



## Avaya Solution & Interoperability Test Lab

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# Application Notes for configuring Teleopti WFM and Avaya Call Management System R17.4 using the ODBC Interface – Issue 1.0

### Abstract

These application notes describe the configuration steps required for Teleopti WFM to successfully interoperate with Avaya Call Management System connecting to the database on the Call Management System using an ODBC connection.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe the configuration steps required for Teleopti WFM to successfully interoperate with Avaya Call Management System R17.4 (CMS) using the Open Database Connectivity (ODBC) protocol to connect to the database on the CMS.

Teleopti WFM is a Workforce Management application suite. It is designed to help plan customer contact centers in optimizing customer satisfaction, profitability, and employee satisfaction. Teleopti WFM uses Structured Query Language (SQL) over the ODBC protocol to access information in the Avaya CMS database and normalises this information into its own database structure. This information is then used to create forecasts and plan agent schedules over the next few days and further ahead.

**Note:** Teleopti WFM is capable of collecting real-time data from the Avaya CMS using the Generic-RTA adapter on CMS. This allows supervisors view real-time data on the call center. This connection to CMS is completely separate from that outlines in these Application Notes and information on this setup can be found in the *Application Notes for Teleopti WFM Real Time Adherence and Avaya Call Management System using the Generic RTA Interface*. These Application Notes are available from the Avaya DevConnect website [https://www.devconnectprogram.com/site/global/home/p\\_home.gsp](https://www.devconnectprogram.com/site/global/home/p_home.gsp)

To allow communication via ODBC between Avaya CMS and Teleopti WFM, IBM Informix Driver was installed on the Teleopti WFM server. IBM Informix ODBC driver is 3rd party software delivered with Avaya CMS to allow client/server database access via ODBC. These Application Notes focus on the installation and configuration of the ODBC driver software on the Teleopti WFM server.

Open Database Connectivity (ODBC) is an interface to provide universal data access to relational and non-relational database servers. It is a software API based on the X/Open Call Level Interface (CLI) used to access data from a database server. It allows 3<sup>rd</sup> party database programmers access to the database associated with the ODBC driver in this case an IBM Informix database.

Typical components of an ODBC application are:

- ODBC Client: An application that uses the ODBC API to interact with a database server.
- ODBC Driver: A library or set of libraries that contains the implementation of the ODBC API for a particular database server.
- ODBC Driver Manager: A library or set of libraries that can be used by an ODBC client to interact with an ODBC Driver.

An IBM Informix ODBC Driver is included with the Avaya Call Management System software and this is then available to the customer to install in order to gain access to the IBM Informix Database on the Avaya Call Management System.

## 2. General Test Approach and Test Results

The general test approach was to configure the Teleopti WFM to communicate with Communication Manager as implemented on a customer's premises. See **Figure 1** for a network diagram. The interoperability compliance testing included feature and serviceability testing. The interoperability compliance test feature testing focused on verifying the ability of Teleopti WFM to import call center data from Avaya CMS using the ODBC interface and displaying splits/skills and agent data as reports accessible by Teleopti WFM clients.

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 testing included:

- Verification of connectivity between Teleopti WFM and Avaya CMS.
- Verification that ODBC connection is correctly established.
- Link Failure\Recovery was also tested to ensure successful reconnection after link failure.
- Historical data collected included.
  - Agent Queue Report
  - Agent Summary Report
  - Split/Skill Summary Report
  - VDN Summary Report

### 2.2. Test Results

Tests were performed to ensure full interoperability between Teleopti WFM and Avaya CMS. The tests were all functional in nature and performance testing was not included. All the test cases passed successfully with the following exceptions, issues and observations.

- Some of the field names on the Avaya CMS reports are different in meaning to similar names on the Teleopti reports so the data for these would not match. This is simply because of different interpretations of the same field. For example when an agent is on an outbound or personal call the Avaya CMS counts this time as part of the agent aux time but Teleopti WFM does not. Another example is a report on incoming calls where Teleopti reports on calls to the Agent ID and Avaya CMS reports on calls to the extension number.

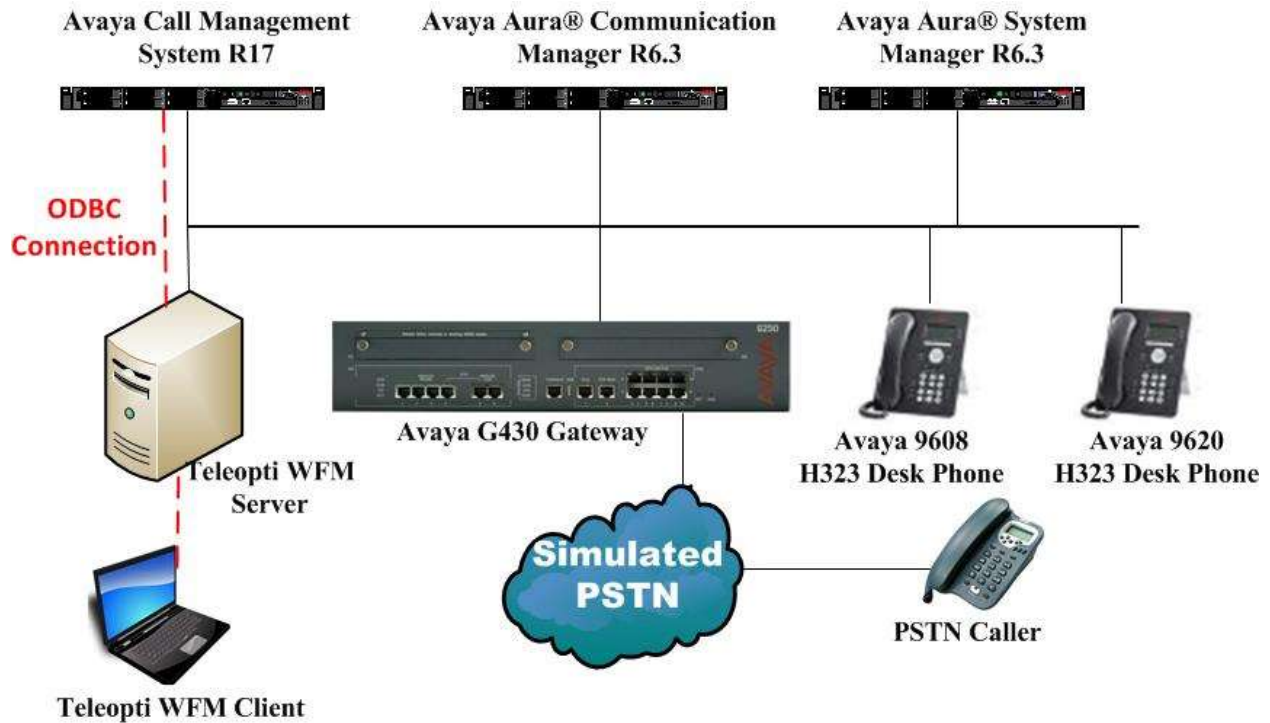
### 2.3. Support

For technical support on Teleopti WFM, use the following information.

