



## **Application Notes for Calabrio Workforce Management with Avaya Call Management System R18 – 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.

# 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 (Communication Manager), relevant contact center resources consisting of Vector Directory Number (VDN), Skill, and Agent are configured to be “measured” by CMS. When a call travels through a “measured” resource on Communication Manager, the call measurement data is sent to CMS, which in turn provides the data to Calabrio Workforce Management via three historical adapters developed by Avaya Professional Services.

The historical adapters reside on CMS. 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 CMS, 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 CMS. A TCP client-server model is used for the connection, with CMS 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 CMS.

## 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.

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.

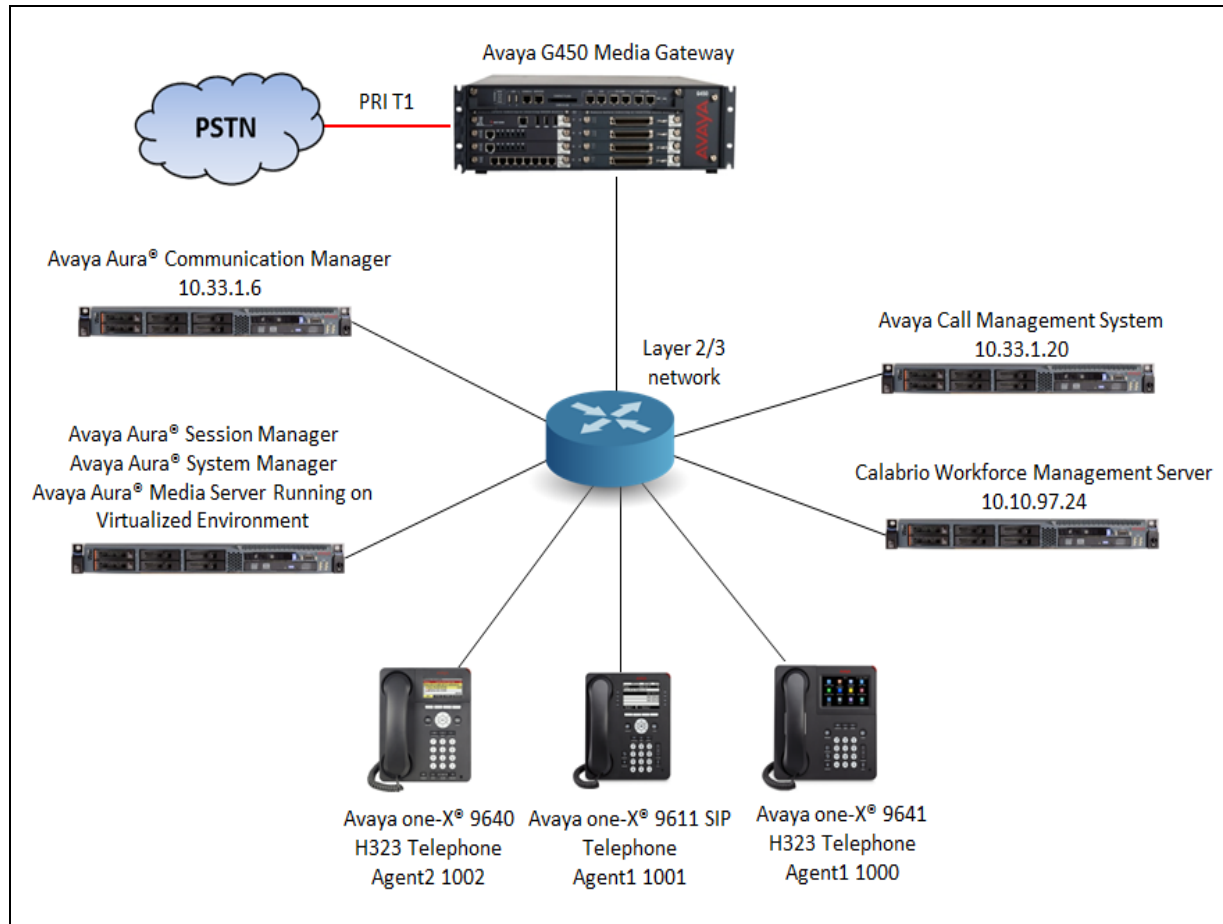
## 2.3. Support

Technical support on Calabrio Workforce Management can be obtained through the following:

- **Phone:** 1-800-303-1248
- **Email:** [calabriosupport@calabrio.com](mailto: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 Windows 2012 R2 Standard 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 Aura® Communication Manager running on Virtualized Environment	7.0 FP1SP1
Avaya Aura® System Manager running on Virtualized Environment	7.0.1.1
Avaya Aura® Session Manager running on Virtualized Environment	7.0.1.1
Avaya Aura® Media Server running on Virtualized Environment	7.7.359
Avaya G450 Media Gateway DCP MM712 DS1 MM710	37.39.0 HW09 FW014 HW05 FW019
Avaya Call Management System	R18
Avaya 96x1 H.323 Telephones	Avaya one-X® Deskphone Release 6.629
Avaya 96x1 SIP Telephones	Avaya one-X® Deskphone Release 7.0.1
Avaya 96x0 H.323 Telephones	Avaya one-X® Deskphone Release 3.25A
Calabrio Workforce Management running under Windows Server 2012 R2 Standard	Release 9.5 SR3

## 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
3340	1	1001
3341	2	1002
3342		1003

### 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	
Name*: Contact Center 1	
Destination: Vector Number 1	
Attendant Vectoring? n	
Meet-me Conferencing? n	
Allow VDN Override? n	
COR: 1	
TN*: 1	
<b>Measured: both</b> Report Adjunct Calls as	
ACD*? n	
Acceptable Service Level (sec): 20	
VDN of Origin Annc. Extension*:	
1st Skill*:	
2nd Skill*:	
3rd Skill*:	
* 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	HUNT GROUP	Page 2 of 4
Skill? y	Expected Call Handling Time (sec): 20	
AAS? n	Service Level Target (% in sec): 80 in 20	
<b>Measured: both</b>		
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 and 2 were configured to be measured. In addition, two agents with extensions 3301, 3301 and 3402 and agent id 1000, 1001 and 1002 were used as available agents for the above Skill groups.

list agent-loginID									
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
1000	Agent 1000	unstaffed						1	lv1
	1/01	/	/	/	/	/	/	/	/
1001	Agent 1001	unstaffed						1	lv1
	1/01	/	/	/	/	/	/	/	/
1002	Agent 1002	unstaffed						1	lv1
	2/01	/	/	/	/	/	/	/	/



## 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 CALA-RTA Adapter
- Enable CALA-RTA Adapter
- Check Intra-hour Interval
- Configure Historical Adapter

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

### 6.1. Configure CALA-RTA Adapter

The CALA-RTA adapter is configured through a configuration file named **rt\_a.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\_a\_cala**. In the **rt\_a.conf** file, select a Session number and configure the following items:

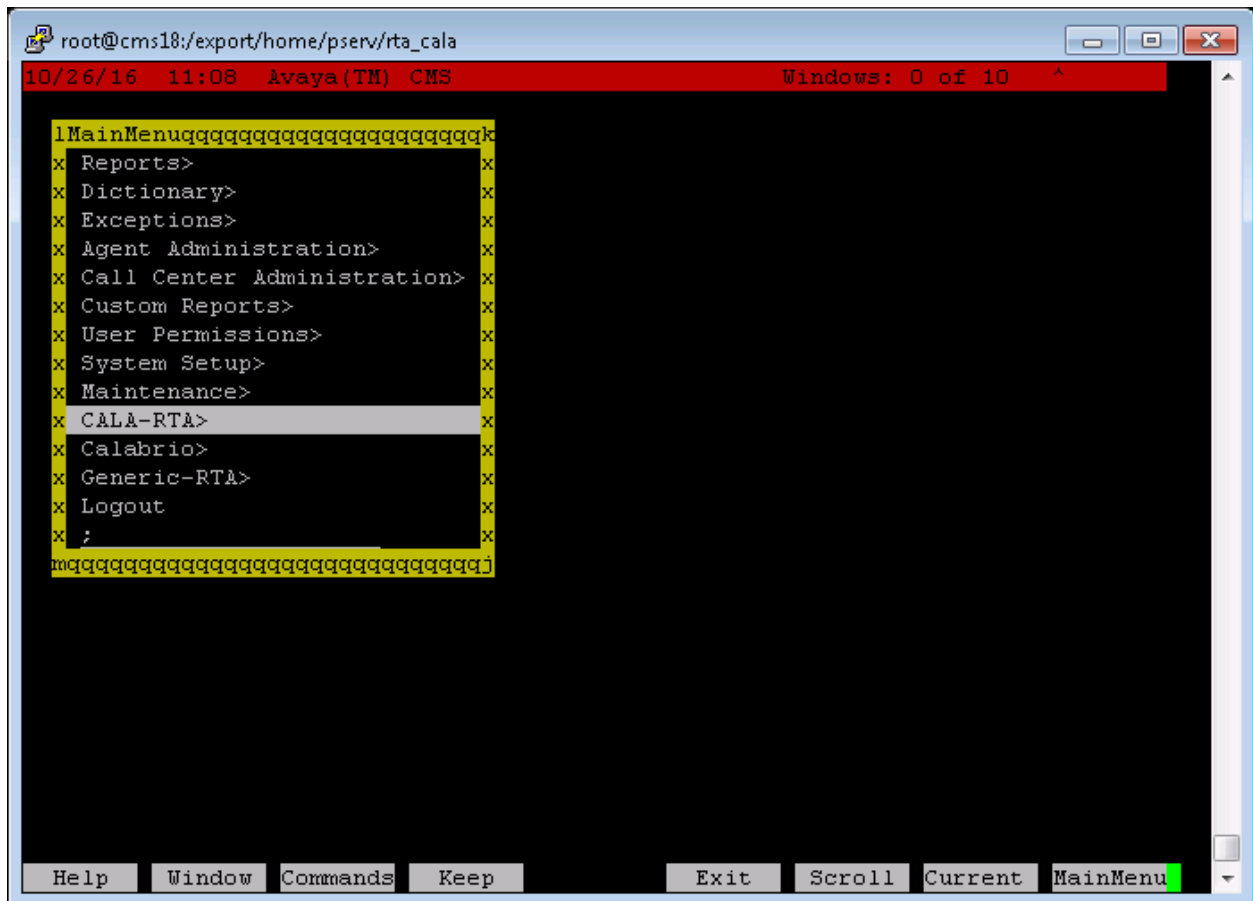
- **HOST:** IP address or hostname of the Calabrio server which is defined in /etc/hosts
- **PORT:** port for the TCP/IP connection
- **ACD:** ACD that sources the real-time date
- **REFRESH:** real-time report refresh rate

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

```
#----- Session 1 -----
#----- (with EXAMPLE settings, NOT defaults) -----
HOST1=10.10.97.24          # The receiving server's host name in /etc/hosts
PORT1=6970                # The receiving server's port
ACD1=1                    # ACD being monitored
OPTS1=""                  # Applicable command line options
REPORT1=rt_a_cala         # Respective custom report name
MONITOR_LIST1="1-2000"    # Skills to monitor
REFRESH1=5                # Respective report refresh rate
DEST_APP1="CALA-RTA Test" # Destination app for rt socket or Cala-RTA
```

## 6.2. Enable CALA-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 **CALA-RTA**. Note that the actual option name may vary. Press the **Enter** key.

