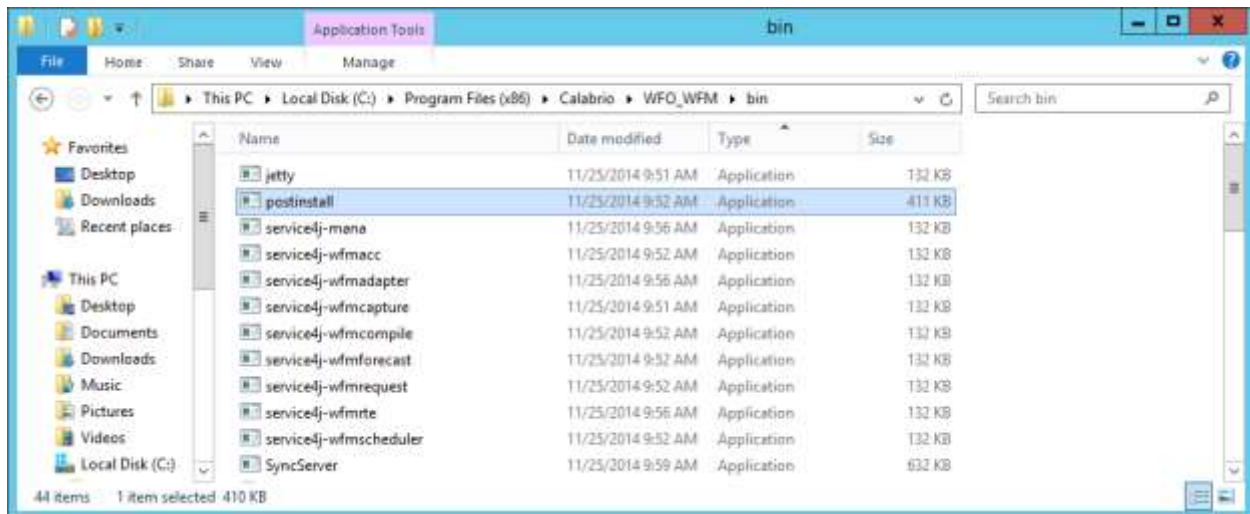
The following screen is displayed.

Click **ACD Connection** in the left pane. Select **Avaya CMS** in the **Select ACD** field and enter "5000" as configured in **Section 6.1** in the **RTA Port** field.

Click **Start Services** in the left pane and answer "Yes" when a **Restart Services?** window pops up to start the Calabrio Workforce Management services.
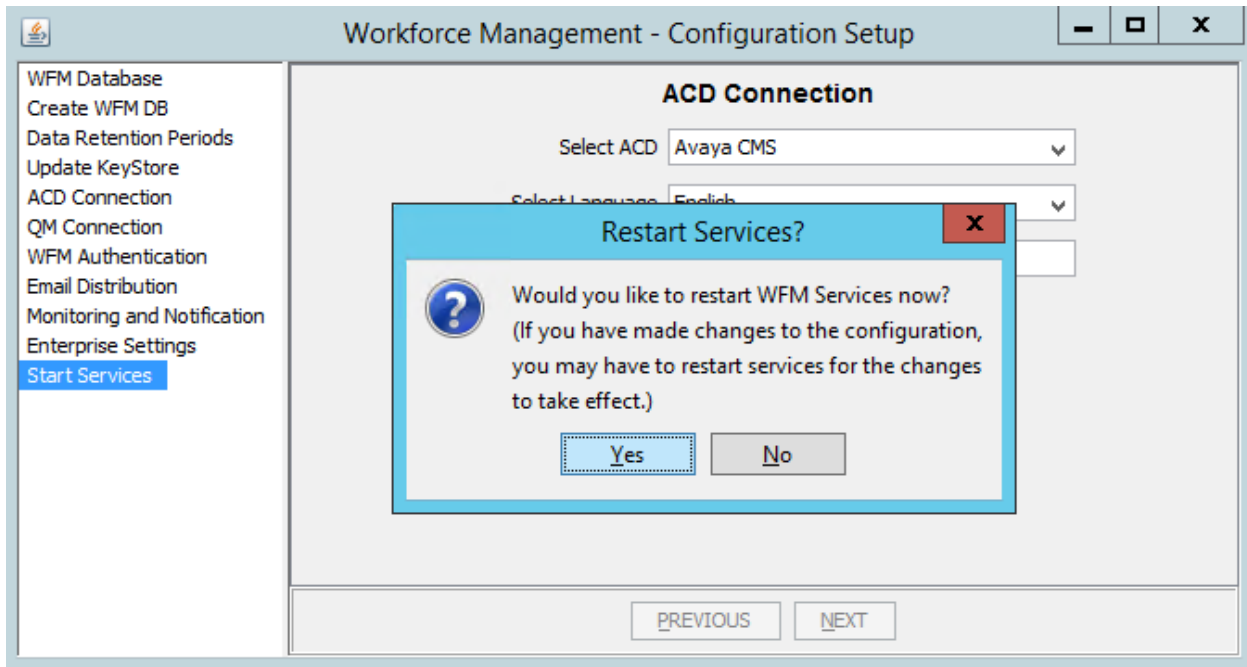
7.2. Administer Historical Report Directory

A third party FTP server is co-located with the Calabrio Workforce Management application in the Calabrio server. The Historical Report Directory is fixed at the **Program Files (x86) →
Calabrio → WFO_WFM → reports** directory in the Calabrio Workforce Management application and has to be configured in the FTP server along with other FTP attributes. The FTP server configuration is beyond the scope of these application notes and is not specified here.

Access the Calabrio Workforce Management web-based administration interface by using the URL "http://ip-address/" in an Internet browser window, where "ip-address" is the IP address of the Calabrio Workforce Management server. Log in using a valid user name and password with administrative privileges.

The **Dashboard** screen is displayed, as shown below.

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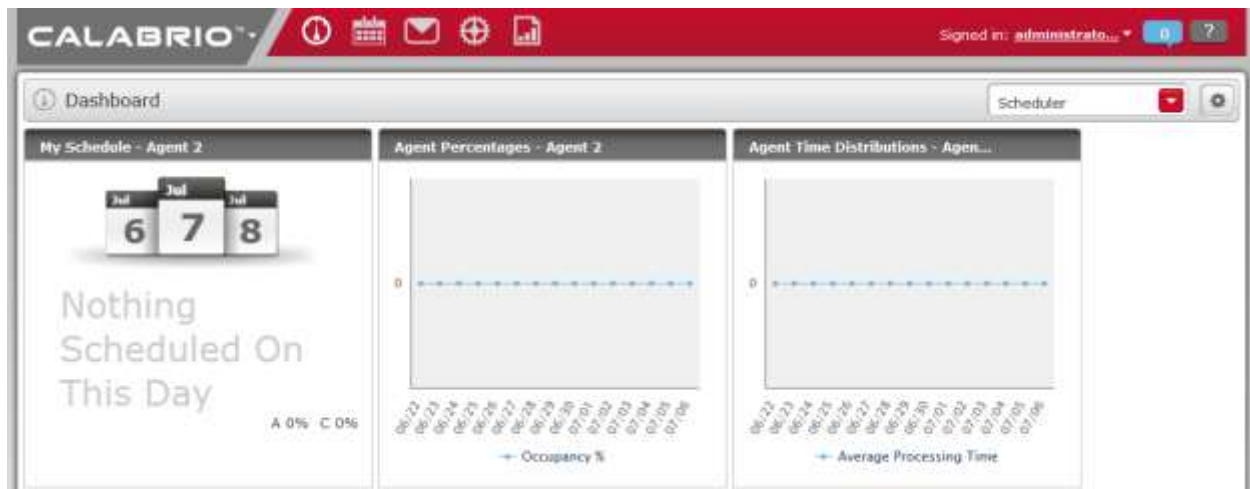
To configure, Skills, VDNs, and Agents, select **Application Management**, as shown below.
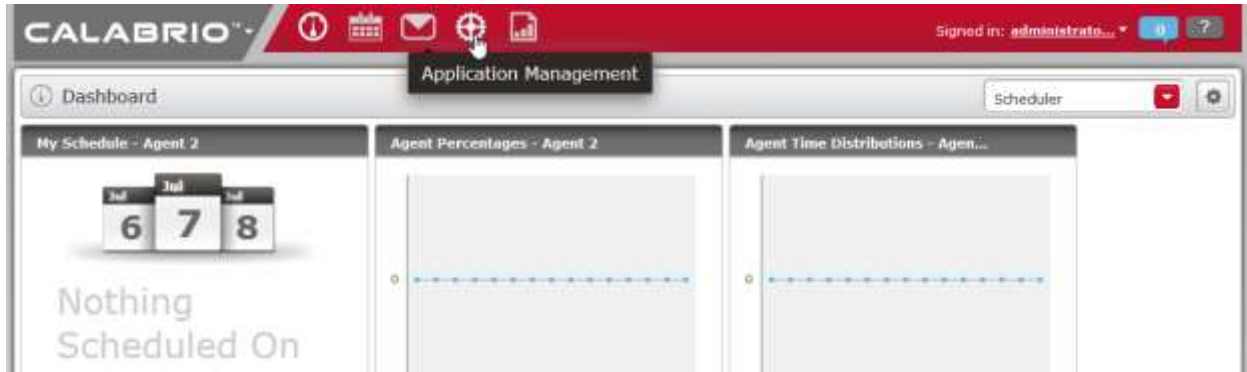
7.3. Administer Skills

