Avaya Solution & Interoperability Test Lab

Application Notes for IEX TotalView Workforce Management with Avaya Communication Manager and Avaya IQ with the IEX-RTA Interface – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate IEX TotalView Workforce Management with Avaya IQ using the IEX-RTA interface. Avaya IQ captures ACD call center data from Avaya Communication Manager over an established link and stores it in its database. The IEX-RTA interface is used to extract real-time agent state information from the Avaya IQ database and send it to IEX TotalView. The agent data can then be parsed by TotalView and displayed on the TotalView Supervisor Workstation. This interface is provided by the Avaya Communication Solutions and Integration (CSI) group within Avaya Global Services.

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 IQ using the IEX-RTA interface. Avaya IQ captures ACD call center data from Avaya Communication Manager over an established link and stores it in its database. The IEX-RTA interface is used to extract real-time agent state information from the Avaya IQ database and send it to IEX TotalView. The agent data can then be parsed by TotalView and displayed on the TotalView Supervisor Workstation. This interface is provided by the Avaya Communication Solutions and Integration (CSI) group within Avaya Global Services.

IEX TotalView Workforce Management software provides a centralized platform for optimizing the performance of a contact center. It supplies real-time information to better manage the performance of the people in the contact center. The real-time agent reports received from Avaya IQ can be viewed from the TotalView Supervisor Workstation.

The real-time agent data is received by IEX TotalView from Avaya IQ. The IEX-RTA interface utilizes a client-server model with Avaya IQ being the "client" and IEX TotalView being the "server". IEX TotalView runs a TCP "listener" process to accept the data connection from the RTA interface of Avaya IQ. Once a connection is established, the connection remains active indefinitely. Avaya IQ can send data to IEX TotalView every 10 seconds (configurable).

Avaya CSI installs and configures the IEX-RTA interface on Avaya IQ, and provides the TCP port number associated with the RTA session to IEX for configuring TotalView. TotalView parses the raw data streams received and makes the data available on the TotalView system.

Figure 1 illustrates the test configuration. In this configuration, Avaya Communication Manager received calls to the skills and VDNs monitored by Avaya IQ. The calls were then routed to available agents in the ACD call center. Agent state information was sent from Avaya Communication Manager to Avaya IQ over a configured link. Avaya IQ stored the agent data in its database and also sent the data to IEX TotalView using the IEX-RTA interface. The IEX TotalView Supervisor Workstation was used to view the real-time agent data. The Avaya IQ Admin PC was used to access the IEX-RTA menu and the Avaya IQ OAM interface using an Internet browser.