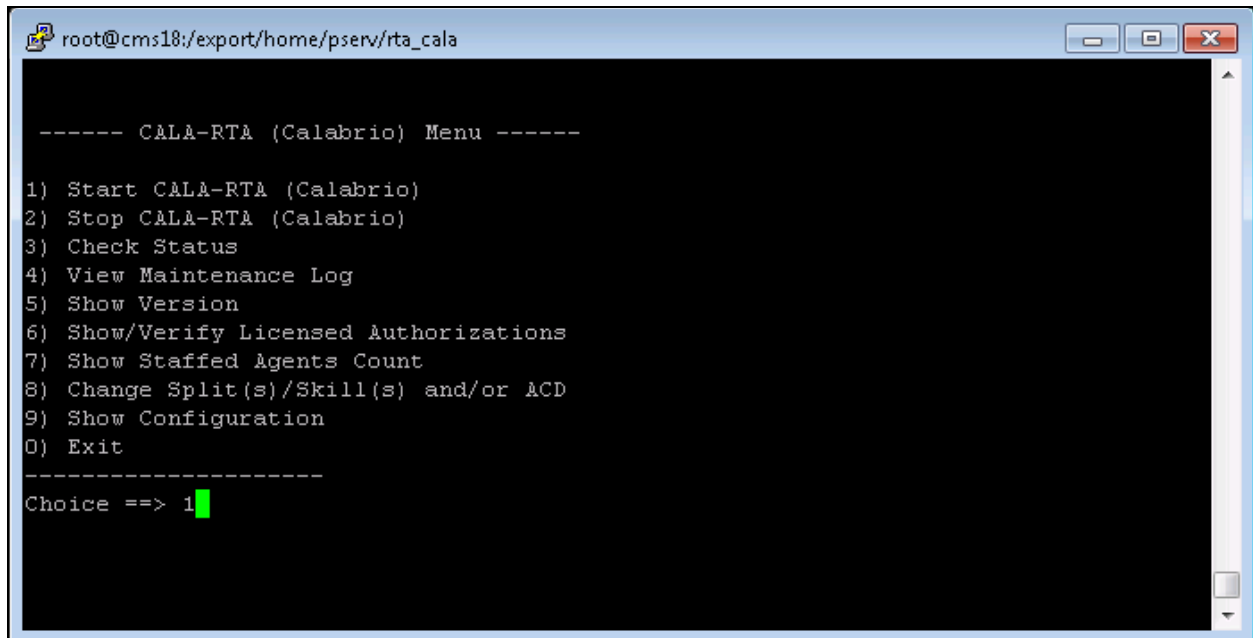


The screenshot shows a terminal window titled "root@cms18:/export/home/pserv/rta\_cala". The window has a red header bar with the text "10/26/16 11:08 Avaya(TM) CMS" and "Windows: 0 of 10". The main area displays a menu with the following options, each preceded by an 'x' and followed by a '>':

- lMainMenu
- x Reports>
- x Dictionary>
- x Exceptions>
- x Agent Administration>
- x Call Center Administration>
- x Custom Reports>
- x User Permissions>
- x System Setup>
- x Maintenance>
- x CALA-RTA>
- x Calabrio>
- x Generic-RTA>
- x Logout
- x ;

The menu is enclosed in a yellow border. At the bottom of the window, there is a status bar with several buttons: Help, Window, Commands, Keep, Exit, Scroll, Current, and MainMenu. The "MainMenu" button is highlighted with a green bar.

The **CALA-RTA Menu** is displayed. Enter “1” followed by the **Enter** key, to start the interface.

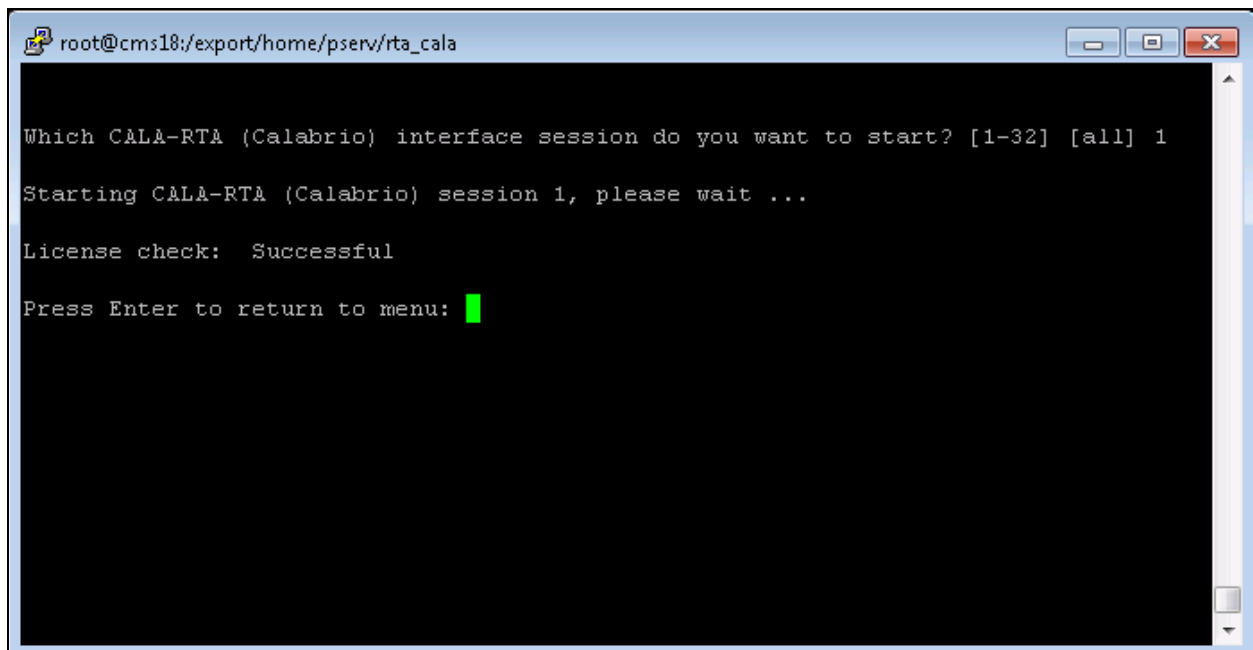
A terminal window titled 'root@cms18:/export/home/pserv/rta\_cala' displays the 'CALA-RTA (Calabrio) Menu'. The menu lists ten options: 1) Start CALA-RTA (Calabrio), 2) Stop CALA-RTA (Calabrio), 3) Check Status, 4) View Maintenance Log, 5) Show Version, 6) Show/Verify Licensed Authorizations, 7) Show Staffed Agents Count, 8) Change Split(s)/Skill(s) and/or ACD, 9) Show Configuration, and 0) Exit. The prompt 'Choice ==>' is followed by the number '1' and a green cursor bar.

```
root@cms18:/export/home/pserv/rta_cala

----- CALA-RTA (Calabrio) Menu -----

1) Start CALA-RTA (Calabrio)
2) Stop CALA-RTA (Calabrio)
3) Check Status
4) View Maintenance Log
5) Show Version
6) Show/Verify 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.

A terminal window titled 'root@cms18:/export/home/pserv/rta\_cala' shows the process of starting a session. It prompts 'Which CALA-RTA (Calabrio) interface session do you want to start? [1-32] [all]' with '1' entered. It then says 'Starting CALA-RTA (Calabrio) session 1, please wait ...', followed by 'License check: Successful'. The prompt 'Press Enter to return to menu:' is shown with a green cursor bar.

```
root@cms18:/export/home/pserv/rta_cala

Which CALA-RTA (Calabrio) interface session do you want to start? [1-32] [all] 1

Starting CALA-RTA (Calabrio) session 1, please wait ...