- Email: [support@teleopti.com](mailto:support@teleopti.com)
- Phone: +46 8 568 950 10

### 3. Reference Configuration

**Figure 1** illustrates the network topology used during compliance testing. The Avaya solution consists of an Avaya CMS, Communication Manager, System Manager, and a G430 Gateway. The IBM Informix ODBC Driver is loaded onto the Teleopti WFM server and this server is scheduled to connect to the Avaya CMS database to extract historical data. To test that this data is being received correctly, calls were made to VDN's and agents on Communication Manager.



**Figure 1: Teleopti WFM with Avaya Call Management System R17 using an ODBC connection to the Avaya Call Management System Database**

## 4. Equipment and Software Validated

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

<b>Equipment/Software</b>	<b>Release/Version</b>
Avaya Aura® System Manager running on a virtual server	System Manager 6.3.11 (SP11) Build No. – 6.3.0.8.5682-6.3.8.3204 Software Update Revision No: 6.3.7.7.2275
Avaya Aura® Communication Manager running on a virtual server	R6.3 SP9 R016x.03.0.124.0
Avaya Call Management System IBM Informix ODBC Driver	R17.4 9.7.400.501
Avaya G430 Gateway	33.12.0 /1
Avaya 9620 Series Deskphone	96xx H.323 Release 3.1 SP2
Avaya 9608 Series Deskphone	96x1 H323 Release 6.4014U
Teleopti WFM Server running on a Windows 2012 Server MS SQL	Teleopti WFM Release 8.2.426.34843 Windows 2012 R2 MSSQL 2012

## 5. Configure Avaya Aura® Communication Manager

Configuration and verification operations on the Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. It is implied a working system is already in place, including Skills/Hunt Groups, Agents and Vectors. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 10**. The configuration operations described in this section can be summarized as follows:

- Administer IP Node Name for CMS.
- Administer Processor Interface Channel.
- Administer measured VDN.
- Administer measured Skill and Agent.

**Note:** The detailed administration of contact center devices such as Skilled Hunt Group, VDN, Vector, and Agents are assumed to be in place. These Application Notes will only cover how to enable Skilled Hunt Group and Agent data to be sent to Avaya CMS.

### 5.1. Administer IP Node Name for Avaya CMS

Use the **change node-names ip** command to add a node name for Avaya CMS (CMS). This node name will be used for setting up the processor channel between CMS and Communication Manager as described in the next section. In the screenshot below **CMS4035** and **10.10.40.35** are entered as **Name** and **IP Address** for CMS. The actual node names and IP addresses may vary. Submit these changes.

```
change node-names ip                                     Page 1 of 2
                                                    IP NODE NAMES
   Name                IP Address
AES63VMPPG            10.10.40.30
CMS4035              10.10.40.35
IPO (PG) SE           10.10.40.25
IPO (PG) V2           10.10.40.20
Imperium              10.10.40.130
PGDECT                10.10.40.50
SM63vmpg              10.10.40.34
default               0.0.0.0
procr                 10.10.40.31
( 16 of 17 administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name
```

## 5.2. Administer Processor Interface Channel

Assign a new processor channel with the **change communication-interface processor-channels** command. Add an entry with the following values, and submit these changes.

- **Enable:** **y.**
- **Appl.:** **mis.**
- **Mode:** **s** for server mode.
- **Interface Link:** **pv4** for Processor Ethernet.
- **Interface Chan:** TCP port number for CMS. In this case **5001**.
- **Destination Node:** CMS server node name from **Section 5.1**.
- **Destination Port:** **0**.
- **Session Local:** Local port for CMS. In this case **1**.
- **Session Remote:** Remote port for CMS. In this case **1**.

**Note:** The values of the Interface Chan, Session Local, and Session Remote fields must match the switch configuration defined in CMS.

<b>change communication-interface processor-channels</b>										Page	1 of	24	
PROCESSOR CHANNEL ASSIGNMENT													
Proc	Chan	Enable	Appl.	Gtwy	To	Mode	Interface	Link/Chan	Destination	Node	Port	Session	Mach
												Local/Remote	ID
	<b>1:</b>	<b>y</b>	<b>mis</b>			<b>s</b>	<b>pv4</b>	<b>5001</b>	<b>CMS4035</b>		<b>0</b>	<b>1</b>	<b>1</b>
	2:	n									0		
	3:	n									0		
	4:	n									0		
	5:	n									0		
	6:	n									0		
	7:	n									0		
	8:	n									0		
	9:	n									0		
	10:	n									0		
	11:	n									0		
	12:	n									0		
	13:	n									0		
	14:	n									0		
	15:	n									0		
	16:	n									0		

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

VDN	Skill	Agents
2900	900	4404
2901	901	4405

### 5.3. Administer Measured VDN

Use the **change vdn x** command, where **x** 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 2900                                     Page 1 of 3
      VECTOR DIRECTORY NUMBER
      Extension: 2900
      Name*: SalesVoice
      Destination: Vector Number                    2900
      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*:

* Follows VDN Override Rules
  
```



## 5.4. Administer Measured Skill and Agent

Use the **change hunt-group x** command, where **x** 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 900                                     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 **900** and **901** were configured to be measured. In addition, two agents with extensions **2015** and **2016** and agent ID **4404** and **4405** were used as available agents for the above Skill groups. Use the command **list agent LoginID** to show the agents configured and the Skills associated with these agents.

```

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
4404      Paul      2015
                900/01  901/01
4405      Russell    2016
                900/01  901/01
                
