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Avaya Solution & Interoperability Test Lab

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

Abstract

These Application Notes describe the configuration steps required for Voran Tephra Workforce to interoperate with Avaya Call Management System.

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

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.

Reviewed: ML
SPOC 12/14/2012
Solution & Interoperability Test Lab Application Notes
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1. Introduction

Tephra is a work force management solution that provides forecasting, scheduling, and monitoring of work for contact center agents. Tephra uses historical call measurement data from Avaya Call Management System to produce forecasts and schedules for contact center agents, and then uses the real-time call measurement data from Call Management System to check the agent adherence to the schedules. These interfaces are provided by Avaya Professional Services.

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

Contact center users such as supervisors and/or agents can access the Tephra server to review any collected data and/or produced forecasts and schedules. For the compliance testing, the Tephra server was used to verify the collected call measurement data from Call Management System.

The integration of real-time Agent call measurement data with Call Management System is a customization achieved through the Generic Real Time Agent (Generic-RTA) interface. A TCP client-server model is used for the connection, with the Call Management System server being the "client", and the Tephra server being the "server". The Tephra server runs a TCP "listener" process to accept the data connection from the Call Management System server. The customized Generic-RTA interface on the Call Management System is provided by the Avaya Communication Solutions and Integration (CSI) group within Avaya Global Services.

The integration of historical VDN/Split/Skill/Agent call measurement data with Call Management System was achieved using an ODBC connection to the Call Management System. The historical data includes data from the agent performance daily, split/skill intrahour interval, VDN hourly interval, and the agent daily login/logout database tables.

The Tephra application pulled the historical data from the database on a regularly scheduled interval.

The Avaya CSI group installs and configures the customized interfaces on the Call Management System, and provides the TCP port number associated with the Generic-RTA interface to Tephra for configuring the Tephra server. These Application Notes assume the configuration and connectivity between Communication Manager and Call Management System is already in place and will not be described in full detail.

2. General Test Approach and Test Results

The focus of the compliance test was to confirm the data used by the Voran Tephra Workforce application matched the data supplied by the Call Management System.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying Tephra parsing and displaying of VDN, Split/Skill, and Agent data from Call Management System.

The serviceability testing focused on verifying the ability of the Tephra server to recover from adverse conditions, such as stopping the Generic-RTA interface on the Call Management System server, and disconnecting the Ethernet cable to the Tephra server. The serviceability testing also included recovery of historical data.

2.2. General Test Approach

The feature test cases were performed manually. Incoming calls were made to the measured VDN, Split/Skill, and Agent to enable measurement data to be sent to Call Management System. Manual call controls and work mode changes from the agent telephones were exercised to populate specific fields in the database records.

The serviceability test cases were performed manually by stopping/restarting the Generic-RTA interface, and by disconnecting/reconnecting the LAN cable to the Tephra server.

The verification of all tests included checking of proper display of data at the Tephra server, and comparing the displayed data with the real-time and historical reports from the Call Management System server.

## 2.3. Test Results

All test cases were executed successfully.

2.4. Support

Technical support for Tephra can be obtained through the following:

- **Phone:** +55 11 5506-3202
- **Web:**   www.tephra.com.br

3. Reference Configuration

The compliance test configuration included a single site consisting of Avaya Aura®
Communication Manager and Avaya Aura® Session Manager with several SIP, H.323 and TDM
endpoints. All calls to and from the public network routed through T1 PRI trunks.
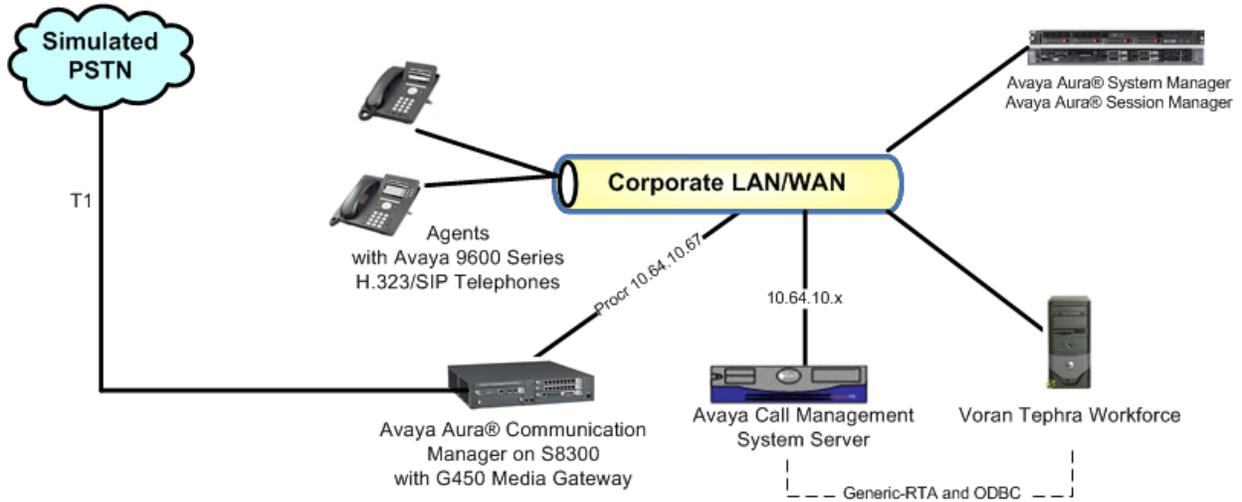
Figure 1: Tephra Workforce with Avaya Call Management System

4. Equipment and Software Validated

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

Equipment	Version
Avaya Aura® System Manager On Dell™ PowerEdge™ R610 Server	6.1 (6.1.6.1.1087) Avaya System Platform 6.0.3.1.3
Avaya Aura® Session Manager On HP ProLiant DL360 G7 Server	6.1 (6.1.3.0.613006)
Avaya Aura® Communication Manager On Avaya S8300D Server	R016x.00.1.510.1, Update 19009 (SP3) (Avaya Aura® System Platform: 6.0.3.1.3)
Avaya Call Management System on Sun T5120 Server	R16.2
Avaya G450 Media Gateway	31.11.1/1
Avaya 9600 Series SIP Phones	SIP 2.6
Avaya 9600 Series H.323 Phones	H.323 3.11
Tephra Workforce	1.1.3

5. Configure Avaya Aura® Communication Manager

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

This section provides the procedures for how to enable Vector Directory Number (VDN), Split/Skill, and Agent measurement data to be sent to Call Management System. The procedures include the following areas:

- Administer measured VDN
- Administer measured Split/Skill and Agent

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

VDN	Split/Skill	Logical Agents
6000	1	6301, 6302
6500	5	6301, 6302

5.1. **Administer Measured VDN**

Use the *change vdn n* command, where *n* is the extension of the VDN to be measured by Call Management System. Set the **Measured** field to *external* or *both* to enable measurement data on the VDN to be sent to Call Management System. External measurement will send data to configured Call Management System servers, *both* allows data to be sent to the "internal" BCMS system as well as the external Call Management System.

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

```
change vdn 6000                                               Page   1 of   3
                           VECTOR DIRECTORY NUMBER

                            Extension: 6000
                                Name*: ACD
                          Destination: Vector Number        2
                   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
```

For the compliance testing, two VDNs with extensions **6000** and **6500** were configured to be measured, as shown below.

```
 list vdn

                       VECTOR DIRECTORY NUMBERS

                                                               Evnt
                                 VDN          Vec        Orig  Noti
Name (22 characters)   Ext/Skills  Ovr COR TN  PRT Num  Meas Annc  Adj

ACD                    6000         n   1   1   V   2   both

From PSTN Gateway      6500         n   1   1   V   7   both
```