To add a new skill, select **Services Queues** under **Services**, and select **Create a new service queue.**

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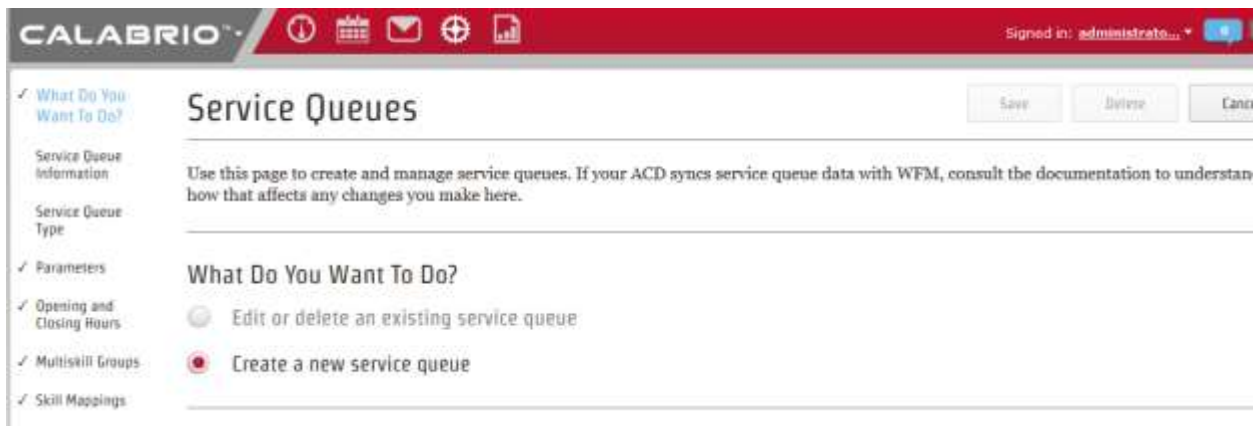
- Type in the **SERVICE QUEUE ID** as configured in CMS. In this case **31**, where **3** is the ACD number and **1** is the Skill number.
- Type in a descriptive name for **SERVICE QUEUE NAME**.
- Set the **Service Queue Type** to the pre-configured **Voice (Interactive)**.

Click **Save** once done. Add additional skills for each skill mentioned in **Section 5.2**.

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7.4. Administer Teams

To add a new team, select **Teams** under **Teams**, and select **Create a new team**.
- Type in a name for the team in **Team Name**.
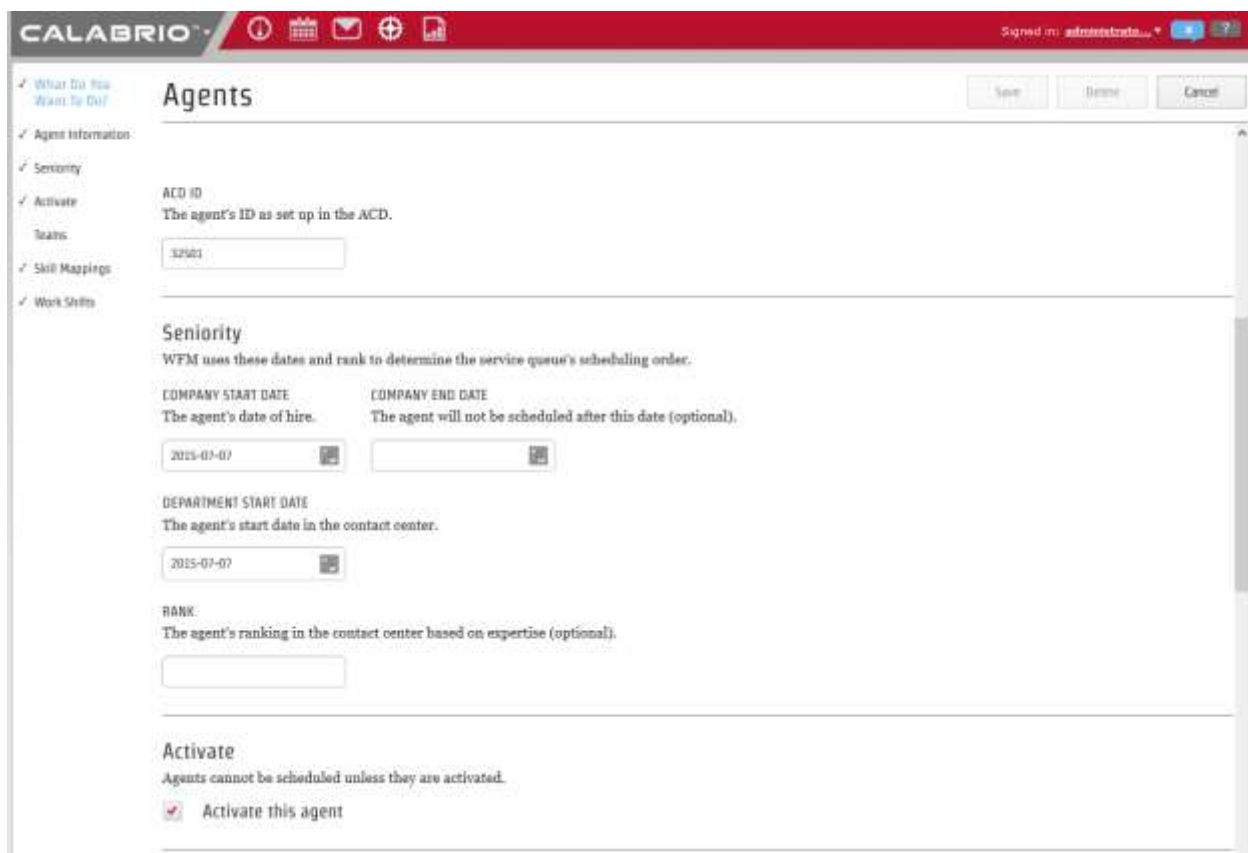
Click **Save** once done.

7.5. Administer Agents

To add a new agent, select **Agents** under **People**, and select **Create a new agent** (not shown).

- Type in values for **FIRST NAME, LAST NAME** and **EMPLOYEE ID** (not shown).
- Type in the **ACD ID** as configured in CMS. In this case **32501**, where **3** is the ACD number and **2501** is the Agent ID.
- Check the box for **Activate this Agent**.

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- Assign the agent to a **Team** by selecting an **Available** team and clicking **>**. In this case, team **Avaya** was added. Note that the team was configured in **Section 7.4**.
- Assign skills to the agent by selecting **Available** skills and clicking **>**. In this case, **Skill 1** and **Skill 2**. Note that these skills were configured in **Section 7.3**.

