Abstract

These Application Notes describe the configuration steps required for Verint Work Force Management to interoperate with Avaya IQ via the RTA and historical interfaces. These interfaces, developed by Avaya’s Consulting and System Integration organization, provide real-time and historical data related to agents, queues, and routing points. 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

The Verint Work Force Management (WFM) solution is designed to integrate seamlessly with contact center systems for obtaining the three primary types of data:

- Real-time agent adherence data
- Direct contact statistics
- Scorecard statistics

The real-time agent adherence statistics consist of actual agent state changes in the ACD. This information is presented within the Verint WFM solution for the purpose of comparing actual real-time agent activities with the scheduled activities.

The direct contact statistics are 15-minute interval queue and routing point level data that are used to track performance of a contact center for forecasting purposes.

The scorecard statistics consists of one-day interval agent data for the purpose of evaluating the performance of agents in terms of percentage of schedule adherence.

Avaya IQ is a uniform reporting engine that reports real-time and historical statistics on contact center and outbound dialing activities provided by the Avaya Call Center and Proactive Contact products. The Verint WFM software integrates with the Avaya IQ via custom adapters developed by the Avaya Consulting and System Integration organization to obtain the above statistics. Specifically, the following adapters were tested in this compliance test:

- Streaming Time Collection Interface (STCI) – a real-time interface for monitoring agent adherence
- Contact Statistics Interface (CSI) for Queue – a historical interface for queue information
- Contact Statistics Interface (CSI) for Routing Point – a historical interface for routing point information
- Agent Scorecards Metrics (ASCM) interface – a historical interface for agent scorecard applications

Figure 1 below shows the compliance test configuration.
In Avaya Communication Manager, relevant skill/VDN objects are configured to be “measured” for Avaya IQ. When a call travels through a “measured” object on Avaya Communication Manager, the ACD related data are sent to the Avaya IQ. Avaya IQ updates the Verint WFM application periodically with real-time and historical data for agents, queues, and routing points. The real-time data are updated every 30 seconds. The contact historical data are sent to the Verint WFM server every 15 minutes via FTP. The scorecard historical data are sent to the Verint WFM server once a day via FTP. During the compliance testing, the Avaya IQ standard reports and a utility tool of the adapters were used to help validate the accuracy of the data generated by Avaya IQ and displayed by Verint WFM.
2. Equipment and Software Validated
The following equipment and software were used for the test configuration:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avaya S8700 Server</td>
<td>Avaya Communication Manager 4.0, load R014x.00.1.732.1, patch 14300</td>
</tr>
<tr>
<td>Avaya G650 Media Gateway</td>
<td>HW01 FW024</td>
</tr>
<tr>
<td>Avaya IQ server with adapters provided by the Avaya Consulting and System Integration organization</td>
<td>IQ R4.0 Update 2 Red Hat Enterprise Linux ES V4 Update 5 RTA version: 0.1.13 Historical adapters version: 0.5.9</td>
</tr>
<tr>
<td>Oracle Database</td>
<td>10g 2</td>
</tr>
<tr>
<td>Verint WFM</td>
<td>7.7.2 Windows 2003 Server</td>
</tr>
</tbody>
</table>

3. Configure Avaya Communication Manager
The detailed administration of contact center objects and connectivity between Avaya Communication Manager and Avaya IQ are not the focus of these Application Notes and will not be described. For administration of contact center objects and connectivity to Avaya IQ, refer to the appropriate documentation listed in Section 11.

In order for the data of a queue or a routing point to be collected and forwarded to Avaya IQ, the “measured” field on the corresponding skill and VDN form must be set to “external”. For administration of the “measured” field for a queue and a routing point, refer to the appropriate documentation listed in Section 11.

4. Configure Avaya IQ
The general configuration of the Avaya IQ is assumed to be in place and will not be described here. This section provides the additional configuration as required for supporting Verint WFM, which includes the following:

- Administer Auxwork codes
- Activate the real-time adapter
- Activate the historical adapters

4.1. Administer Auxwork Reason Codes
In Avaya IQ 4.0, the Auxwork Reason Codes need to be added manually. In the 4.1 release, Avaya IQ will automatically create the codes and this manual step will no longer be required.
To manually add the Auxwork reason codes, use a web browser to log in to the Avaya IQ administration interface with the proper credentials. Click the Enterprise tab at the upper left corner. Use the expand icon to expand the menu and select Resources → All Resources → Reporting → Reporting: AgentActivityStates.
Click the “+” icon. A **New Agent Activity State** screen will pop up. Enter 1 in the **Source Identifier** field and Aux 1 in the **Name** field. Click **OK**.