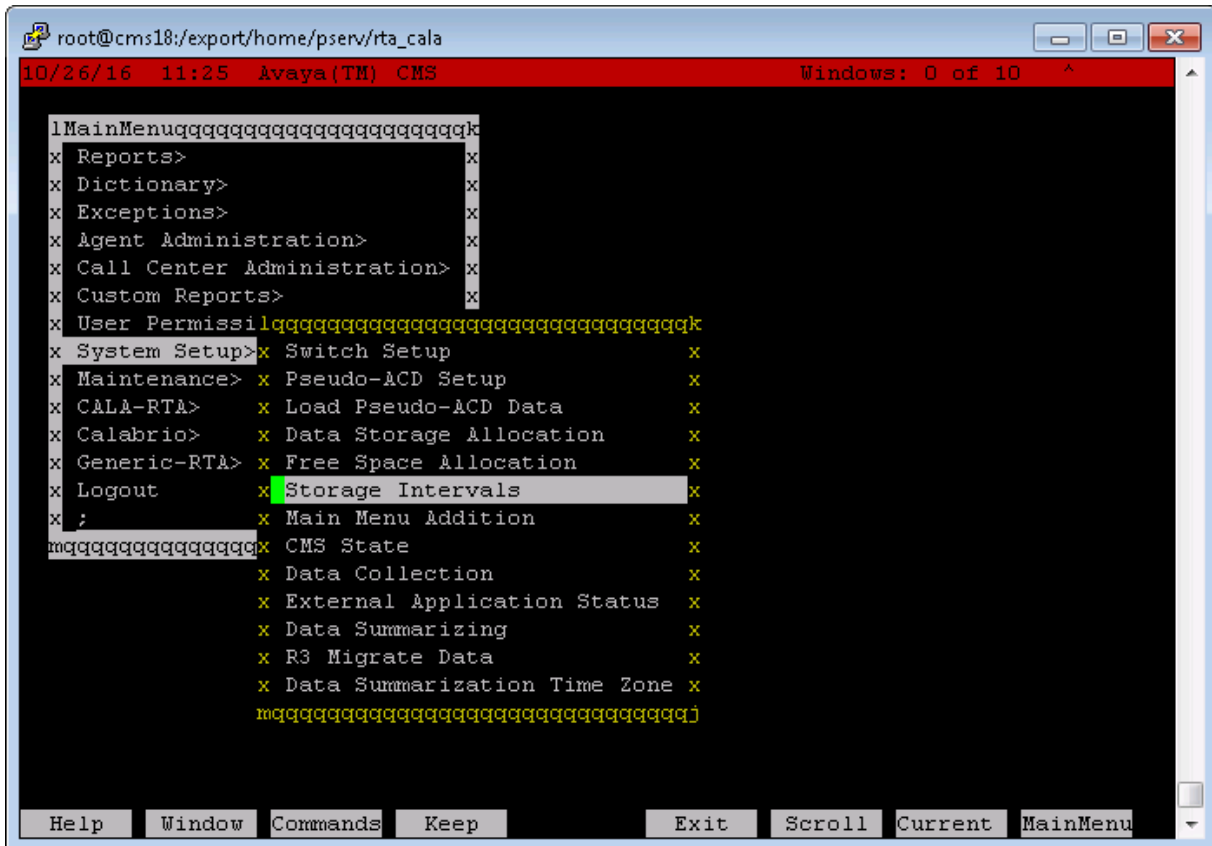
License check: Successful

Press Enter to return to menu:
```

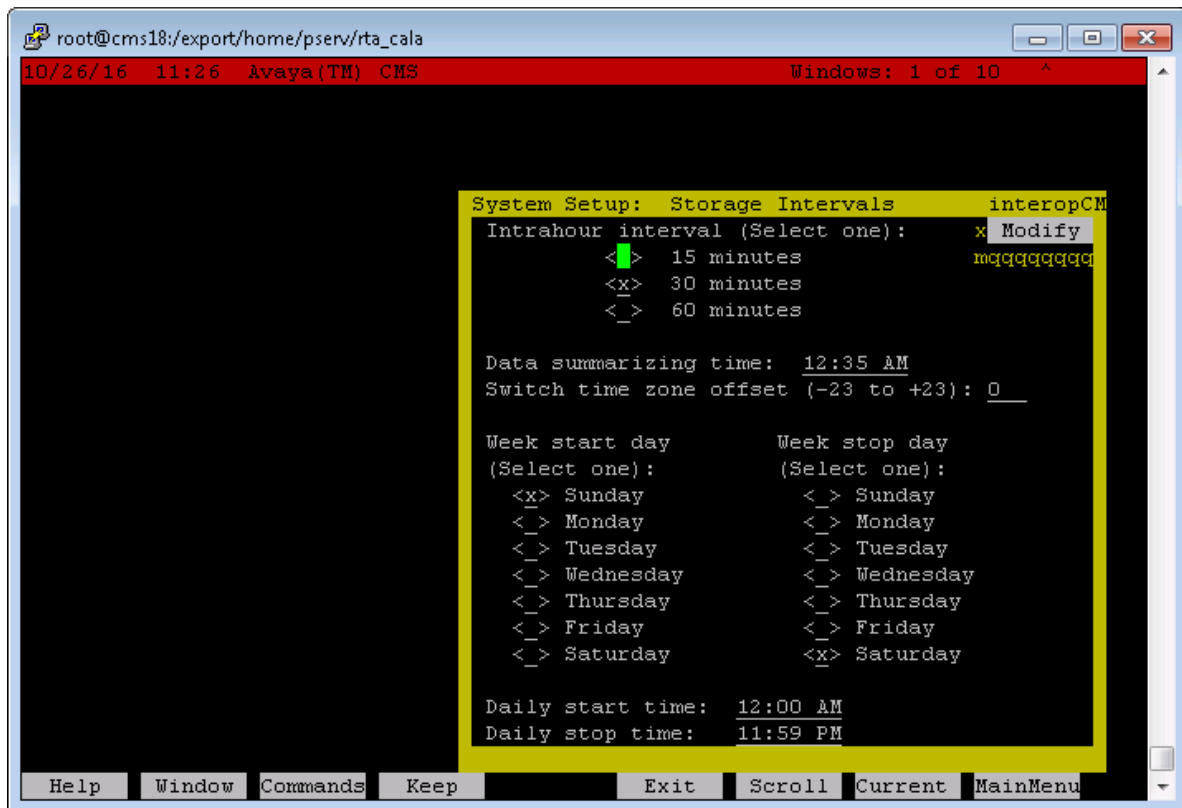
Press the **Enter** key followed by “0” to return to the CMS **Main Menu**.

### 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.



## 6.4. Configure Historical Adapters

The Calabrio historical adapter is configured through a configuration file named **cala.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/cala6**. In the **cala.conf** file, configure the following items:

- **ACD**: ACD number that sources the historical report
- **INTERVAL**: the interval time of report
- **TYPE**: type of transfer
- **APPN**: the action of FTP command
- **DEST**: the ip address of Calabrio server
- **USER**: the username of FTP server
- **PASS**: the password of FTP user

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