Click **Save** once done. Add additional agents for each agent mentioned in **Section 5.2**.
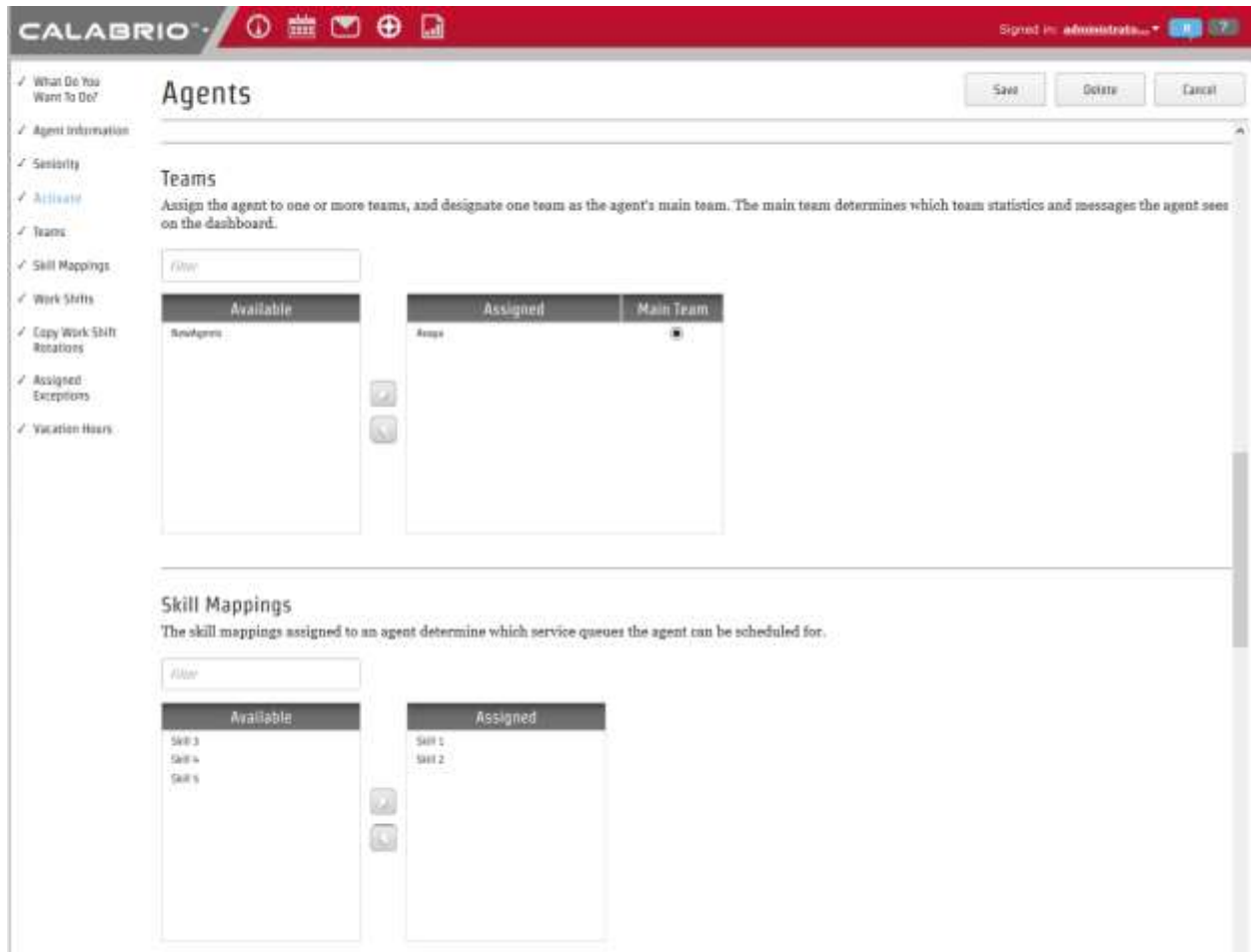
7.6. Administer DNs

To add a new Directory Number to map to each VDN, select **Directory Numbers** under **Services**, and select **Create a new DN**.

- Type in the **DIRECTORY NUMBER** as configured in CMS. In this case **310001**, where **3** is the ACD number and **10001** is the VDN.
- Assign skills to the DN by selecting **Available** skills and clicking >. In this case, **Skill 1** and **Skill 2.** Note that these skills are as configured in **Section 7.3**.

Click **Save** once done. Add additional VDNs for each VDN mentioned in **Section 5.1.**

8. Verification Steps

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

8.1. Verify Avaya Call Management System

From the CMS server, follow the procedures in **Section 6.2** to display the **MainMenu**. Verify the status of the connection to Communication Manager by selecting **Maintenance ➔ Connection Status**, and press the **Enter** key.
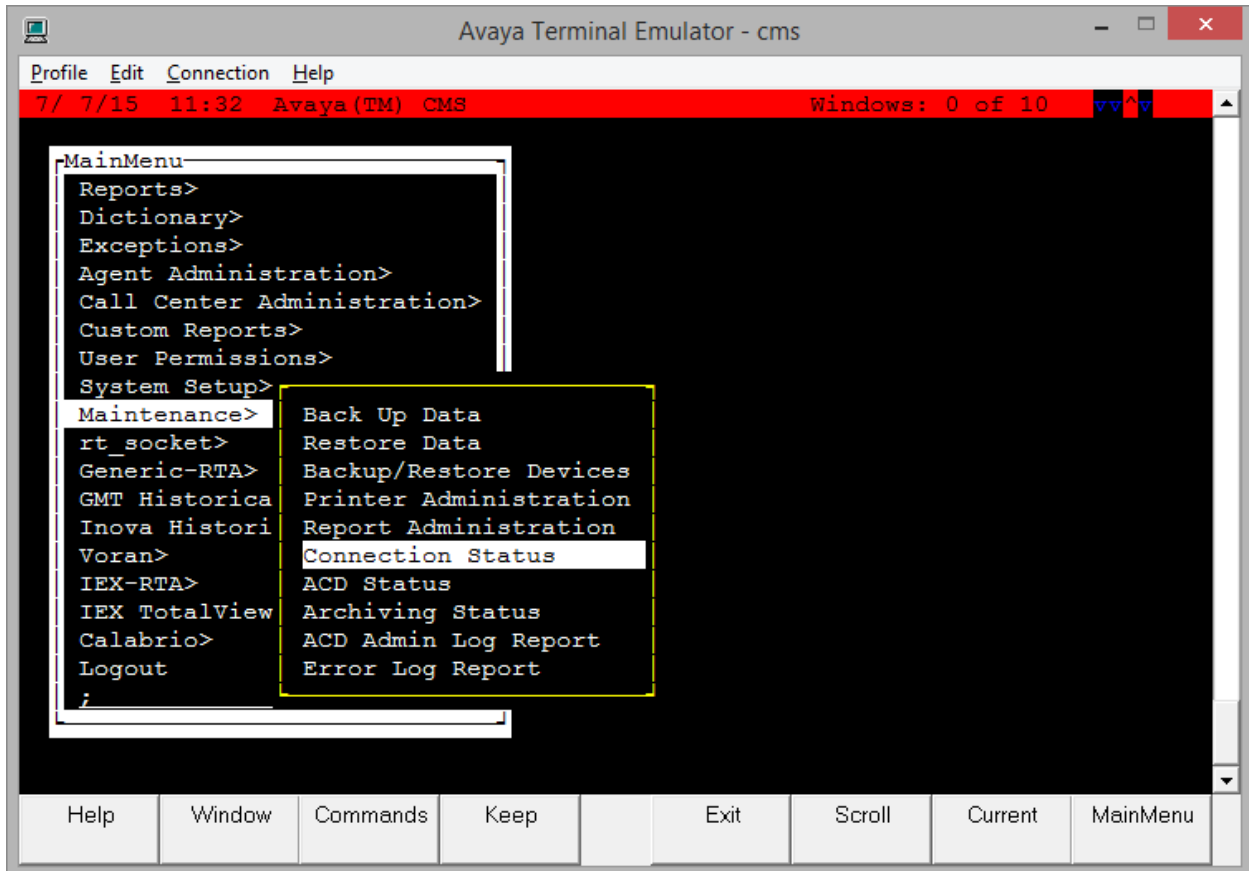
In the **Maintenance: Connection Status** dialog box, enter the corresponding **ACD(s)** number followed by the **Enter** key. For the compliance testing, the corresponding switch connection is ACD "3". Select **Find one** in the right window and press **Enter**.

