Avaya Solution & Interoperability Test Lab

Application Notes for IEX TotalView Workforce Management with Avaya Operational Analyst – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate IEX TotalView Workforce Management with Avaya Operational Analyst using the Avaya Data API. The Avaya Data API provides access to historical and real-time data on Avaya Operational Analyst derived from agent activity on Avaya Interaction Center. IEX developed two Data API clients referred to as the *avayaoahist* and *AvayaOA_rta* applications that run on the TotalView server. These Data API clients act as a conduit between IEX TotalView and the Avaya Operational Analyst Web Reporting Framework and retrieve historical and real-time data from Avaya Operational Analyst.

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 to integrate IEX TotalView Workforce Management with Avaya Operational Analyst using the Avaya Data API. The Avaya Data API provides access to historical and real-time data on Avaya Operational Analyst derived from agent activity on Avaya Interaction Center. IEX developed two Data API clients referred to as the *avayaoahist* and *AvayaOA_rta* applications that run on the TotalView server. These Data API clients act as a conduit between IEX TotalView and the Avaya Operational Analyst Web Reporting Framework and retrieve historical and real-time data from Avaya Operational Analyst.

The TotalView *avayaoahist* application extracts agent and queue summary statistics from the historical tables of Avaya Operational Analyst at the end of each 30-minute interval. The *avayaoahist* application then presents these statistics, in report file format, to a specified directory on the TotalView server for processing. The historical data is aggregated from real-time data at the end of the data interval. IEX TotalView captures three historical reports called *QueueStats*, *AgentQueueStats*, and *AgentSystemStats* reports. A sample of the historical data file is included in the Appendix.

The *AvayaOA_rta* application extracts agent desktop state information from the Avaya Operational Analyst real-time tables at specified frequencies. This data is retrieved on a near real-time basis. The data includes the agent's *State* and the *Time in State*. Historical and real-time data is processed by IEX TotalView, the data can then be displayed on the TotalView Supervisor Workstation.

Figure 1 illustrates the configuration used to verify IEX TotalView with Avaya Interaction Center (IC) and Avaya Operational Analyst (OA). Avaya IC enables a contact center to manage transactions across multiple channels including voice, email, and web-based e-commerce, and to route customers to the best available agent or resource. Avaya Application Enablement Services is used to establish a CTI link between Avaya Communication Manager and Avaya IC. OA stores and provides historical and real-time views of contact center statistics. IEX TotalView can then retrieve the historical and real-time data from Avaya Operational Analyst and display the reports on the TotalView Supervisor Workstation. The Avaya Operational Analyst data is stored in a Microsoft SQL Server 2000 database.

The focus of these Application Notes is on the configuration of Avaya Operational Analyst to enable the proper reports required by the TotalView solution and on the configuration of the *avayaoahist* and *AvayaOA_rta* applications on the IEX TotalView server. The installation and configuration of Avaya Operational Analyst, Avaya Interaction Center, and the IEX TotalView Workforce Management System are outside the scope of these Application Notes. The reader should refer to the documentation in the references section for additional information.

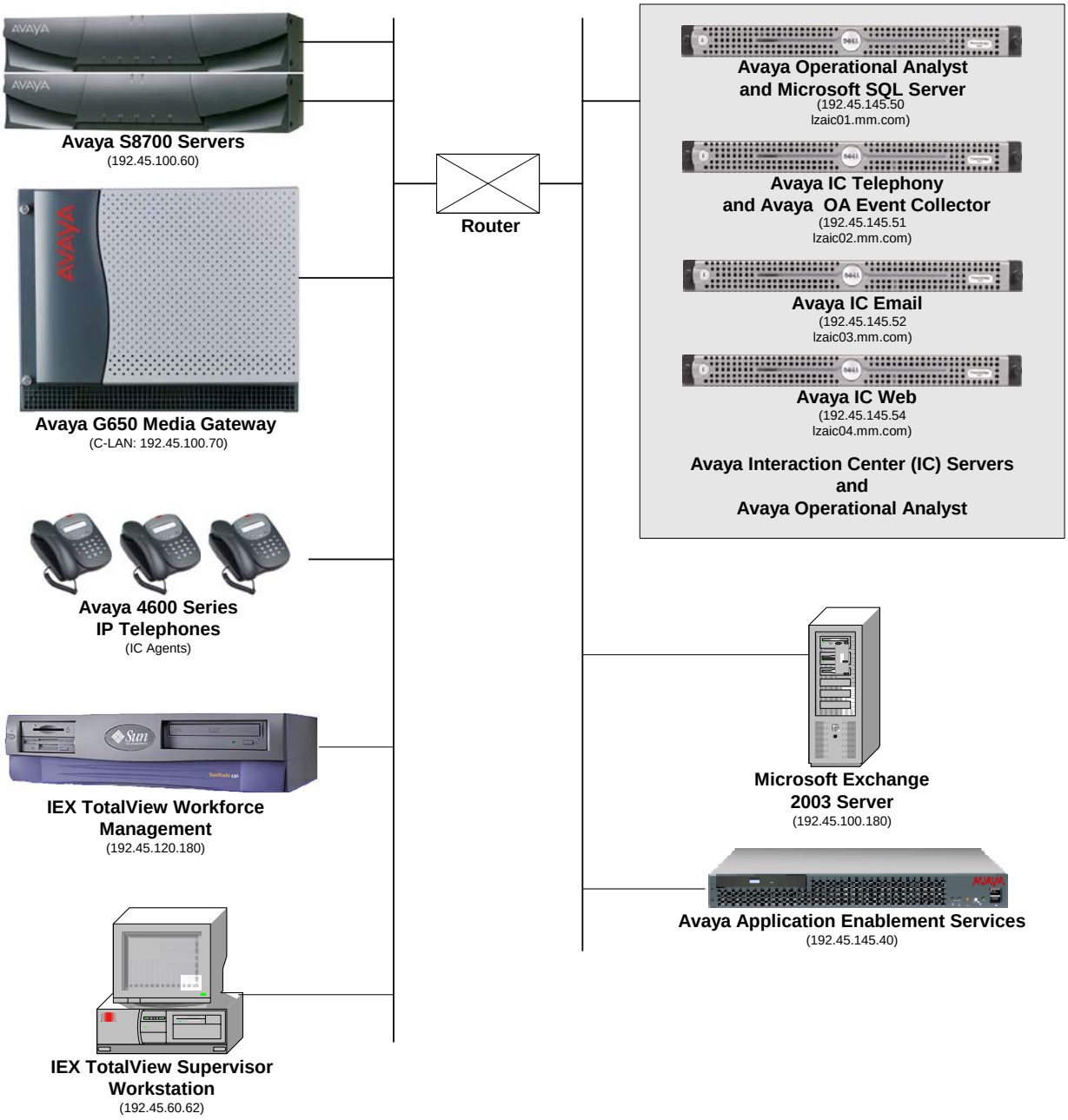


Figure 1: Configuration with IEX TotalView and Avaya Operational Analyst

1.1. Equipment and Software Validated

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

Equipment	Software
Avaya Operational Analyst with Microsoft SQL Server 2000	7.1.0.030
Avaya Interaction Center	7.1
Avaya Application Enablement Services	3.1
Avaya S8700 Servers with a G650 Media Gateway	Avaya Communication Manager 4.0 (R014x.00.1.731.2)
Avaya 4600 Series IP Telephones	2.8
Microsoft Exchange 2003 Server	N/A
IEX TotalView Workforce Management with *avayaoahist* and *avayaOA_rta* Applications	3.12.4.0
IEX TotalView Supervisor Workstation	3.12.5.0

2. Configure Avaya Operational Analyst

This section describes how to configure the various subsystems and data collection on Avaya Operational Analyst (OA). The subsystems that must be configured include:

- **Historical subsystem:** The Historical subsystem analyzes the data in the database. In this configuration a Microsoft SQL Server 2000 database was used.
- **Real-time subsystem:** The Real-time subsystem processes the active work items in the real-time database.
- **Report subsystem:** The Report subsystem provides the Web-based report framework necessary to run Basic Reports or Advanced Reports.

This section also describes how to configure data collection for the historical reports retrieved by IEX TotalView Management Workforce using a Data API client. In order for Avaya OA to store historical data, a *Container* must be created for each data store. Without containers, Avaya OA will not aggregate the real-time data and store it in the historical database. The IEX TotalView solution requires the following summary data for the historical reports: Agent service class, Agent state, and Service class summary. A container will be created for each of these data stores.

The Real-time subsystem summarizes IC data into 30-minute intervals and transfers it to the Historical subsystem, which proceeds to aggregate the data into containers.

Avaya Operational Analyst is configured using the OA Administration client to permit data collection and reporting. For additional information on installing and configuring Avaya OA, refer to [4].

Start the Avaya OA Administration client by navigating to the directory where it is installed (e.g., C:\Program Files\Avaya\BI\AdminPol.html) and double-click on the **AdminPol.html** file in that directory. After logging in using the appropriate credentials, the OA Administration client screen will be displayed in an Internet browser as shown in **Figure 2**.

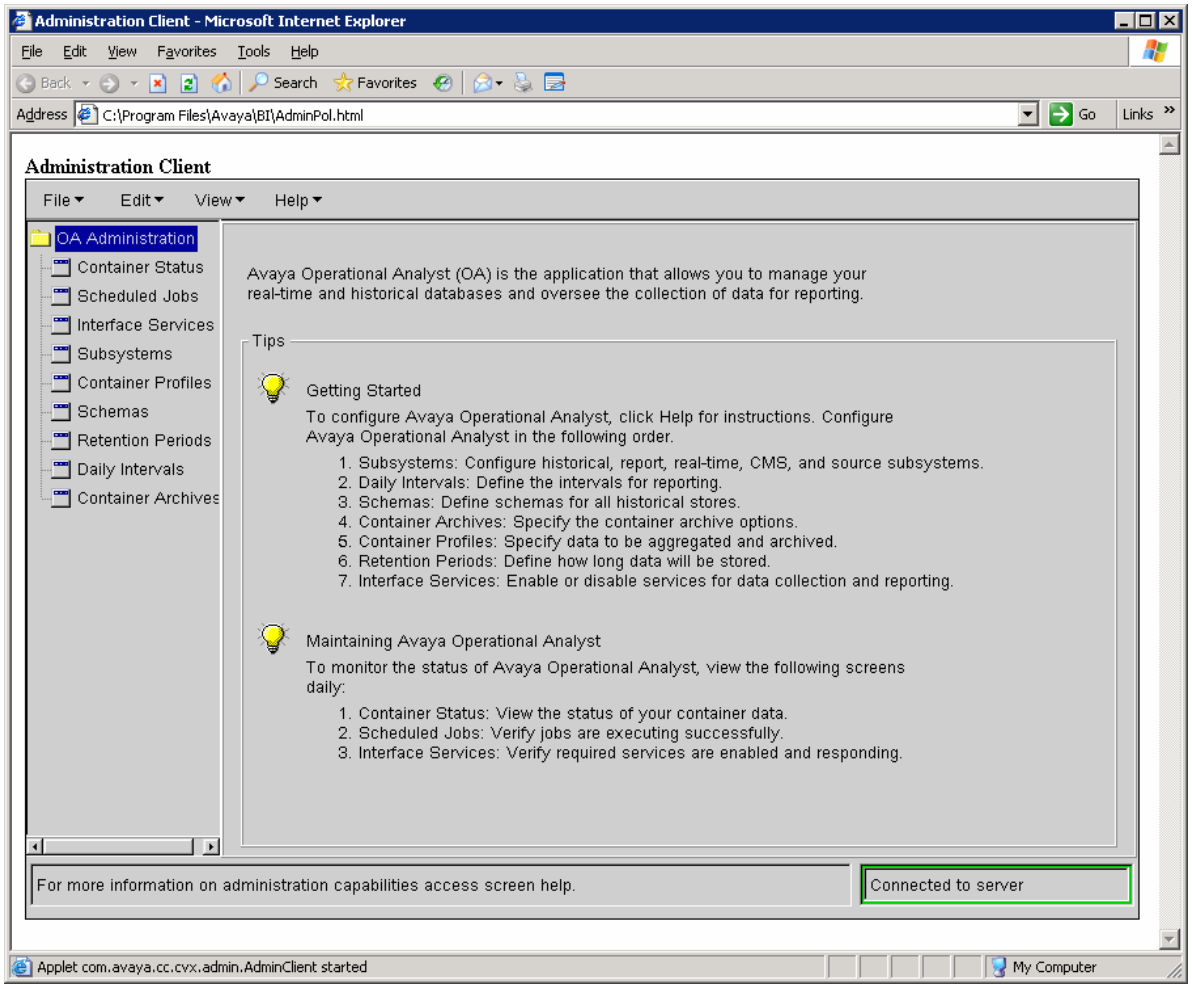


Figure 2: OA Administration Client Welcome Screen

2.1. Configure Subsystems

From the OA Administration client, select **Subsystems** in the left pane shown in **Figure 3.** Initially, the Historical subsystem is automatically added if this feature was selected during the installation of Avaya OA. The configuration of the Historical subsystem is displayed in **Figure 4** for reference.

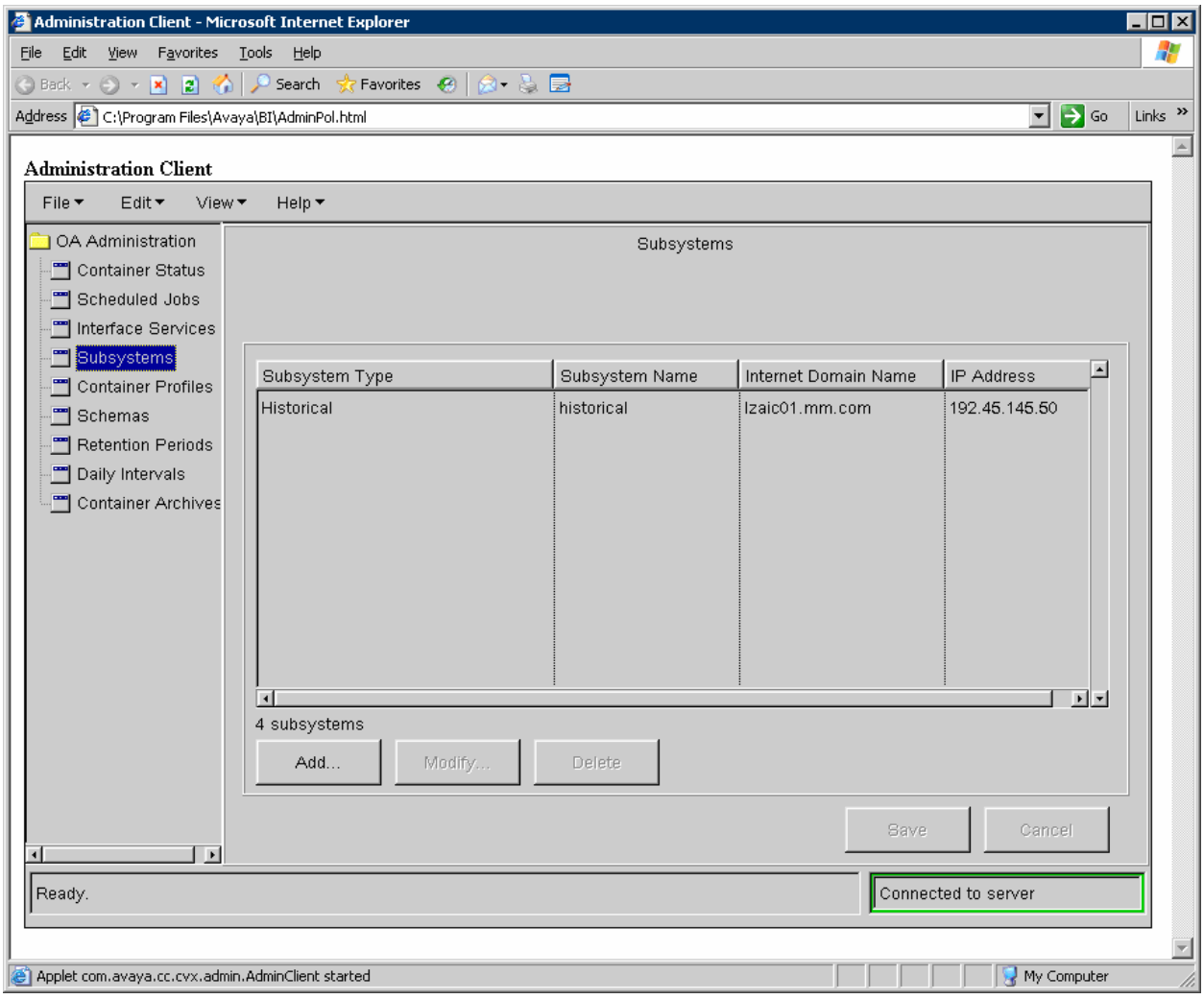


Figure 3: Subsystems

Figure 4 shows the configuration of the Historical subsystem. The **Internet domain name** field contains the fully qualified domain name (FQDN) of the Avaya OA server (i.e., lzaic01.mm.com), which resides with the Microsoft SQL database.

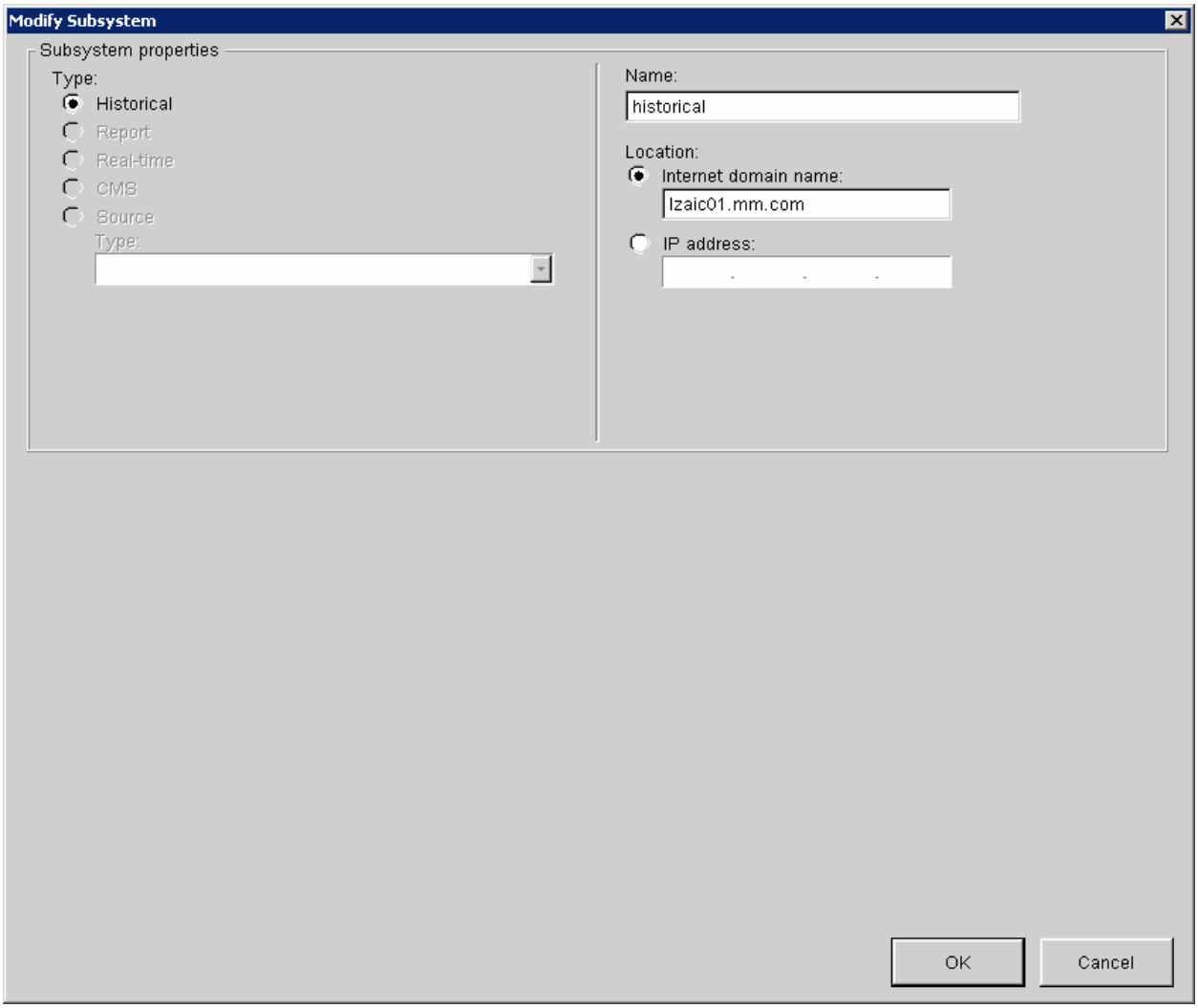


Figure 4: Historical Subsystem

From the **Subsystems** screen shown in **Figure 3**, click the **Add** button to add the Real-Time subsystem. Select the *Real-Time* radio button for the **Type** field, provide a descriptive name, and configure the **Location** field by providing the FQDN or IP address of the Avaya OA server. Click **OK** to add the Real-time subsystem.