```
# make a backup of this before modifying
SESSIONS=1                # number of sessions
HACMS=no                  # look for HA cms lockfile
# copy entire section and change session number for additional feeds
ACD[1]=1                  # ACD number
OFFSET[1]=0               # ACD offset from CMS
INTERVAL[1]=30            # ACD Interval 15, 30, or 60
REPORT[1]=0300            # Time to run the daily reports or OFF
AGENT[1]=agent_new        # agent interval report (agent or agent_new)
TYPE[1]=ftp               # ftp, sftp or ldc
DIR[1]=/                  # Destination directory
APPN[1]=put               # put or append (only put for sftp)
DEST[1]=10.10.97.24       # ftp/sftp server name or IP address
USER[1]=administrator     # ftp/sftp username
PASS[1]=*                 # ftp password (not used for sftp)
```

## 7. Configure Calabrio Workforce Management

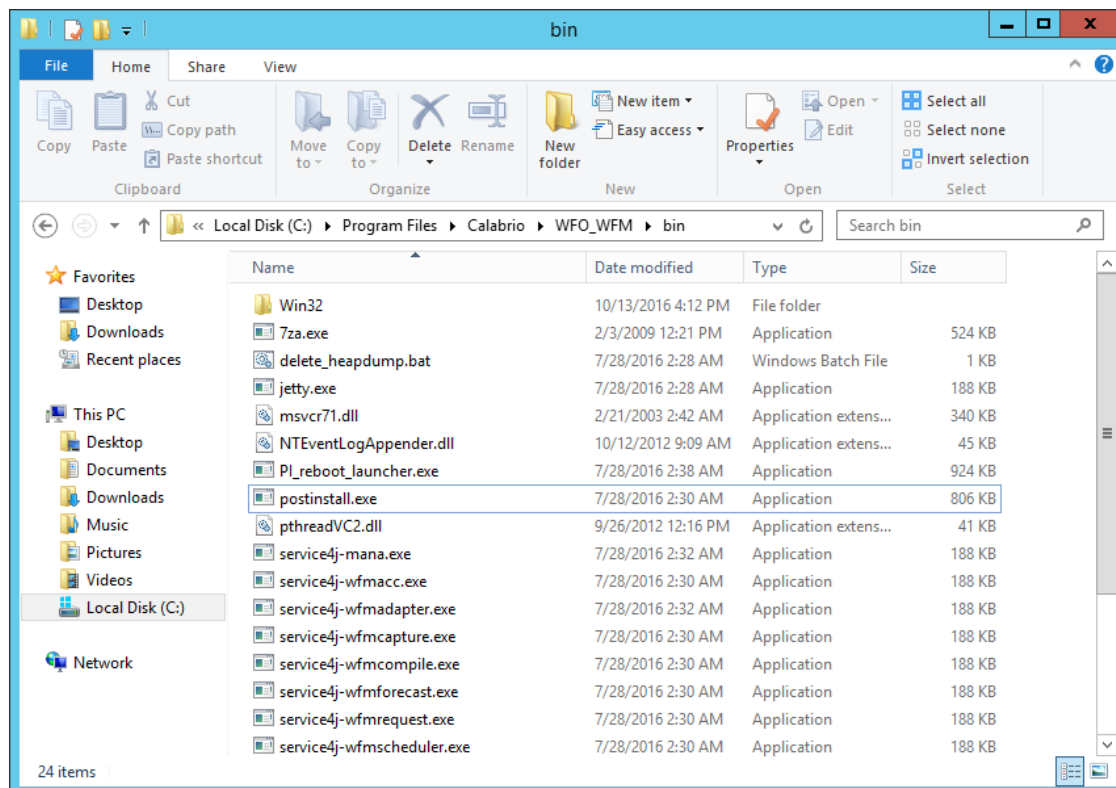
This section provides the procedures for configuring Calabrio Workforce Management. The procedures include the following areas:

- Administer real-time interface port
- Administer historical report directory
- Administer services
- Administer skills
- 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\Calabrio\WFO\_WFM\bin**. Double click the **postinstall.exe** file.



The following screen is displayed.

The screenshot shows a window titled "Workforce Management - Configuration Setup". On the left is a sidebar menu with the following items: "WFM Database" (highlighted), "Create WFM DB", "Data Retention Periods", "WFM Transaction Server", "Update KeyStore", "ACD Connection", "QM Connection", "WFM Authentication", "Email Distribution", "Monitoring and Notification", "Enterprise Settings", "Jetty Configuration", and "Start Services". The main area is titled "WFM Database" and contains the following configuration options:

- Radio buttons for "Host Name" (selected) and "IP Address".
- A text field for "Host Name or IP Address" containing "localhost".
- Radio buttons for "Use default instance" (selected) and "Use named instance".
- A text field for "Instance Port" containing "1433".
- A text field for "User Name" containing "qmdbuser".
- A text field for "Password" containing "\*\*\*\*\*".

At the bottom of the main area are two buttons: "PREVIOUS" and "NEXT".



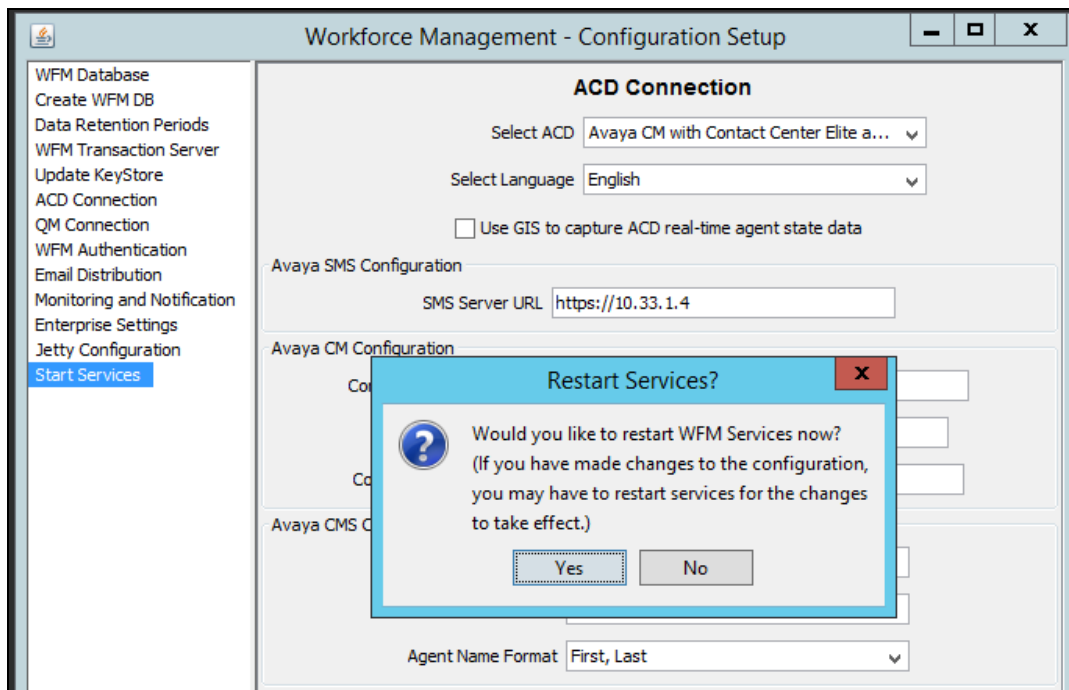
Click **ACD Connection** in the left pane. Select **Avaya CM with Contact Center Elite...** in the **Select ACD** field and populate all relevant fields.

The screenshot shows a web-based configuration interface titled "Workforce Management - Configuration Setup". On the left is a navigation pane with the following menu items: WFM Database, Create WFM DB, Data Retention Periods, WFM Transaction Server, Update KeyStore, **ACD Connection** (highlighted), QM Connection, WFM Authentication, Email Distribution, Monitoring and Notification, Enterprise Settings, Jetty Configuration, and Start Services. The main content area is titled "ACD Connection" and contains the following fields and sections:

- Select ACD:** A dropdown menu with the selected value "Avaya CM with Contact Center Elite a...".
- Select Language:** A dropdown menu with the selected value "English".
- ☐ Use GIS to capture ACD real-time agent state data
- Avaya SMS Configuration:**
  - SMS Server URL:** A text field containing "https://10.33.1.4".
- Avaya CM Configuration:**
  - Communication Manager IP Address:** A text field containing "10.33.1.6".
  - Communication Manager Login:** A text field containing "calabrio".
  - Communication Manager Password:** A text field containing "\*\*\*\*\*".
- Avaya CMS Configuration:**
  - CMS ACD ID:** A text field containing "1".
  - RTA Port:** A text field containing "6970".
  - Agent Name Format:** A dropdown menu with the selected value "First, Last".

At the bottom of the configuration area are two buttons: "PREVIOUS" and "NEXT".

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

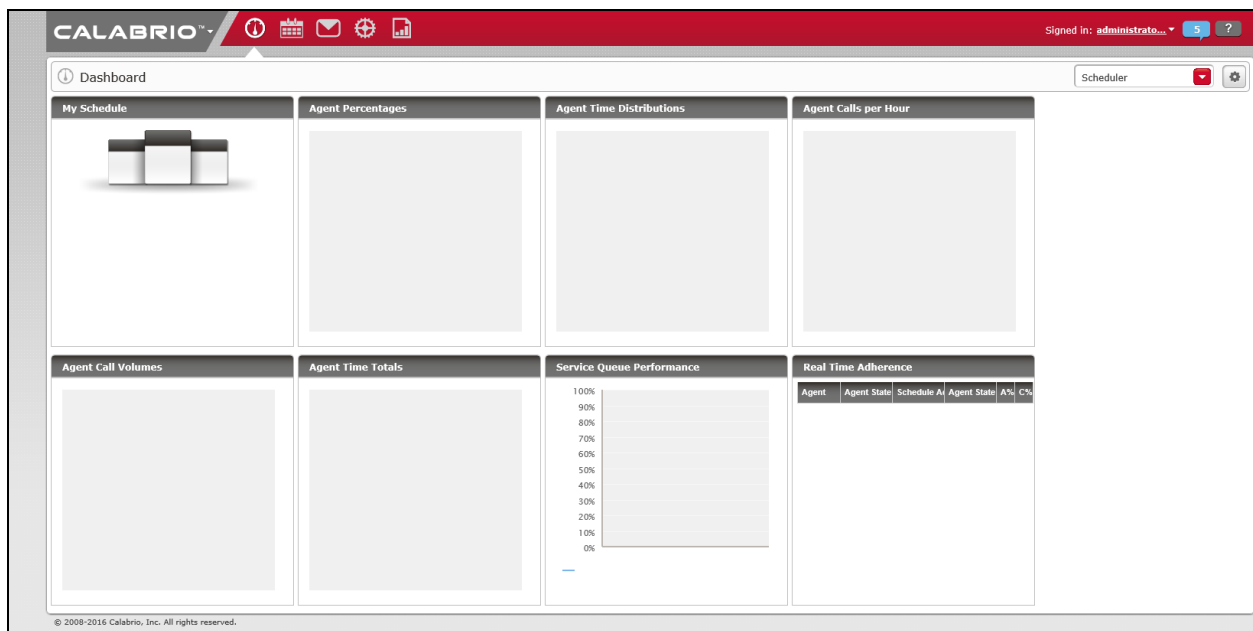
A third party FTP server is co-located with the Calabrio Workforce Management application in the Calabrio server. The Historical Report Directory can be set as **C:\AvayaCapture\reports\archives** directory in the Calabrio Workforce Management application and has to be configured in the FTP server along 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.

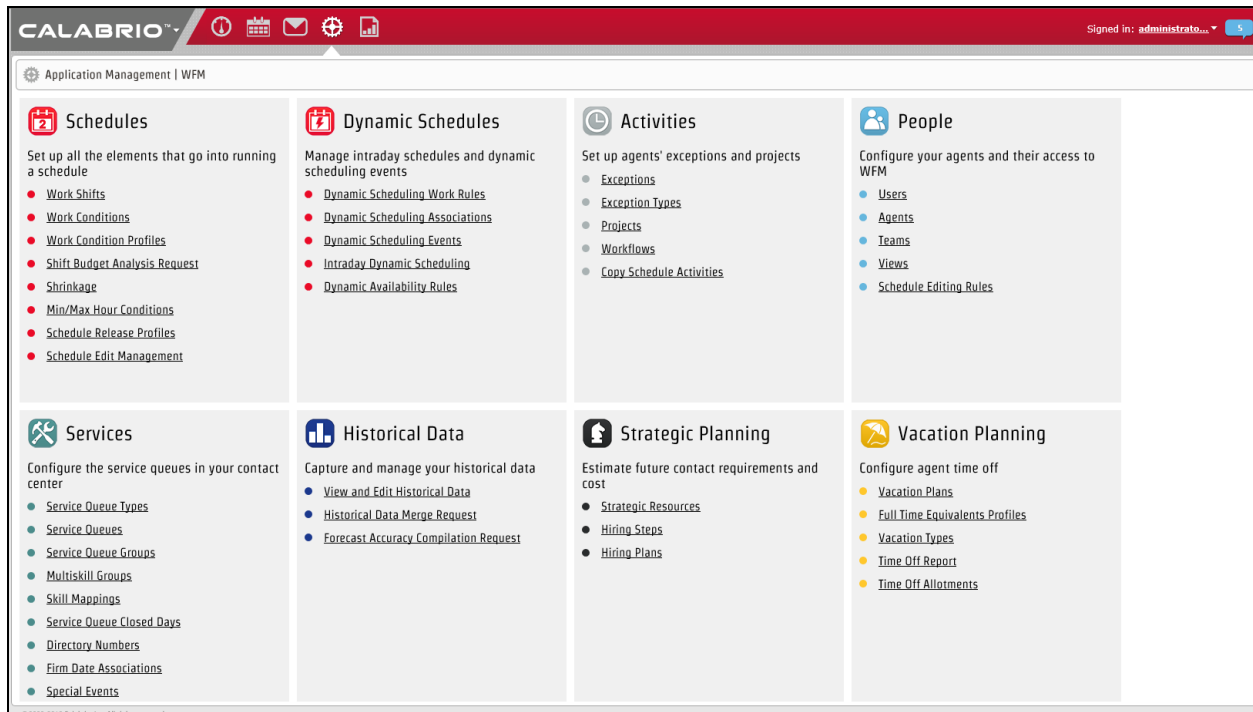


The login screen features the Calabrio logo with a large '1' in a black circle. Below the logo is a login form with fields for Username, Password, and Language (set to English). A 'Log In' button is at the bottom right, and a link to 'Validate my PC configuration' is at the bottom left.

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

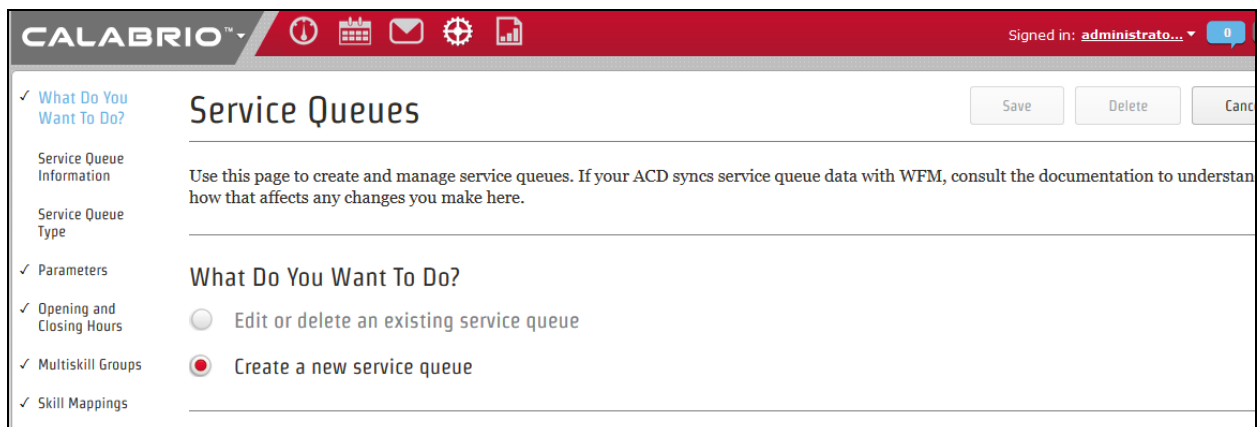


To configure, Skills, VDNs, and Agents, select **Application Management**, as shown below.



## 7.3. Administer Skills

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



- Type in the **SERVICE QUEUE ID** as configured in Avaya CMS. In this case **11, 1** 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 **Voice**. Note that the Service Queue Type of Voice was preconfigured.

Click **Save** once done.

CALABRIO™

✓ What Do You Want To Do?

✓ Service Queue Information

✓ Service Queue Type

✓ Parameters

✓ Opening and Closing Hours

✓ Multiskill Groups

✓ Skill Mappings

✓ Virtual Service Queue

✓ Scheduling Order

✓ Directory Numbers

✓ Color

## Service Queues

### Service Queue Information

Skill-1

SERVICE QUEUE ID  
Identifies the service queue in the ACD

11

SERVICE QUEUE NAME  
The name that identifies the service queue in WFM

Skill-1

☐ Do not generate forecasts or schedules for this service queue

### Service Queue Type

Select the type of customer contact handled by this service queue. IMPORTANT: Once a service queue type is assigned

Voice [Interactive]

## 7.4. Administer Team

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.

The screenshot shows the CALABRIO Teams administration page. The header is red with the CALABRIO logo and several icons. A left sidebar contains a checklist: 'What Do You Want To Do?' (checked), 'Team Name' (checked), 'Agents' (checked), and 'Productivity' (checked). The main content area is titled 'Teams' and includes a sub-header 'What Do You Want To Do?' with two radio buttons: 'Edit or delete an existing team' (selected) and 'Create a new team'. Below this is a 'Team Name' section with a text input field containing 'NewAgents' and a red save button. The 'Agents' section is titled 'Assign agents to this team.' and features two filterable lists. The 'Available' list is empty. The 'Assigned' list, titled 'Main Team', contains four entries: 'Agent 1000, Agent 1000 [11000]', 'Agent 1001, Agent 1001 [11001]', 'Agent 1002, Agent 1002 [11002]', and 'Agent 1003, Agent 1003 [11003]', each with an unchecked checkbox. Navigation arrows are positioned between the two lists.