```

## 5.5. Save Avaya Aura® Communication Manager Configuration

From the Command Line enter **Save Translation**, in order to commit the changes that have been introduced to memory on Communication Manager.

## 6. Configure Avaya Call Management System

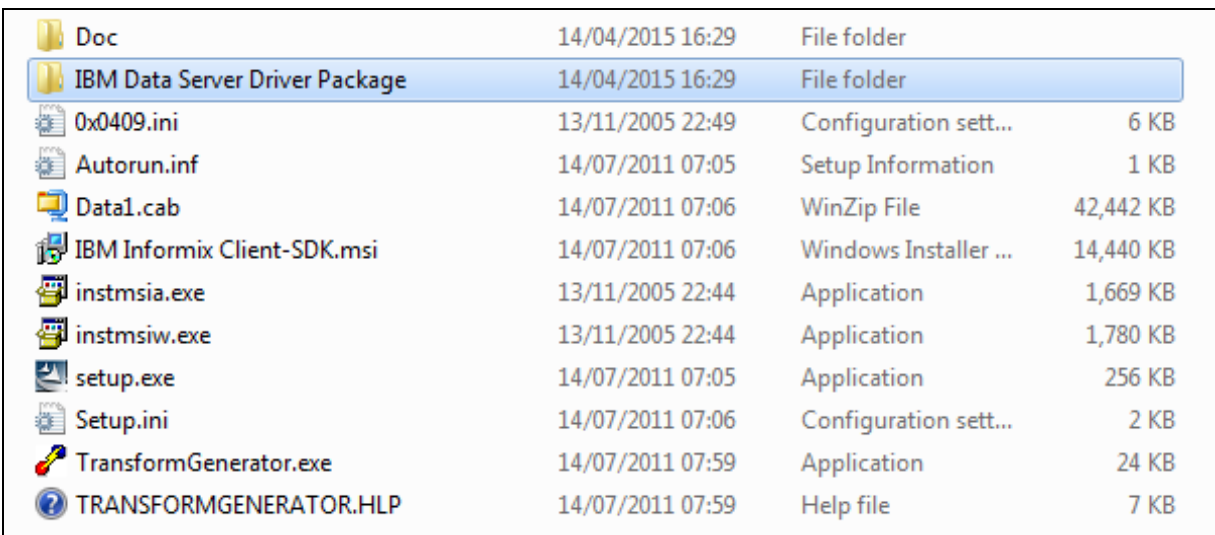
It is implied that a working Avaya CMS is already in place and that the connections to Communication Manager are already configured. The IBM Informix database management system (DBMS) used by CMS supports IBM Informix ODBC and JDBC clients. CMS is now delivered with this ODBC and JDBC network connectivity enabled. No further configuration is required. ODBC and JDBC clients allow for direct access to the IBM Informix database that CMS uses and all of the CMS call center data.

## 7. Configure Teleopti WFM Server

This section outlines the steps required to configure the Teleopti WFM server in order to connect successfully to the Avaya CMS database to copy the historical data from the CMS database to the SQL database on the Teleopti WFM Server.

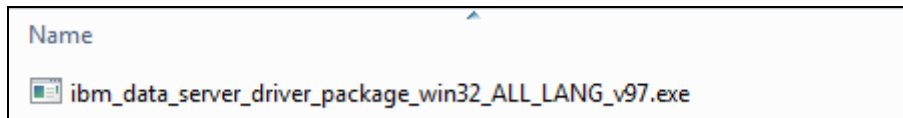
### 7.1. Install the IBM Informix ODBC Driver

The IBM Informix ODBC driver is packaged with the CMS software and can be found by navigating to the following folder on the CMS DVD or location, IBM Data Server Driver Package.