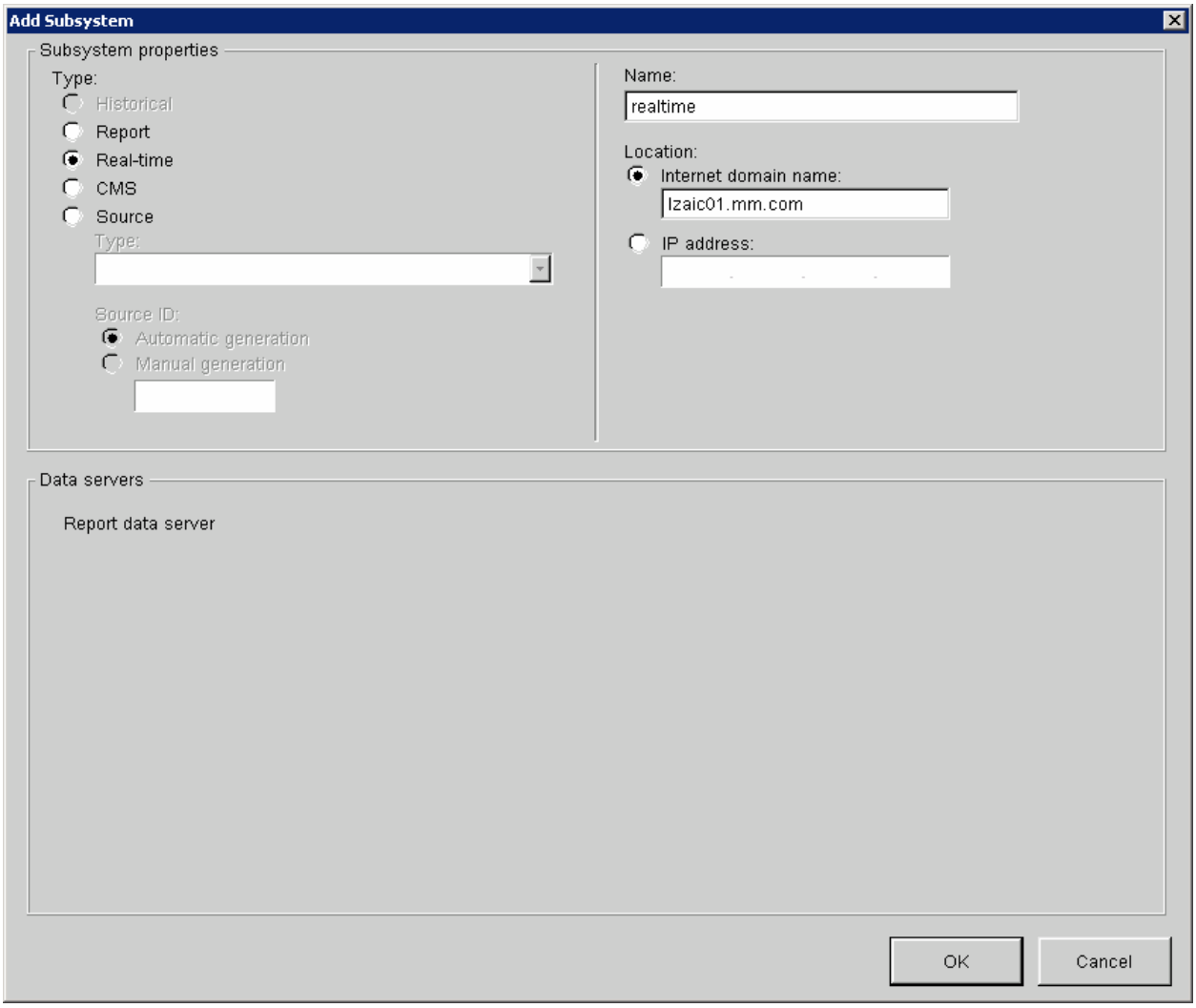


Figure 5: Real-Time Subsystem

Create an Avaya IC Source subsystem for the Event Collector on Avaya IC (configured in Section 3) and associate it with the Real-time subsystem created in the previous step. From the **Subsystems** screen shown in **Figure 3**, click **Add** to add an IC source. Set the **Source Type** field to *Avaya Interaction Center* and set the **Source ID** field to **Automatic Generation** field to allow Avaya OA to generate a Source ID. The Source ID assigned will be displayed the next time this subsystem entry is modified (see **Figure 7**). The Source ID will be used to configure the Event Collector on Avaya IC. Enter a descriptive name in the **Name** field and select the *realtime* subsystem in the **Real-time subsystem** drop-down list. Click **OK** to add the new IC Source subsystem.

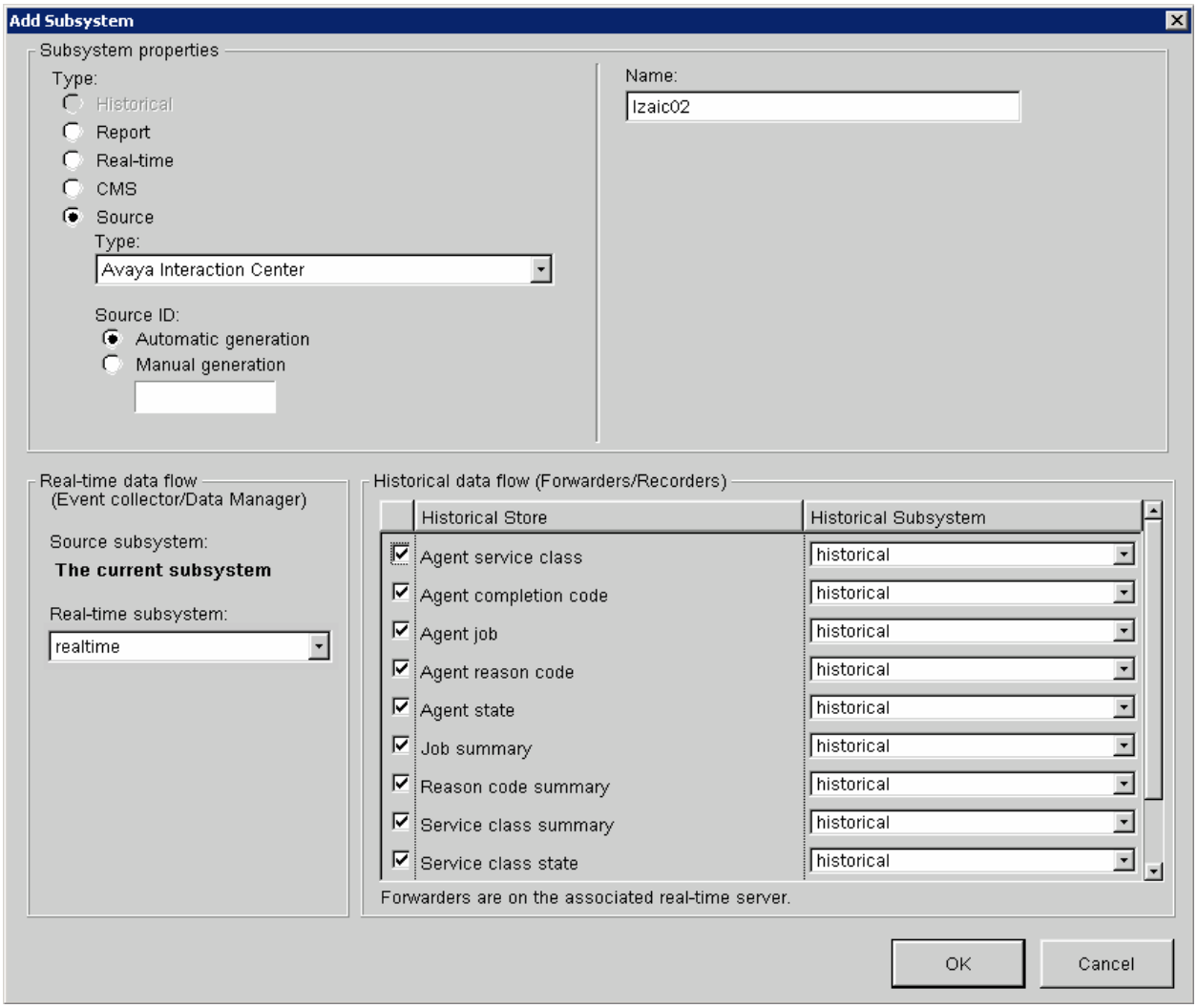


Figure 6: IC Source Subsystem

From the **Susbsystems** screen, highlight the IC Source and then click **Modify**. **Figure 7** shows the IC Source subsystem after it has been configured. Note the Source ID assigned is displayed in the screen. This Source ID will be required when the Event Collector is configured on Avaya IC.

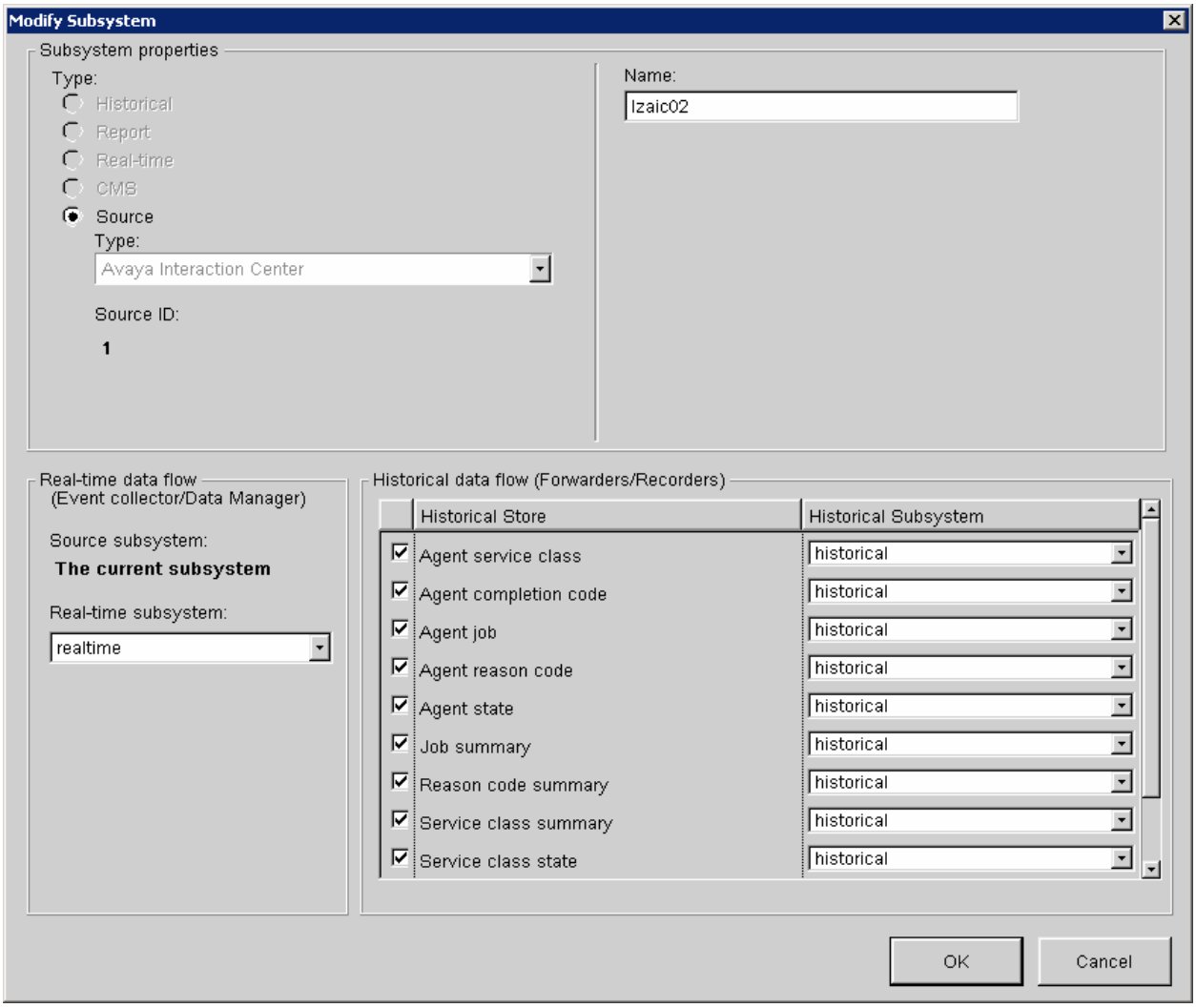


Figure 7: Source ID Assigned to IC Source Subsystem

To generate reports for the data collected, a Report subsystem must be configured. From the **Subsystems** screen, click the **Add** button to add the Report subsystem. Select the *Report* radio button for the **Type** field, provide a descriptive name, and configure the **Location** field by providing the FQDN or IP address of the Avaya OA server. Click **OK** to add the Report subsystem.

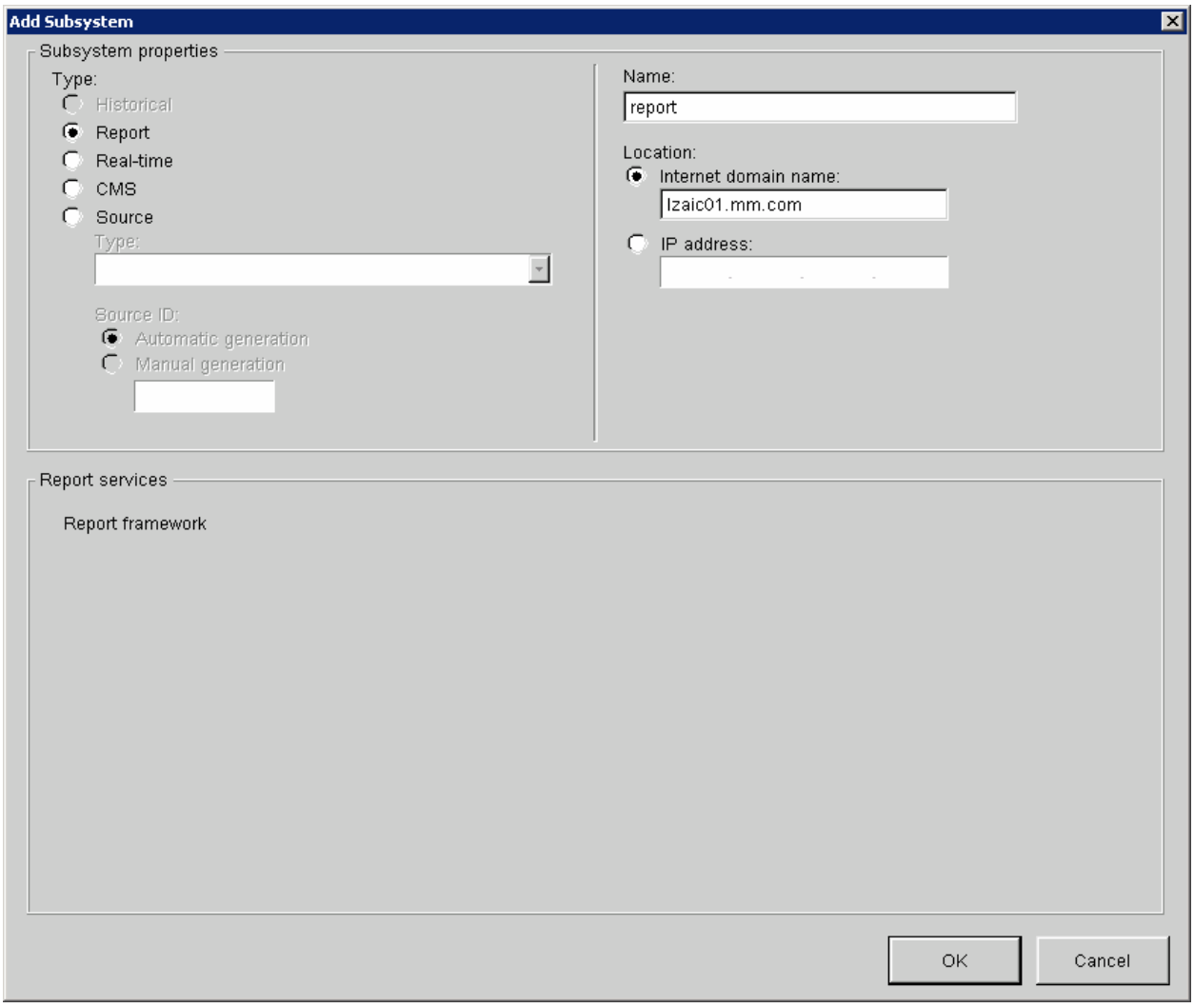


Figure 8: Report Subsystem

The new subsystems configured in the previous steps should now appear in the **Subsystems** screen as shown in **Figure 9**.