**CALABRIO™**

✓ What Do You Want To Do?  
✓ Team Name  
✓ Agents  
✓ Productivity


### Teams

Use this page to create and manage teams. If your ACD syncs team data with WFM, consult the documentation

#### What Do You Want To Do?



☒ Edit or delete an existing team  
☐ Create a new team

#### Team Name

NewAgents 

#### Agents

Assign agents to this team.

Filter  Filter 

Available	Assigned
	<b>Main Team</b>
	Agent 1000, Agent 1000 [11000] <input type="checkbox"/>
	Agent 1001, Agent 1001 [11001] <input type="checkbox"/>
	Agent 1002, Agent 1002 [11002] <input type="checkbox"/>
	Agent 1003, Agent 1003 [11003] <input type="checkbox"/>

## 7.5. Administer Agents

To add a new agent, select **Agents** under **People**, and select **Create a new agent**.

- Type in values for **FIRST NAME**, **LAST NAME** and **EMPLOYEE ID**.
- Type in the **ACD ID** as configured in Avaya CMS. In this case **11000**, 1 is the ACD number and **1000** is the Agent ID.
- Check box for **Activate this Agent**.

**CALABRIO™**

✓ What Do You Want To Do?

✓ **Agent Information**

✓ Seniority

✓ Activate

✓ Main Service Queue

✓ Work Condition Profile

✓ Teams

✓ Skill Mappings

✓ Standard Work Shift Rotation

✓ Copy Work Shift Rotations

✓ Other Work Shifts

✓ Assigned Exceptions

✓ Vacation Hours

✓ Schedule Release Profile

### Agents

ACD ID  
The agent's ID as set up in the ACD.

11000

### Seniority

WFM uses these dates and rank to determine the service queue's scheduling order.

COMPANY START DATE  
The agent's date of hire.

COMPANY END DATE  
The agent will not be scheduled after this date (optional).

2016-08-01

DEPARTMENT START DATE  
The agent's start date in the contact center.

2016-08-01

RANK  
The agent's ranking in the contact center based on expertise (optional).

Activate

Agents cannot be scheduled unless they are activated.

☒ Activate this agent

### Main Service Queue

Select the agent's primary service queue.

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

Click **Save** once done.

CALABRIO™

✓ What Do You Want To Do?

✓ Agent Information

✓ Seniority

✓ Activate

✓ Main Service Queue

✓ Work Condition Profile

✓ Teams

✓ Skill Mappings

✓ Standard Work Shift Rotation

✓ Copy Work Shift Rotations

✓ Other Work Shifts

✓ Assigned Exceptions

✓ Vacation Hours

✓ Schedule Release Profile

## Agents

### Teams

Assign the agent to one or more teams, and designate one team as the agent's main team. The main team determines which team

Filter

Available

Assigned

NewAgents

Main Team

○

➤

⬅

### Skill Mappings

The skill mappings assigned to an agent determine which service queues the agent can be scheduled for.

Filter

Available

AMM

Skill-2

Test HG

Assigned

Skill-1

➤

⬅



## 7.6. Administer DNs

To add a new Directory Number (VDN), select **Directory Numbers** under **Services**, and select **Create a new DN**.

- Type in the **DIRECTORY NUMBER** as configured in Avaya CMS. In this case **13340**, **1** is the ACD number and **3340** is the VDN.
- Assign skills to the DN by selecting **Available** skills and clicking >. In this case, **Skill 1**. Note that these skills are as configured in **Section 7.3**.

Click **Save** once done.

The screenshot shows the CALABRIO web interface for configuring Directory Numbers. The page has a red header with the CALABRIO logo and navigation icons. On the left, a sidebar lists 'What Do You Want To Do?', 'DN Information', and 'Service Queues'. The main content area is titled 'Directory Numbers' and contains three sections: 'What Do You Want To Do?' with radio buttons for 'Edit or delete an existing DN' (selected) and 'Create a new DN'; 'DN Information' with a 'SELECT DN' dropdown showing 'Contact Center 1 [13340]', and input fields for 'DIRECTORY NUMBER' (13340) and 'DESCRIPTION' (Contact Center 1); and 'Service Queues' with a 'Filter' input and a table for assigning skills to the DN.

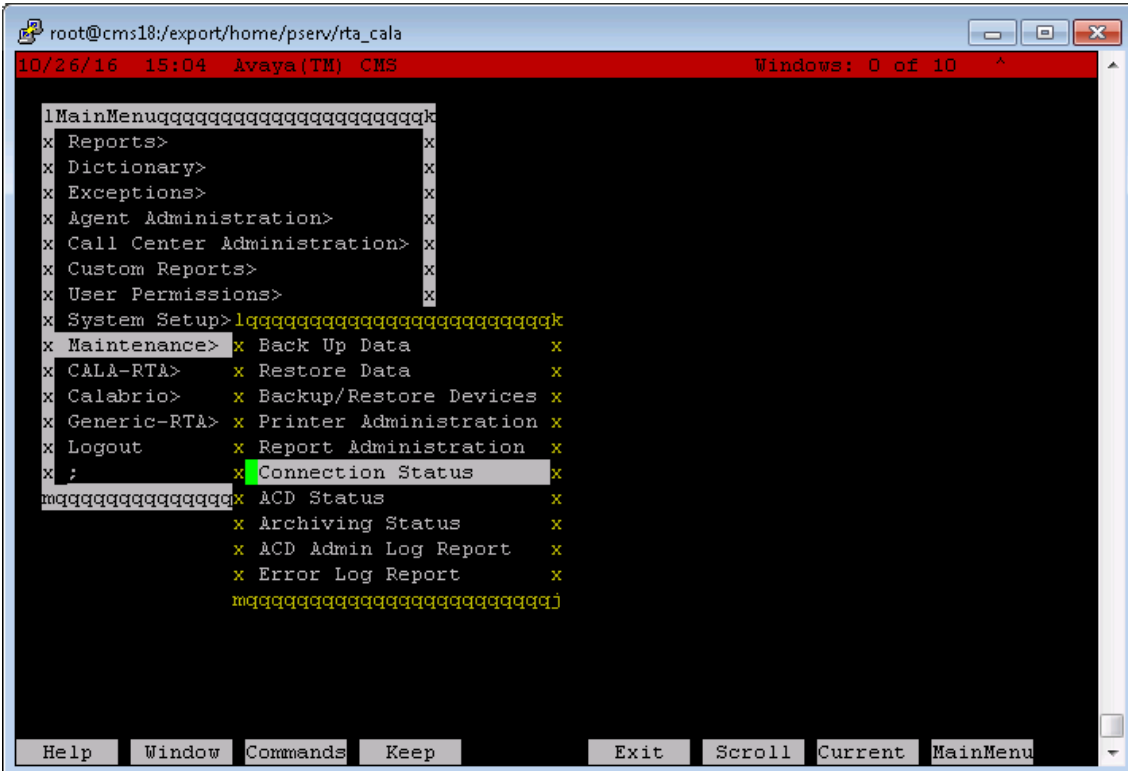
Available	Assigned	Start Time	End Time	Sun	Mon	Tue	Wed	Thur	Fri	Sat
AMM Skill-1 Skill-2 Test HG	Skill-1	00:00	23:59	✓	✓	✓	✓	✓	✓	✓

## 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

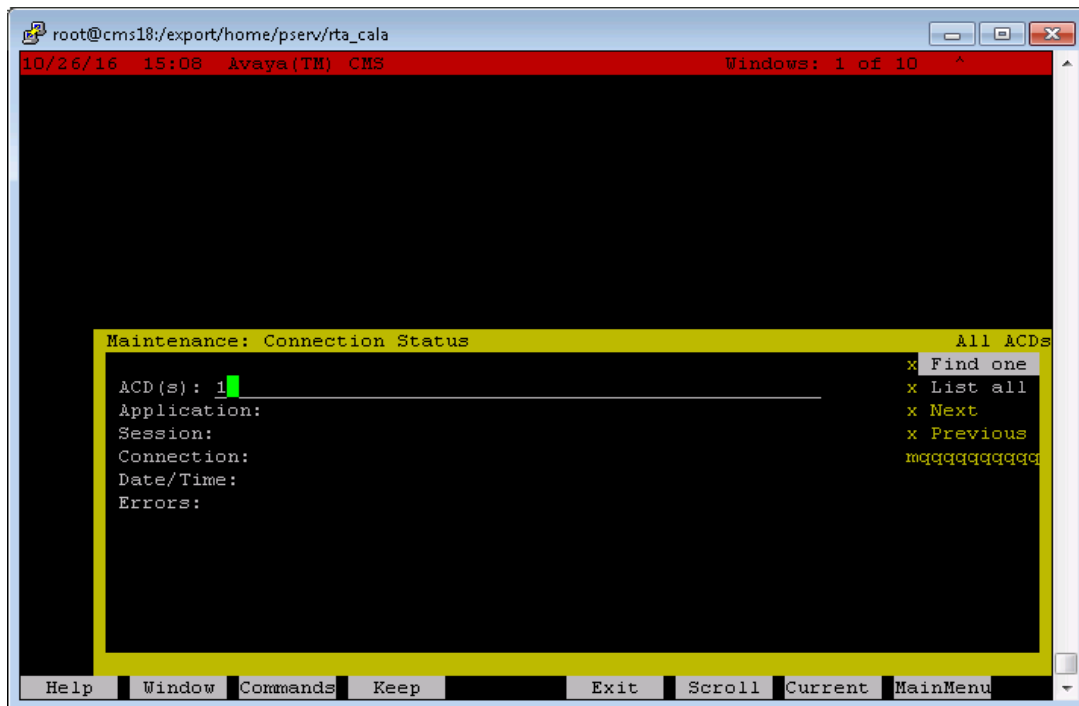
From the CMS server, follow the procedures in **Section 6.2** to display the **MainMenu**. Verify the status of the connection to Communication Manager by selecting **Maintenance** → **Connection Status**, and press the **Enter** key.

A screenshot of a terminal window titled 'root@cms18:/export/home/pserv/rt\_a\_cala'. The window shows the Avaya (TM) CMS Main Menu. The menu is displayed in a list format with options like Reports, Dictionary, Exceptions, Agent Administration, Call Center Administration, Custom Reports, User Permissions, System Setup, Maintenance, CALA-RTA, Calabrio, Generic-RTA, Logout, and a semicolon (;). The 'Maintenance' option is highlighted, and a sub-menu is displayed to its right. This sub-menu includes options like Back Up Data, Restore Data, Backup/Restore Devices, Printer Administration, Report Administration, Connection Status (highlighted), ACD Status, Archiving Status, ACD Admin Log Report, and Error Log Report. The bottom of the window features a series of buttons: Help, Window, Commands, Keep, Exit, Scroll, Current, and MainMenu.

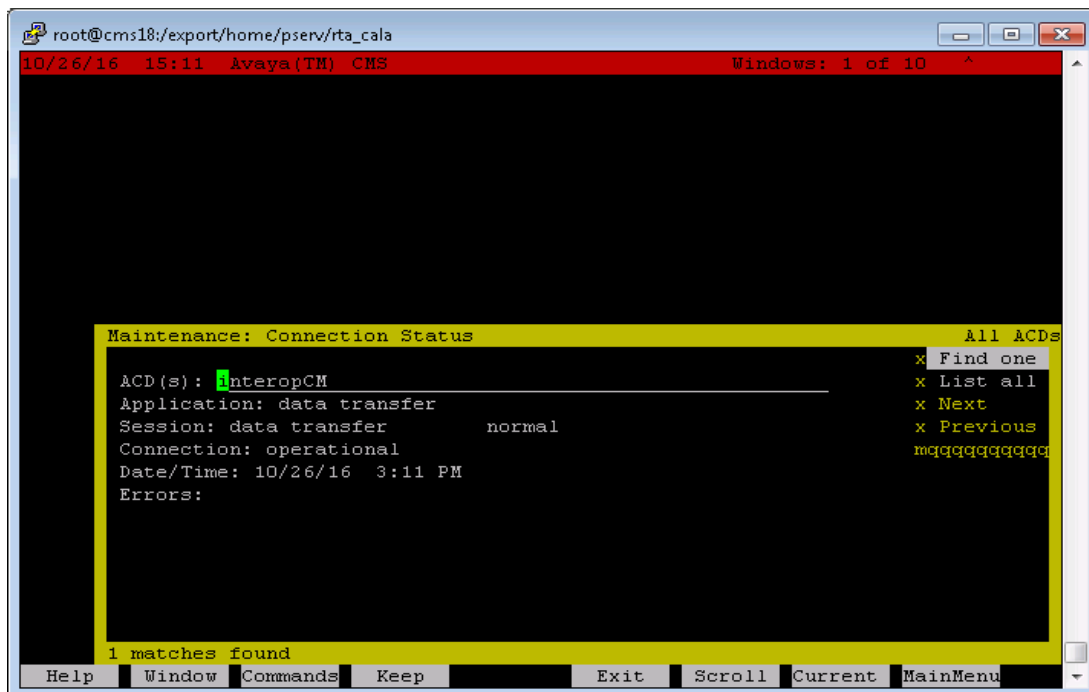
```
root@cms18:/export/home/pserv/rt_a_cala
10/26/16 15:04 Avaya (TM) CMS Windows: 0 of 10
lMainMenuqqqqqqqqqqqqqqqqqqqqqqqqk
x Reports> x
x Dictionary> x
x Exceptions> x
x Agent Administration> x
x Call Center Administration> x
x Custom Reports> x
x User Permissions> x
x System Setup> lqqqqqqqqqqqqqqqqqqqqqqqqk
x Maintenance> x Back Up Data x
x CALA-RTA> x Restore Data x
x Calabrio> x Backup/Restore Devices x
x Generic-RTA> x Printer Administration x
x Logout x Report Administration x
x ; x Connection Status x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqx ACD Status x
x Archiving Status x
x ACD Admin Log Report x
x Error Log Report x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj

Help Window Commands Keep Exit Scroll Current MainMenu
```

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**.



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 Avaya Call Management System Real-Time Adapter

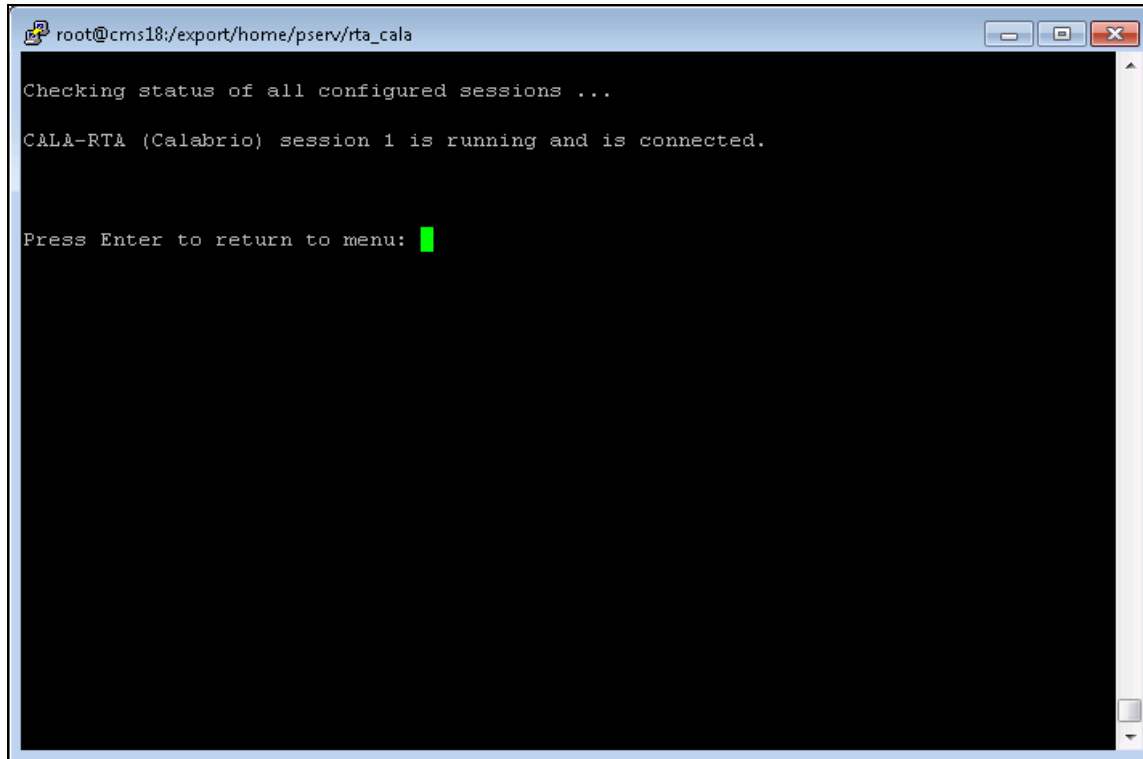
From the **MainMenu** screen, select the **CALA-RTA** option and press **Enter**.