Click the **Refresh** button on the browser. The newly added Auxwork reason code should be displayed. Repeat the procedure for Auxwork reason code 2 to 10. If there are more Auxwork reason codes used in the ACD, create them as well.
4.2. Activate The Real-time Adapter

One real-time adapter is installed in Avaya IQ to support the Verint WFM integration. This adapter supports the Streaming Time Collection Interface (STCI).

Use SSH to log into the Avaya IQ. Change directory to /opt/Avaya/pserv/rta_bp. Run “./menurta”.

From the BP-RTA Menu screen, enter 2 then all to stop all the sessions. Each session corresponds to an ACD data source. Once all the sessions are stopped, enter Enter to continue. Enter 1 then all to start all the sessions. Once all the sessions are started, enter Enter to continue and 0 to quit. The screen capture below shows that all the sessions have been started.
4.3. Activate The Historical Adapters

Three historical adapters are installed in Avaya IQ to support the Verint WFM integration. These adapters support the Contact Statistics Interface (CSI) for Queue, CSI for Routing Point, and Agent Scorecards Metrics (ASCM) interface.

Use SSH to log into Avaya IQ. Change directory to /opt/Avaya/pserv/bp. Run “./menu”.

The first column shows the status of the sessions. Each session corresponds to an interface for an ACD data source. Enter T followed by the session number to toggle the status until all the sessions are ON. The screen capture below shows that there are three sessions (queue, rp, and agent) for ACD 1 and three other sessions for ACD 2. The first column indicates that all the sessions have been started.
5. Configure Avaya IQ Adapters

The Avaya IQ adapters are configurable in the following areas to fit into the customer environment.

- Timezone for the reports
- Sliding window size
- Avaya IQ login/password
- FTP server parameters (login, password, naming format, folder, ascii or binary)
-Delimiter
- Data source name
- Report type: agent, queue, or routing point
- Time to run (only for historical report)

However, the adapters are not user configurable and should only be configured by the Avaya Consulting and System Integration organization. Questions about adapter configuration should be directed to Avaya Consulting and System Integration.

6. Configure Verint WFM

This section provides the procedures for configuring Verint WFM. For detailed explanations, please refer to Verint Workforce Management Administration Guide

6.1. Log Into the Verint WFM Server

From a web browser, access the Verint WFM server using the URL http://servername:7001/wfo/control/signin where servername is the host name of the Verint WFM server. Enter the login/password credential.
6.2. Create Data Source

The data source must be configured before the link to Avaya IQ is created. A data source is required to map activities and reason codes.

To create a data source, click **System → Data Sources**. Click the **Create Data Source** button at the bottom of the screen. A small window will pop up. Enter **phone** as the Data Source Type. The **Create Data Source** window will pop up. Enter values into the fields as shown in the diagram below. Click the **Save** button at the bottom of the window. Once a data source is added, the name of the data source will appear in the left pane of the screen. Below is an example of the **Create Data Source** screen.
6.3. Create Data Source Groups

Data Source Groups are used to identify the ACD queue or routing point for which data will be collected from Avaya IQ.

To create a data source group, click System → Data Sources → Data Source Groups. Select the data source from the left pane. Click the Create Group button at the bottom of the screen. The Create Group window will pop up. Enter values into the fields as shown in the diagram below. Click the Save button at the bottom of the window. Below is an example of the Create Group screen.
6.4. Create Reason Codes

Reason codes are used by the Agent Adherence application. The Verint WFM servers map the Aux reason codes received from Avaya IQ to text strings.

To create reason codes, click System → Data Sources → Reason Codes. Select the data source from the left pane. Click the Create Reason Code button at the bottom of the screen. The Create Reason Code window will pop up. Enter values into the fields as shown in the diagram below. Click the Save button at the bottom of the window. Below is an example of the Create Reason Code screen.
6.5. Configure Queues

Queues are used to define the entity for which ACD queue and routing point related historical data will be collected and reported by the Verint WFM.

To create a queue, click **App Admin → Queues → Settings.** Click the **Create Queue** button at the bottom of the screen. The **Create Queue** window will pop up. Enter values into the fields as shown in the diagram below. Click the **Save** button at the bottom of the window. Once a queue is added, the name of the queue will appear in the left pane on the screen. Below is an example of the **Create Queue** screen.
6.6. Configure Queue Data Source Group Mapping

Queue Data Source Group Mapping is used to map data source groups to Queue.

To configure the mapping, click **App Admin → Queues → Queue Group Mapping**. Select the Queue from the left pane of the screen. A list of **Available Data Source Groups** will be displayed in the left side box. Select groups and use the double arrow buttons to move to the **Mapped Data Source Groups** box. Click the **Save Mapping** button at the bottom of the window to save the mapping. Below is an example of the **Create Queue** screen.