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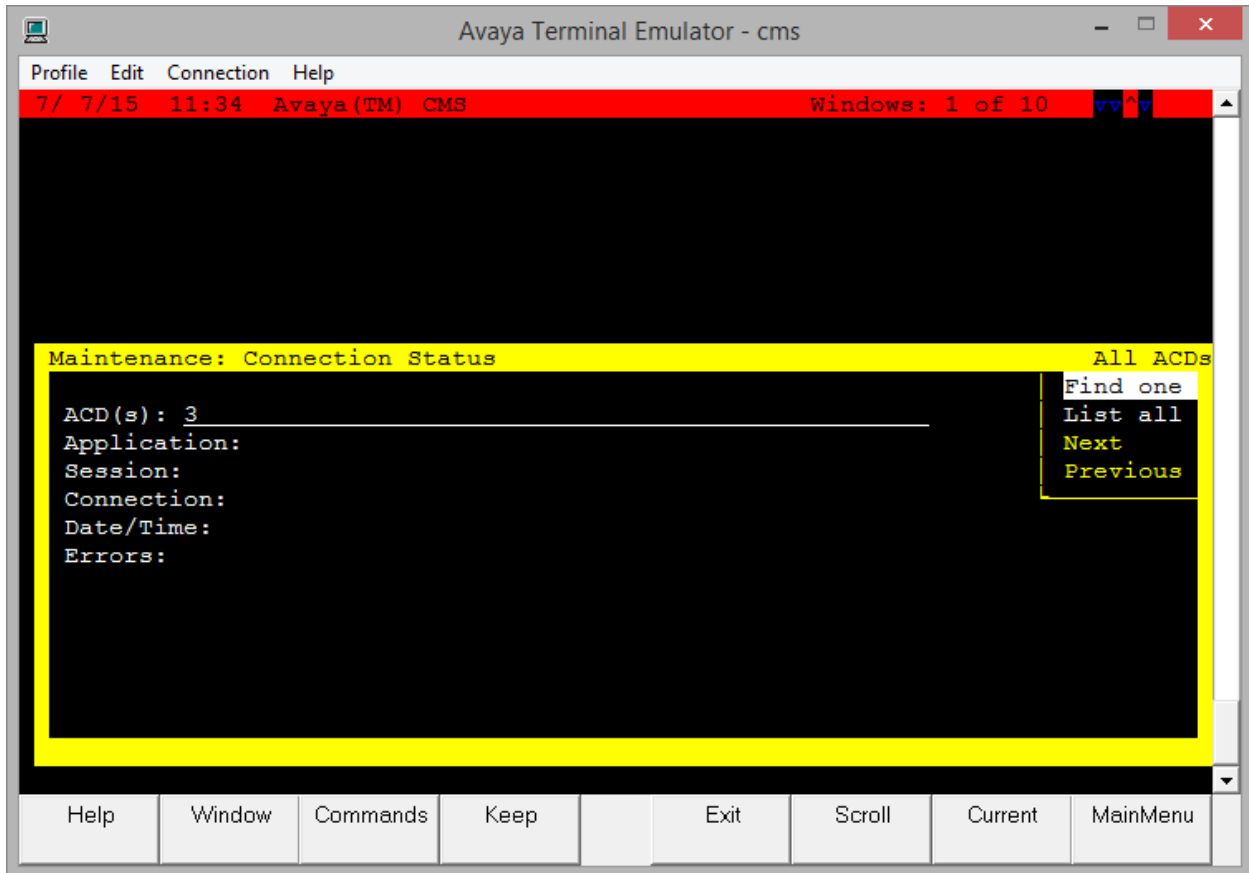
The **Maintenance: Connection Status** dialog box is updated with status information. Verify that the **Session** status is "data transfer" and "normal", and that the **Connection** status is "operational", as shown below.

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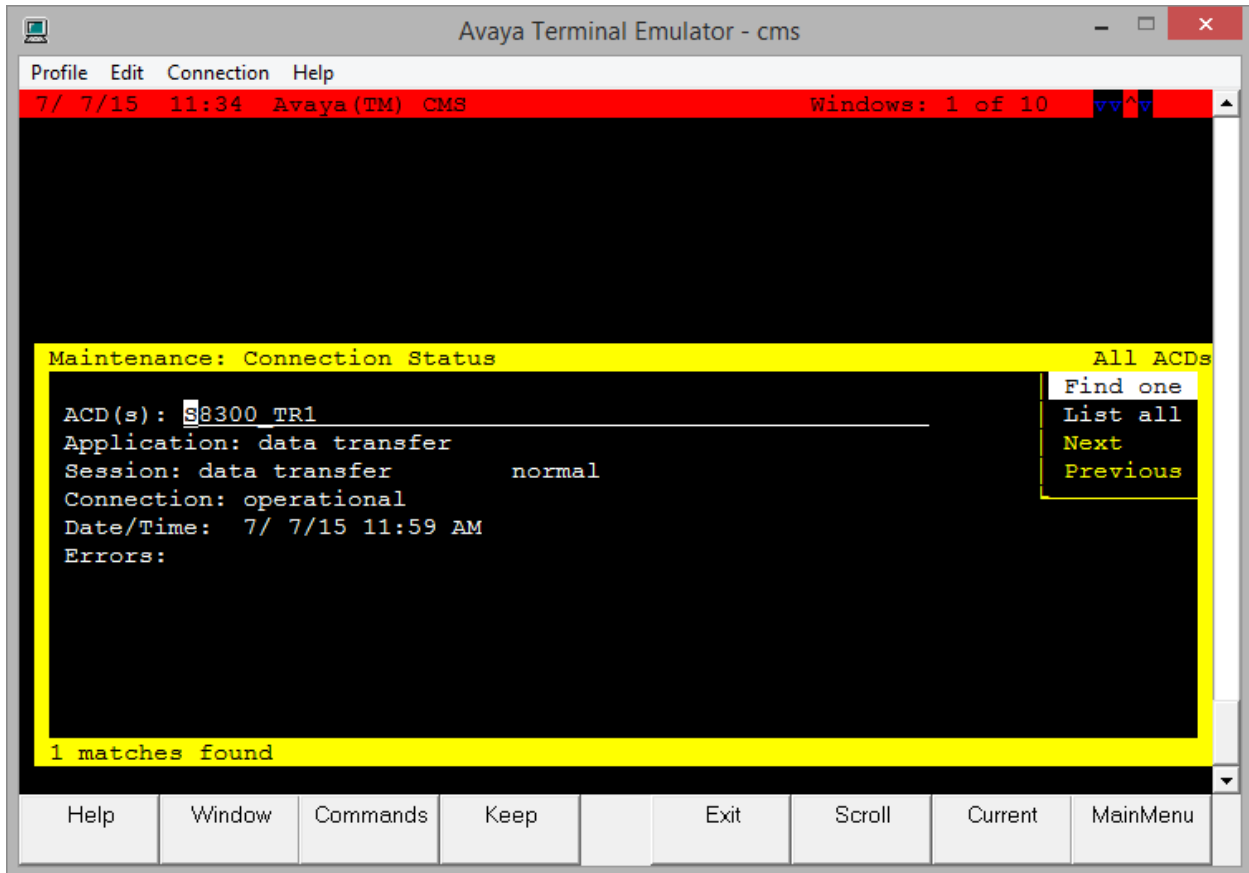
8.2. Verify Avaya Call Management System Real-Time Adapter

From the **MainMenu** screen, select the **Generic-RTA** option and press **Enter**.
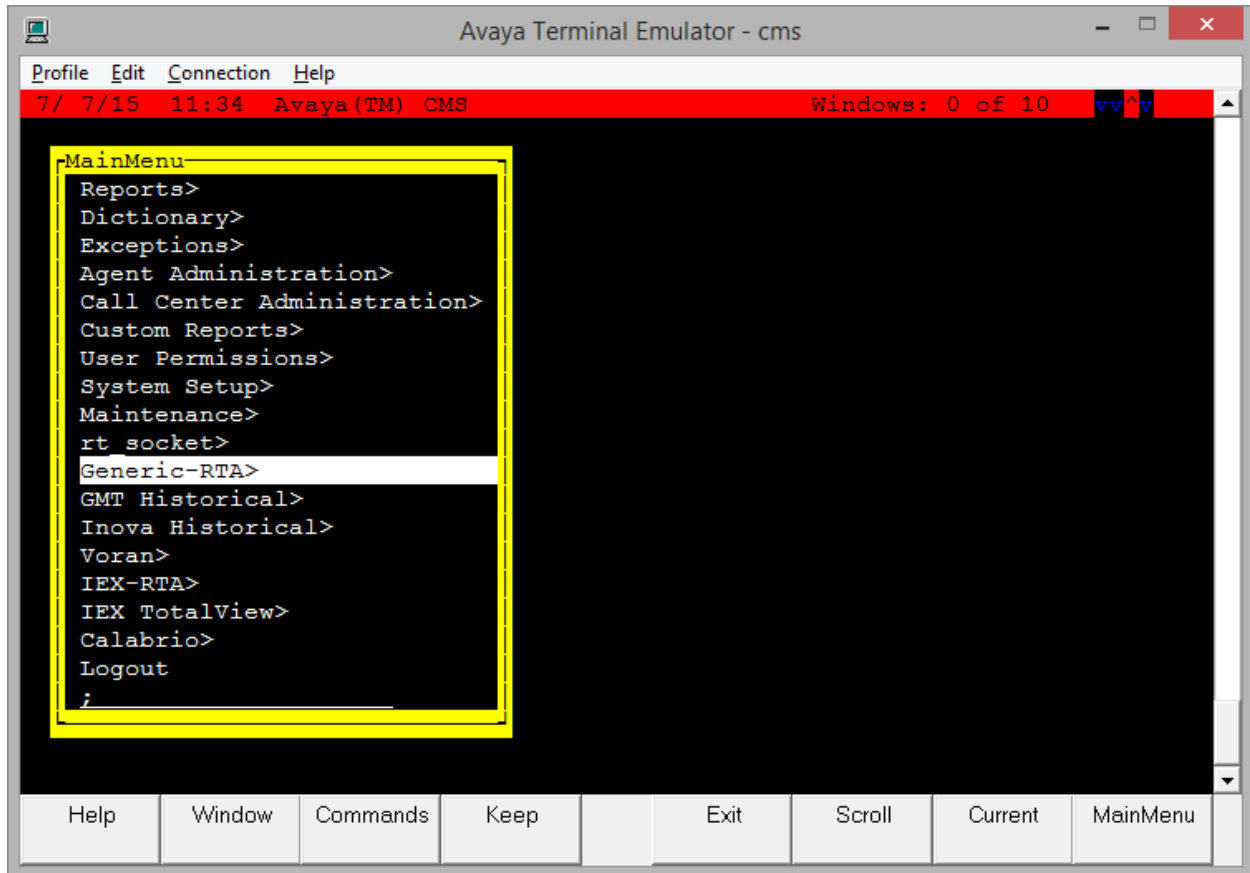
The **Generic-RTA** Menu is displayed. Enter **3** to check the status of the Generic RTA session.

```
                  Avaya Terminal Emulator - cms              _  □  ×

 Profile  Edit  Connection  Help


  ------ Generic-RTA Menu ------

1) Start Generic-RTA
2) Stop Generic-RTA
3) Check Status
4) View Maintenance Log
5) Show Version
6) Show Licensed Authorizations
7) Show Staffed Agents Count
8) Change Split(s)/Skill(s) and/or ACD
9) Show Configuration
0) Exit
=============
Choice ==> 3
```

Verify that the session is running and is connected.