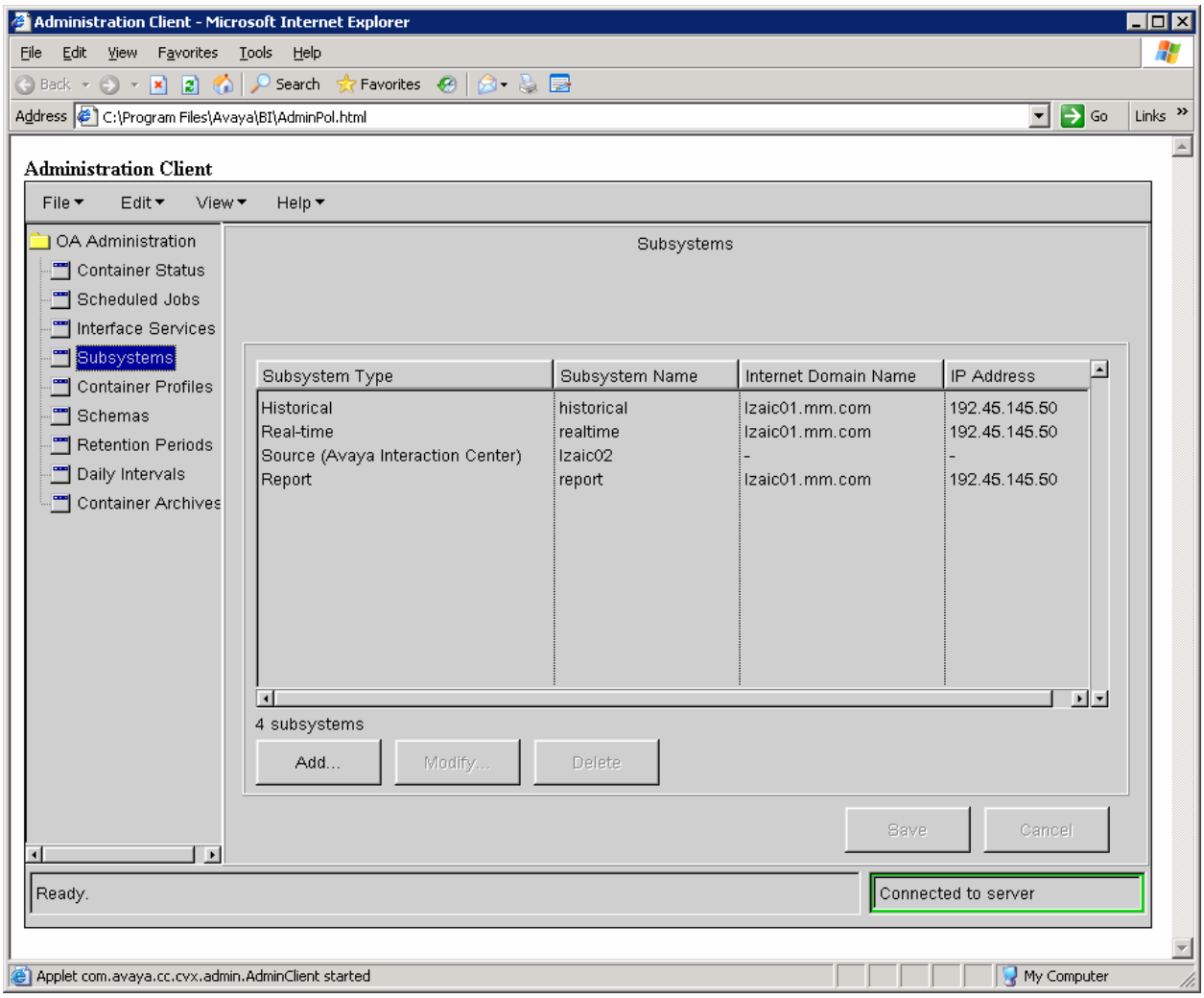


Figure 9: Configured Subsystems

2.2. Configure Container Profiles

This section covers the configuration of container profiles in Avaya OA. Three containers will be created for the Agent service class, Agent state, and Service class summary data.

Create the Agent service class container. In the OA Administration client, click on **Container Profiles** in the left pane. In the **Container Profiles** screen shown in **Figure 10**, set the **Historical store** field to *Agent service class* and click the **Add** button. The **Add Container Profile** screen shown in **Figure 11** will be displayed.

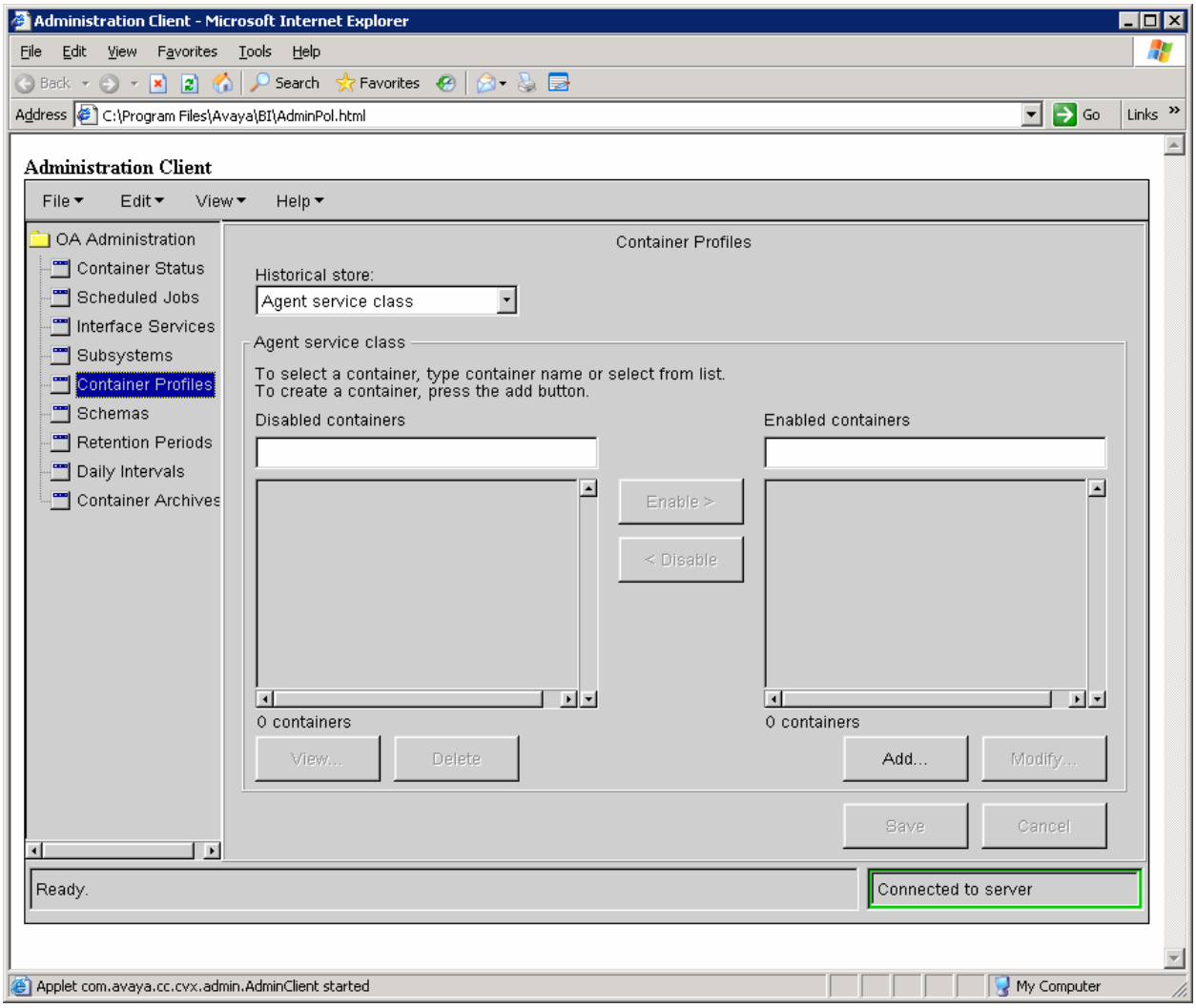


Figure 10: Container Profiles – Agent Service Class

In the **Add Container Profile** screen, add a descriptive name in the **Container name** field. In the **Workgroup name property** tab, select the Workgroup name that the IC agents belong to. In this configuration, the IC agents were part of the *Service* workgroup. The agents' workgroup(s) was specified when they were added in Avaya IC. Click **Next** to configure the **Service class name property** tab.

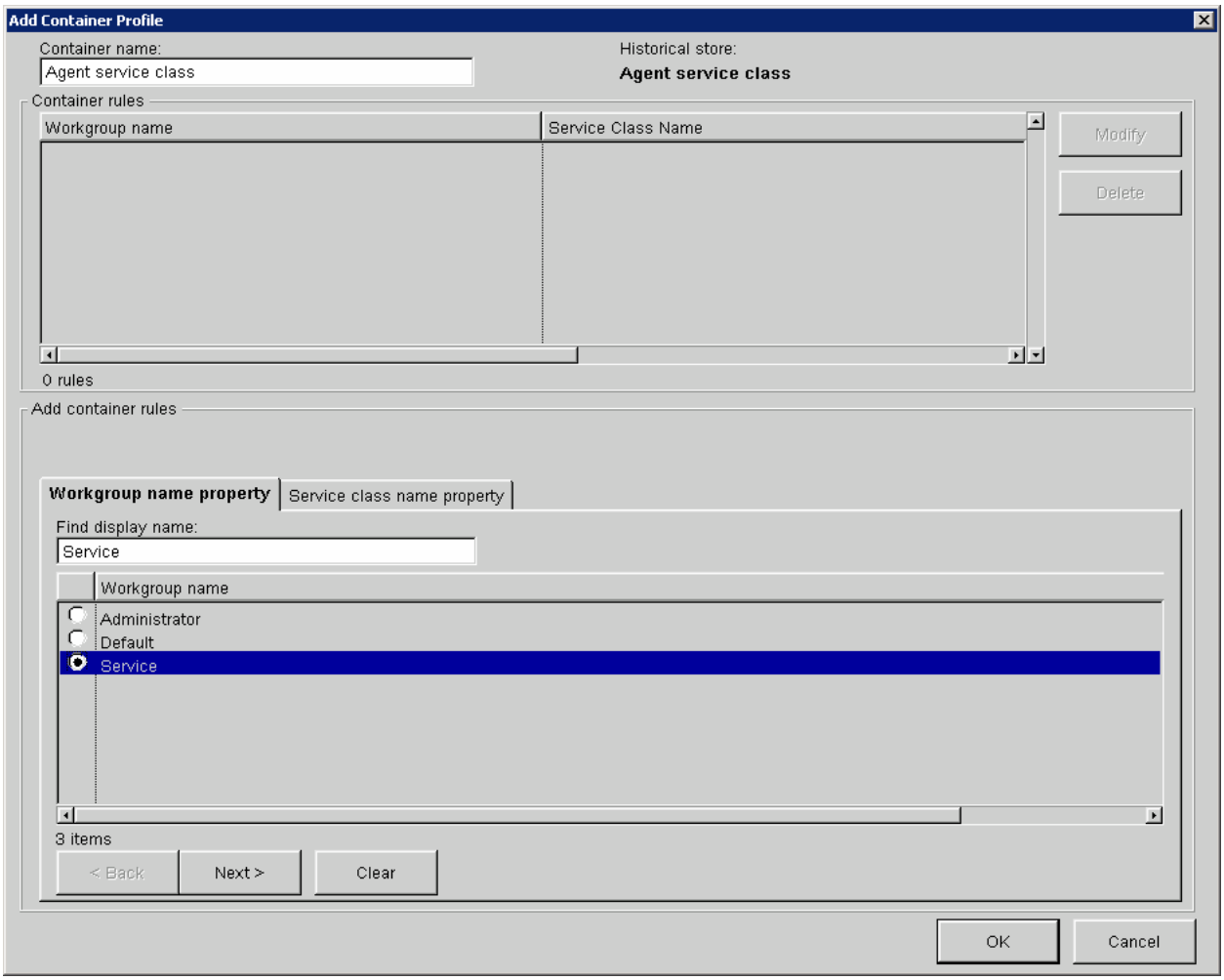


Figure 11: Add Container Profile – Agent Service Class

In the **Service class name property** tab, set the **Service Class Name** field to *ALL* to capture data for the all the channels on Avaya Interaction Center. Click **Finish**.

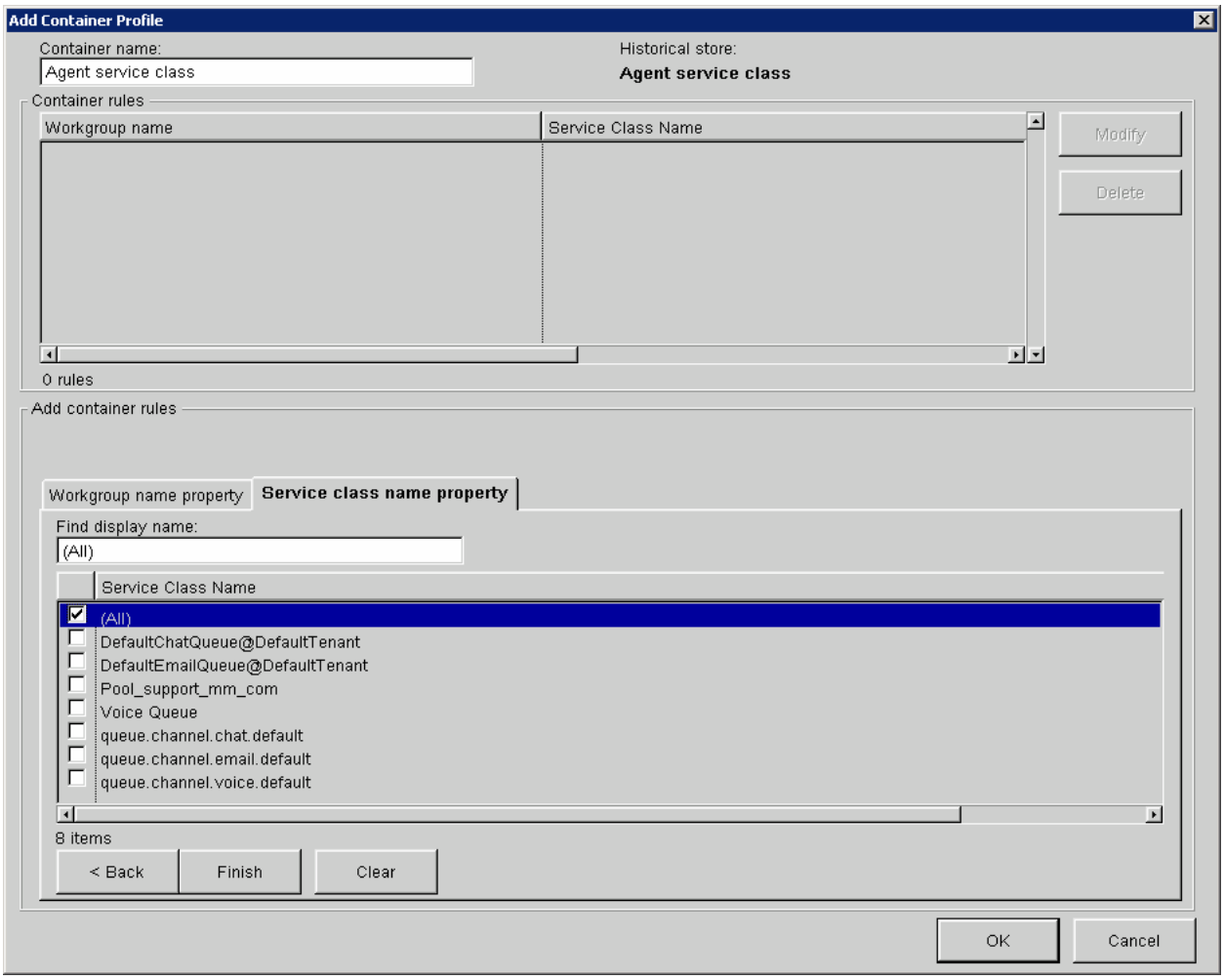


Figure 12: Add Container Profile – Agent Service Class

After configuring the **Agent service class** container, click **OK**. The user is returned to the **Container Profiles** screen shown in **Figure 10**. Click **Save** on that screen.

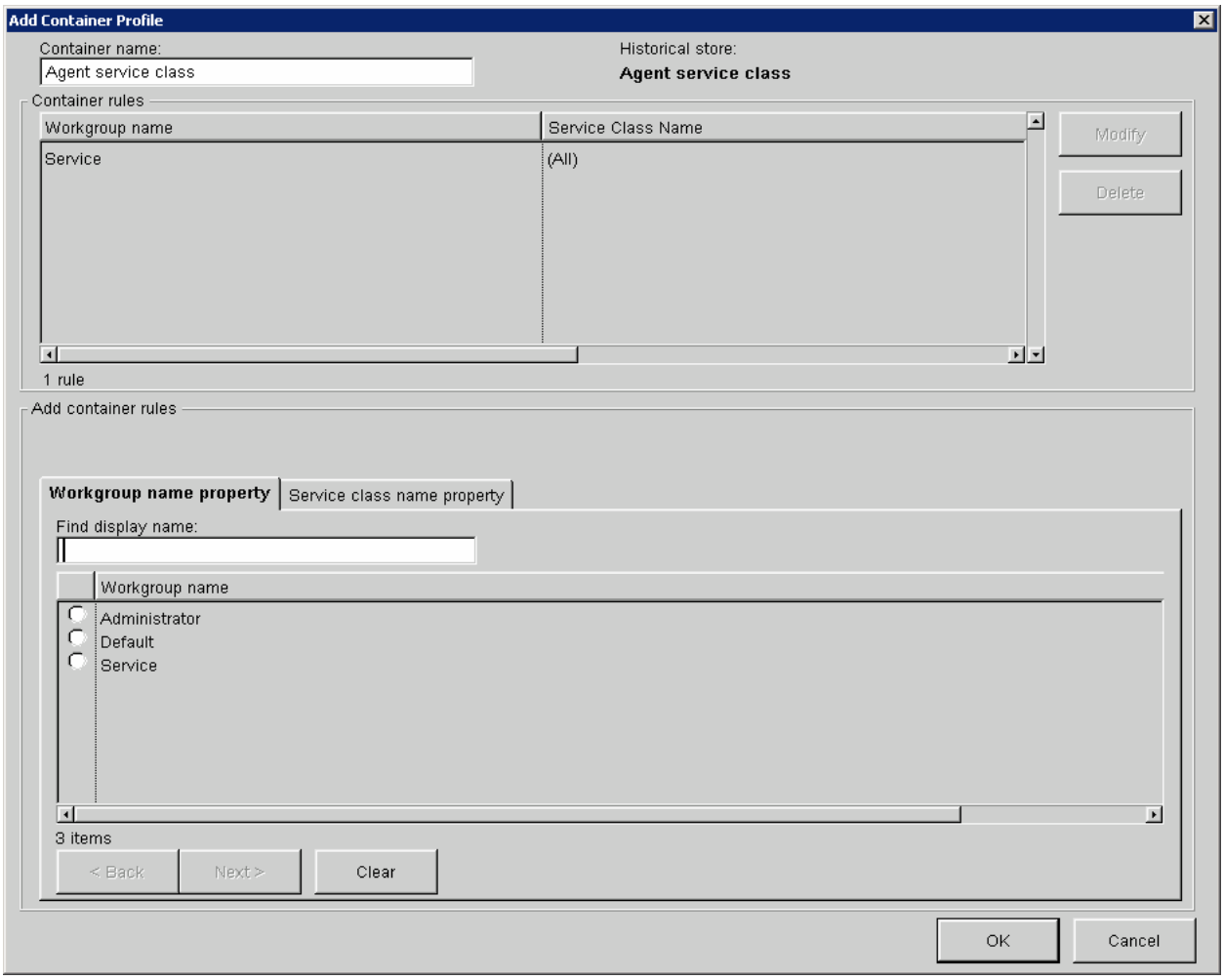


Figure 13: Agent Service Class Container Completed

Create the Agent state container. From the **Container Profiles** screen, select *Agent state* in the **Historical store** field and click the **Add** button. The **Add Container Profile** screen shown in **Figure 15** will be displayed.