Name	Date	Time	Type	Size
Doc	14/04/2015	16:29	File folder	
IBM Data Server Driver Package	14/04/2015	16:29	File folder	
0x0409.ini	13/11/2005	22:49	Configuration sett...	6 KB
Autorun.inf	14/07/2011	07:05	Setup Information	1 KB
Data1.cab	14/07/2011	07:06	WinZip File	42,442 KB
IBM Informix Client-SDK.msi	14/07/2011	07:06	Windows Installer ...	14,440 KB
instmsia.exe	13/11/2005	22:44	Application	1,669 KB
instmsiw.exe	13/11/2005	22:44	Application	1,780 KB
setup.exe	14/07/2011	07:05	Application	256 KB
Setup.ini	14/07/2011	07:06	Configuration sett...	2 KB
TransformGenerator.exe	14/07/2011	07:59	Application	24 KB
TRANSFORMGENERATOR.HLP	14/07/2011	07:59	Help file	7 KB

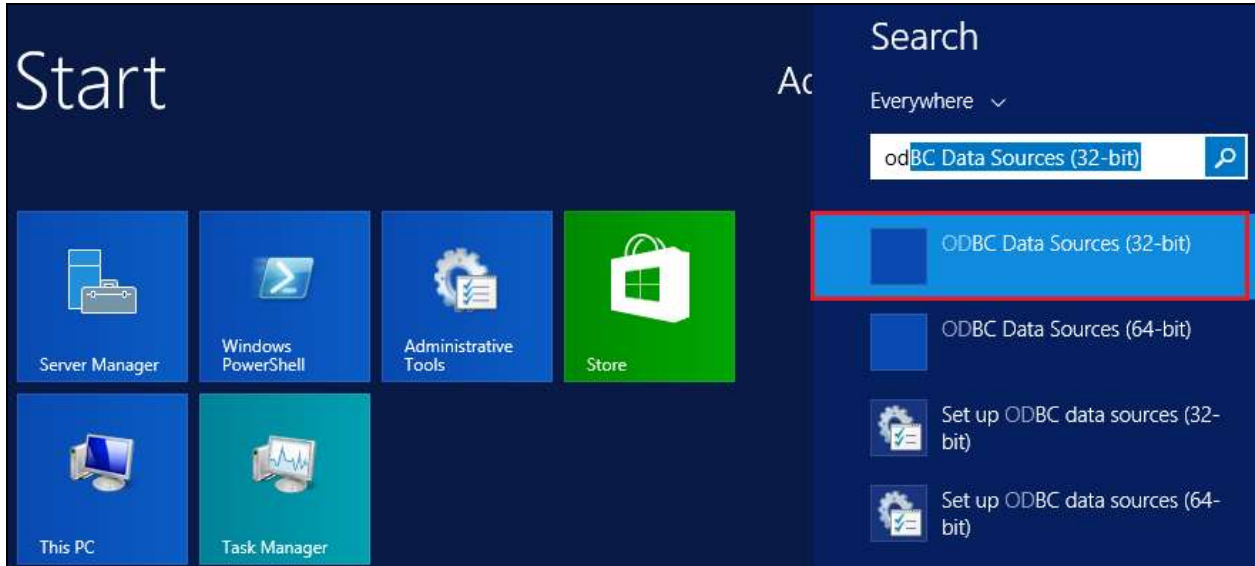
Within this folder to following file is run and this will install the ODBC driver onto the server.



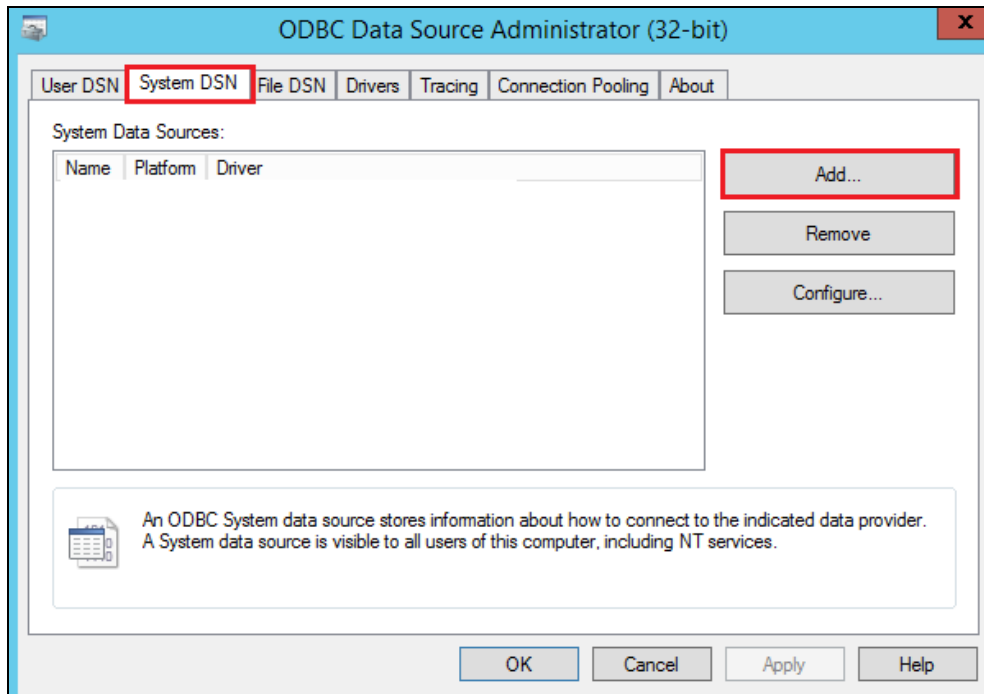
Name
ibm_data_server_driver_package_win32_ALL_LANG_v97.exe

## 7.2. Configuring ODBC connection to Avaya CMS

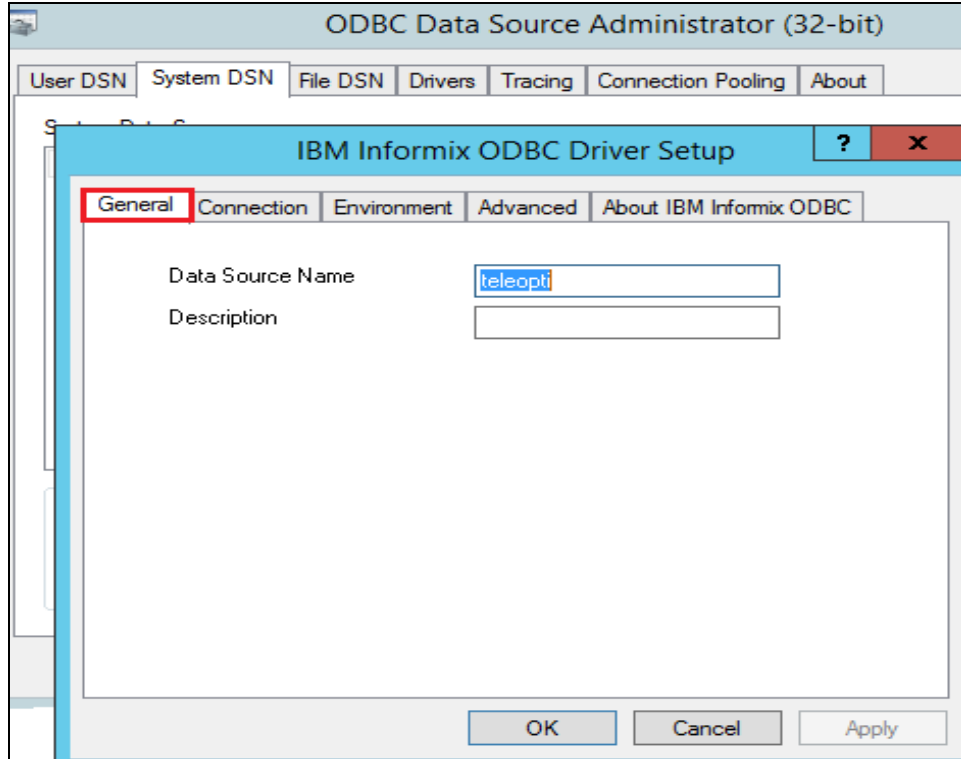
Open the ODBC Data Sources (32-bit) client driver. This can be done by doing a search for this application as is shown below.



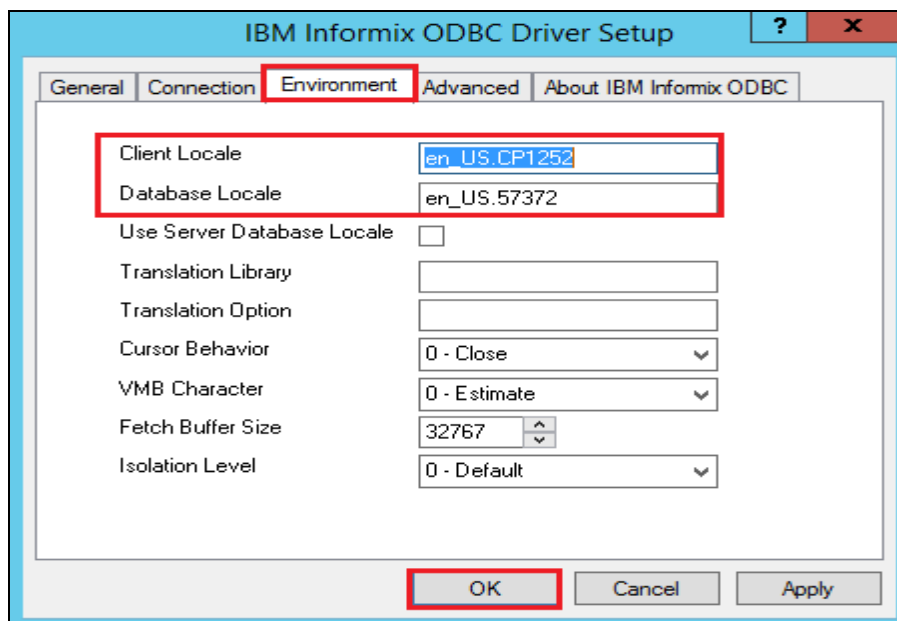