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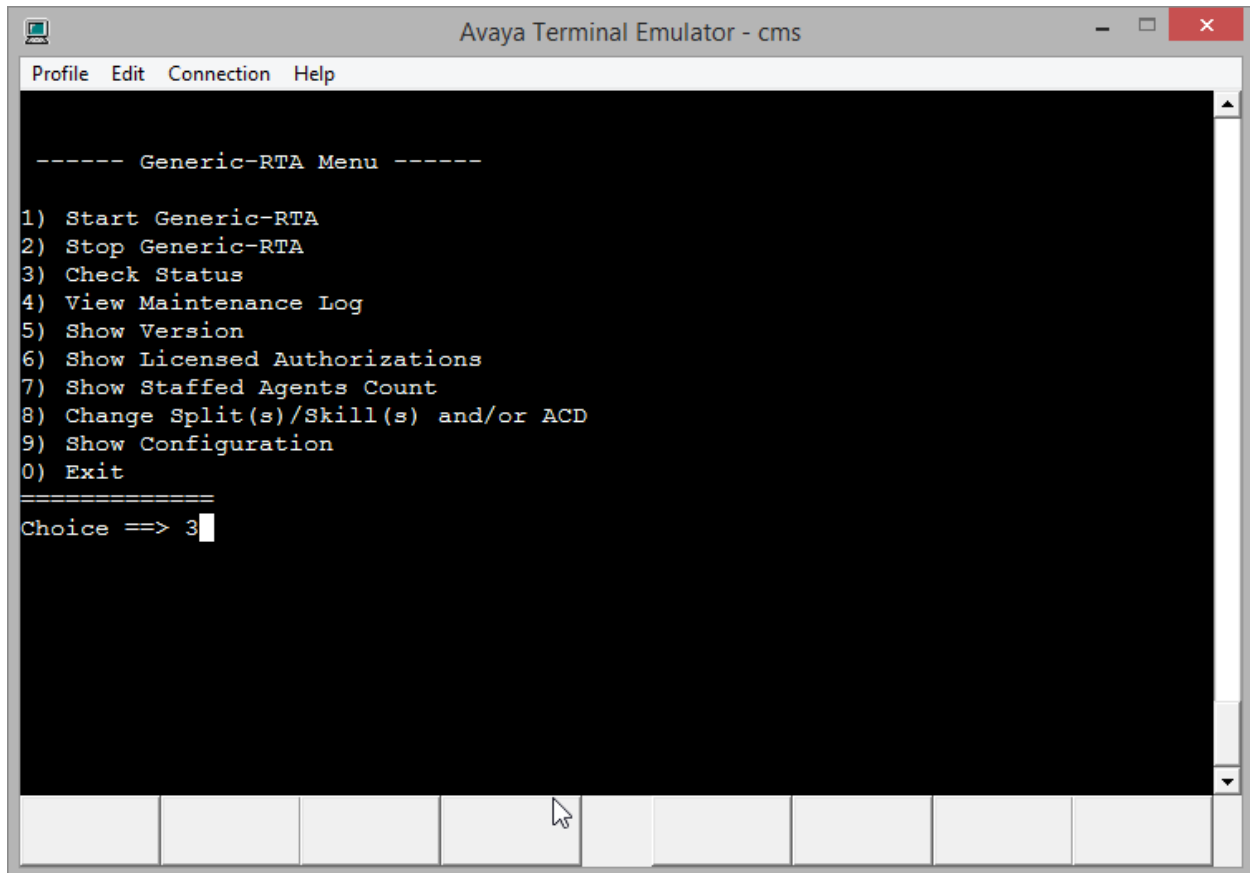©2015 Avaya Inc. All Rights Reserved.

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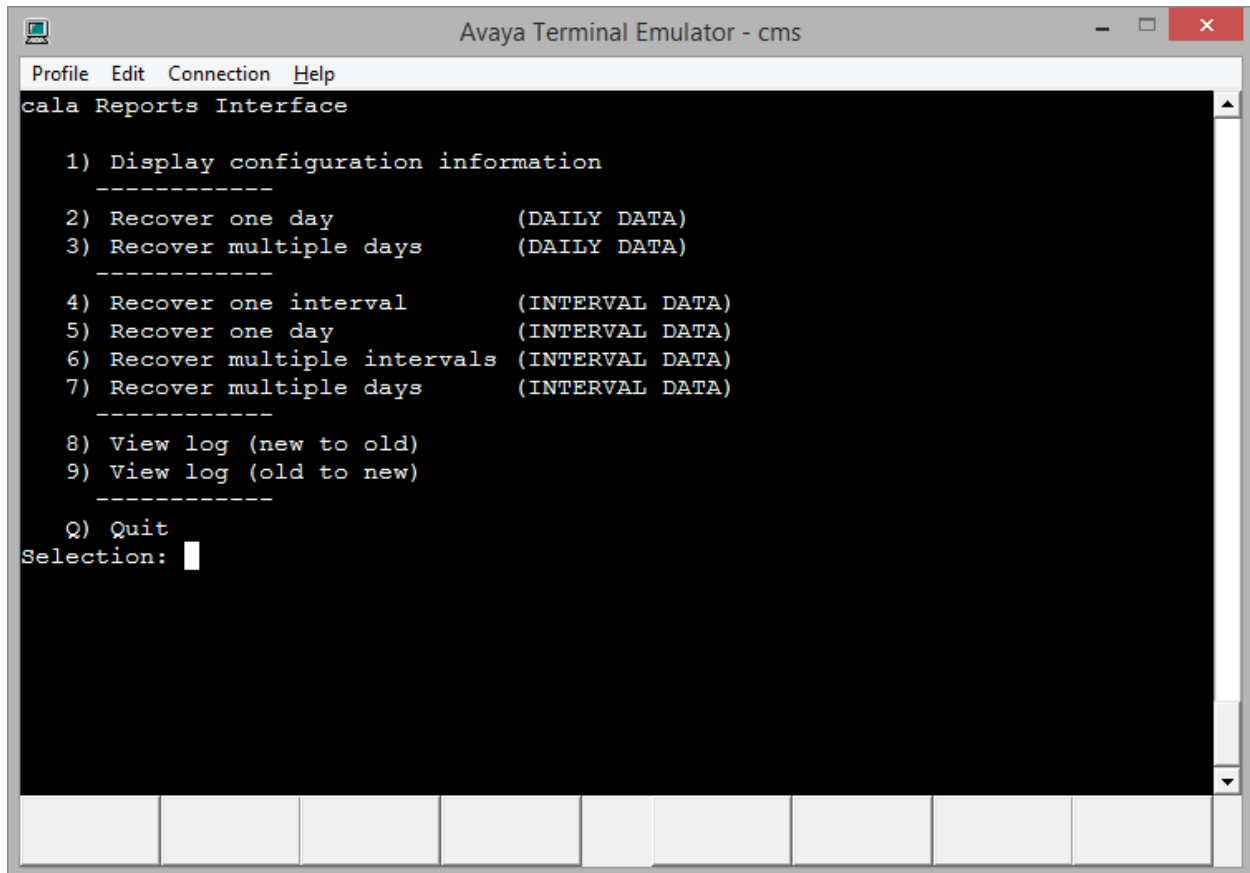
8.3. Verify Avaya Call Management System Historical Adapters