![Queue Group Mapping Example](image-url)
6.7. Add Packages to the Integration Server

The Verint WFM Integration Packages serve as the adapters between Avaya IQ and Verint WFM. Integration Packages corresponding to the four data feeds from Avaya IQ must be configured in order for Verint WFM to receive data from those data feeds.

To add Integration Packages to the Integration Server, click System → Integration. Double click on the displayed Integration Server. In the left pane, select the Integration Server [Root] and then click the Workflow tab. Select the Integration Packages from the Available Packages box. Use the double arrow button to move them to the Selected Packages box. Click the Save button at the bottom of the window. Once the Integration Packages are saved, they will appear in the left pane of the screen. Below is an example of the Integration Package Configuration screen.
6.8. Configure the Integration Packages

The Integration Packages need to be configured to be associated with particular data sources.

To configure an Integration Package, click **System → Integration**. Double click the displayed Integration Server. In the left pane, select the Integration Package and then click the **Data Source** tab. Select data sources from the **Available Data Sources** box. Use the double arrow button to move them to the **Selected Data Sources** box. Click the **Save** button at the bottom of the window. Below is an example of the **Configure Data Source for Integration Package** screen.
6.9. Configure Report Definition

For the historical interfaces, the report definition needs to be configured to match the interface definition so the data can be extracted correctly.

To configure report definition, click System → Integration. Double click the displayed Integration Server. In the left pane, select the Integration Package and expand. Click Converter. In the right pane, click Configuration → Report Definition. Select Delimited Report. Populate the Column Name, Column Position, and Data Type fields based upon the definition of the adapter interface. Click the Save button at the bottom of the window. Below are the Configure Report Definition screens for theCSI for Queue, CSI for Routing Point, and ASCM interfaces, respectively.
6.10. Configure Data Mapping

For the historical interfaces, Verint WFM provides the data mapping functions to map data from the Avaya IQ format to the Verint report format.

To perform the data mapping, click **System → Integration**. Double click on the displayed Integration Server. In the left pane, select the Integration Package and expand. Click **Converter**. In the right pane, click **Configuration → Data Mapping → Basic → Column Mapping**. In the right hand side column, enter the source objects and calculation needed to derive the WFM objects. Click the **Save** button at the bottom of the window. Below are the **Configure Data Mapping** screens for the CSI for Queue, CSI for Routing Point, and ASCM interfaces, respectively.
6.11. Connect to the Real-time Interface

To connect Verint WFM to the real-time STCI interface, click System → Integration. Double click on the displayed Integration Server. In the left pane, select Avaya – STCI for IQ. In the right pane, click the Monitor tab. Click the Import Now button. Wait until the Avaya IQ Adapter lamp turns green. Below is an example of the screen.
6.12. Import Historical Files

The data for the historical interfaces are forwarded to Verint WFM via FTP. After the files arrive at the Verint WFM server, the user needs to import the file manually to the database.

To perform the data import, the user has to configure where to get the file. Click **System → Integration**. Double click on the displayed Integration Server. In the left pane, select the Integration Package. In the right pane, click **Configure**. Specify the **Report file path** and **Report extension** fields. Click the **Save** button at the bottom of the window. Below is an example of the **Configure** screen.
After the file location is configured, click the **Monitor** tab. Click the **Import Now** button. Wait until the Converter lamp turns green. Below is an example of the **Import Now** screen.

### Integration Server Configuration: Avaya - CSI for IQ Report 4.1 - For VDN Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Start Time</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avaya - CSI for IQ Report 4.1 - For VDN (CSI)</td>
<td>11/02/2009 3:34 PM Started</td>
<td>11/02/2009 3:34 PM Completed</td>
</tr>
</tbody>
</table>

The Import Now screen shows the status of various components in the integration server configuration.
6.13. Run the Scorecard Calculation

After the historical file is imported, there is an extra configuration step for the Scorecard application which is to run the scorecard calculation. The user needs to click System → Integration. Double click on the displayed Integration Server. In the left pane, select the Witness – Scorecards Calc Engine package. In the right pane, click the Monitor tab. Click the Import Now button. Wait until the Converter lamp turns green. Below is the Import Now screen for the Witness – Scorecards Calc Engine package.
7. Interoperability Compliance Testing

The interoperability compliance test included features and serviceability testing.

The feature testing focused on verifying Verint WFM processing and displaying of agent, queue, and routing point data from Avaya IQ.

The serviceability testing focused on verifying the ability of Verint WFM to recover from adverse conditions, such as disconnecting the Ethernet cables to the Verint WFM server and restarting the Avaya IQ adapters.

7.1. General Test Approach

The feature test cases were performed manually. Incoming calls were made to the measured routing points, queues, and agents to generate data to the Verint WFM. Manual call controls such as answer, hold, unhold, and disconnect and work mode changes from the agent phones such as login, auto-in, manual-in, after call work, auxwork, and logout were exercised as necessary to populate specific fields in the reports.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cable to Verint WFM and stopping and restarting the Avaya IQ adapters.