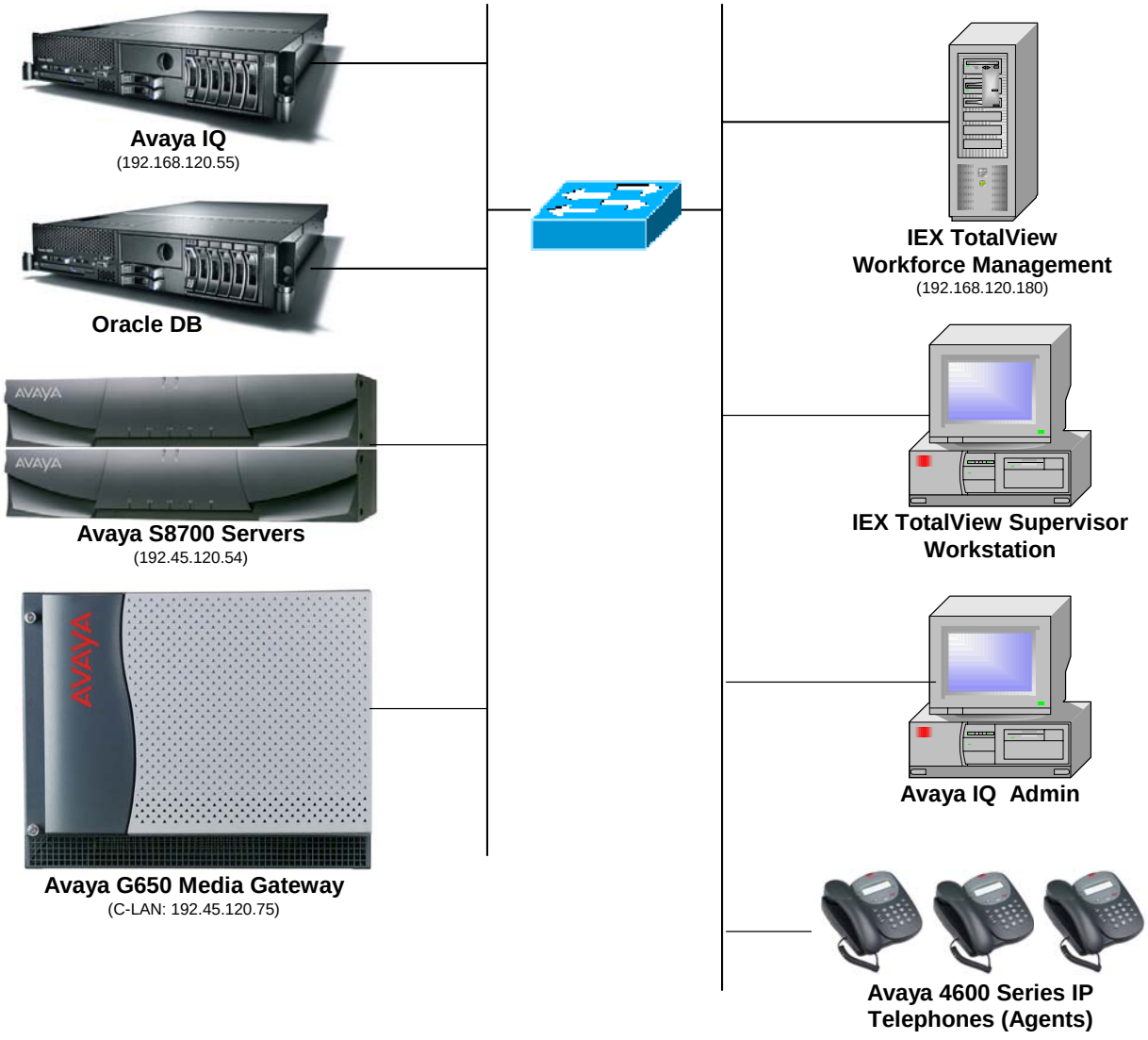

Figure 1: IEX TotalView with Avaya Communication Manager and Avaya IQ

2 Equipment and Software Validated

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

Equipment	Software
Avaya S8700 Servers	Communication Manager 4.0.1, load 731.2
Avaya G650 Media Gateway ▪ TN799DP C-LAN Circuit Pack	 HW01 FW024
Avaya IQ	4.1
Avaya 4600 Series IP Telephones	2.8 (H.323)
IEX TotalView Workforce Management	3.12.5.0
IEX TotalView Supervisor Workstation	3.12.5.0

3 Configure Avaya Communication Manager

This section provides the procedures for configuring Avaya Communication Manager. The procedures include the following areas:

- Verify Avaya Communication Manager Options
- Administer adjunct CCR release
- Administer IP node names for C-LAN
- Administer IP interface for C-LAN
- Administer data module for C-LAN
- Administer processor interface channel
- Administer measured VDN
- Administer measured Skill

The detailed administration of contact center devices such as ACD/Skill, VDN, Vector, and Agents are assumed to be in place. These Application Notes will only cover how to enable ACD/Skill, VDN, and Agent data to be sent to Avaya IQ.

3.1 Verify Avaya Communication Manager Software Options

Log into the System Access Terminal (SAT) to verify that the Avaya Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the "display system-parameters customer-options" command to verify that the **G3 Version** field is set to "V14" on **Page 1**, as shown below.

```
display system-parameters customer-options                    Page   1 of  11
                            OPTIONAL FEATURES

     G3 Version: V14
       Location: 1                          RFA System ID (SID): 1
       Platform: 6                          RFA Module ID (MID): 1

                                                        USED
                            Platform Maximum Ports: 44000 373
                                 Maximum Stations: 500   205
                            Maximum XMOBILE Stations: 0     0
                    Maximum Off-PBX Telephones - EC500: 5     0
                    Maximum Off-PBX Telephones -   OPS: 100   14
                    Maximum Off-PBX Telephones - PBFMC: 0     0
                    Maximum Off-PBX Telephones - PVFMC: 0     0
                    Maximum Off-PBX Telephones - SCCAN: 0     0

        (NOTE: You must logoff & login to effect the permission changes.)
```

Figure 2: Customer-Options – Page 1

Navigate to **Page 6** and verify that the **Call Center Release** field is set to "4.0", as shown below.

```
display system-parameters customer-options                    Page   6 of  11
                        CALL CENTER OPTIONAL FEATURES

                          Call Center Release: 4.0

                                 ACD? y                       Reason Codes? y
                       BCMS (Basic)? y              Service Level Maximizer? n
          BCMS/VuStats Service Level? y           Service Observing (Basic)? y
  BSR Local Treatment for IP & ISDN? n     Service Observing (Remote/By FAC)? y
                  Business Advocate? y             Service Observing (VDNs)? y
                    Call Work Codes? y                          Timed ACW? y
      DTMF Feedback Signals For VRU? y                  Vectoring (Basic)? y
                 Dynamic Advocate? y               Vectoring (Prompting)? y
       Expert Agent Selection (EAS)? y            Vectoring (G3V4 Enhanced)? y
                          EAS-PHD? y             Vectoring (3.0 Enhanced)? n
                 Forced ACD Calls? n     Vectoring (ANI/II-Digits Routing)? y
                                         Vectoring (G3V4 Advanced Routing)? y
          Lookahead Interflow (LAI)? y                  Vectoring (CINFO)? y
Multiple Call Handling (On Request)? y      Vectoring (Best Service Routing)? y
    Multiple Call Handling (Forced)? y                Vectoring (Holidays)? n
  PASTE (Display PBX Data on Phone)? y               Vectoring (Variables)? y
        (NOTE: You must logoff & login to effect the permission changes.)
```