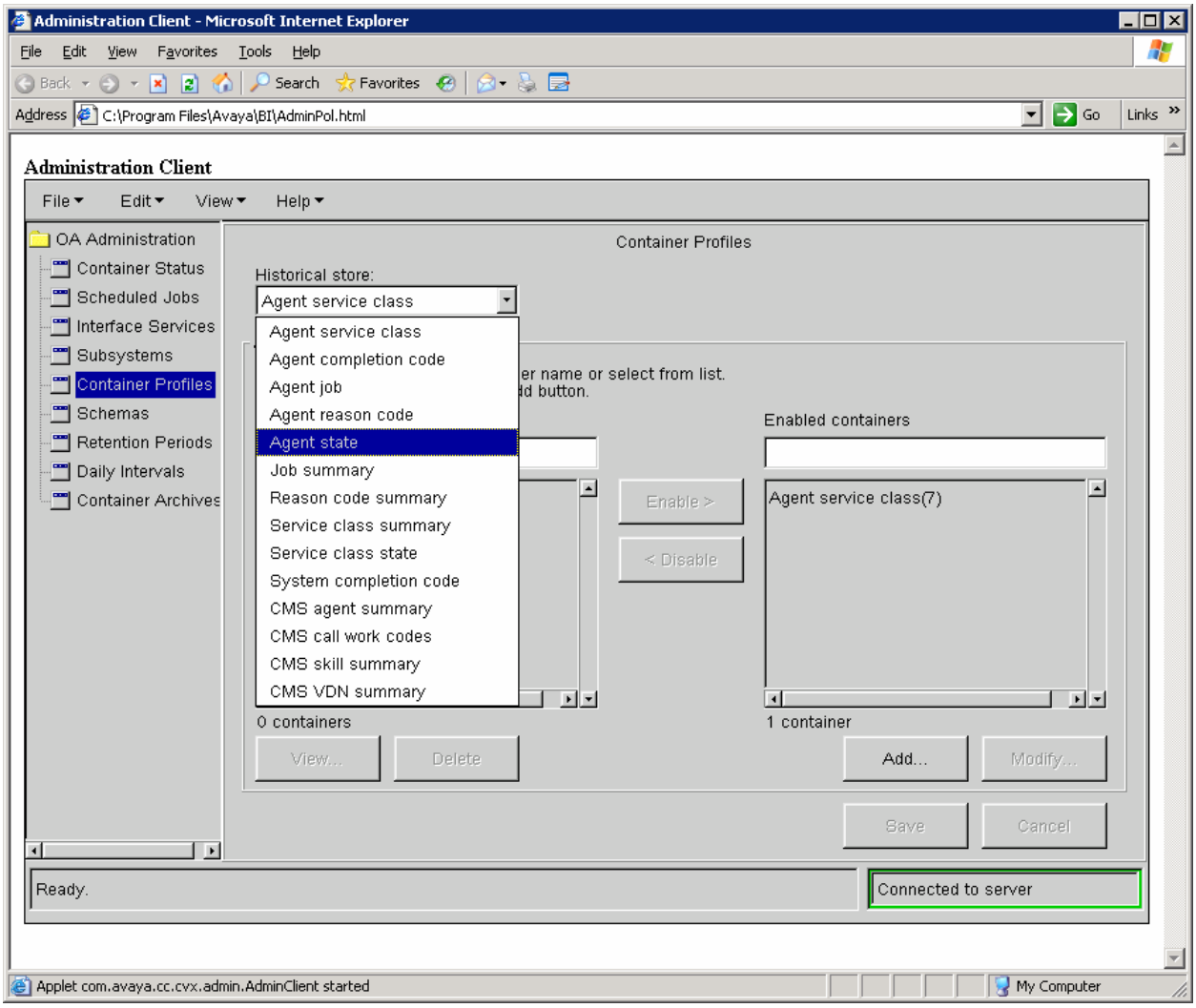


Figure 14: Container Profiles – Agent State

In the **Add Container Profile** screen, add a descriptive name in the **Container name** field. In the **Workgroup name property** tab, select the Workgroup name that the IC agents belong to. In this configuration, the IC agents were part of the *Service* workgroup. Click **Finish**.

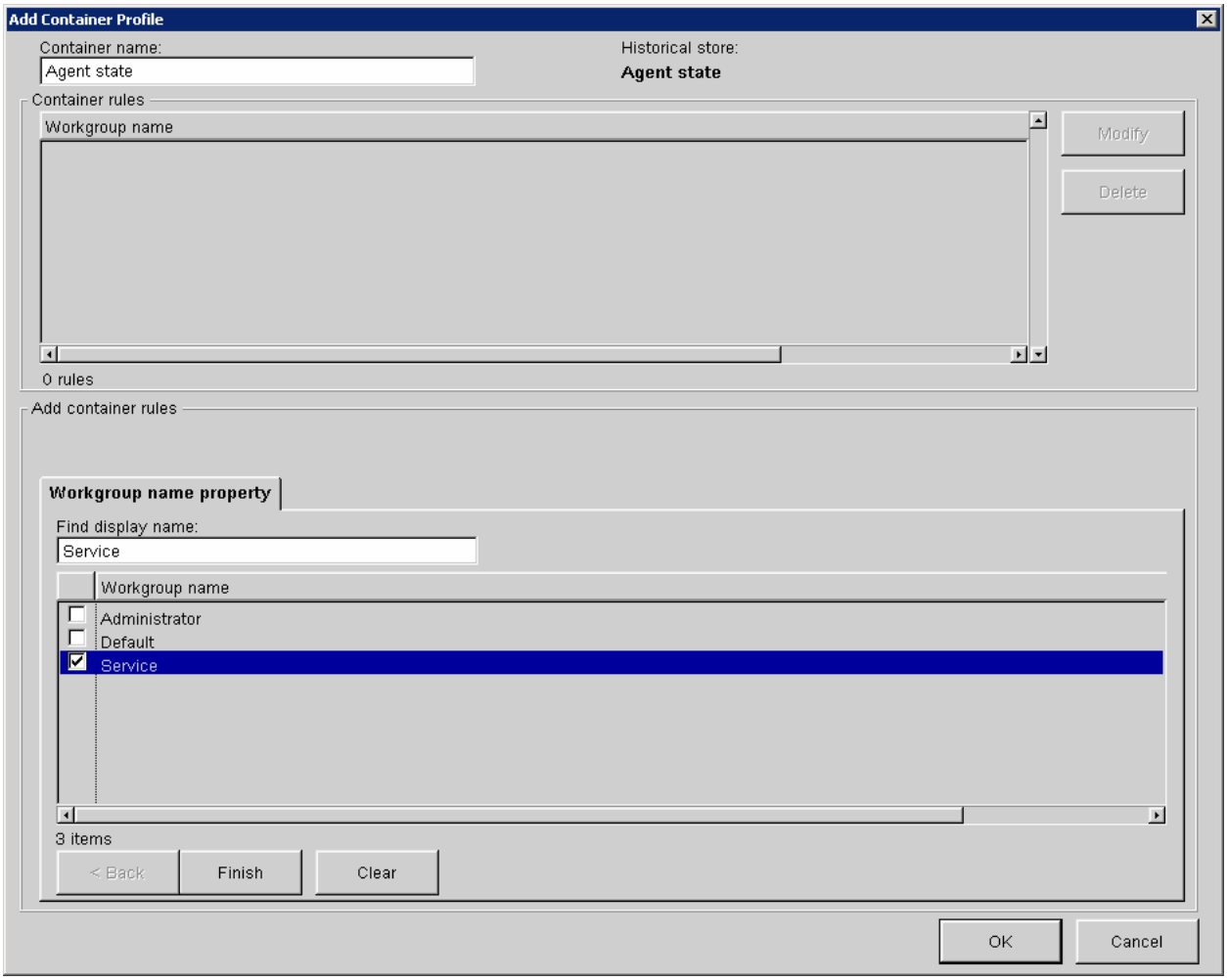


Figure 15: Add Container Profile – Agent State

The *Service* workgroup will be displayed under the **Container rules** section of this screen. Click **OK**. After configuring the **Agent state** container, the user is returned to the **Container Profiles** screen. Click **Save** on that screen.

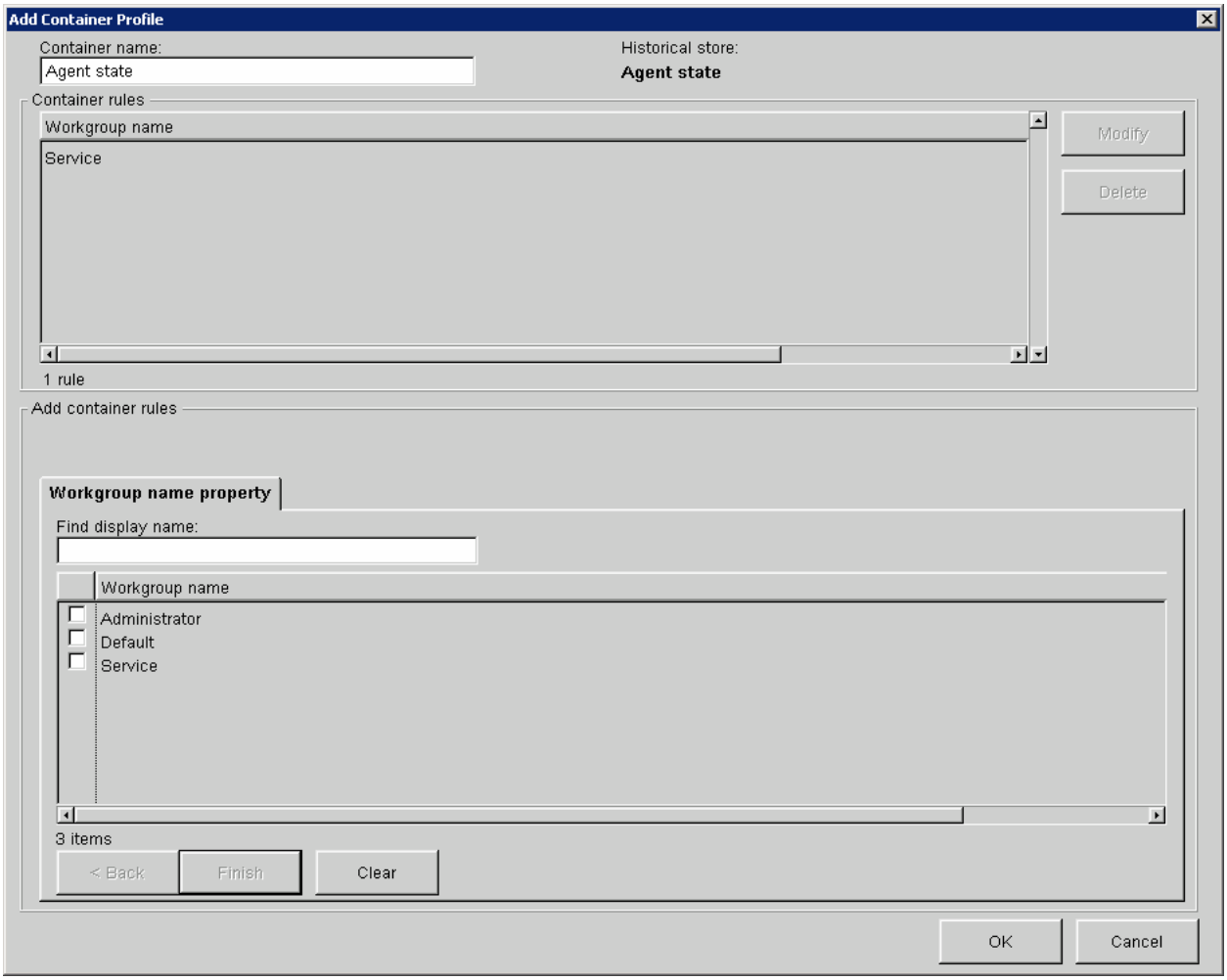


Figure 16: Agent State Container Completed

Create the Service class summary container. From the **Container Profiles** screen, select *Service class summary* in the **Historical store** field and click the **Add** button. The **Add Container Profile** screen shown in **Figure 18** will be displayed.

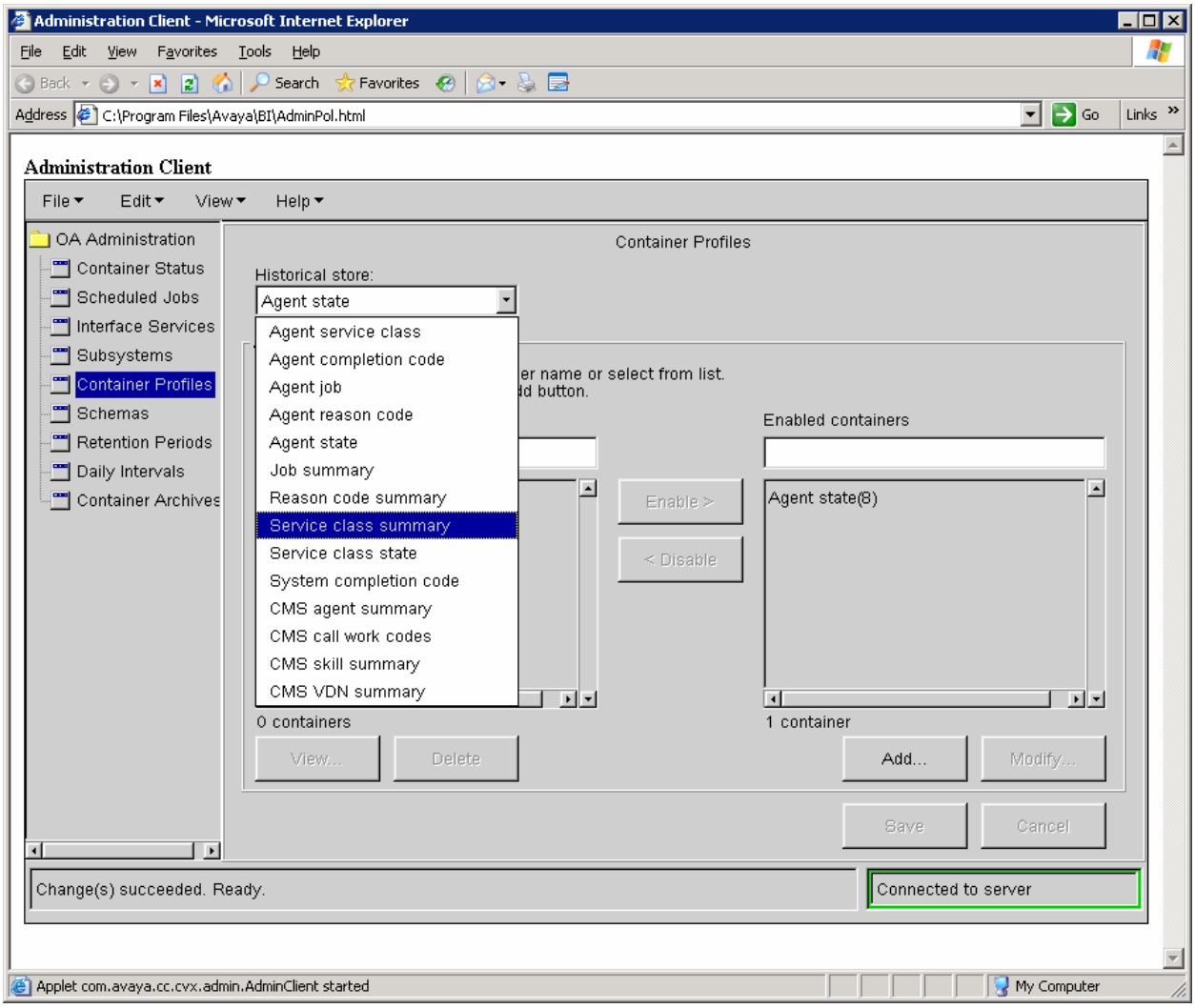


Figure 17: Container Profiles – Service Class Summary

In the **Add Container Profile** screen, add a descriptive name in the **Container name** field. In the **Service class name property** tab, select the channels implemented on Avaya IC. In this configuration, all of the channels were selected. Click **Finish**.

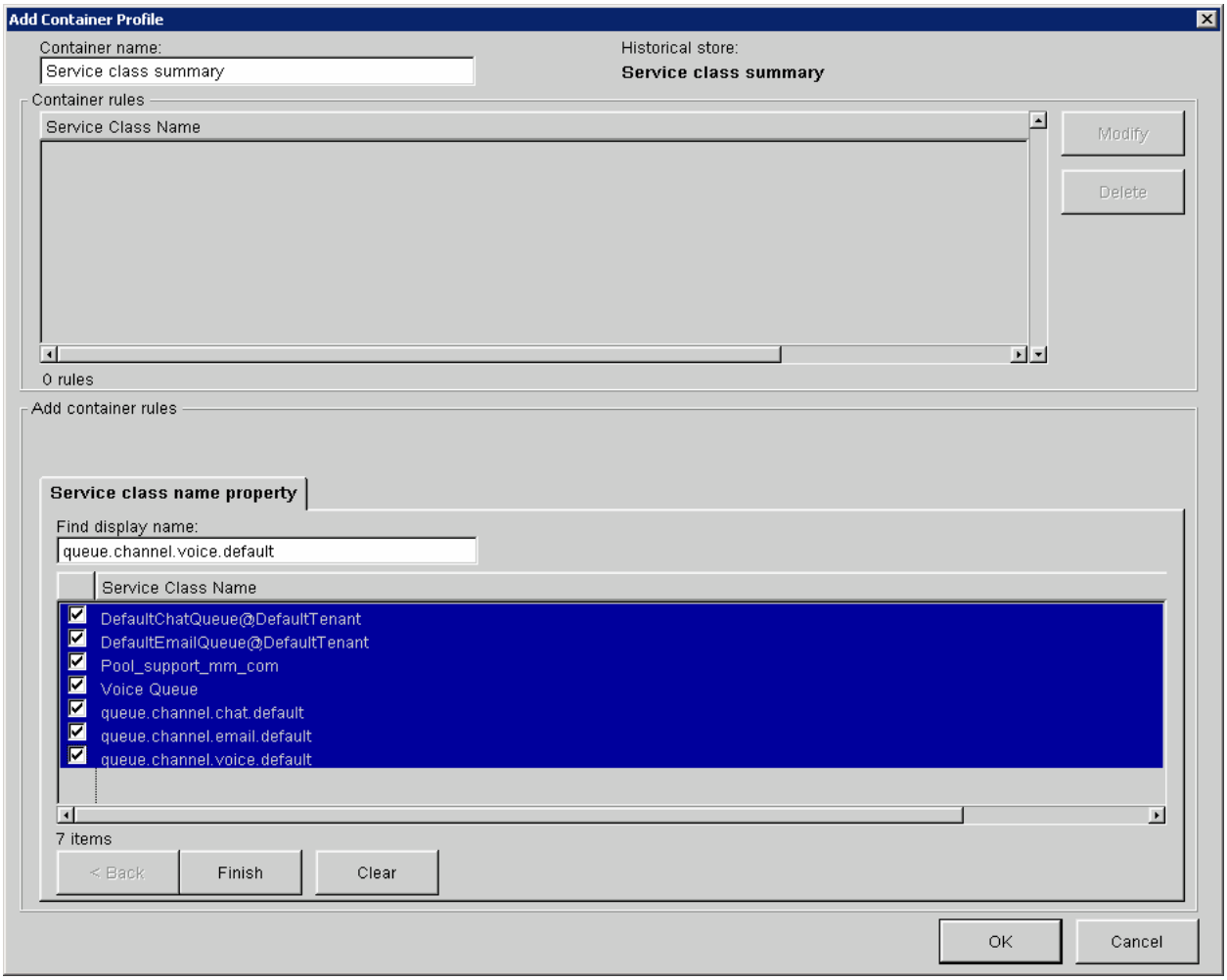


Figure 18: Add Container Profile – Service Class Summary

The service classes will be displayed under the **Container rules** section of this screen. Click **OK**. After configuring the **Service class summary** container, the user is returned to the **Container Profiles** screen. Click **Save** on that screen.