For the data that are currently used by Verint in its applications, the data displayed by the Verint applications was compared against the source data including the data in the Avaya IQ standard reports, the data generated by the Avaya IQ adapters, and the data calculated based upon the test scenarios. The proper display of data by the Verint WFM applications was also checked.

For the data not currently used by Verint in its applications, the data generated by the Avaya IQ adapters was compared against the source data including the data in the Avaya IQ standard reports and the data calculated based upon the test scenarios.

The data generated by the Avaya IQ adapters can be monitored using a utility provided with the adapters.

7.2. Test Results

Verint WFM successfully passed the compliance test. The four interfaces - Streaming Time Collection Interface (STCI), Contact Statistics Interface (CSI) for Queue, Contact Statistics Interface (CSI) for Routing Point, and Agent Scorecards Metrics (ASCM) interface - were verified in the compliance test.

The following observations were made during the compliance test:

- CSI Interface for Queue
  - ANS_Time and ASA are calculated with abandoned calls included. In the upcoming Avaya IQ 4.1 release, the two items will be calculated without abandoned calls included.
  - Busy_Calls field does not display a value when a busy call scenario is exercised.
- CSI Interface for Routing Points
  - ANS Time and ASA are calculated with abandoned calls included. In Avaya IQ 4.1, the two items will be calculated without abandoned calls included.
- The Scorecards showed incorrect values in the average hold time and average wrap-up time fields. A database script was provided to solve the issue. The issue will be addressed in the Verint WFM 7.7.3 release.

8. Verification Steps
This section describes the steps to use to verify proper configuration of Avaya IQ and Verint WFM.

8.1. Verify Avaya IQ Adapters
To verify the real-time interface, use SSH to log in to the Avaya IQ. Change directory to /opt/Avaya/pserv/rta_bp. Run “./menurta”.

From the BP-RTA Menu screen, enter 3 to check the status of the sessions. Each session corresponds to an ACD data source. Ensure that each session required is running and connected to the Verint WFM application. The screen capture below shows that session 1 is up and connected to bluepumpkin (the host name of the Verint WFM server) but session 2 is not.

![Screen capture showing status of sessions](image-url)
To verify that the historical interfaces are up and running, use SSH to log in to the Avaya IQ. Change directory to /opt/Avaya/pserv/bp. Run “./menu”. Ensure that the first column of the menu screen shows ON for all the sessions, as shown in the screen capture below.
8.2. Verify Verint WFM

Verint WFM needs to be verified at the interface level.

8.2.1. Verify the STCI Interface

Click **System → Integration**. Double click on the displayed Integration Server. In the left pane, select **Avaya – STCI for IQ**. In the right pane, click the **Monitor** tab. Verify that the **Avaya IQ Adapter** lamp is green as shown in the screen shot below.
8.2.2. Verify the CSI for Queue Interface

Make sure that in the FTP directory (e.g. /Inetpub/ftproot/report41/Devcon13/queue), there is a new file FTP’d over for the interface every 15 minutes. The naming convention of the file is configurable at the Avaya IQ side (see Section 5). Use the procedure in Section 6.12 to import the latest file and click Tracking → Pulse. In the left pane, select a queue that uses the CSI for Queue Interface. In the right pane, enter the date of the FTP file. Verify that data are shown for the time slot that matches the time slot in the FTP file.
8.2.3. Verify the CSI for Routing Point Interface

Make sure that in the FTP directory (e.g. /Inetpub/ftproot/report41/Devcon13/rp), there is a new file FTP’d over for the interface every 15 minutes. Use the procedure in Section 6.12 to import the latest file and click Tracking → Pulse. In the left pane, select a queue that uses the CSI for Routing Point Interface. In the right pane, enter the date of the FTP file. Verify that data are shown for the time slot that matches the time slot in the FTP file.
8.2.4. Verify the Scorecard Interface

Make sure that in the FTP directory (e.g. /Inetpub/ftproot/report41/Devcon13/scorecards), there is a new file FTP’d over for the interface every day. Use the procedure in Section 6.12 to import the latest file and the procedure in Section 6.13 to perform the calculation. To access your scorecard, click the My Home Module tab, and then click the My Scorecards Section tab.

9. Support

Technical support from Verint can be obtained through the following:

- **Phone:** 800-494-8637
- **Email:** support@verint.com
10. **Conclusion**
These Application Notes describe the configuration steps required for Verint WFM to interoperate with Avaya IQ Release via custom developed real-time and historical interfaces. Compliance testing using such steps has been completed successfully.

11. **Additional References**
This section references the product documentation relevant to these Application Notes.