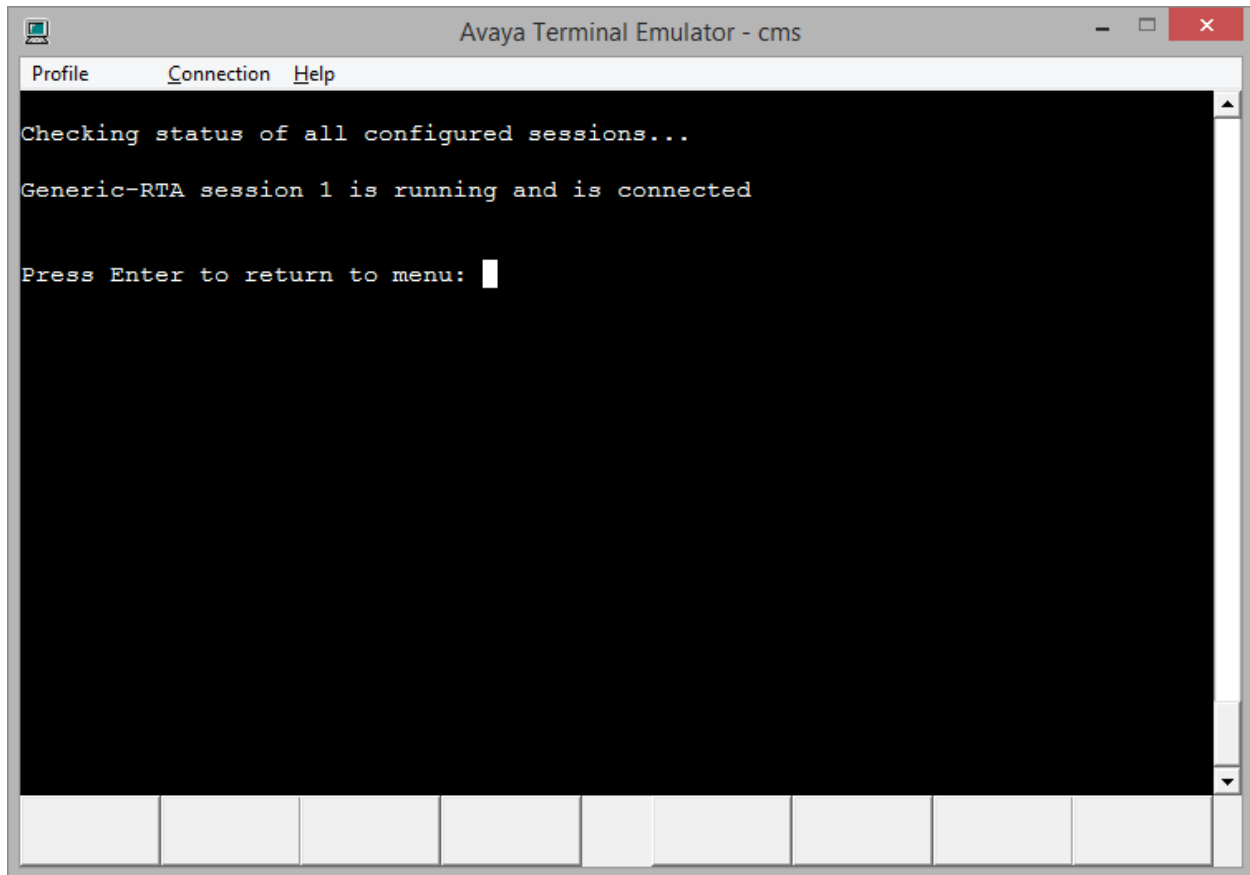From the **MainMenu** screen, select the **Calabrio** option and press **Enter**.
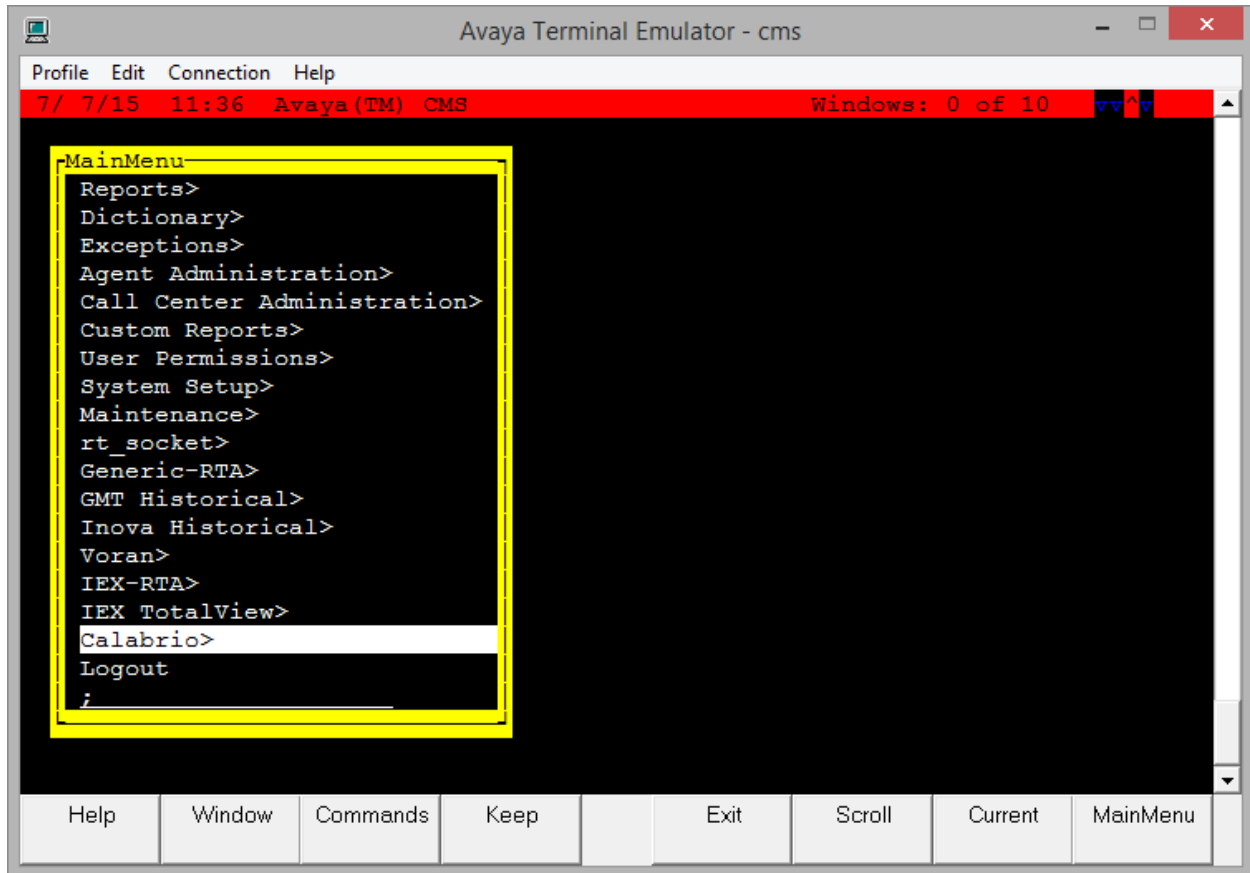
The **cala Reports Interface** menu is displayed.
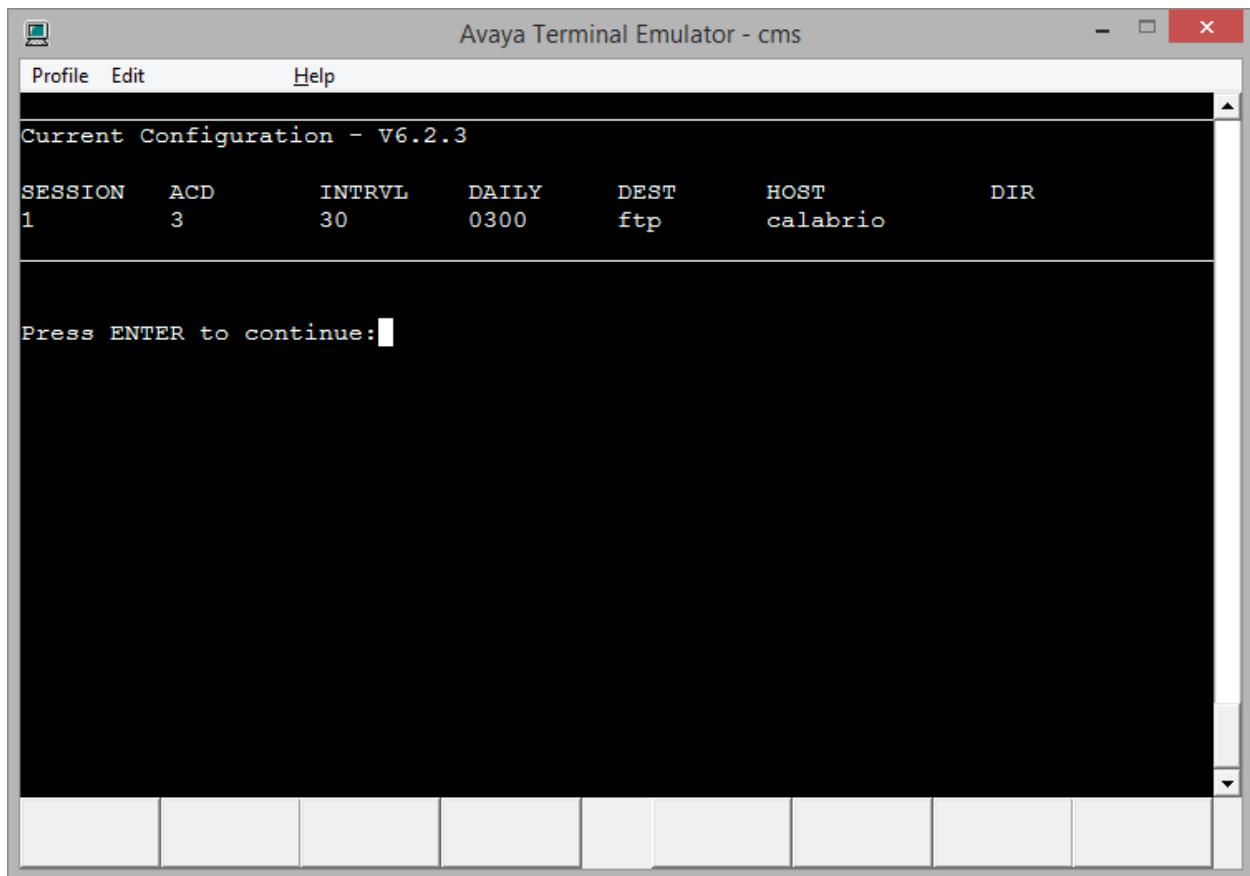

```
                     Avaya Terminal Emulator - cms           _  □  ×
 Profile  Edit  Connection  Help
cala Reports Interface                                              ▲

   1) Display configuration information
      ------------
   2) Recover one day            (DAILY DATA)
   3) Recover multiple days      (DAILY DATA)
      ------------
   4) Recover one interval       (INTERVAL DATA)
   5) Recover one day            (INTERVAL DATA)
   6) Recover multiple intervals (INTERVAL DATA)
   7) Recover multiple days      (INTERVAL DATA)
      ------------
   8) View log (new to old)
   9) View log (old to new)
      ------------
   Q) Quit
Selection: █
```