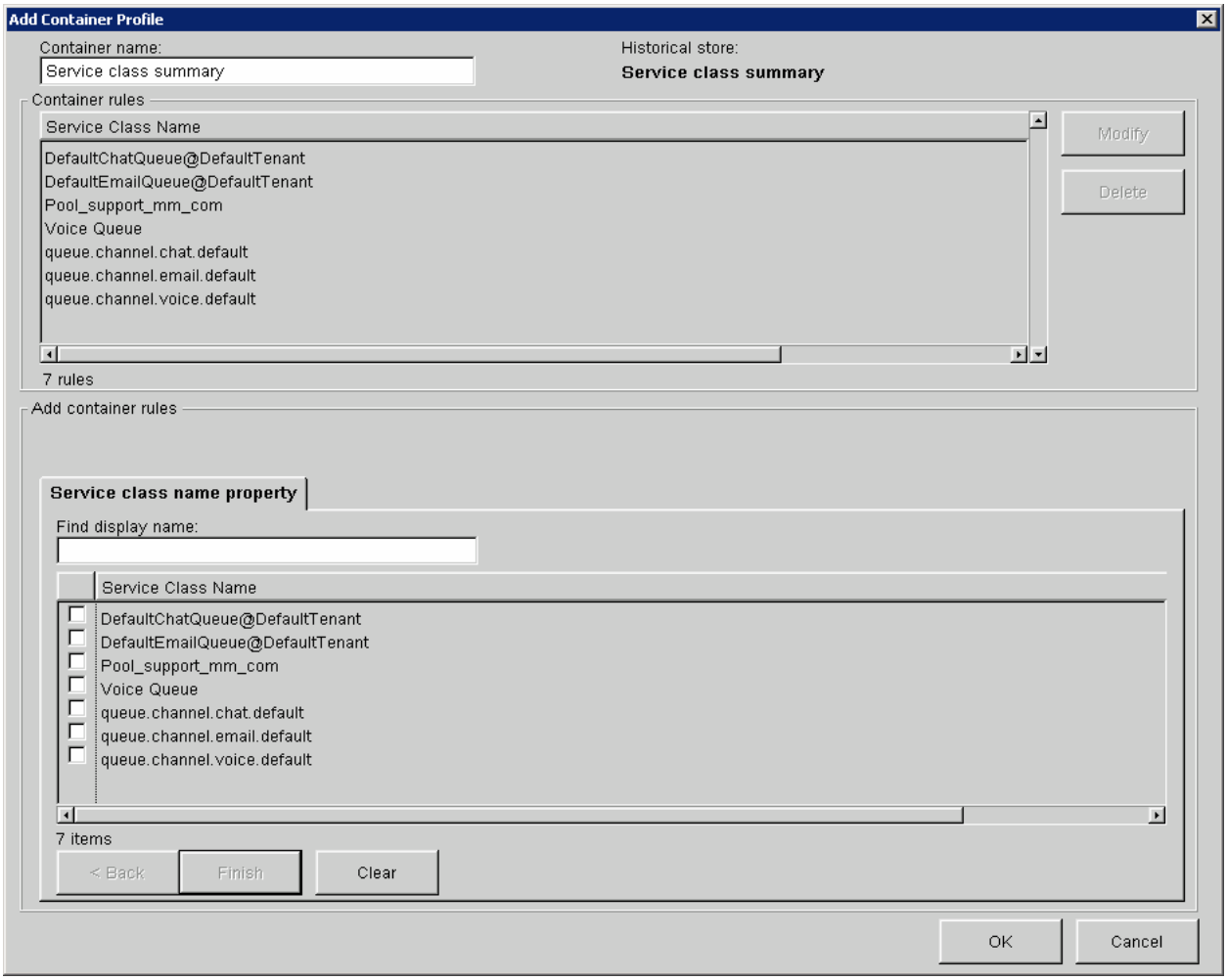


Figure 19: Service Class Summary Container Completed

Next, ensure that the historical stores used for this solution are enabled. Click **Interface Services** in the left pane of the OA Administration client. View the status of the historical stores. In the following example, **Agent state** is in the *Disabled* state. Highlight **Agent state** and then click **Enable**. The **Status** should change from *Disabled* to *Enabled – normal operation*. Click **Save**.

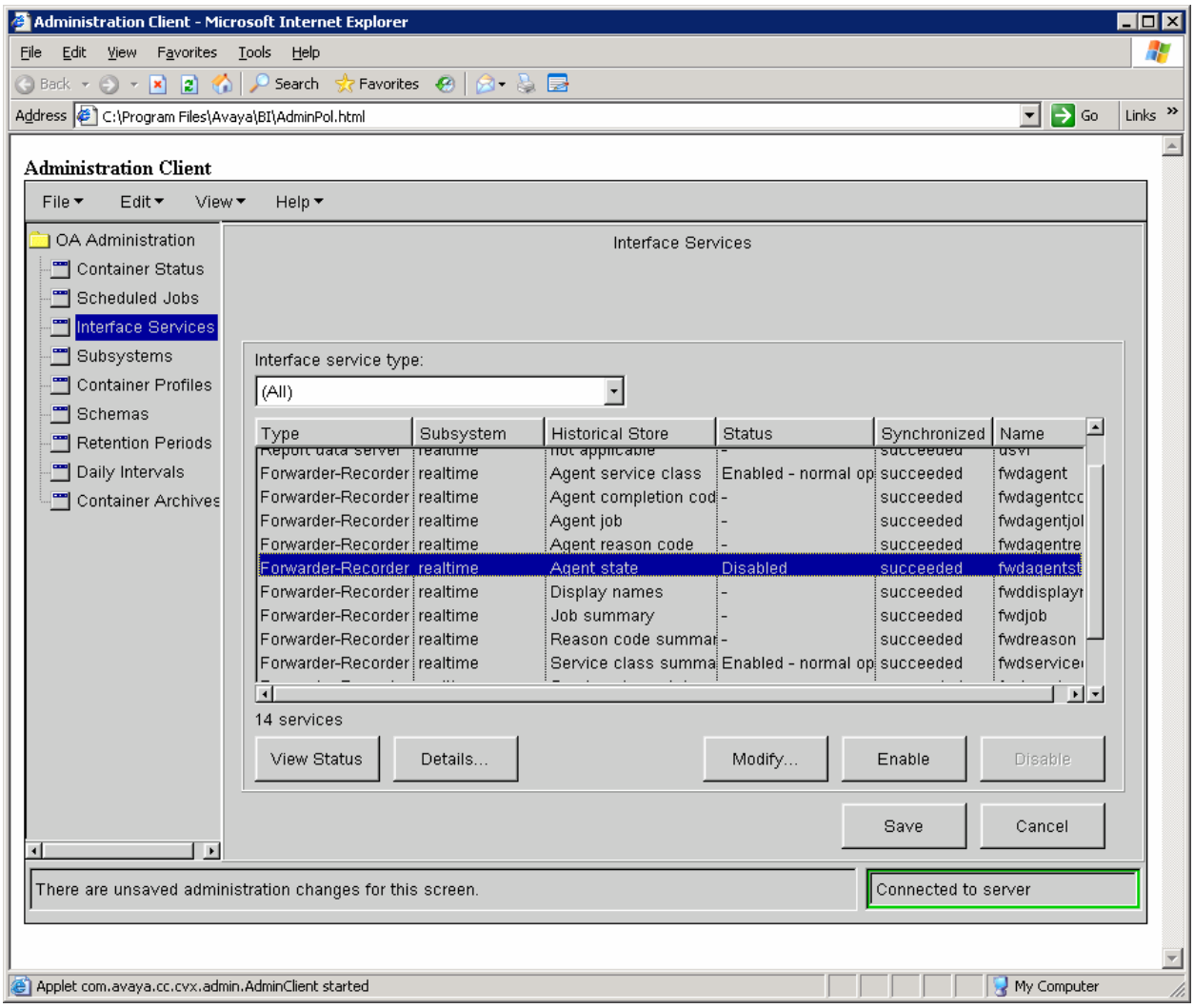


Figure 20: Interface Services

Navigate to the **Container Status** screen and select *Aggregated data* in the **Select status of** field. Click **View Status** to view the status of each configured container. At the end of data interval, if there was data reported, the **Status** field would be set to *Successful* as shown in **Figure 21**. If there is no data for that interval, then the **Status** field would be set to *No Data*. In addition, the **Interval Start Time** and the **Last Updated** columns will be updated. In this configuration, Avaya OA was configured to aggregate the real-time data 10 minutes after data interval expires.

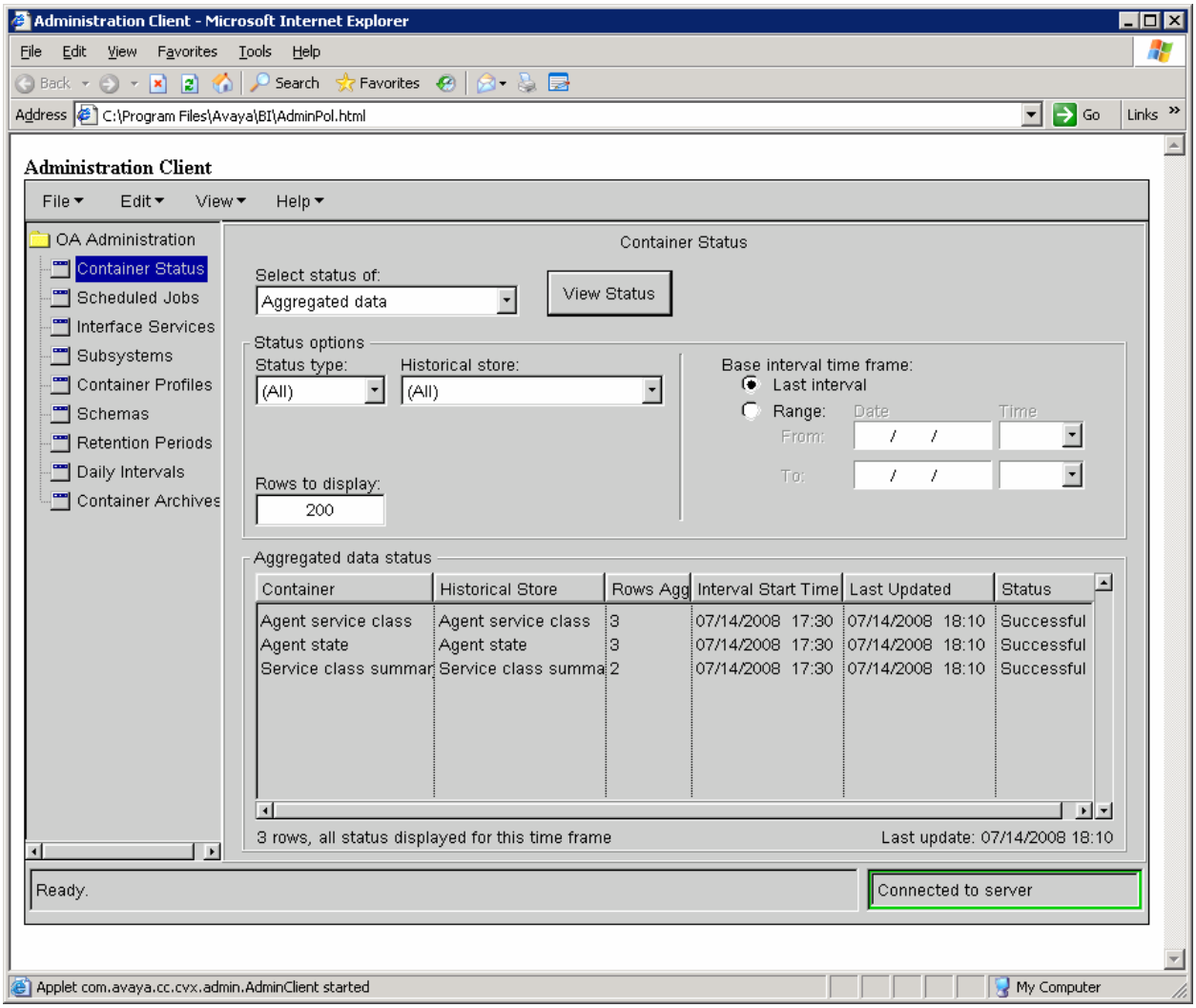


Figure 21: Container Status

Avaya OA aggregates the real-time data and stores it in the historical database 10 minutes after the 30 minute data interval expires. This setting is configured under **Scheduled Jobs**. To view or modify this setting, select **Scheduled Jobs** from the OA Administration client, set the **Job Type** field to **System scheduled**, and highlight *Aggregation* under Enabled Jobs. Click **Modify** to access the setting as shown in **Figure 23**.

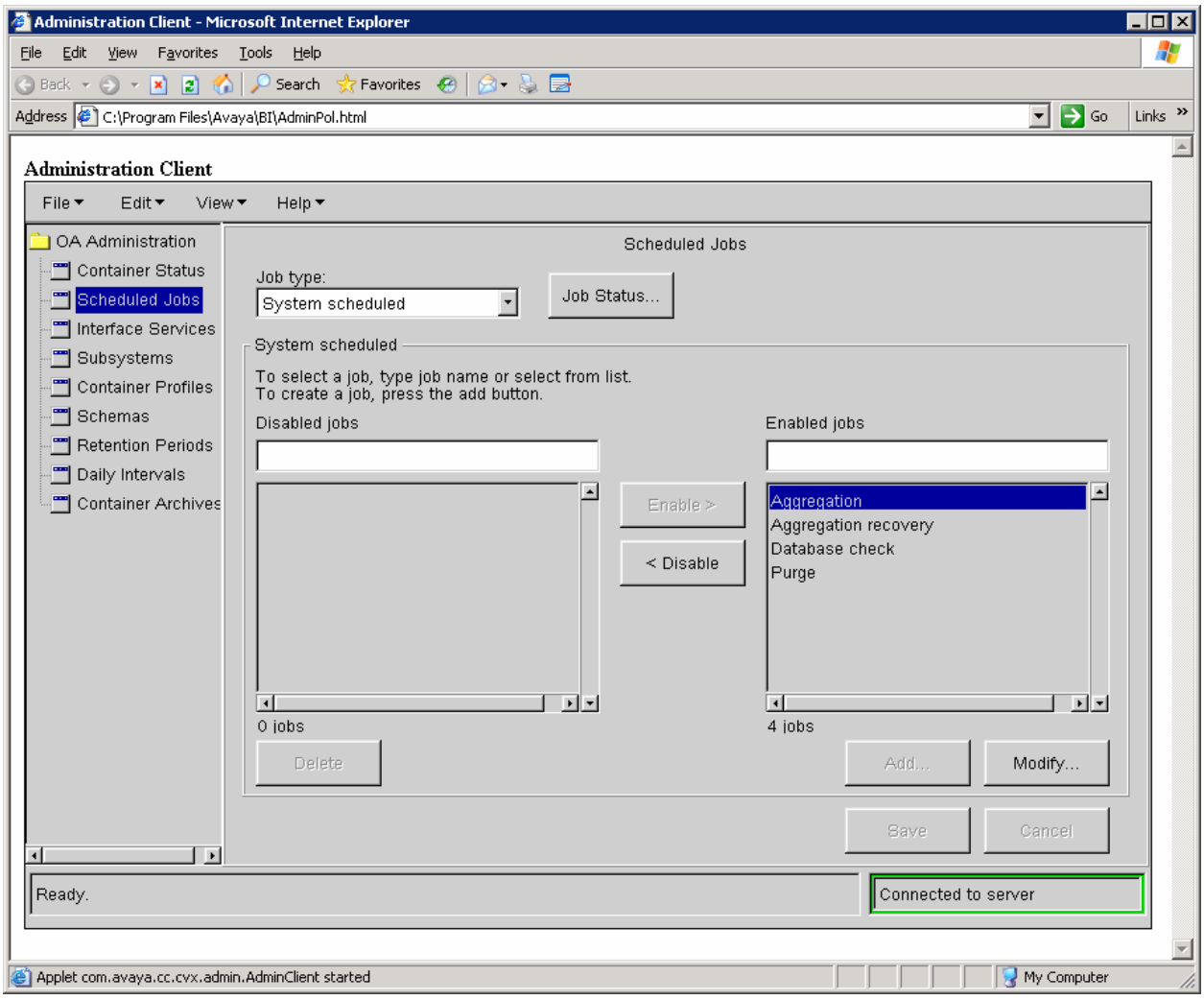


Figure 22: Scheduled Jobs

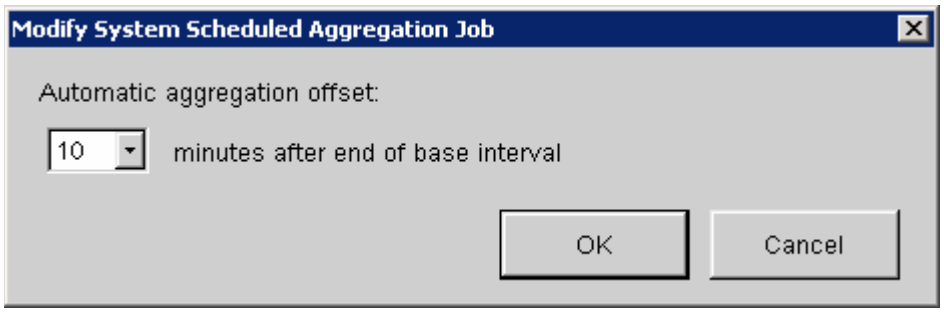


Figure 23: Automatic Aggregation Offset Setting

3. Configure Avaya Interaction Center

This section describes how to create the Event Collector subsystem in Avaya IC. The Event Collector subsystem is loaded on an IC server to collect data and send the data to the OA Real-time subsystem. In this configuration, the Event Collector was installed on the IC Voice server (i.e., lzaic02.mm.com or 192.45.145.51).

Note: Before configuring the Event Collector server for Avaya IC, the Real-time subsystem must be administered and the corresponding IC source subsystem must be created on the Avaya OA server.

Start the IC Manager by navigating to **Start→Programs→Avaya Interaction Center→IC Manager** and log in using the appropriate credentials. The IC Manager screen is shown in **Figure 24**.