5.2. **Administer Measured Split/Skill and Agent**

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

```
change hunt-group 1                                             Page   2 of   4
                                  HUNT GROUP

                    Skill? y       Expected Call Handling Time (sec): 180
                      AAS? n         Service Level Target (% in sec): 80 in 20
                 Measured: both
      Supervisor Extension:

        Controlling Adjunct: none

          VuStats Objective:

     Multiple Call Handling: none


 Timed ACW Interval (sec): 30        After Xfer or Held Call Drops? n
```

For the compliance testing, two Split/Skill groups with group numbers 510 and 520 were configured to be measured, as shown below.

```
list hunt-group


                              HUNT GROUPS
Grp  Grp
No.  Name/            Grp      ACD/              No. Cov Notif/  Dom   Message
     Ext              Type     MEAS Vec MCH   Que Mem Path Ctg Adj Ctrl  Center

1    EAS Hunt Group
     6501             ucd-mia y/E  SK   none y  0           n        1   n
5    EAS Skill 5
     6503             ucd-mia y/E  SK   none y  0           n            n
```

In the compliance testing, two agents with physical extensions 6001 and 6002 and logical extensions 6301 and 6302 were used as available agents for the above Split/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

6301        Agt1          6001                                 2  lvl
              1/01    5/01     /        /        /        /        /        /
6302        Agt2          6002                                 2  lvl
              1/01    5/01     /        /        /        /        /        /
```
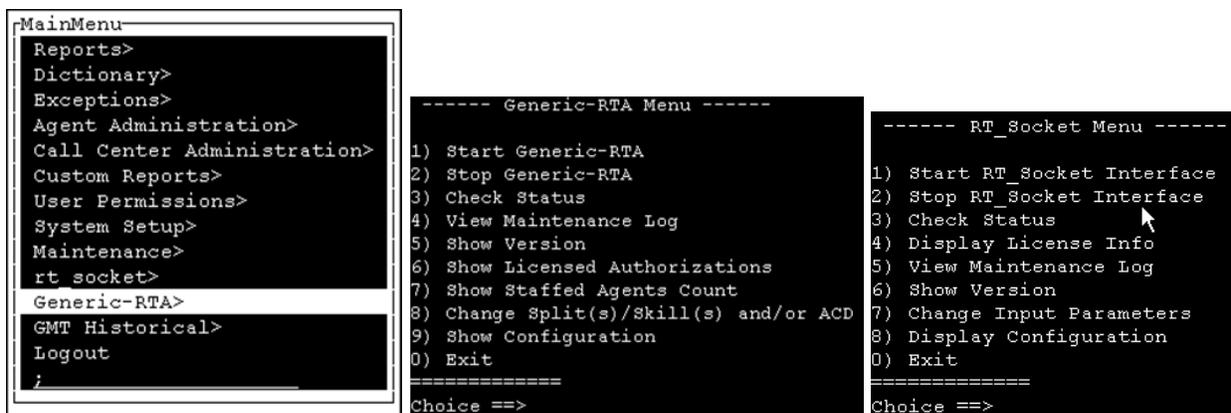
6. Configure Avaya Call Management System

The connectivity between Avaya Call Management System and Avaya Aura® Communication Manager is assumed to be in place and will not be described. Significant portions of the configuration are performed by Avaya Professional Services on a per-engagement basis and therefore are not described in full detail here. These activities will generally involve enabling a database user account for the solution to use with ODBC for historical data, and configuring the rt_socket and Generic-RTA interfaces for the specific needs of each integration.

This section provides the procedures for enabling the rt_socket and Generic-RTA interfaces.

6.1. Enable RT_Socket and Generic-RTA Interface

Use a terminal emulator to connect to the Call Management System server, and log in with the proper credentials. Enter "**cms**" at the command prompt to display the **MainMenu** screen. Select the option that corresponds to the customized real-time interface created by Professional Services, either **rt_socket** or **Generic-RTA**. Press **Enter**.

The **rt_socket** and **Generic-RTA** menus are displayed above.

Enter "**2**" followed by the **Enter** key, to stop the interface.
Enter "**1**" followed by the **Enter** key, to start the interface.
Enter "**9**" followed by the **Enter** key, to show the interface configuration (illustrated below). For **rt_socket**, this will generally list multiple sessions for various reports.
Enter "**0**" followed by the **Enter** key, to exit and return to the main menu.

7.   Configure Tephra Workforce

Voran engineers configure the Tephra solution. In the tested configuration, the Tephra equipment was offsite and used an Internet connection to collect the Call Management System data via the Interation service server. The Interation service is an intermediate service, which ran on a Windows 2008R2 server which resided on-site with the Call Management System. This service will run on the Tephra server when co-located with the Call Management System.

Voran's Avaya Interation service is a service developed by Voran to collect the information from the Generic-RTA and RT_Socket connectors for real time adherence and service level, and ODBC connection to historical information for reports.

7.1. Configure the Voran Interation Service

Avaya Interation has two ways of configuration, directly through AvayaInteration.config file or through a graphical user interface. Following is a snapshot of a typical configuration file with field descriptions on the following page (note the data below is not related to the test environment, this is from product documentation):