Select the **System DSN** tab and click on **Add**. This will add a new system DSN.



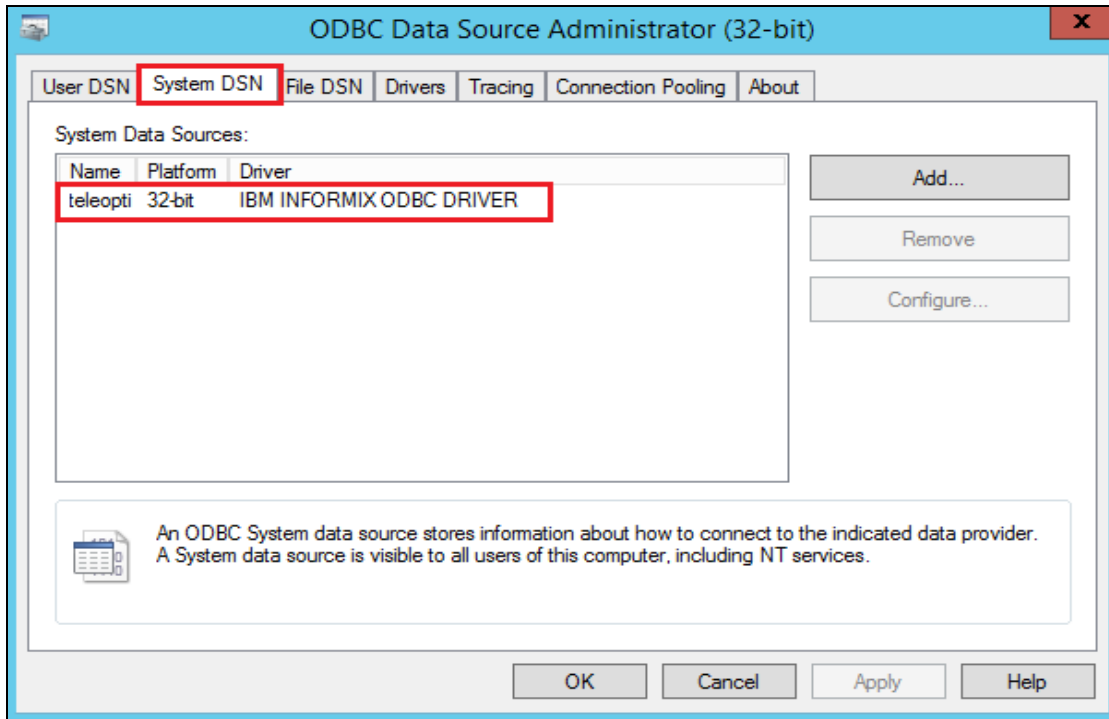
A new window opens; under the **General** tab enter a suitable name for the ODBC connection.



Select the **Environment** tab and note the **Client Locale** and **Database locale**. These values should be automatically populated and will be as shown below. Click on **OK** once the information is entered correctly.



The **System Data Source** is now displayed under the **System DSN** tab. Click on **OK** at the bottom of the screen.

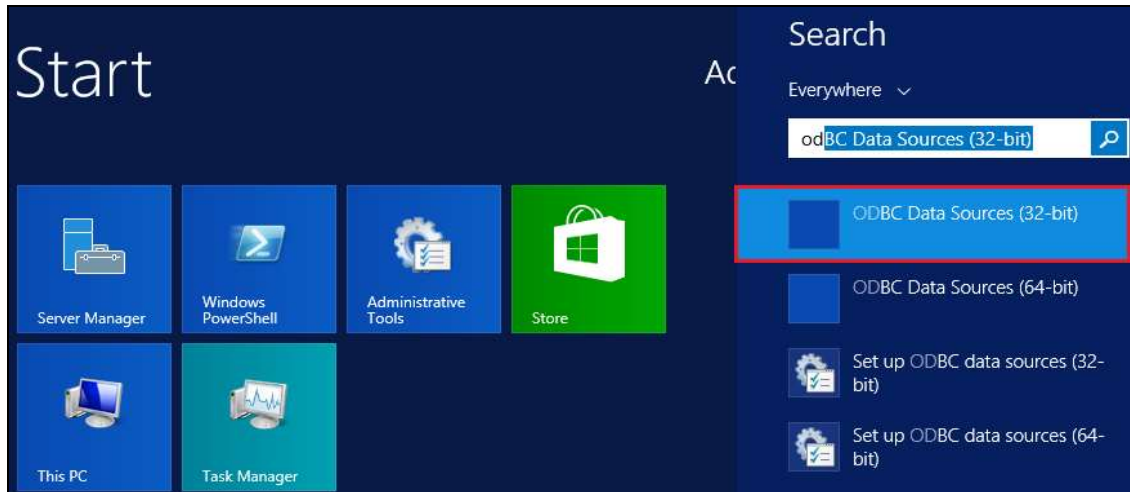


## 8. Verification Steps

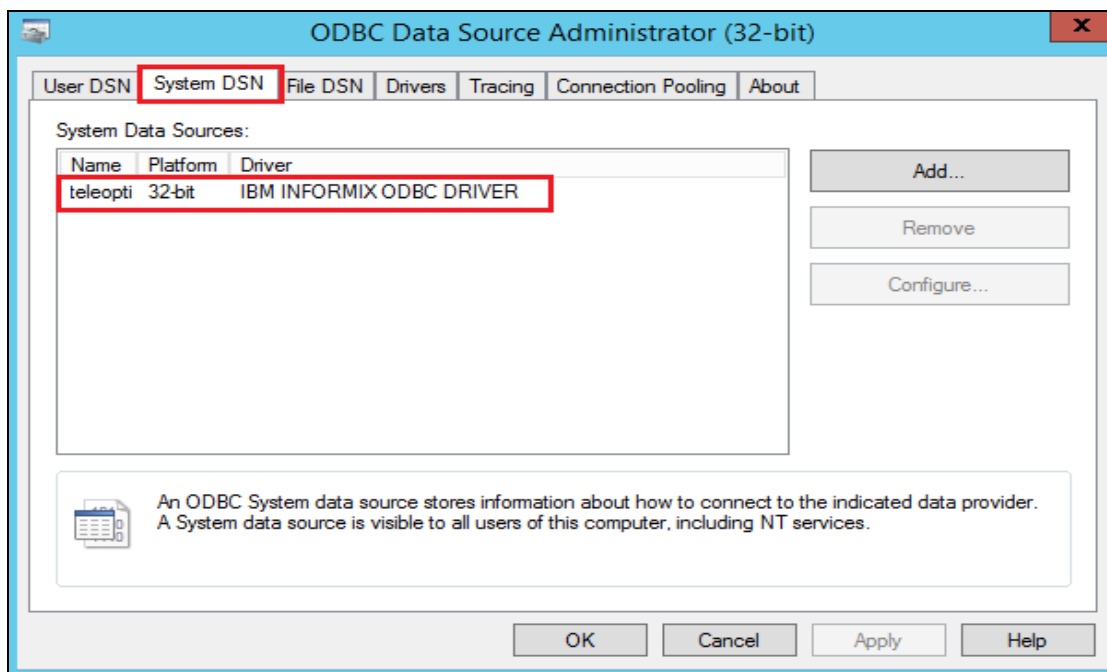
This section provides tests that can be performed to verify correct configuration of the Avaya and Data Track Teleopti WFM solution.

### 8.1. Verify the ODBC Connection

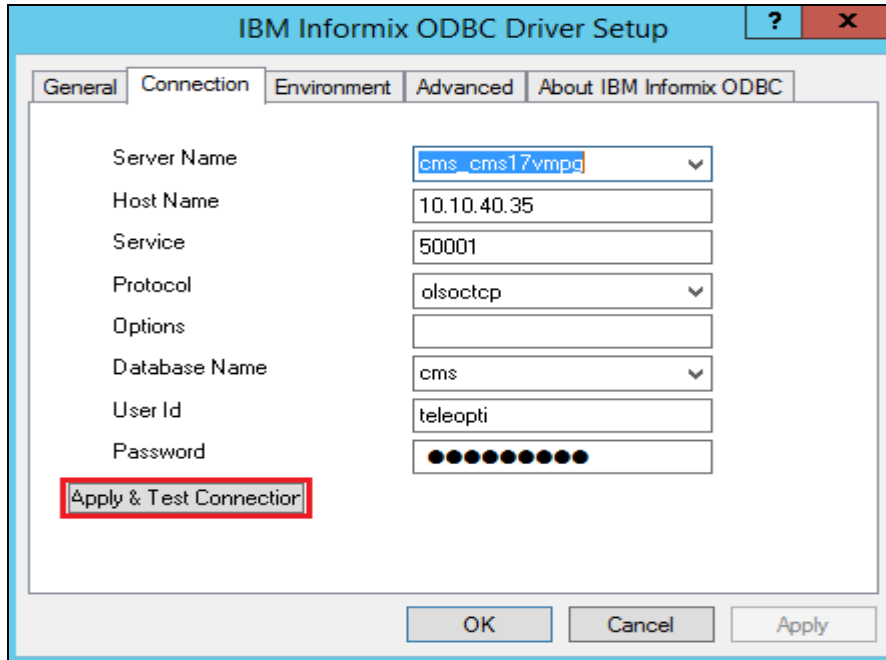
Open the ODBC Data Sources (32-bit) client driver. This can be done by doing a search for this application as is shown below.



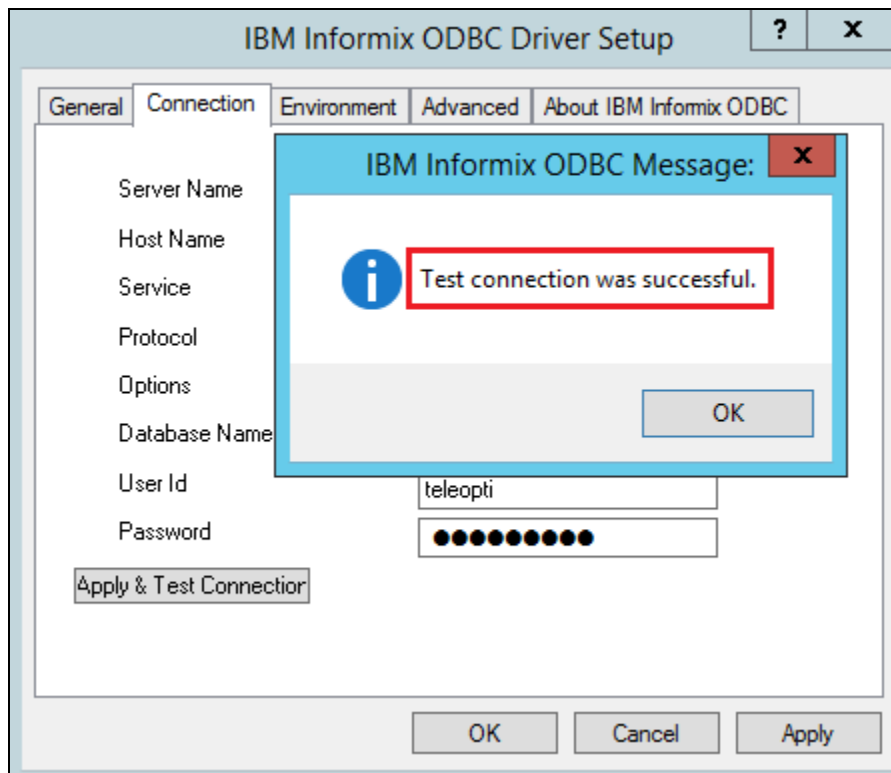
Click on the **System DSN** tab and the Teleopti DSN IBM ODBC Driver is displayed. Double click on this driver to open it.



Select the **Connection** tab and click on **Apply & Test Connection**.

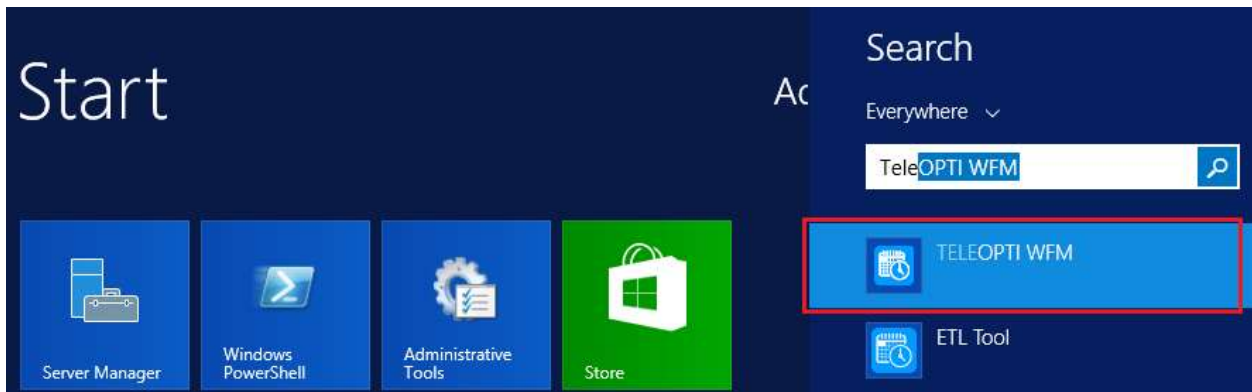