```
root@cms18:/export/home/pserv/rt_a_cala
10/26/16 15:13 Avaya(TM) CMS Windows: 0 of 10
MainMenu
x Reports>
x Dictionary>
x Exceptions>
x Agent Administration>
x Call Center Administration>
x Custom Reports>
x User Permissions>
x System Setup>
x Maintenance>
x CALA-RTA>
x Calabrio>
x Generic-RTA>
x Logout
x ;
x
Help Window Commands Keep Exit Scroll Current MainMenu
```

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

```
root@cms18:/export/home/pserv/rt_a_cala
----- CALA-RTA (Calabrio) Menu -----
1) Start CALA-RTA (Calabrio)
2) Stop CALA-RTA (Calabrio)
3) Check Status
4) View Maintenance Log
5) Show Version
6) Show/Verify Licensed Authorizations
7) Show Staffed Agents Count
8) Change Split(s)/Skill(s) and/or ACD
9) Show Configuration
0) Exit
-----
Choice ==> 3
```

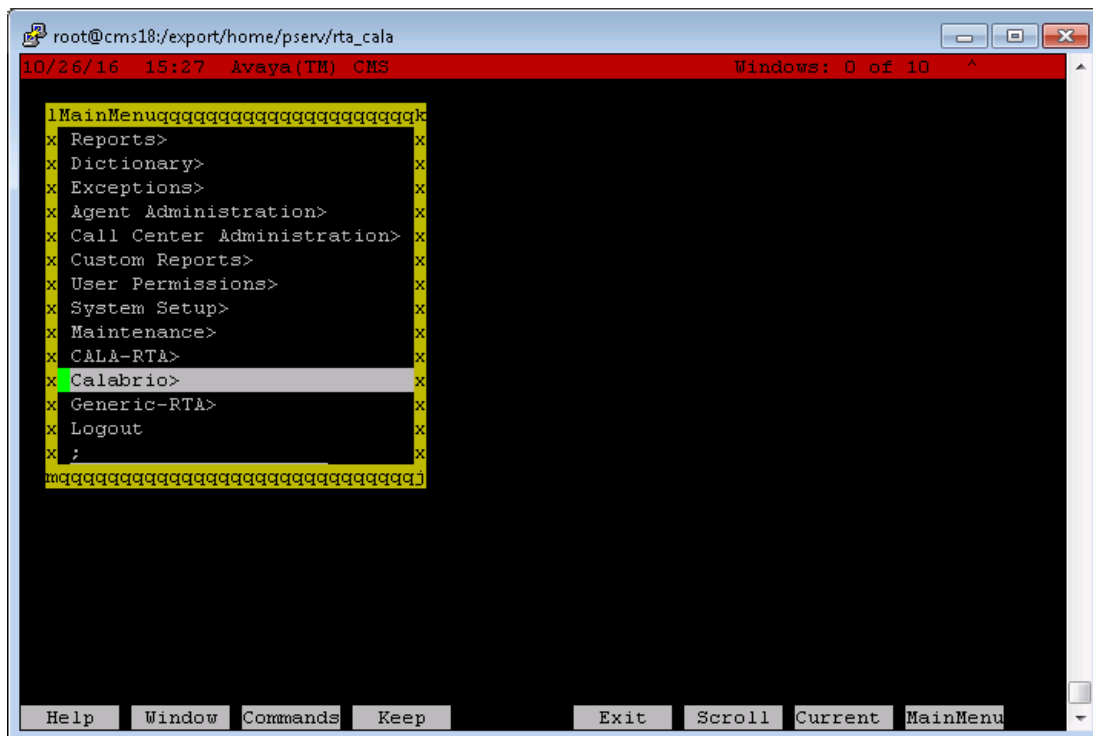
Verify that the session is running and is connected.

A terminal window with a blue title bar. The title bar contains the text 'root@cms18:/export/home/pserv/rta\_cala' and standard window control buttons (minimize, maximize, close). The terminal has a black background with white text. The text displayed is: 'Checking status of all configured sessions ...', 'CALA-RTA (Calabrio) session 1 is running and is connected.', and 'Press Enter to return to menu: ' followed by a green cursor block.

```
root@cms18:/export/home/pserv/rta_cala
Checking status of all configured sessions ...
CALA-RTA (Calabrio) session 1 is running and is connected.
Press Enter to return to menu: █
```

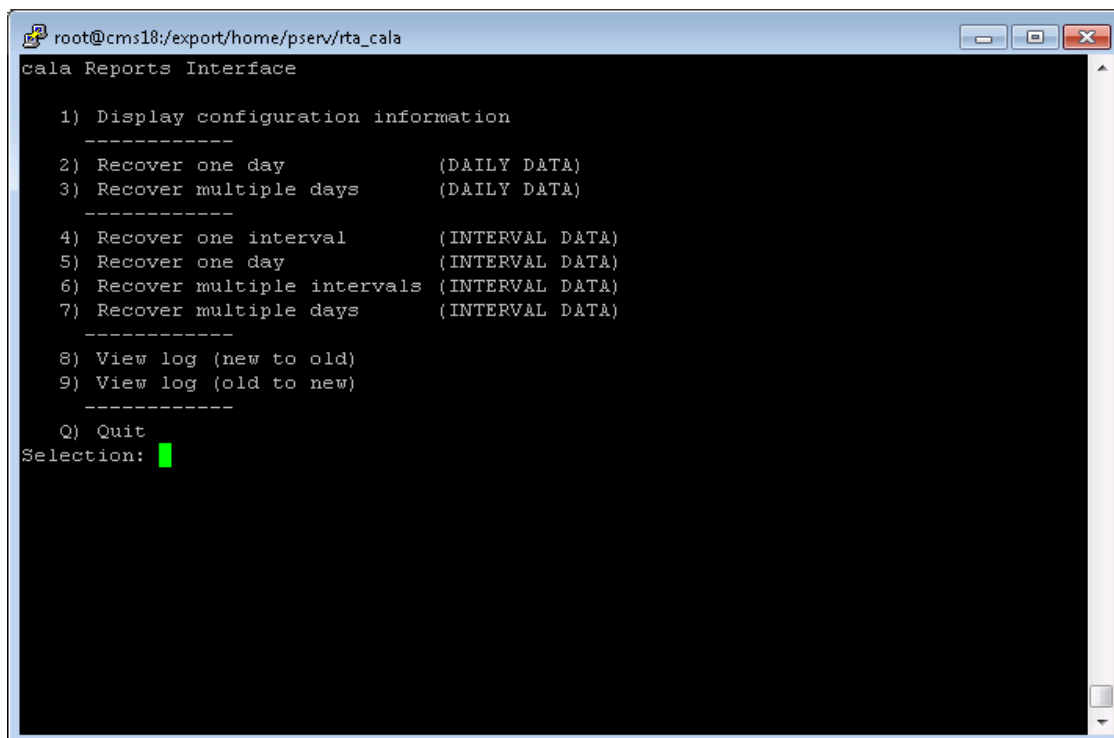
### 8.3. Verify Avaya Call Management System Historical Adapters

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



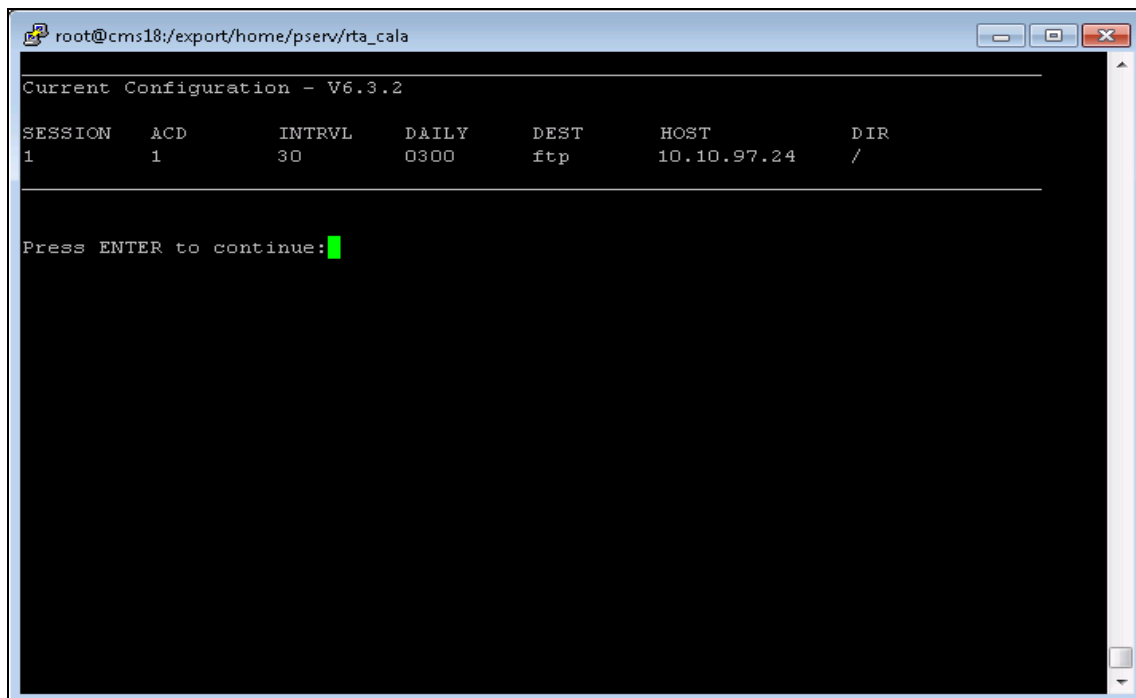
The screenshot shows a terminal window titled 'root@cms18:/export/home/pserv/rta\_cala'. The window has a red header bar with the text '10/26/16 15:27 Avaya(TM) CMS' and 'Windows: 0 of 10'. The main content area displays a menu with the following options: 'MainMenu', 'Reports', 'Dictionary', 'Exceptions', 'Agent Administration', 'Call Center Administration', 'Custom Reports', 'User Permissions', 'System Setup', 'Maintenance', 'CALA-RTA', 'Calabrio', 'Generic-RTA', 'Logout', and a semicolon ';'. The 'Calabrio' option is highlighted with a green bar. The bottom of the window features a status bar with buttons: 'Help', 'Window', 'Commands', 'Keep', 'Exit', 'Scroll', 'Current', and 'MainMenu'.

The **cala Reports Interface** menu is displayed.



The screenshot shows a terminal window titled 'root@cms18:/export/home/pserv/rta\_cala'. The window displays the 'cala Reports Interface' menu. The menu options are: '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)', and 'Q) Quit'. A green cursor is positioned after the 'Selection:' prompt.

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**.



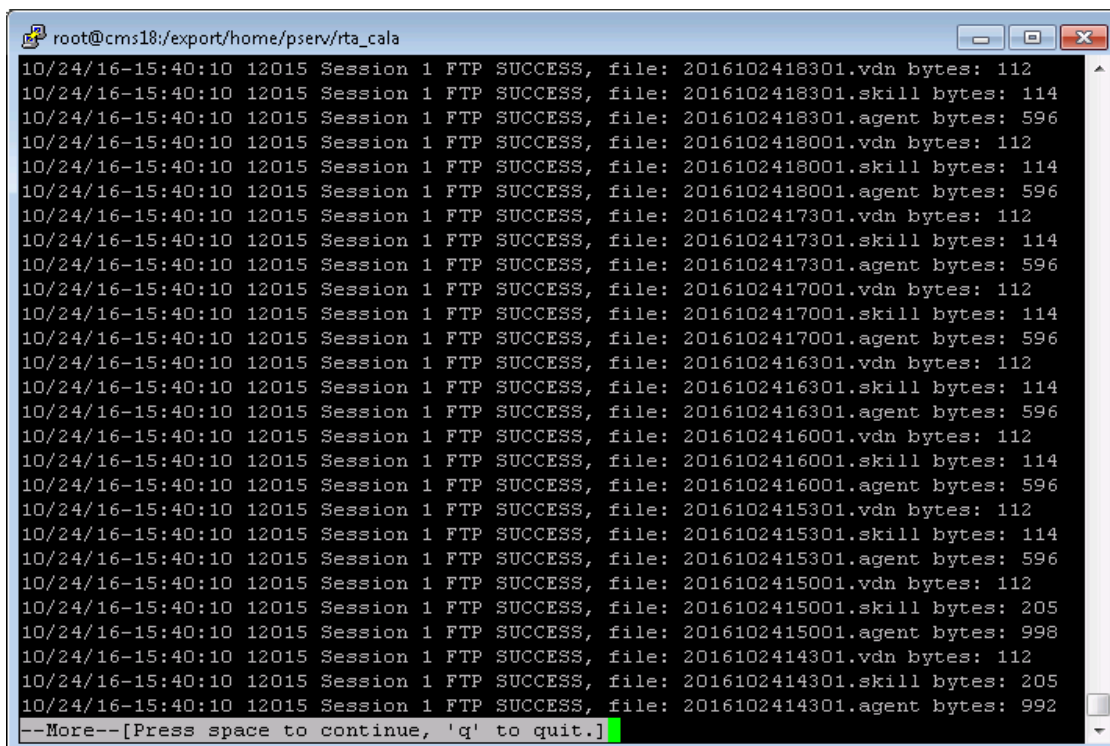
```
root@cms18:/export/home/pserv/rt_a_cala