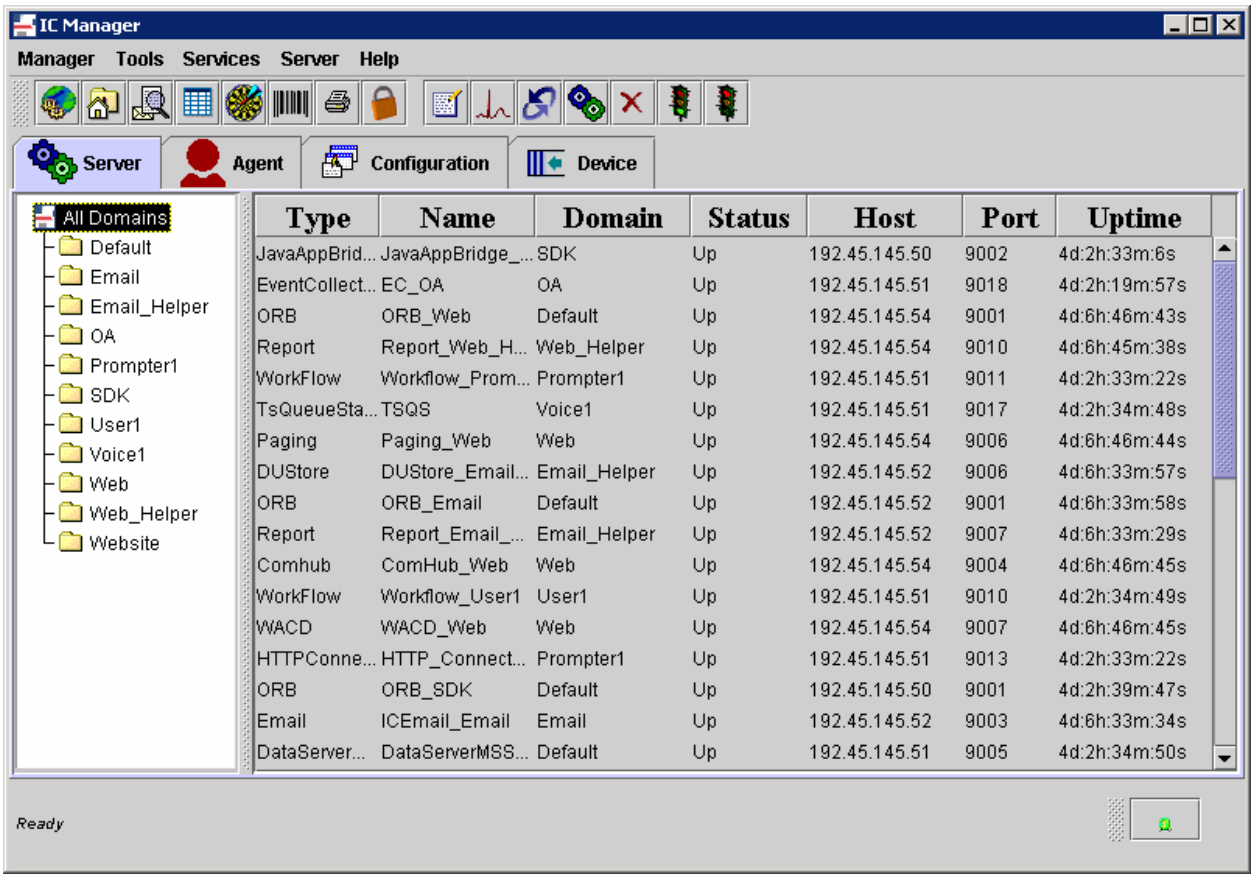


Figure 24: IC Manager

From IC Manager, select **Tools→Domains…** to open the Domain Manager. Right-click in the Domain window and select **New** from the pop-up menu.

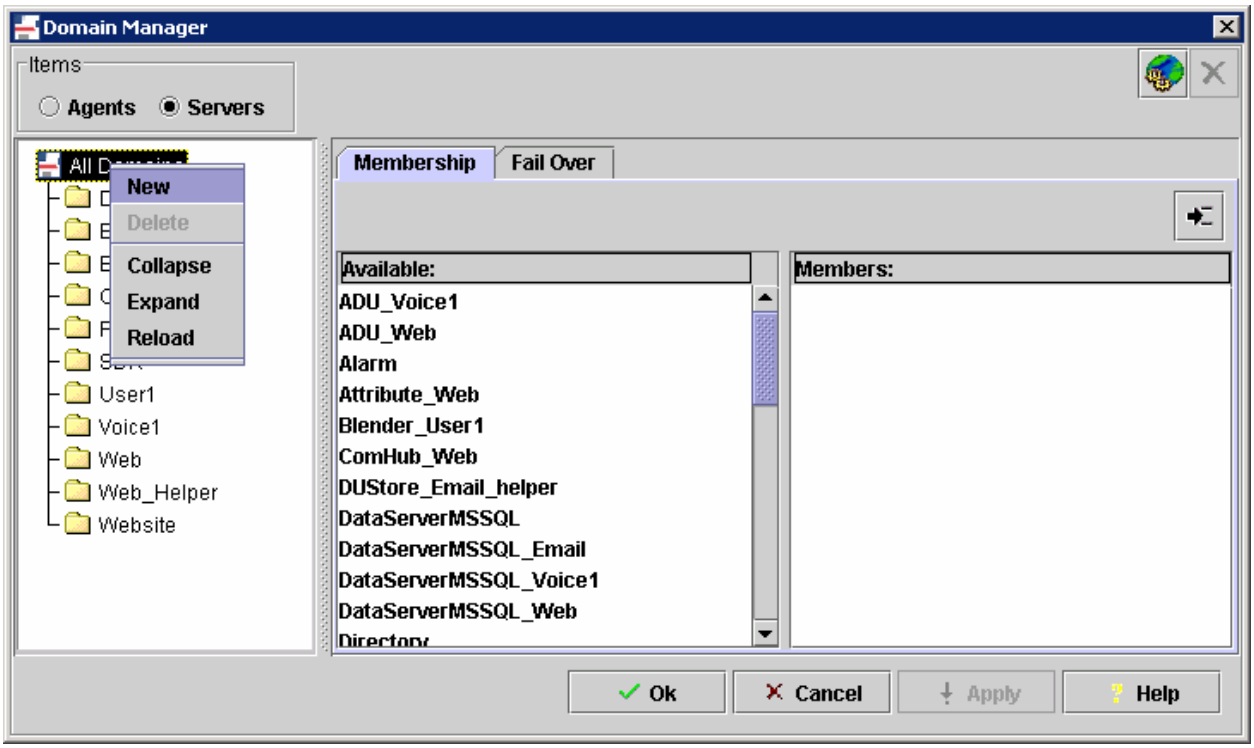


Figure 25: Domain Manager

Enter the name of the new domain (e.g., OA) and click **OK** as shown in **Figure 26**.

Figure 26: New Domain Window

Select the **Fail Over** tab. Select the following members from the Available window: **OA**, **Voice1**, **Email**, **Web**, and **Default** and move these to the Members window using the arrow button. Use the Up and down arrow buttons to arrange the members in the order shown in **Figure 27**. Click **OK** to continue.

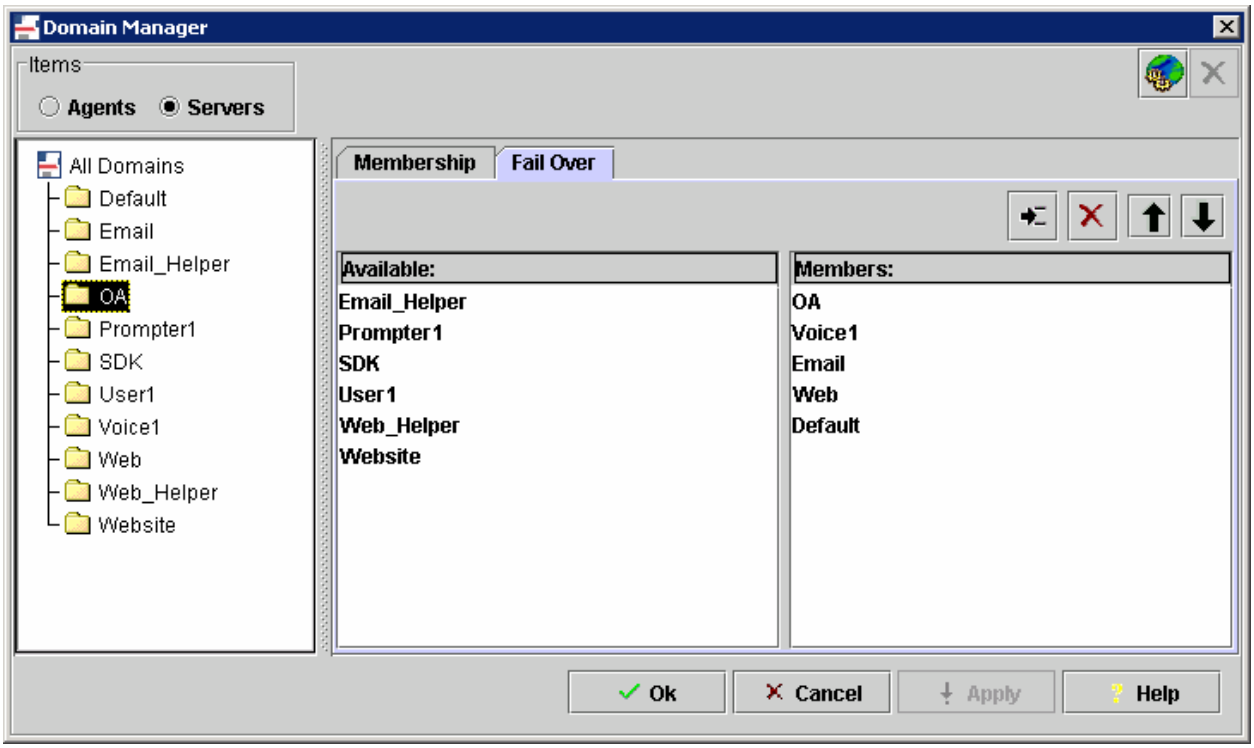


Figure 27: Fail Over Domains

From the IC Manager, select the **Server** tab and right-click in the left pane of the window. Select **New** from the pop-up menu. Set the **Server Type** field to *EventCollector* as shown in **Figure 28**. Click **OK** to continue.

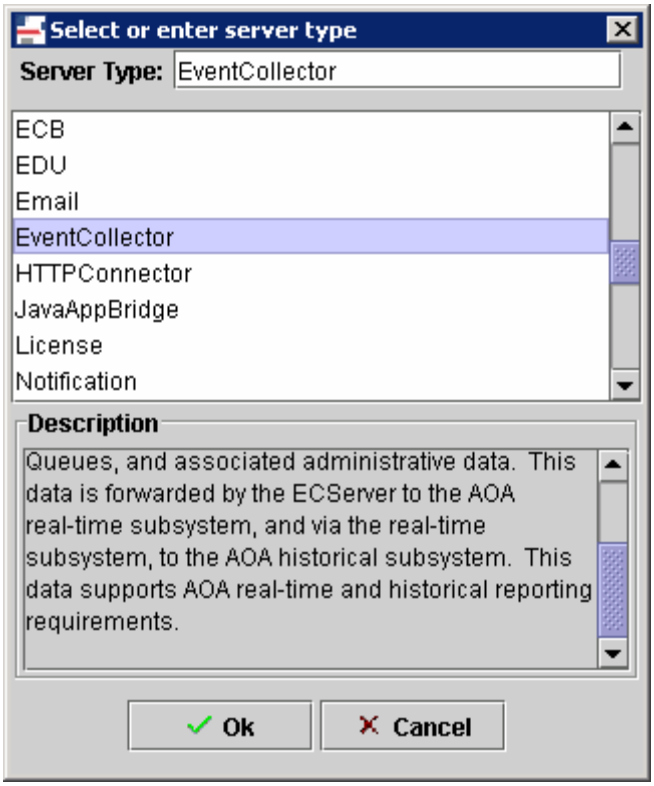


Figure 28: Event Collector Server Type

For the Event Collector, specify a name and set the **Domain** field to *OA*. Set the **Host** field to the IP address of the IC server where the Event Collector is installed. In this configuration, the Event Collector is installed on the IC Voice server (i.e., 192.45.145.51).

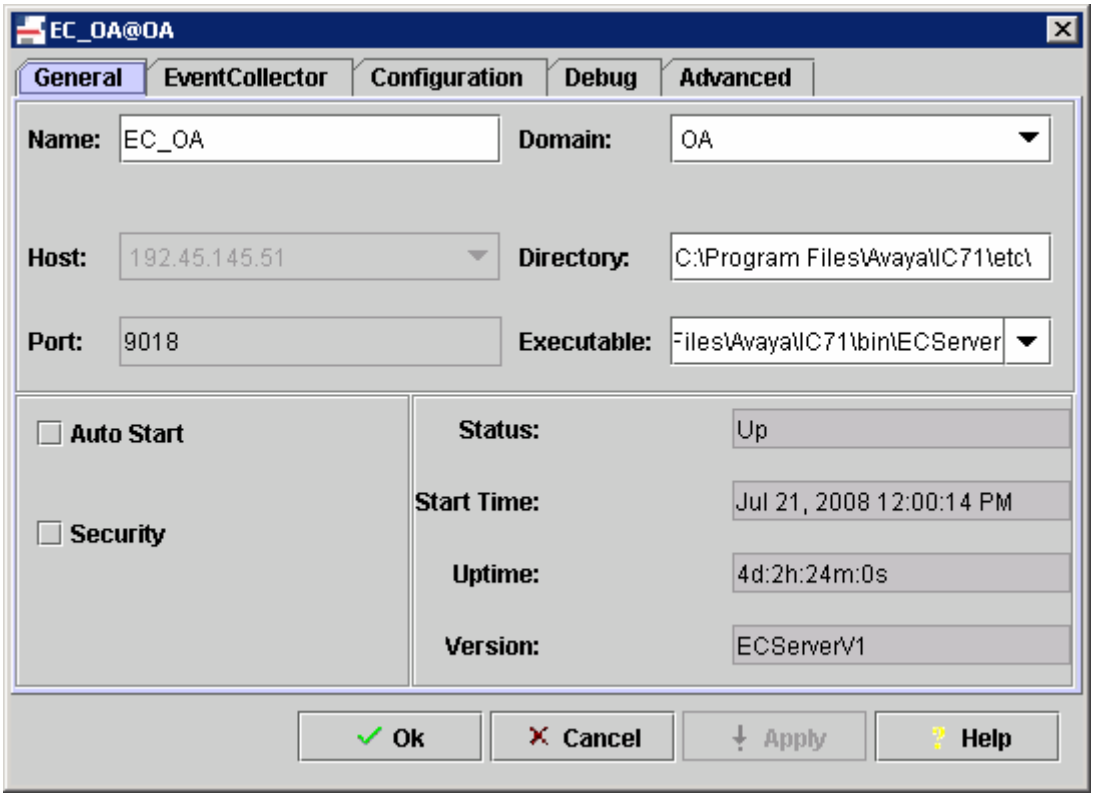


Figure 29: Event Collector – General Tab

In the Event Collector tab, set the **Real-Time System ID** field to the Source ID assigned in **Figure 7**. Enter the FQDN of the OA server in the **Data Manager Host** field. Click on the **Ellipses** […] button next to the **Domains to Monitor** field to display the window shown in **Figure 31**.

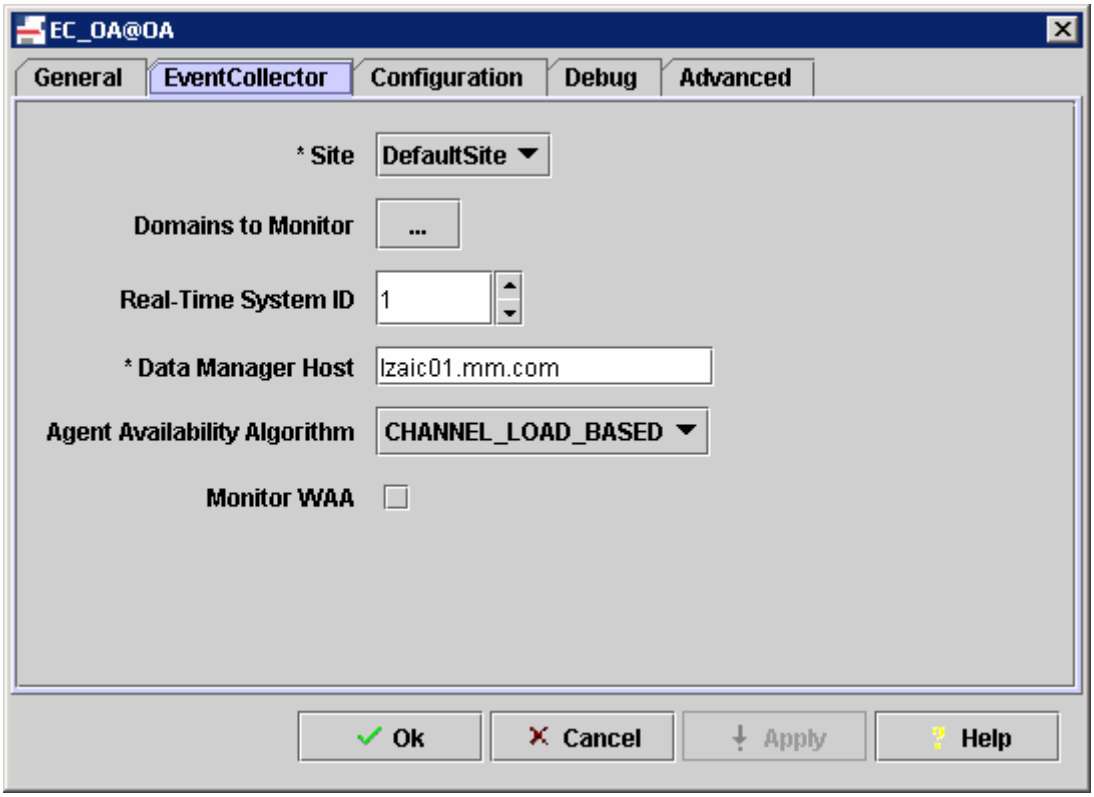


Figure 30: Event Collector Tab

Click on the  button and use the drop-down list to select the domains shown in **Figure 31**.
Use the up  and down  arrow buttons to arrange the domains in the order shown.
Click **OK** to continue.

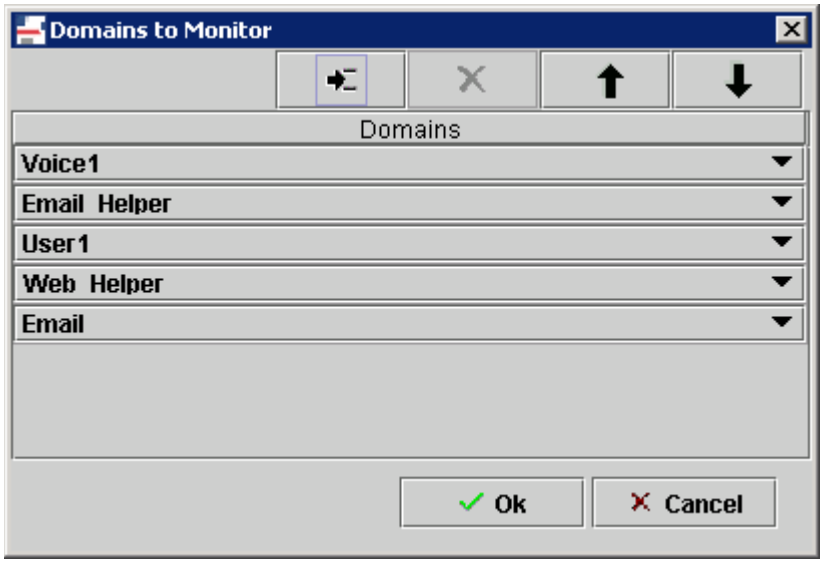


Figure 31: Domains to Monitor

Select the **Debug** tab, click on the **Ellipses** […] button next to the **Trace Levels** field to display the window shown in **Figure 33**.