If the connection is setup correctly the following message will be displayed.

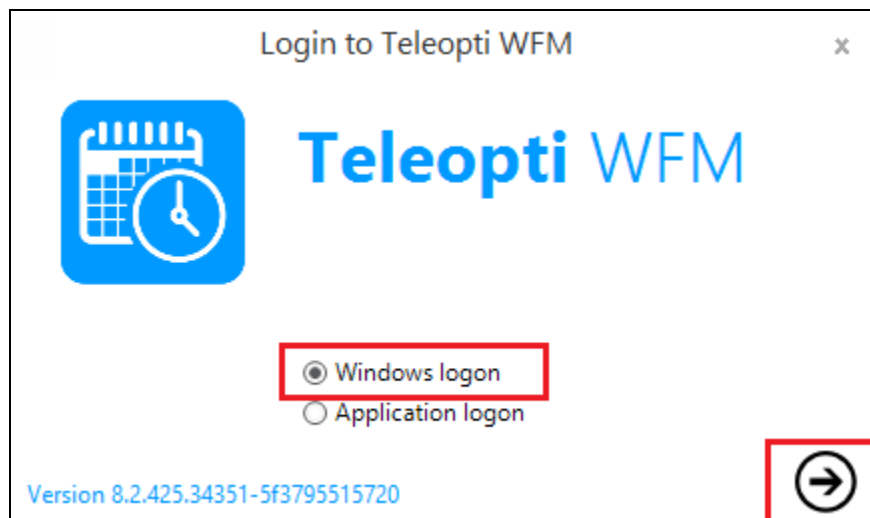


## 8.2. Verify Teleopti Historical Report

Open the **Teleopti WFM** client as follows.

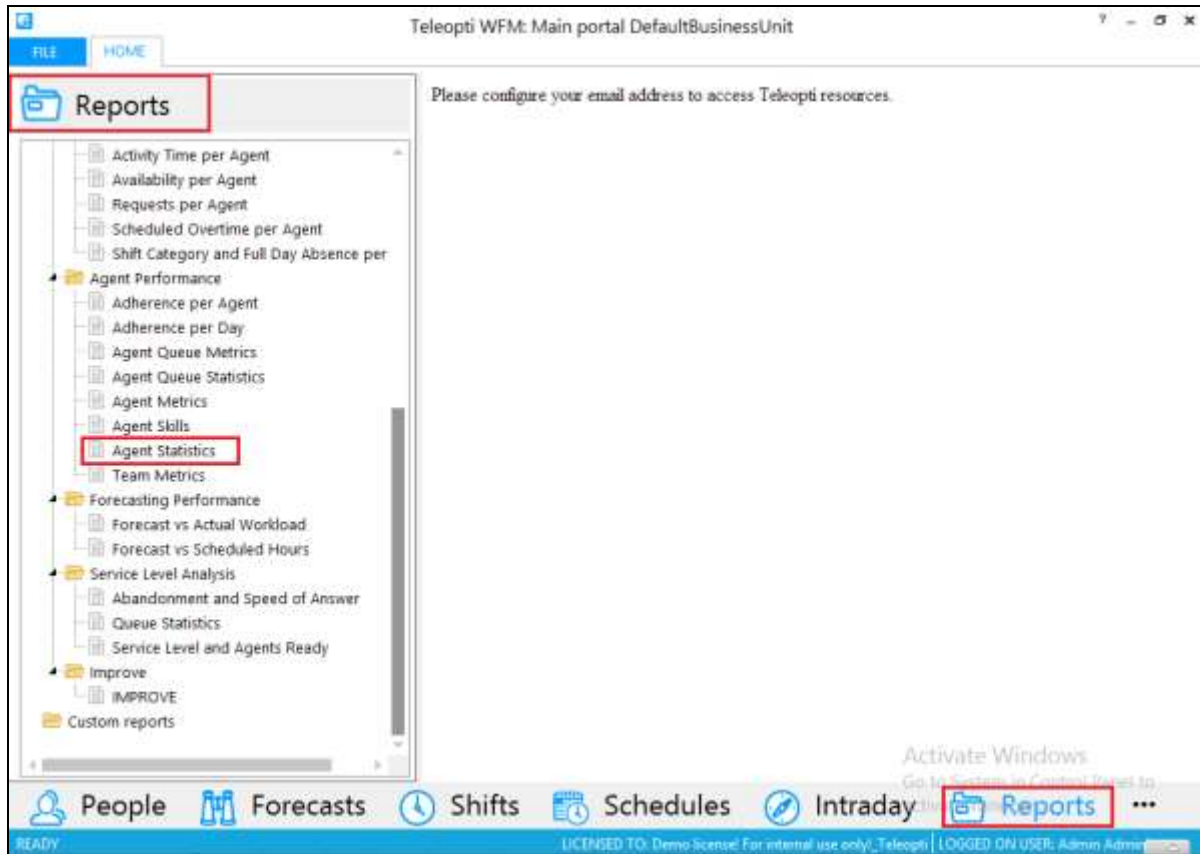


The following **Login** window is displayed, choose the **Windows Logon** and click on the **Login icon** highlighted.

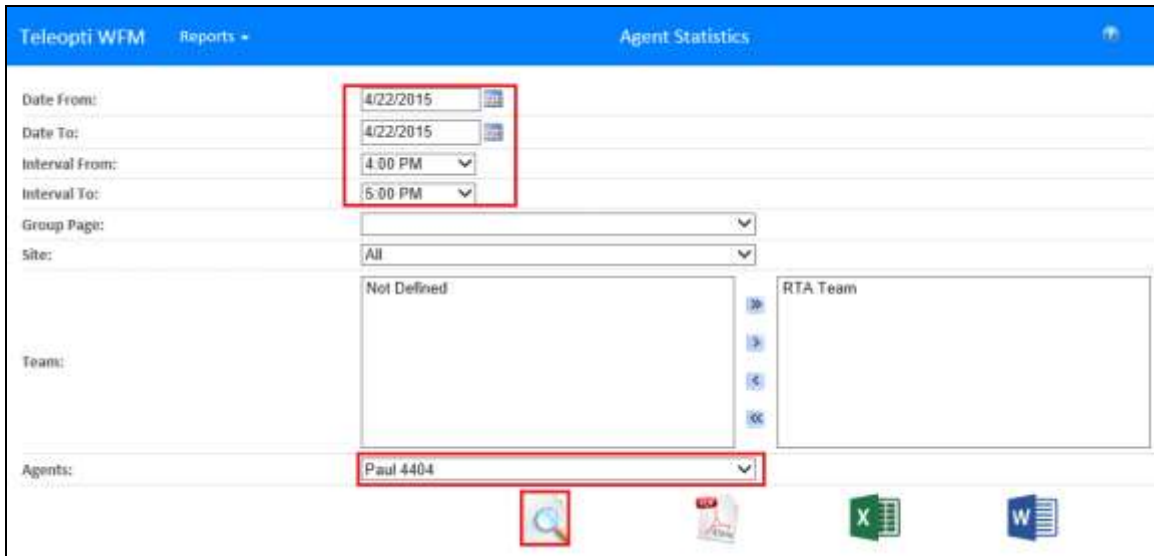




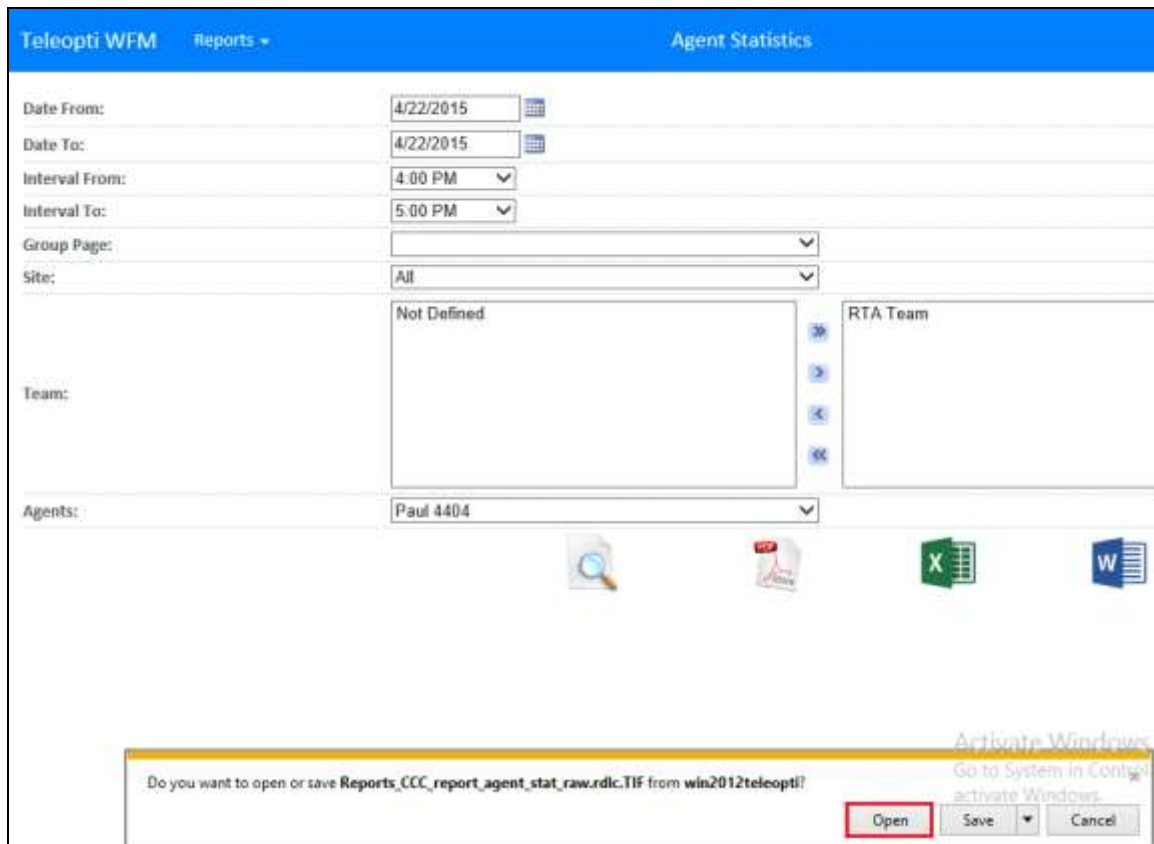
Click on **Reports** at the bottom of the screen, this will display a range of different reports that can be run in the left window. These reports are arranged into different categories such as **Agent Performance**, **Forecasting Performance**, **Service Level Analysis** and **Custom reports**. The example below shows a report called **Agent Statistics** being run. Double click on this report in the left window.



Enter the **To** and **From** dates and times. Select the Agent from the **Agents** drop-down menu. Click on the **display** icon highlighted.



A message is displayed at the bottom of the screen asking to open or save the file. Click on **Open** to display the file on the screen.



The **Agent Statistics** report is opened and the agent's data is displayed.

Agent Statistics											