Enter **1** followed by the **Enter** key, to display the configuration of the Calabrio Historical Adapters. Verify that the configuration matches what was configured in **Section 6.4**.

```
Avaya Terminal Emulator - cms

Profile   Edit              Help

Current Configuration - V6.2.3

SESSION    ACD        INTRVL      DAILY       DEST        HOST            DIR
1          3          30          0300        ftp         calabrio



Press ENTER to continue:
```

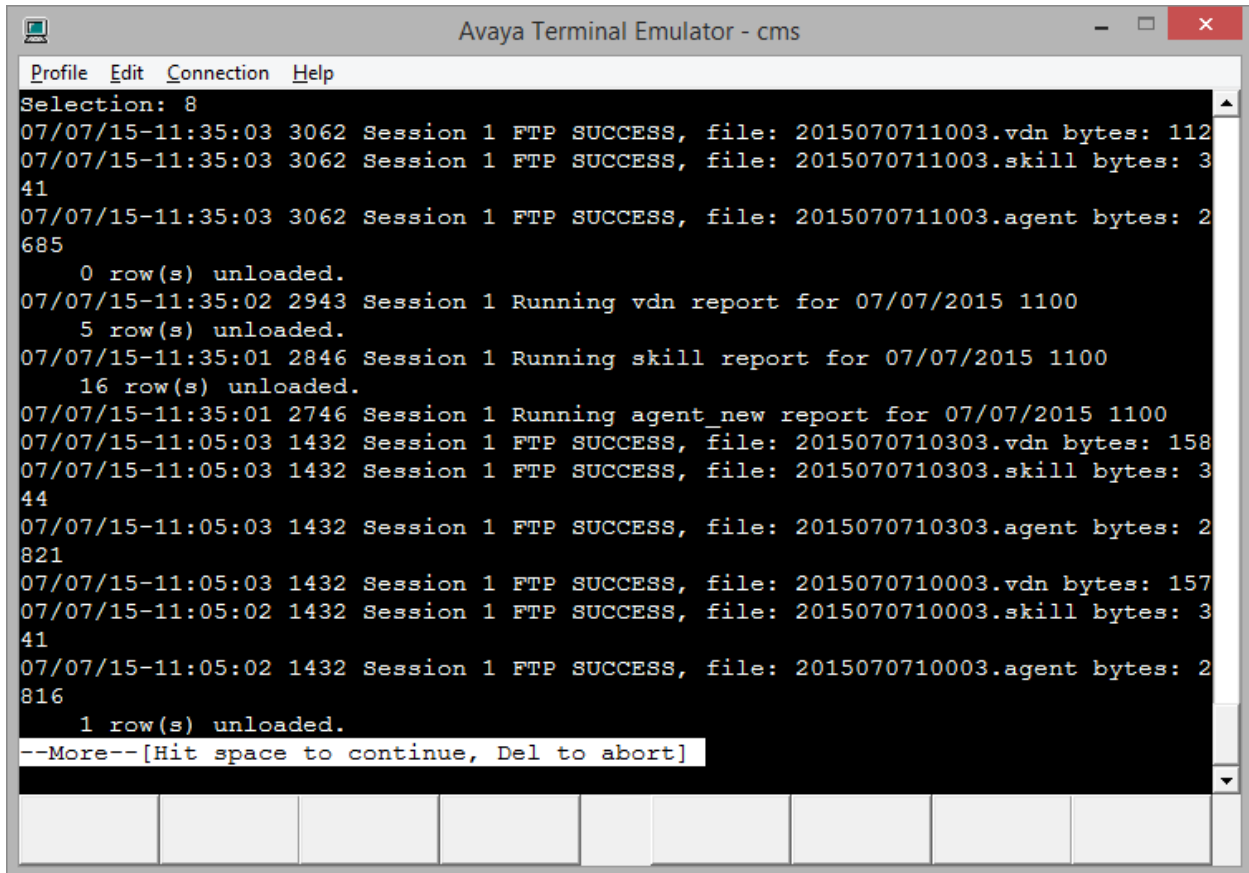Press **Enter** to return to the **cala Reports Interface** menu. Enter **8** followed by the **Enter** key, to display the log. Verify that the Calabrio Historical Adapters have successfully created and transferred three historical reports every 30 minutes.

```
Avaya Terminal Emulator - cms

Profile  Edit  Connection  Help

Selection: 8
07/07/15-11:35:03 3062 Session 1 FTP SUCCESS, file: 2015070711003.vdn bytes: 112
07/07/15-11:35:03 3062 Session 1 FTP SUCCESS, file: 2015070711003.skill bytes: 3
41
07/07/15-11:35:03 3062 Session 1 FTP SUCCESS, file: 2015070711003.agent bytes: 2
685
     0 row(s) unloaded.
07/07/15-11:35:02 2943 Session 1 Running vdn report for 07/07/2015 1100
     5 row(s) unloaded.
07/07/15-11:35:01 2846 Session 1 Running skill report for 07/07/2015 1100
     16 row(s) unloaded.
07/07/15-11:35:01 2746 Session 1 Running agent_new report for 07/07/2015 1100
07/07/15-11:05:03 1432 Session 1 FTP SUCCESS, file: 2015070710303.vdn bytes: 158
07/07/15-11:05:03 1432 Session 1 FTP SUCCESS, file: 2015070710303.skill bytes: 3
44
07/07/15-11:05:03 1432 Session 1 FTP SUCCESS, file: 2015070710303.agent bytes: 2
821
07/07/15-11:05:03 1432 Session 1 FTP SUCCESS, file: 2015070710003.vdn bytes: 157
07/07/15-11:05:02 1432 Session 1 FTP SUCCESS, file: 2015070710003.skill bytes: 3
41
07/07/15-11:05:02 1432 Session 1 FTP SUCCESS, file: 2015070710003.agent bytes: 2
816
     1 row(s) unloaded.
--More--[Hit space to continue, Del to abort]
```

8.4. Verify Calabrio Workforce Management

Prior to verifying Calabrio Workforce Management, make calls to the measured resources on Communication Manager, to enable measurement data to be sent to CMS.