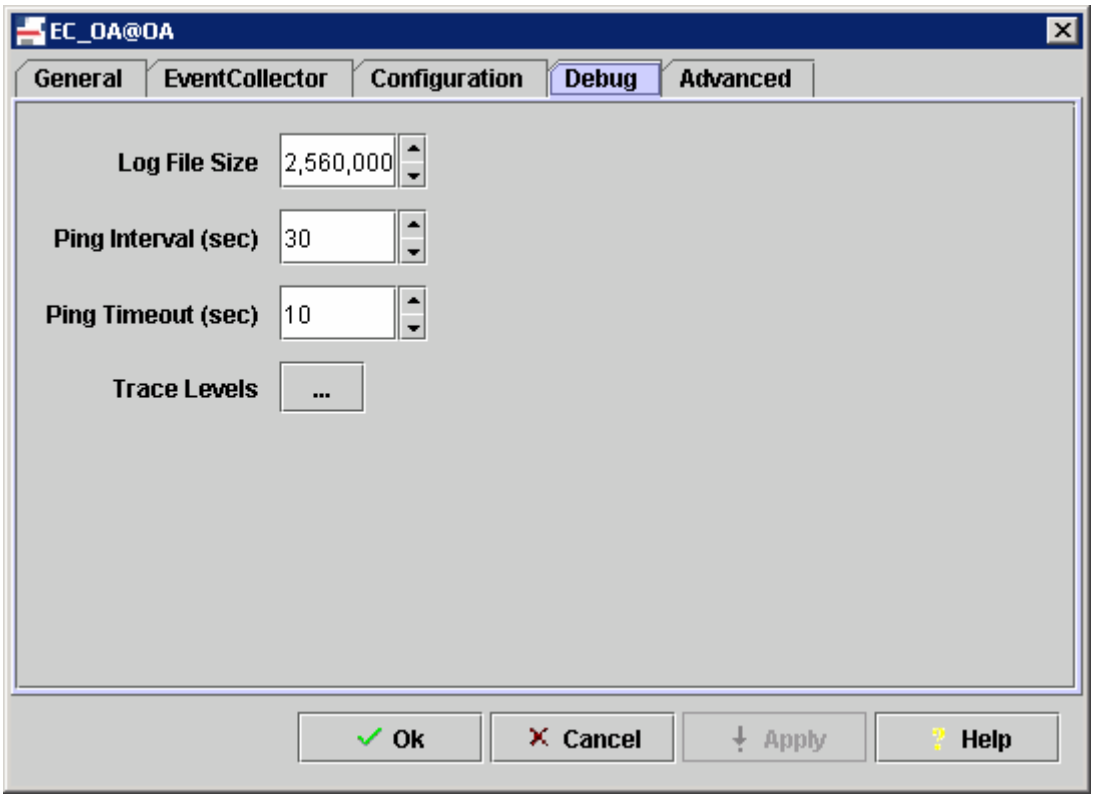


Figure 32: Debug Tab

In the Trace Levels dialog box, select the field as shown in **Figure 33**. This causes the Event Collector to log messages to the trace file to aid in troubleshooting. Click **OK** to complete the Event Collector configuration.

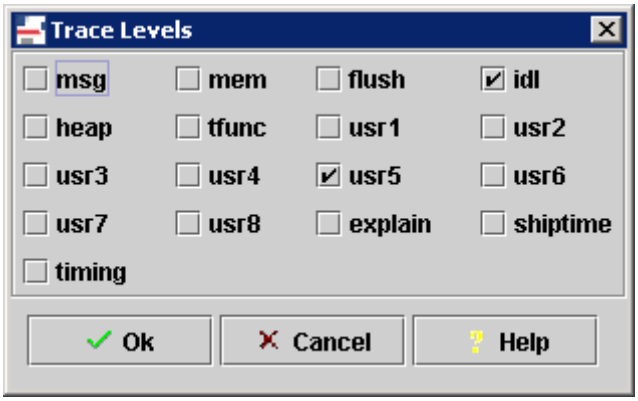


Figure 33: Trace Levels

From the IC Manager, click on the OA folder in the left pane. Highlight the EventCollector server that was just created and click on the  icon to start the server. Click on the  icon to get server status. The *Status* of the server should be **Up**.

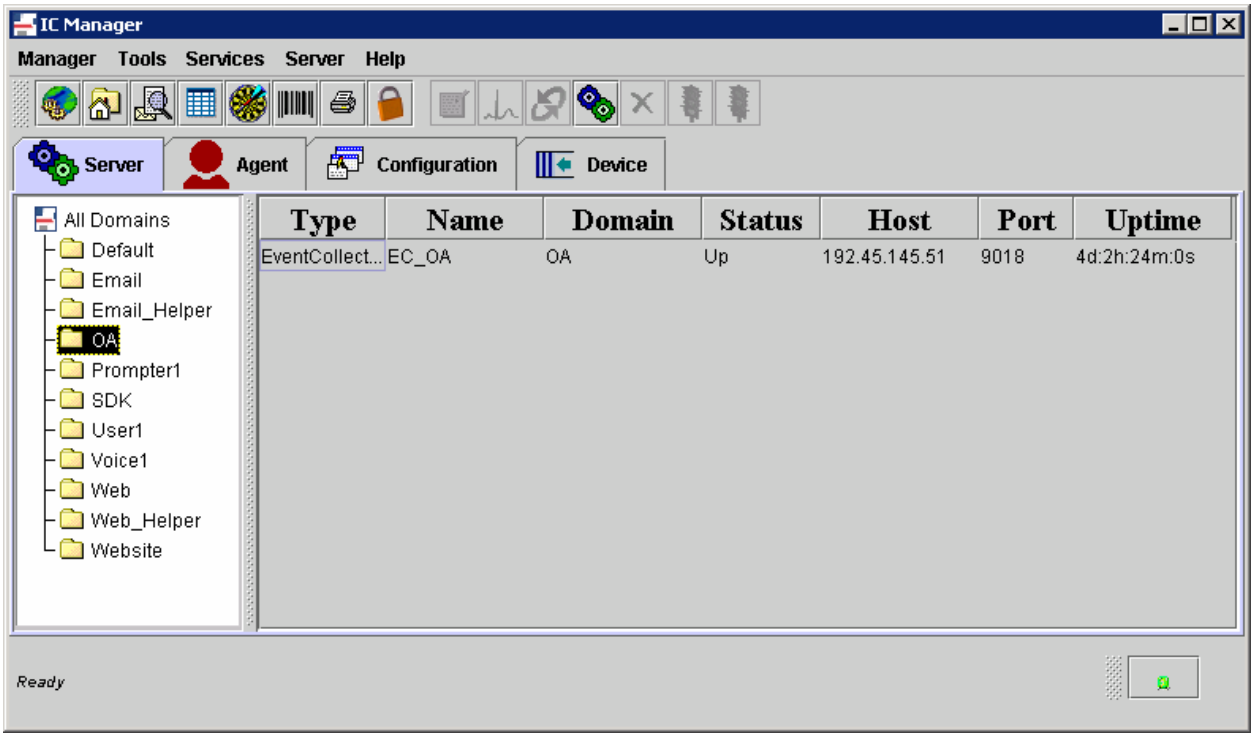


Figure 34: Event Collector Server Status

4. Configure IEX TotalView Workforce Management

The IEX TotalView system is installed and configured by the IEX implementation team. The customer is also provided with TotalView training, which includes how to configure agent information and how to use the TotalView Supervisor Workstation. The procedure for installing and configuring the TotalView system is outside the scope of these Application Notes and the reader should refer to [5] for the TotalView Reference Guides. It is assumed that the TotalView server has already been installed and configured with the agent information configured in Avaya IC. This section will describe how to establish a connection to the TotalView server using the Supervisor Workstation and how to view historical and real-time information. It is assumed that the TotalView Supervisor Workstation has already been installed on a Windows PC.

4.1. Configure avayaoahist and AvayaOA_rta Applications

The installation and configuration of the *avayaoahist* and *AvayaOA_rta* applications are performed by IEX at the time of purchase. Additional details are provided by IEX.

4.2. Configure IEX TotalView Supervisor Workstation

From a Windows PC with TotalView Supervisor Workstation, start the **Configuration** application by launching **Programs →CCApps→TotalView Configuration**. The **Configuration** screen is displayed. Configure the fields as shown in **Figure 35**. The **Default Customer ID** is provided by IEX after TotalView has been configured. In the **Host Name or IP Address** field, enter the IP address of the TotalView server and click on the **Selected** checkbox. When completed, click the **OK** button.

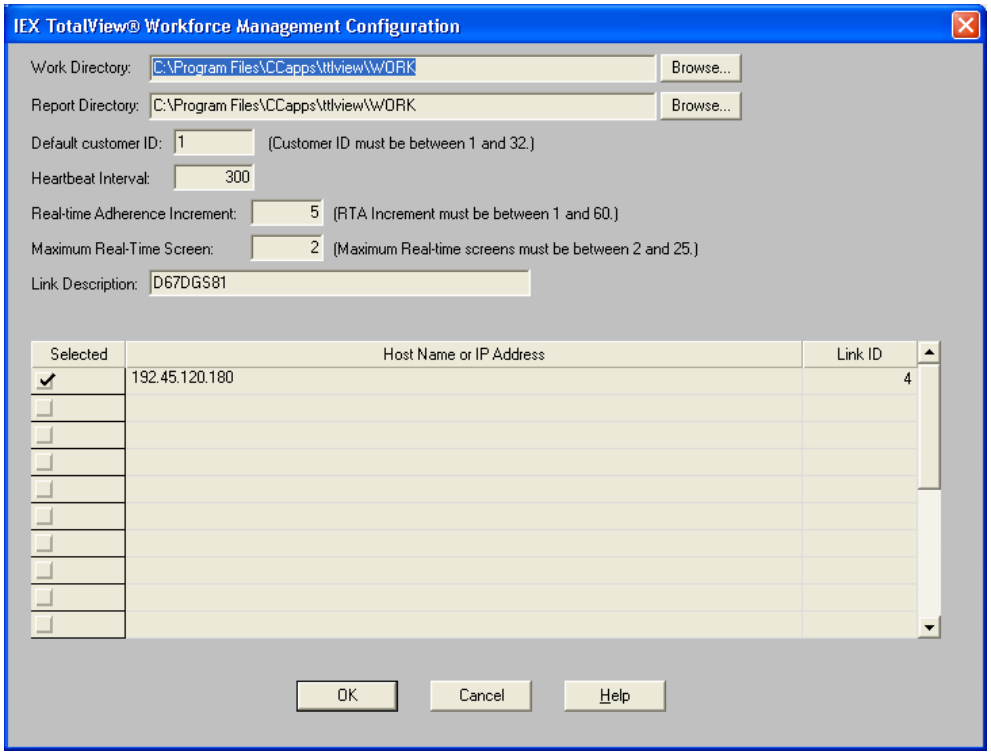


Figure 35: TotalView Configuration

From a Windows PC with TotalView Supervisor Workstation installed, start the application by launching **Programs→CCApps→TotalView**. The **User Logon** window is displayed. Log in with the appropriate credentials and then click **OK**.

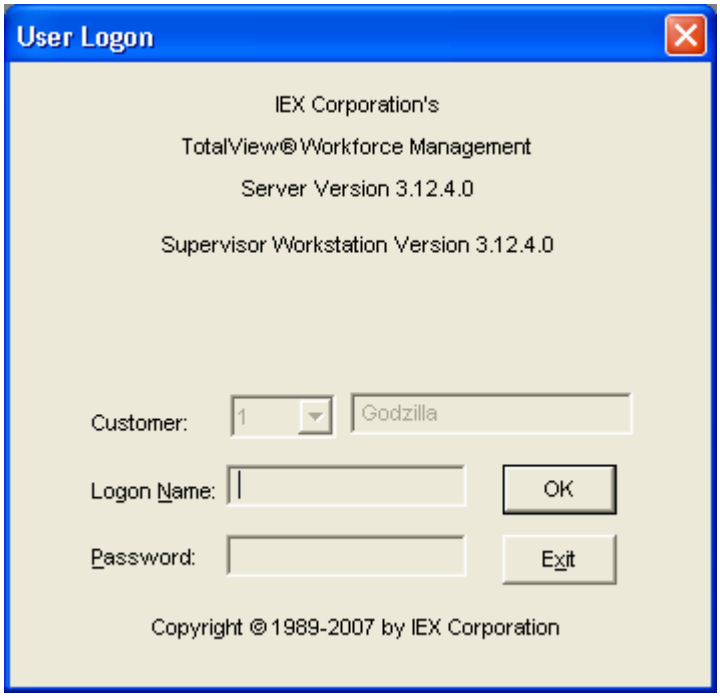


Figure 36: TotalView Supervisor Workstation Login

4.2.1. Viewing Historical Data on TotalView Supervisor Workstation

Once logged in, the TotalView main window is displayed as shown in **Figure 37**. To view historical queue statistics for the customer interactions on Avaya IC, navigate to **CT→Intraday**.

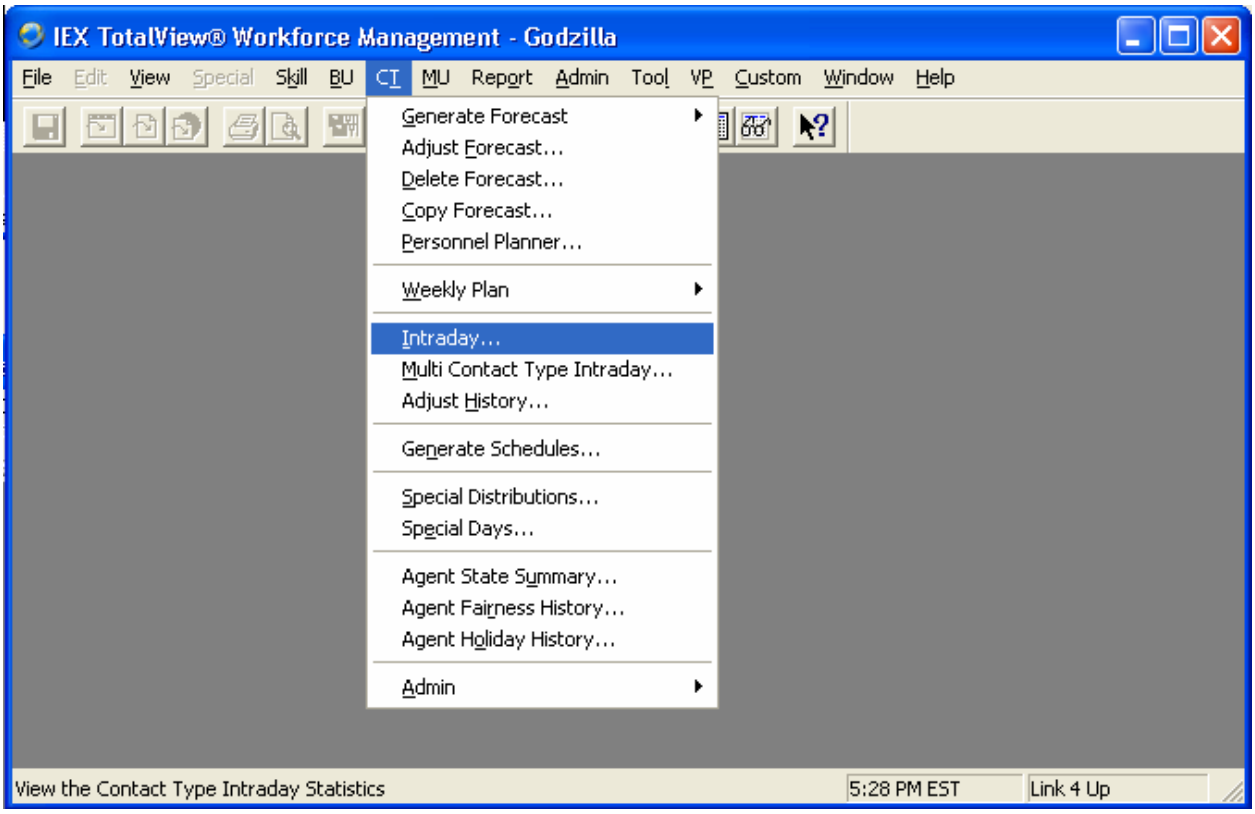


Figure 37: TotalView Supervisor Workstation Main Window

From the **Intraday** window, click on the **Ellipses** button […] by the **CT** field to select the contact type (e.g., Avaya OA). Next, click on the **Ellipses** button […] by the **Shift** field to select the **All Day** shift. These options were already configured by IEX during the TotalView system configuration. Click the **OK** button. The Intraday window is displayed with Historical data as shown in **Figure 38**.

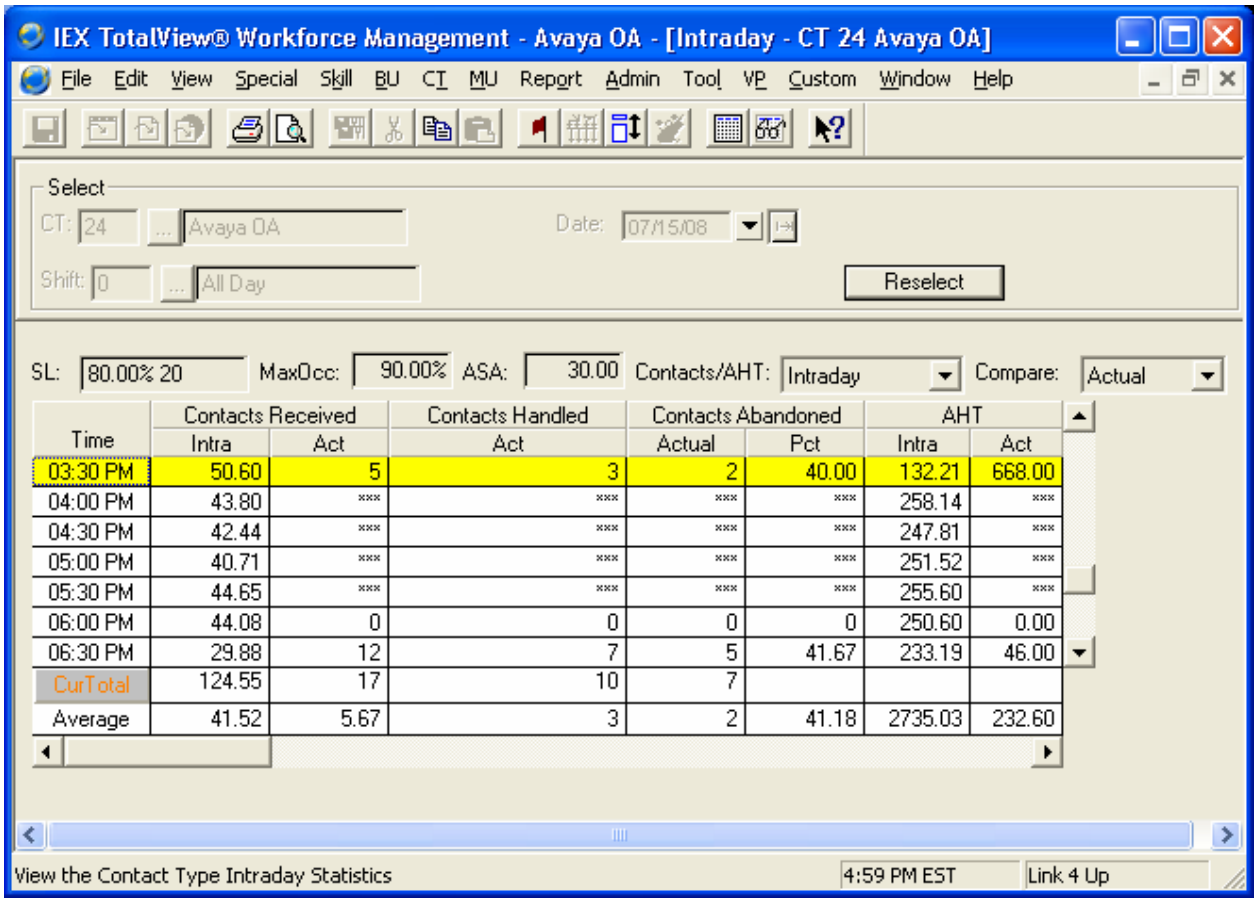


Figure 38: Intraday Window with Historical Data

4.2.2. Viewing Real-Time Data on TotalView Supervisor Workstation

Once logged in, the TotalView main window is displayed as shown **Figure 39**. To view agent state information for the ACD call center configured on Avaya Communication Manager, navigate to **MU→Real-time Adherence**. The Real-time Adherence window is displayed as shown in **Figure 40**.