```xml
<applicationSettings>
    <AvayaInterationManager.My.MySettings>
        <setting name="AgentPort" serializeAs="String">
            <value>10001</value>
        </setting>
        <setting name="QueuePort" serializeAs="String">
            <value>10005</value>
        </setting>
        <setting name="AgentIPIndex" serializeAs="String">
            <value>0</value>
        </setting>
        <setting name="QueueIPIndex" serializeAs="String">
            <value>0</value>
        </setting>
        <setting name="AgentPath" serializeAs="String">
            <value>\\srv\RT\</value>
        </setting>
        <setting name="QueuePath" serializeAs="String">
            <value>\\srv\RT\</value>
        </setting>
        <setting name="TephraServerAddress" serializeAs="String">
            <value>192.168.0.10</value>
        </setting>
        <setting name="TephraServerPort" serializeAs="String">
            <value>1433</value>
        </setting>
        <setting name="AvayaODBCConnStr" serializeAs="String">
            <value>provider=OpenLinkODBC; Data Source=CMS_ol; user
            id=odbc1; password=****;Extended Properties='Cursors=ODBC'</value>
        </setting>
        <setting name="ODBCAcd" serializeAs="String">
            <value>2</value>
        </setting>
        <setting name="ODBCImportTime" serializeAs="String">
            <value>01:00</value>
        </setting>
    </AvayaInterationManager.My.MySettings>
</applicationSettings>
```

- **AgentPort** is the port the connector will be listening for Generic RTA data.

- **QueuePort** is the port the connector will be listening for RT_Socket data.