8.4.1. Verify Real-Time Agent Data

From the Calabrio Workforce Management web-based administration interface, click **Dashboard** (not shown), and verify the agent states under the **Real Time Adherence** widget.
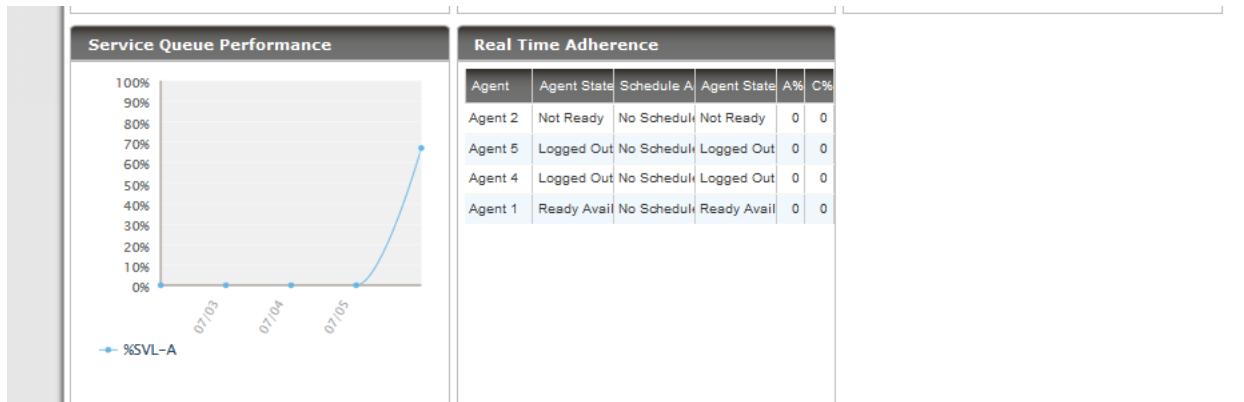
8.4.2. Verify Historical Report

From the Calabrio Workforce Management web-based administration interface, click **Reporting**, and select a report, **Agent Interval** in this case.

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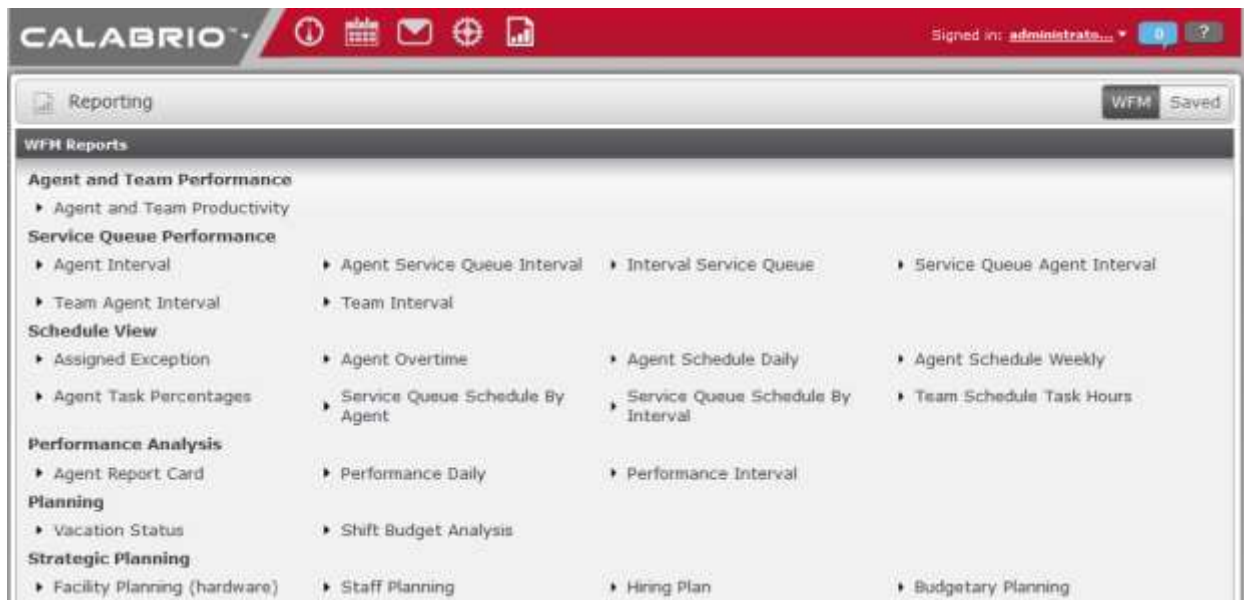
- Select the team that was configured in **Section 7.4** under **Team**.
- Select an agent or all agents under **Agent**.
- Click **Run Report**.
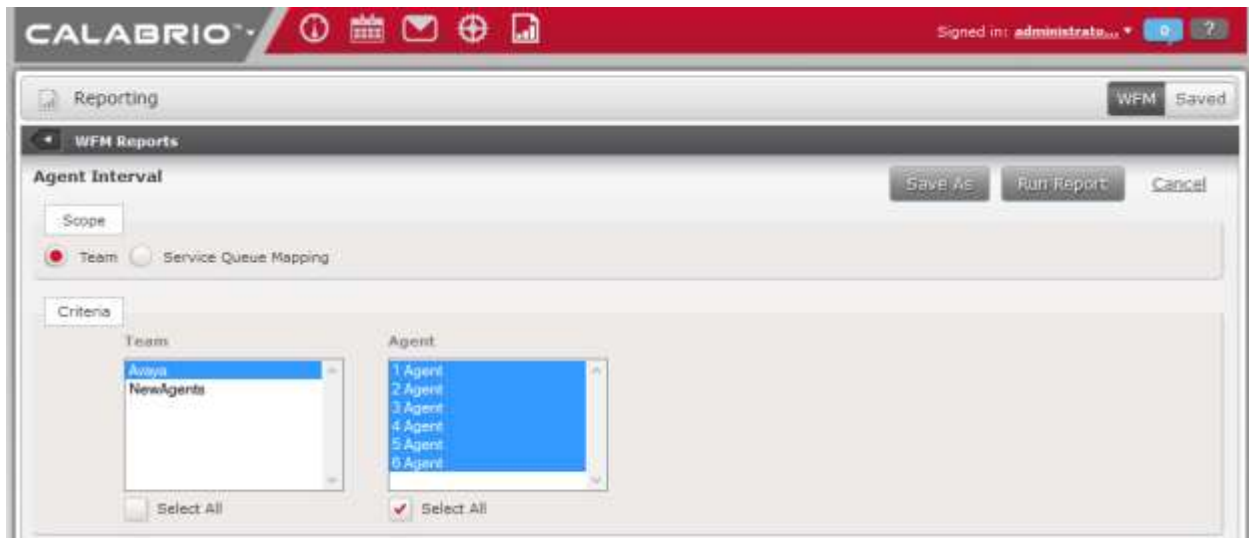
Verify that the **Agent Interval** report is displayed in a pop-up window, and that the report is filled with historical agent data, **Agent 1** in this case.

Agent Interval

Run By: S Supervisor

Agent	Agent Number	Interval	Date	Calls Answered	Calls Handled	Average Talk Time	Average Work Time	Average Handle Time	In Service Time	Ready State Time	Busy Other State Time	Occupancy %
1 Agent	Agent2501	00:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	00:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	01:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	01:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	02:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	02:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	03:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	03:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	04:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	04:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	05:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	05:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	06:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	06:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	07:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	07:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	08:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	08:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	09:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	09:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	10:00	2015-06-22	0	0	--	--	--	0:29:10	0:29:10	0:00:44	0.0
1 Agent	Agent2501	10:30	2015-06-22	0	0	--	--	--	0:11:42	0:11:42	0:18:18	0.0
1 Agent	Agent2501	11:00	2015-06-22	18	18	0:00:18	0:00:12	0:00:30	0:22:57	0:11:38	0:07:04	39.7
1 Agent	Agent2501	11:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	12:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	12:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	13:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	13:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	14:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	14:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	15:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	15:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	16:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	16:30	2015-06-22	2	2	0:00:28	0:00:28	0:00:56	0:29:44	0:27:30	0:00:18	6.2
1 Agent	Agent2501	17:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	17:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	18:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	18:30	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0
1 Agent	Agent2501	19:00	2015-06-22	0	0	--	--	--	0:30:00	0:30:00	0:00:00	0.0

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9. Conclusion

These Application Notes describe the configuration steps required for Calabrio Workforce Management R9.3.1 to interoperate with Avaya Call Management System R17.3, via the customized real-time and historical call measurement data adapters provided by Avaya Professional Services.   All feature and serviceability test cases were completed with one observation noted in **Section 2.2**.

10.   Additional References

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

- *Avaya Call Management System Administration*, Release 17, July 2015
- *Calabrio Workforce Management Installation Guide, Version 9.2 November 2013*
- *Calabrio Workforce Management Application User Guide, Version 9.3 September 2013*