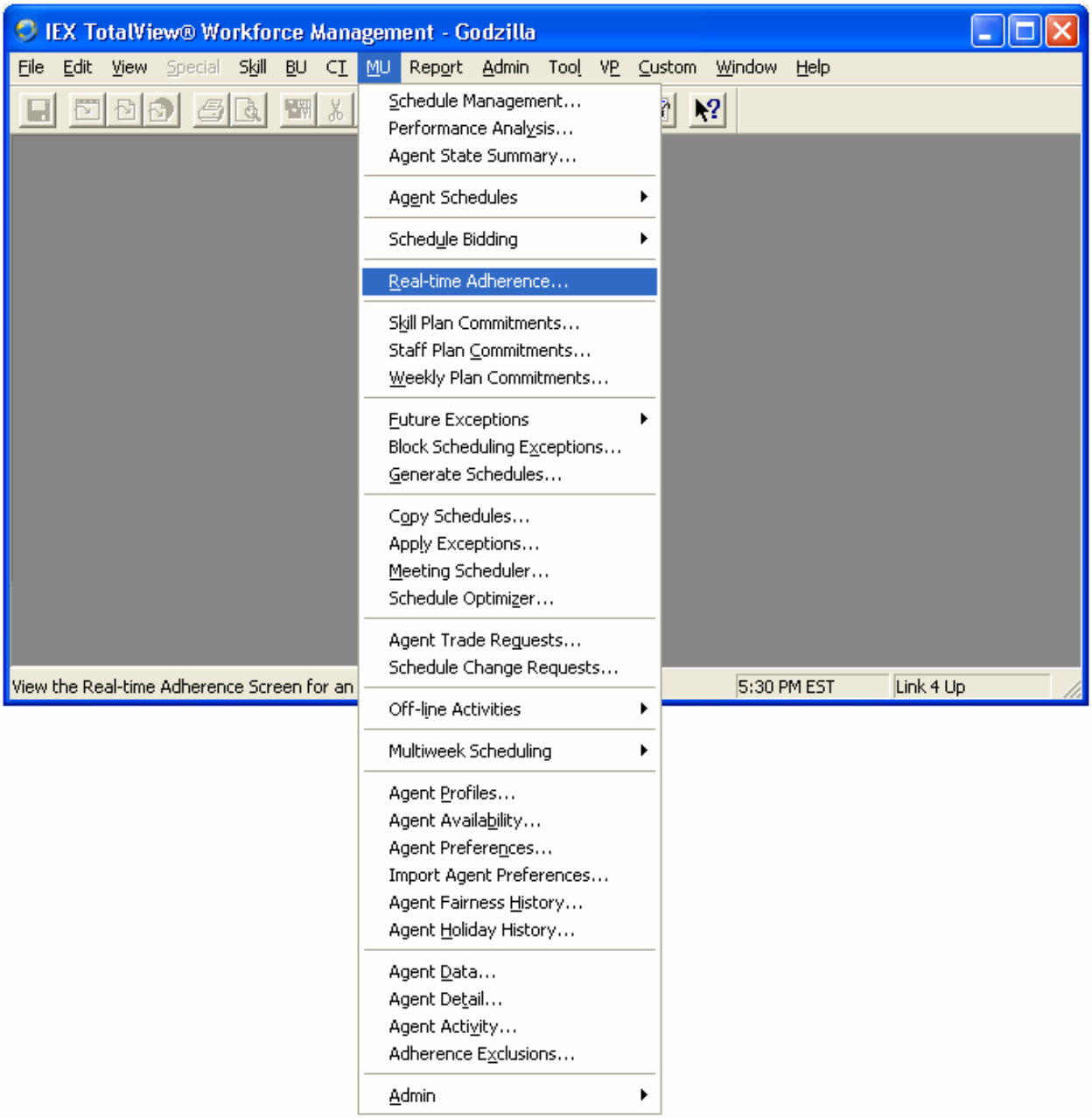


Figure 39: TotalView Supervisor Workstation Main Window

From the **Real-time Adherence** (or **Schedule Adherence**) window, click on the **Ellipses** button […] by the **MU** field to select the management unit. In the **Management Units** window that is displayed, select the option corresponding to Avaya OA. This option was already configured by IEX during the TotalView system configuration. Click the **Retrieve** button to display the agent list with their *Actual State* and *Time in State* as shown in **Figure 41**.

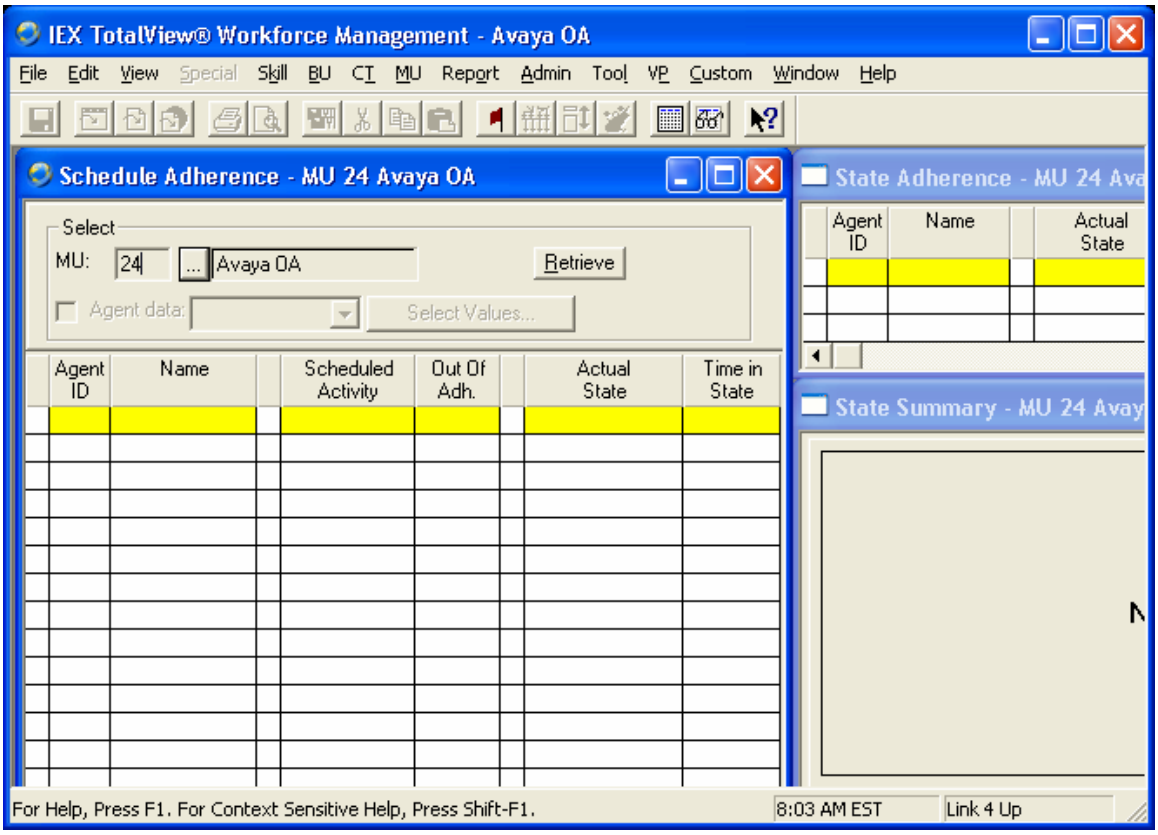


Figure 40: Real-time Adherence Window

The **Real-time Adherence** window is now displayed with agent state data for IC agents. The agent state will update automatically.

Note: If the state information is grayed out, that indicates that either the connection to the TotalView server has been lost or the TotalView server is down.

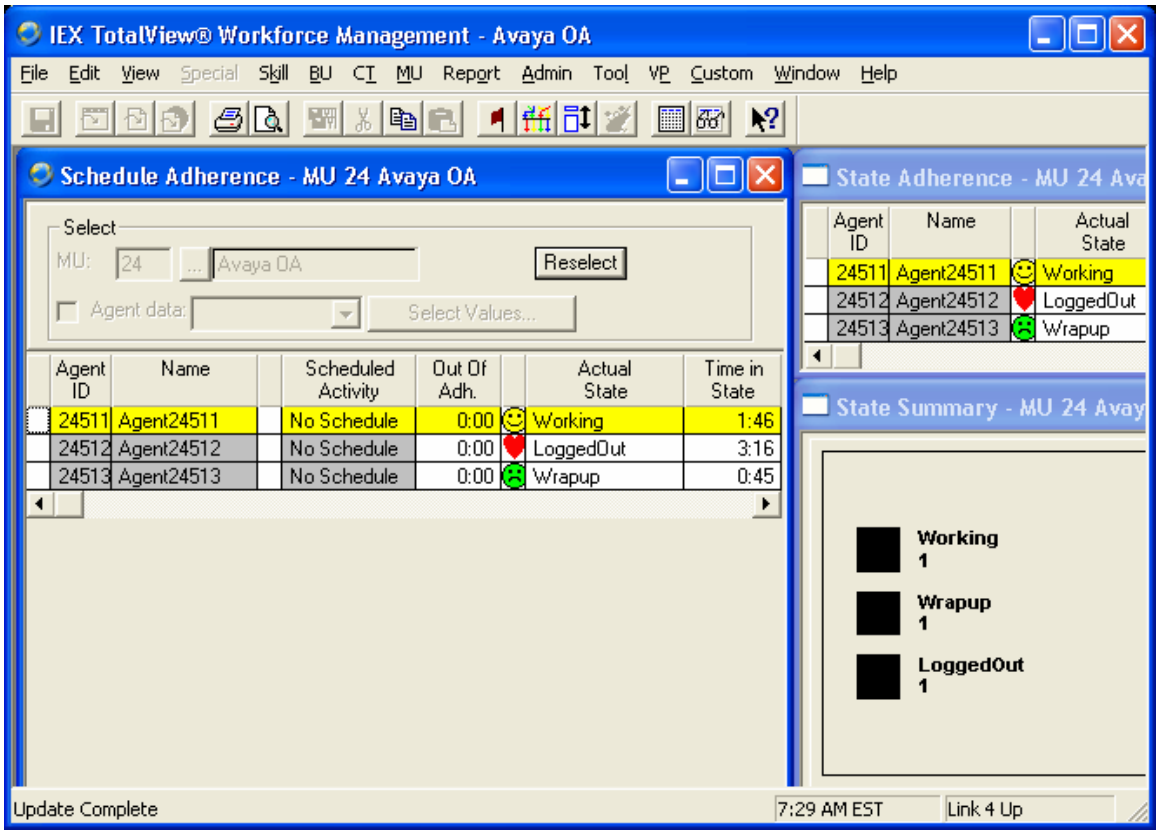


Figure 41: Real-time Adherence Window with Agent State Data

5. Interoperability Compliance Testing

This section describes the interoperability compliance testing used to verify the IEX TotalView Workforce Management with Avaya Operational Analyst and Avaya Interaction Center. This section covers the general test approach and the test results.

5.1. General Test Approach

The interoperability compliance test included feature and serviceability testing. For historical reports, incoming calls were routed to available agents by Avaya Interaction Center. Agent and contact activity was collected Avaya Operational Analyst. Historical data was then retrieved and processed by IEX TotalView and then displayed on the IEX TotalView Supervisor Workstation. These steps verified that the *avayaoahist* application, a Data API client, was successfully retrieving data from Avaya Operational Analyst and that the data was correct for the specified data interval. For real-time reports, IEX TotalView retrieved real-time agent status data periodically and displayed the data on the IEX TotalView Supervisor Workstation. The agent workmodes (e.g., after-call-work, aux, etc.) were verified on IEX TotalView.

Serviceability testing focused on verifying the ability of IEX TotalView to recover from adverse conditions, such as server restarts, power failures, and disconnecting cables to the IP network.

5.2. Test Results

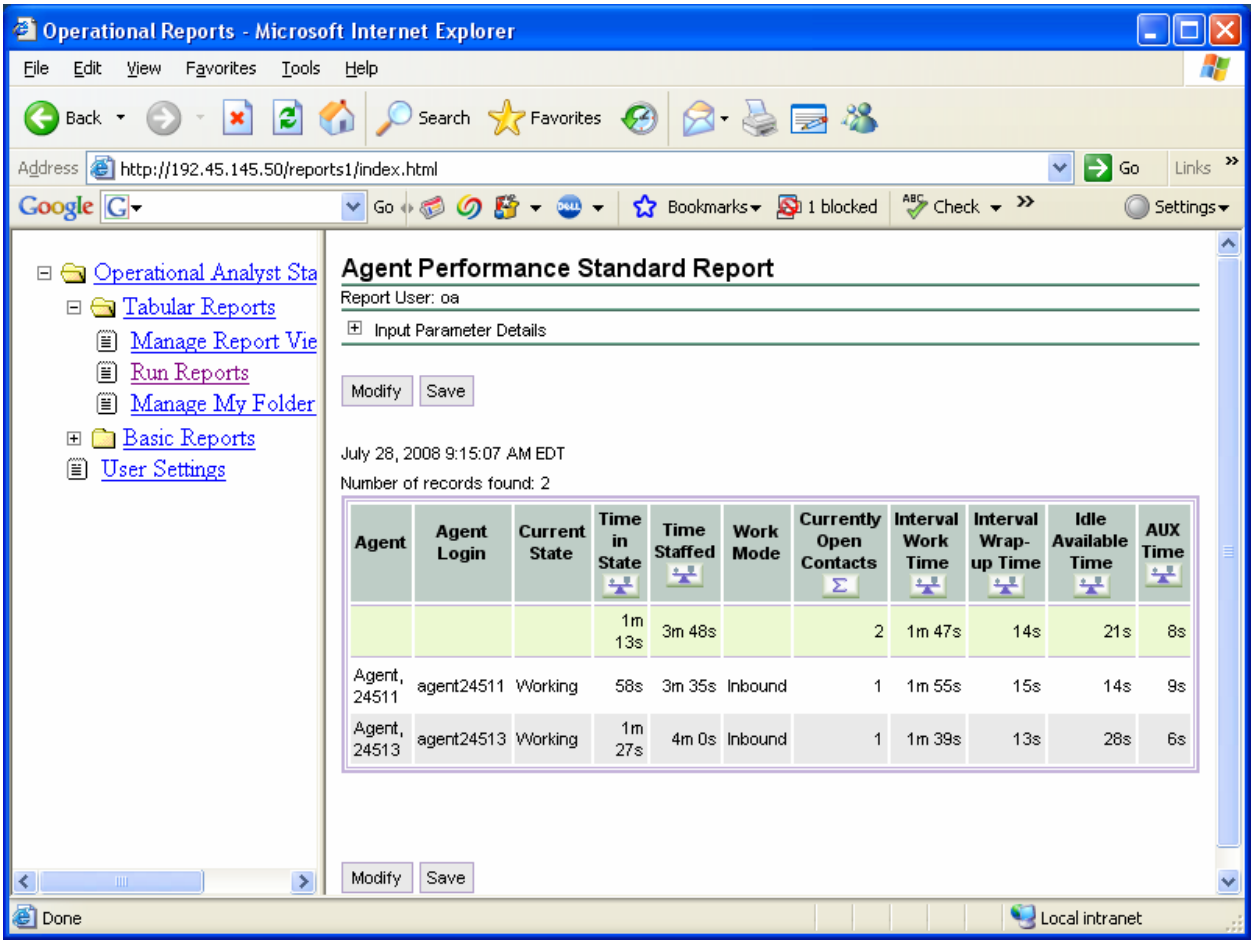
All test cases passed.

6. Verification Steps

This section provides the verification steps that may be performed to verify that IEX TotalView can retrieve historical and real-time data from Avaya Operational Analyst.

1. Place calls that are handled by agents on Avaya IC.

2. Verify that Avaya OA captures real-time agent information by running one of the standard real-time reports on an Internet browser. Open an Internet browser and enter *http://<192.45.145.50>/reports1* (specify the IP address of the Avaya OA server). Log in with the appropriate credentials for the reports account. In the webpage, select **Tabular Reports→Run Reports** and follow the prompts for the **Agent Performance Standard Report**. Another real-time report may be used for this purpose. The report should be populated with real-time data as shown in the webpage below. This verifies that Avaya OA is capturing data.



3. At the end of a data interval, verify that Avaya OA was successful in aggregating historical data as indicated by the **Last Updated** and **Status** columns in **Figure 21**. The **Last Updated** column will indicate the last time the historical data was aggregated and

the **Status** column will indicate whether data was available. If data was available for the specified data interval, the status would be *Successful*. Note that historical data is aggregated 10 minutes after an interval expires, per this configuration, or based on some other setting configured in **Figure 23**. This verifies that Avaya OA is aggregating historical data.

4. On the IEX TotalView server, verify that the reports file are being generated and stored in the appropriate directory at the end of the data interval. As the data is processed, check that the data is posted to the TotalView Supervisor Workstation as described in Sections 4.2.1 and 4.2.2.

7. Support

IEX technical support is available via the Internet, phone, or email.

- **Web:** www.iex.com/service/service--support/support.html
- **Phone:** (800) 433-7692
- **Email:** iexinfo@iex.com

8. Conclusion

These Application Notes describe the configuration steps required to integrate IEX TotalView Workforce Management with Avaya Operational Analyst using the Avaya Data API. All feature and serviceability test cases were completed successfully.

9. References

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

[1] *Administrator Guide for Avaya Communication Manager*, Document 03-300509, Issue 3.1, February 2007, available at http://support.avaya.com.

[2] *Feature Description and Implementation for Avaya Communication Manager*, Document 555-245-205, Issue 5, February 2007, available at http://support.avaya.com.

[3] *Avaya Interaction Center Release 7.1 Installation and Configuration*, Document 07-300569, Release 7.1, May 2006, available at http://support.avaya.com.

[4] *Avaya Operational Analyst Release 7.1 Installation and Configuration*, Document 07-600834, Release 7.1, May 2006, available at http://support.avaya.com.

[5] *IEX TotalView Product Documentation CD*, available on IEX TotalView software CD.

10. APPENDIX: Sample Data File

Below is a sample data file, called 071408.1830, which contains the three historical reports generated by the Data API client (i.e., *avayaoahist*) running on the IEX TotalView server. The three reports are the *QueueStats*, *AgentQueueStats*, and *AgentSystemStats* reports.

```
Begin Report AvayaOAClient/QueueStats
07/14/08 18:30
queue_id                                aband_contacts handled_gos
queue_delay_time aband_ahead aband_behind aband_critical aband_on_target
queue.channel.voice.default                           0           0
0           0            0             0              0
Voice Queue                                           5           0
84           0            5              0              0
End Report AvayaOAClient/QueueStats

Begin Report AvayaOAClient/AgentQueueStats
07/14/08 18:30
queue_id                                agent_logon_id
handled contact_time work_time
queue.channel.voice.default             agent24513
1           23         6
Voice Queue                             agent24511
4           82        58
Voice Queue                             agent24513
3          155        27
End Report AvayaOAClient/AgentQueueStats

Begin Report AvayaOAClient/AgentSystemStats
07/14/08 18:30
agent_logon_id                          ready_time not_ready_time
nonprod_time onbreak_dur unknown_dur
agent24511                                    1584             1
1660          75           0
agent24513                                    1589             0
1589           0           0
End Report AvayaOAClient/AgentSystemStats
```

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.