- **AgentIPIndex** is the default IP Address that will be listening for Generic RTA data, 0 would mean the first local IP available.
- **QueueIPIndex** is the default IP Address that will be listening for RT_Socket data, 0 would mean the first local IP available.
- **AgentPath** is the location the Generic RTA data received will be kept.
- **QueuePath** is the location the RT_Socket data received will be kept.
- **TephraServerAddress** is the Tephra Workforce Management SQL Server address.
- **TephraServerPort** is the Tephra Workforce Management SQL Server port.
- **AvayaODBCConnStr** is the connection string used to connect to Avaya ODBC.
- **ODBCACD** is the ACD to import ODBC historical data.
- **ODBCImportTime** is the time of the day to import ODBC data.

Following are snapshots of the GUI screens (from product documentation, not specific to the test environment):
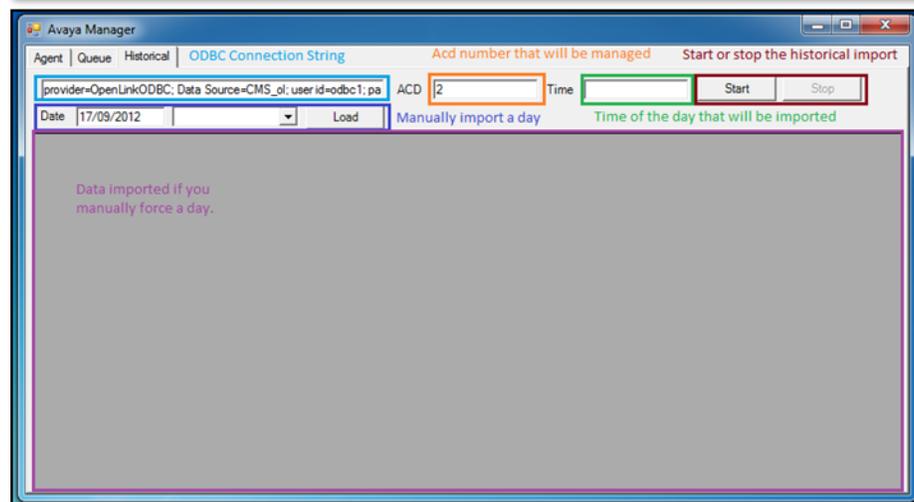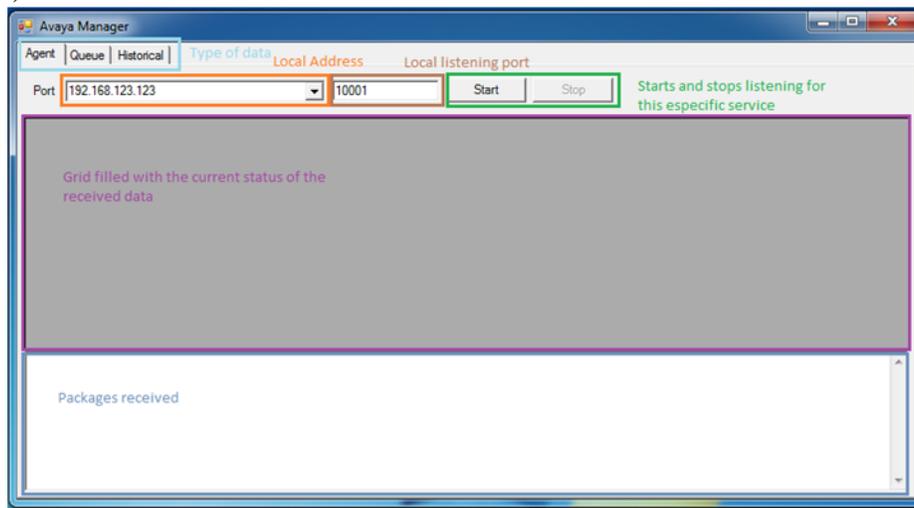
8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Call Management System and Tephra. It is assumed the connection between Avaya Aura® Communication Manager and Call Management System is active.

8.1. Verify Avaya Call Management System

From the Call Management System server, follow the procedures in **Section 4.1** to display the **MainMenu**. Verify the status of the connection to Tephra for the rt_socket or Generic-RTA by selecting the appropriate option from the Main Menu. The status should confirm the session is running and connected as illustrated below (rt_socket will appear similar and therefore is not shown below):