Current Configuration - V6.3.2

SESSION   ACD      INTRVL   DAILY   DEST    HOST      DIR
1          1        30       0300    ftp     10.10.97.24 /

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.



```
root@cms18:/export/home/pserv/rt_a_cala

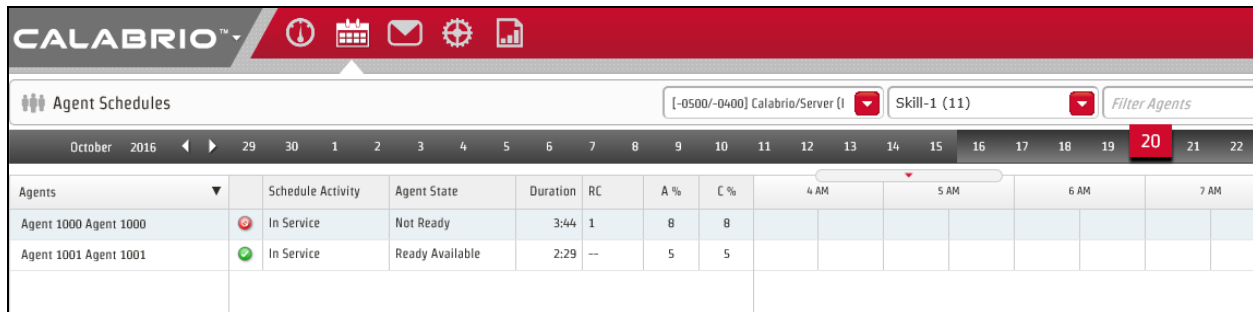
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418301.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418301.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418301.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418001.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418001.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102418001.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417301.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417301.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417301.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417001.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417001.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102417001.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416301.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416301.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416301.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416001.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416001.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102416001.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415301.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415301.skill bytes: 114
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415301.agent bytes: 596
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415001.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415001.skill bytes: 205
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102415001.agent bytes: 998
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102414301.vdn bytes: 112
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102414301.skill bytes: 205
10/24/16-15:40:10 12015 Session 1 FTP SUCCESS, file: 2016102414301.agent bytes: 992
--More--[Press space to continue, 'q' to quit.]
```

## 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 **Schedules and Planning**, and verify the agent states under the **Agent Schedules** section.

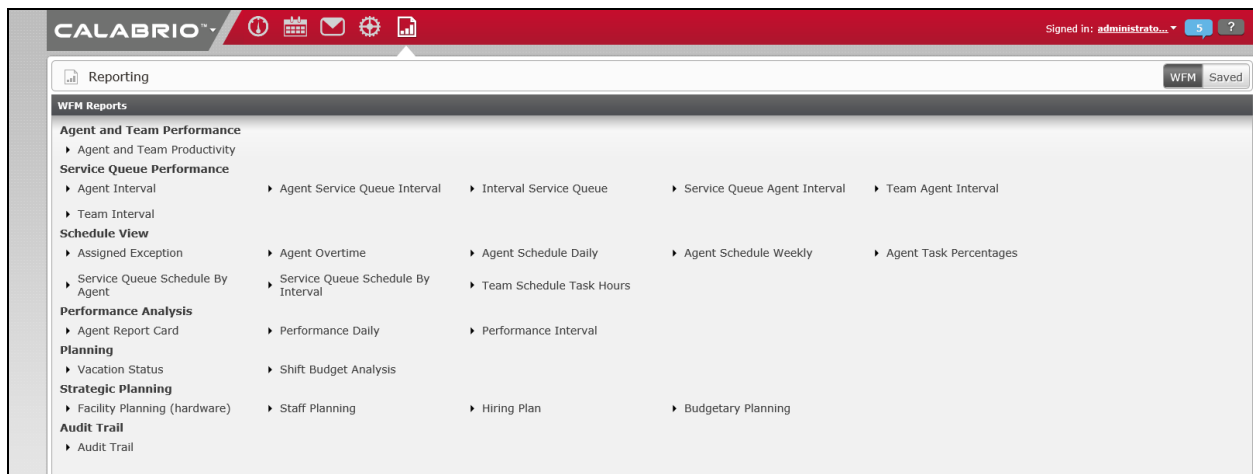


The screenshot shows the Calabrio Workforce Management interface. At the top, there's a navigation bar with icons for clock, calendar, mail, settings, and reports. Below it, the 'Agent Schedules' section is active. It includes filters for '[-0500/-0400] Calabrio/Server (I)' and 'Skill-1 (11)', with a 'Filter Agents' button. A calendar at the top shows the month of October 2016, with the 20th highlighted. Below the calendar is a table with columns: Agents, Schedule Activity, Agent State, Duration, RC, A %, C %, and time slots from 4 AM to 7 AM. Two agents are listed: 'Agent 1000 Agent 1000' with a red status icon, 'In Service', 'Not Ready', '3:44', '1', '8', '8'; and 'Agent 1001 Agent 1001' with a green status icon, 'In Service', 'Ready Available', '2:29', '--', '5', '5'.

Agents	Schedule Activity	Agent State	Duration	RC	A %	C %	4 AM	5 AM	6 AM	7 AM
Agent 1000 Agent 1000	In Service	Not Ready	3:44	1	8	8				
Agent 1001 Agent 1001	In Service	Ready Available	2:29	--	5	5				

### 8.4.2. Verify Historical Report

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





- Select the team that was configured in this document under **Team**
- Select an agent or all agents under **Agent**
- Click **Run Report**

**CALABRIO™**

Reporting

WFM Reports

Agent and Team Productivity

Criteria

Team: NewAgents

Agent: Agent 1000 Agent 1000, Agent 1001 Agent 1001, Agent 1002 Agent 1002, Agent 1003 Agent 1003

Select All

Dates

In the past week

Date Range: Specific Date

Group Dates By: Day, Week, Month

Format

Output: HTML

Fields

Available

Metric Name

Selected

Metric Name

ACD ID

Date

Verify that the **Agent and Team Performance** report is displayed in a pop-up window, and that the report is filled with historical agent data, **Agent 1** in this case.

1 Agent and Team Performance By Day																					
Agent Productivity																					
Run By: administrator administrator																					
Agent Name	Agent Number	ACD ID	Date	Adherence %	Conformance %	Occupancy %	Utilization %	Calls per Hour	Calls Handled	Calls Transferred	Average Handle Time	Average Talk Time	Average Hold Time	Average Work Time	Average Ready Time	Average Not Ready Time	Total Handle Time	Total Talk Time	Total Hold Time	Total Work Time	Total Ready Time
Agent 1001 Agent 1001	11001	11001	2016-10-21	0.9	0.9	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:03:17	0:01
Agent 1001 Agent 1001	11001	11001	2016-10-24	32.0	32.0	13.3	9.0	0.4	1	0	0:20:25	0:20:25	0:00:00	0:00:00	2:13:18	1:13:54	0:20:25	0:20:25	0:00:00	0:00:00	2:13:18
Total	Total			16.5	16.5	12.9	8.7	0.4	1	0	0:20:25	0:20:25	0:00:00	0:00:00	2:16:35	1:15:35	0:20:25	0:20:25	0:00:00	0:00:00	2:16:35
Agent Name	Agent Number	ACD ID	Date	Adherence %	Conformance %	Occupancy %	Utilization %	Calls per Hour	Calls Handled	Calls Transferred	Average Handle Time	Average Talk Time	Average Hold Time	Average Work Time	Average Ready Time	Average Not Ready Time	Total Handle Time	Total Talk Time	Total Hold Time	Total Work Time	Total Ready Time
Agent 1000 Agent 11000	11000	11000	2016-10-20	33.9	135.9	0.0	0.0	0.0	6	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Agent 1000 Agent 11000	11000	11000	2016-10-21	64.6	164.6	33.7	24.2	25.9	6	2	0:00:47	0:00:23	0:00:09	0:00:15	0:01:26	0:00:54	0:04:41	0:02:17	0:00:54	0:01:50	0:06:37
Agent 1000 Agent 11000	11000	11000	2016-10-24	59.4	64.7	35.9	30.2	0.2	1	0	1:33:03	1:33:03	0:00:00	0:00:00	1:28:51	0:49:08	1:33:03	1:33:03	0:00:00	0:00:00	1:28:51
Total	Total			54.3	121.7	32.3	27.3	1.4	7	2	0:13:58	0:13:37	0:00:09	0:00:13	0:16:13	0:07:40	1:37:44	1:35:20	0:00:54	0:01:50	2:07:28
Agent Name	Agent Number	ACD ID	Date	Adherence %	Conformance %	Occupancy %	Utilization %	Calls per Hour	Calls Handled	Calls Transferred	Average Handle Time	Average Talk Time	Average Hold Time	Average Work Time	Average Ready Time	Average Not Ready Time	Total Handle Time	Total Talk Time	Total Hold Time	Total Work Time	Total Ready Time
Agent 1003 Agent 11003	11003	11003	2016-10-21	5.9	5.9	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Total	Total			5.9	5.9	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Agent Name	Agent Number	ACD ID	Date	Adherence %	Conformance %	Occupancy %	Utilization %	Calls per Hour	Calls Handled	Calls Transferred	Average Handle Time	Average Talk Time	Average Hold Time	Average Work Time	Average Ready Time	Average Not Ready Time	Total Handle Time	Total Talk Time	Total Hold Time	Total Work Time	Total Ready Time
Agent 1002 Agent 11002	11002	11002	2016-10-21	97.5	197.5	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Agent 1002 Agent 11002	11002	11002	2016-10-24	20.3	120.3	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:01:13
Total	Total			59.1	159.1	0.0	0.0	0.0	0	0	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:01:13
Grand Total	Grand Total			40.0	90.3	20.9	17.0	0.5	8	2	0:14:46	0:14:28	0:00:07	0:00:11	0:33:10	0:16:19	1:58:09	1:55:45	0:00:54	0:01:30	4:25:16

## 9. Conclusion

These Application Notes describe the configuration steps required for Calabrio Workforce Management to interoperate with Avaya Call Management System, 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
- *Avaya Call Management System Call History Interface Release 18*, July 2016
- *Calabrio ONE Workforce Management User Guide*, May 2016
- *Calabrio ONE Workforce Management Installation Guide*, Version 9.5, May 2016

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