											4/23/2015 2:55 PM
											1 (1)
Group Page:											
Site:	All										
Team:	RTA Team										
Agents:	Paul 4404										
Date:	4/22/2015										
Interval:	4:00 PM - 5:00 PM										
Date / Interval	Agent	Acid Login	Logged In Time	Ready Time	Not Ready Time	Idle Time	Admin Time	Direct Outbound Calls	Direct Outbound Calls Talk Time	Direct Incoming Calls	Direct Incoming Calls Talk Time
<b>Totals:</b>			<b>1:00:00</b>	<b>0:52:25</b>	<b>0:07:35</b>	<b>0:42:26</b>	<b>0:00:00</b>	<b>1</b>	<b>0:01:01</b>	<b>0</b>	<b>0:00:00</b>
<b>4/22/2015</b>			<b>1:00:00</b>	<b>0:52:25</b>	<b>0:07:35</b>	<b>0:42:26</b>	<b>0:00:00</b>	<b>1</b>	<b>0:01:01</b>	<b>0</b>	<b>0:00:00</b>
16:00-16:15	Paul 4404	4404 Paul	0:15:00	0:11:43	0:03:18	0:10:09	0:00:00	1	0:00:31	0	0:00:00
16:15-16:30	Paul 4404	4404 Paul	0:15:00	0:11:42	0:03:17	0:10:08	0:00:00	0	0:00:30	0	0:00:00
16:30-16:45	Paul 4404	4404 Paul	0:15:00	0:14:30	0:00:30	0:11:05	0:00:00	0	0:00:00	0	0:00:00
16:45-17:00	Paul 4404	4404 Paul	0:15:00	0:14:30	0:00:30	0:11:04	0:00:00	0	0:00:00	0	0:00:00
<b>Totals:</b>			<b>1:00:00</b>	<b>0:52:25</b>	<b>0:07:35</b>	<b>0:42:26</b>	<b>0:00:00</b>	<b>1</b>	<b>0:01:01</b>	<b>0</b>	<b>0:00:00</b>

## 9. Conclusion

These Application Notes describe the compliance tested configuration used to validate Teleopti WFM with Avaya Call Management System R17.4. A full and comprehensive set of feature and functional test cases were performed during Compliance testing. All of the test cases passed with any issues and observations outlined in **Section 2.2**.

## 10. Additional References

These documents form part of the Avaya official technical reference documentation suite. Further information may be had from <http://support.avaya.com> or from your Avaya representative.

- [1] *Avaya Aura® Communication Manager Feature Description and Implementation*, Release 6.3.
- [2] *Administering Avaya Aura® Communication Manager*, Release 6.3.
- [3] *Application Notes for Teleopti WFM Real Time Adherence and Avaya Call Management System using the Generic RTA Interface*.
- [4] *Avaya Call Management System Software Installation, Maintenance, and Troubleshooting for Linux* Release 17 February 2015
- [5] *Avaya Call Management System Database Items and Calculations* Release 17.x June 2014
- [6] *Avaya Call Management System ODBC and JDBC* Release 17.0 November 2013

Teleopti WFM documentation can be found using the contact details listed in **Section 2.3**.

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