```
 6/29/11  14:57  Avaya(TM) CMS                    Windows: 0 of 10    v^v

 ┌MainMenu───────────┐
 │ Reports>          │
 │ Dictionary>       │         ------ Generic-RTA Menu ------
 │ Exceptions>       │
 │ Agent Administration> │    1) Start Generic-RTA
 │ Call Center Administration> │  2) Stop Generic-RTA
 │ Custom Reports>   │         3) Check Status
 │ User Permissions> │         4) View Maintenance Log
 │ System Setup>     │         5) Show Version
 │ Maintenance>      │         6) Show Licensed Authorizations
 │ rt_socket>        │         7) Show Staffed Agents Count
 │ Generic-RTA>      │         8) Change Split(s)/Skill(s) and/or ACD
 │ GMT Historical>   │         9) Show Configuration
 │ Logout            │         0) Exit
 │ ;                 │         =============
 └───────────────────┘         Choice ==>


             Checking status of all configured sessions...

             Generic-RTA session 1 is running and is connected


             Press Enter to return to menu: █
```

8.2. Verify Tephra Workforce

Prior to verifying Tephra, make calls to *measured* resources on Communication Manager to enable data to be sent to Avaya Call Management System.

On the Interation server, the TCP Replicator applet will be running and can be reviewed by selecting the application from the Windows Taskbar. This will show the status of RTA data sessions:
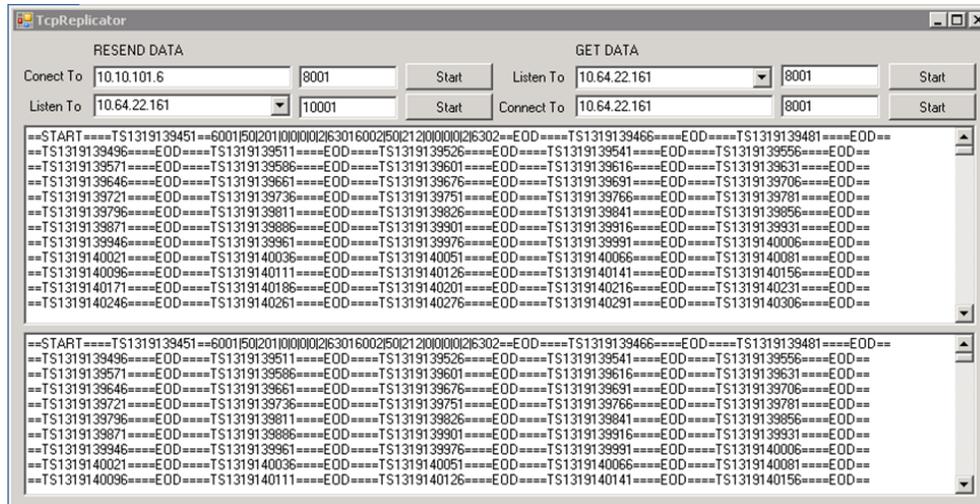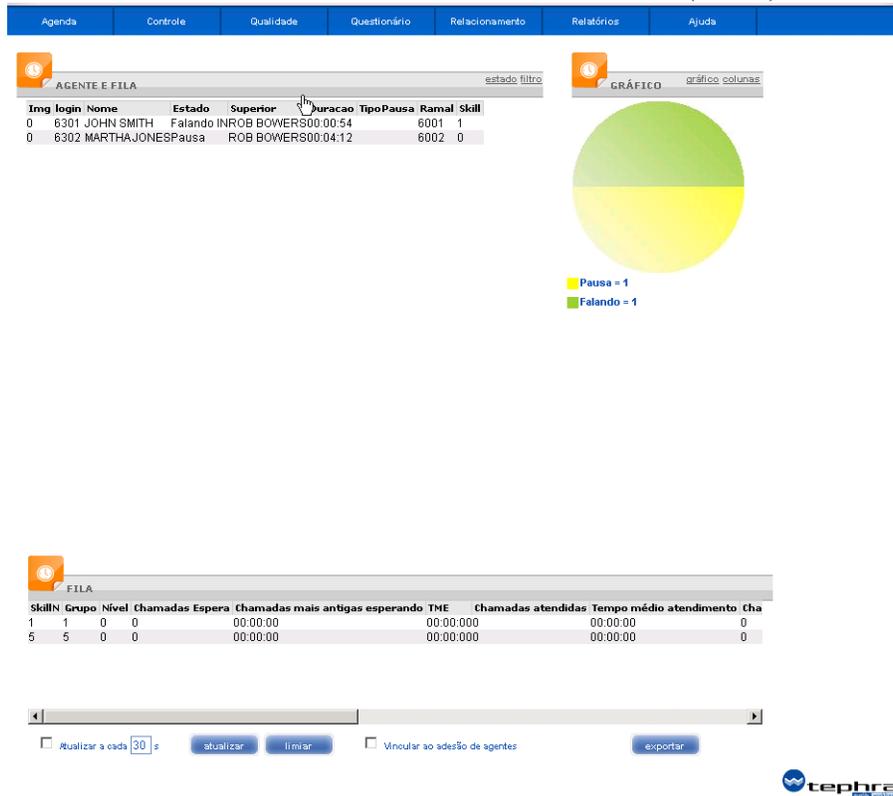

For all other data verification, login to Tephra using a web browser:
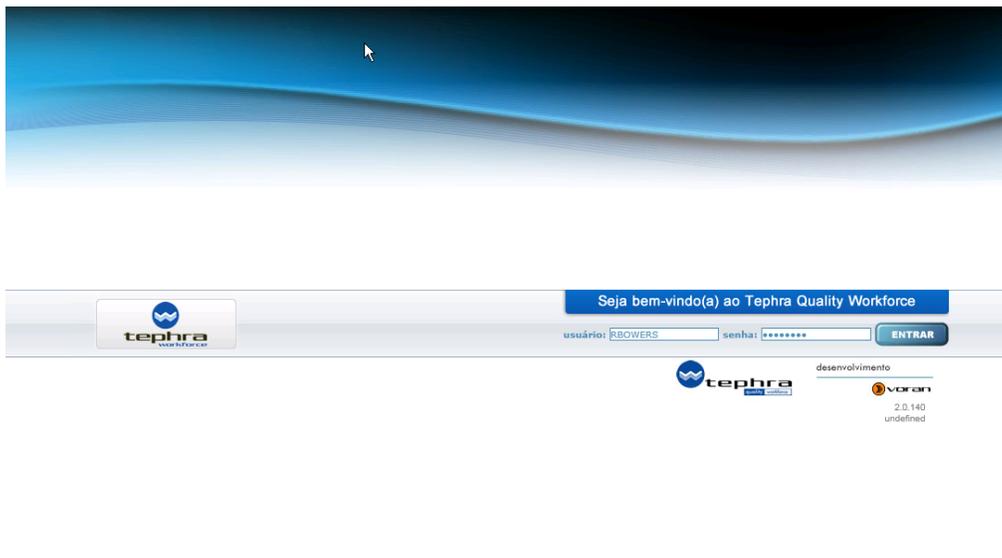
8.2.1. Verify Real-Time agent status

Navigate to the **Controle > Agente E Fila** menu item to see the current status of agents in the call center. In the below illustration, the two agents (John Smith – Agent ID 6301 and Martha Jones – Agent ID 6302) are logged in. In this illustration, John is on a call (Falando) that has been in progress for 54 seconds and Martha is in Aux Work mode (Pausa).

Reviewed: ML
SPOC 12/14/2012

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8.2.2. Verify Historical Data

Navigate to the **Relatorios** menu to view historical data. Scroll to the right to see all of the historical data (not shown):

9. Conclusion

These Application Notes describe the configuration steps required for Voran Tephra Workforce to interoperate with Avaya Call Management System, via the customized real-time and ODBC historical call measurement data interfaces provided by Avaya Professional Services. All feature and serviceability test cases were completed.

10. Additional References

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

Avaya Documentation:

- *Administering Avaya Aura™ Communication Manager,* Document ID 03-300509, Issue 6.0, Release 6.0, June, 2010.
- *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*, June, 2010
- *Avaya Call Management System Call History Interface*, Release 16.x, November, 2010