Figure 3: Customer-Options – Page 6

3.2 Administer Adjunct CCR Release

Use the "change system-parameters features" command and navigate to **Page 12**. Set the **Adjunct CCR Release** field to the software release of Avaya IQ. In this case, "4.0" is used to correspond to Avaya IQ software release 4.0.

```
change system-parameters features                              Page  12 of  17
                        FEATURE-RELATED SYSTEM PARAMETERS

  AGENT AND CALL SELECTION
                          MIA Across Splits or Skills? y
                           ACW Agents Considered Idle? y
                           Call Selection Measurement: current-wait-time
    Service Level Supervisor Call Selection Override? n
                                 Auto Reserve Agents: all

  CALL MANAGEMENT SYSTEM
                            REPORTING ADJUNCT RELEASE
                                      CMS (appl mis):
                                      CCR (appl ccr): 4.0

                                BCMS/VuStats LoginIDs? y
                    BCMS/VuStats Measurement Interval: hour
            BCMS/VuStats Abandon Call Timer (seconds):
                      Validate BCMS/VuStats Login IDs? n
                               Clear VuStats Shift Data: on-login
                  Remove Inactive BCMS/VuStats Agents? n
```

Figure 4: System-Parameters Features

3.3 Administer IP Node Name for C-LAN

Use the "change node-names ip" command, to add entries for Avaya IQ and the C-LAN that will be used for connectivity. In this case, "avayaiq" and "192.45.120.55" are entered as **Name** and **IP Address** for the Avaya IQ server, and "clancrm" and "192.45.120.75" are entered as **Name** and **IP Address** for the C-LAN. The actual node names and IP addresses may vary. Submit these changes.

```
change node-names ip                                             Page   1 of   1
                                  IP NODE NAMES
    Name              IP Address          Name              IP Address
clancrm             192.45 .120.75                           .   .   .
avayaiq             192.45 .120.55                           .   .   .
```

Figure 5: IP Node Names

3.4 Administer IP Interface for C-LAN

Add the C-LAN to the system configuration using the "add ip-interface 1a04" command. The actual slot number may vary. In this case, "1a04" is used as the slot number. Enter the C-LAN node name assigned from **Section 3.3** into the **Node Name** field. The **IP Address** field will be populated automatically.

Enter proper values for the **Subnet Mask** and **Gateway Address** fields. In this case, "255.255.255.0" and "192.45.120.1" are used to correspond to the network configuration in these Application Notes. Set the **Enable Ethernet Port** field to "y". Default values may be used in the remaining fields. Submit these changes.

```
add ip-interface 1a04                                          Page   1 of   1
                                IP INTERFACES

                  Type: C-LAN
                  Slot: 01A04
            Code/Suffix: TN799  D
              Node Name: clancrm
             IP Address: 192.45 .120.75
            Subnet Mask: 255.255.255.0                            Link: 1
        Gateway Address: 192.45 .120.1
  Enable Ethernet Port? Y                          Allow H.323 Endpoints? y
         Network Region: 1                          Allow H.248 Gateways? y
                  VLAN: n                            Gatekeeper Priority: 5

Number of CLAN Sockets Before Warning: 400
       Receive Buffer TCP Window Size: 8320
                              ETHERNET OPTIONS
                  Auto? y
```

Figure 6: IP Interfaces

3.5 Administer Data Module for C-LAN

Add a new data module using the "add data-module n" command, where "n" is an available extension. Enter the following values, and submit these changes.

- **Name:** A descriptive name.
- **Type:** "ethernet"
- **Port:** Same slot number from **Section 3.4** above and port "17".
- **Link:** An available link number.

```
add data-module 50000                                          Page   1 of   1
                              DATA MODULE

  Data Extension: 50000           Name: CRM CLAN LINK
            Type: ethernet
            Port: 01A0417
            Link: 1
Network uses 1's for Broadcast Addresses? y
```

Figure 7: Data Module

3.6 Administer Processor Interface Channel

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

- **Enable:** "y"
- **Appl.:** "ccr"
- **Mode:** "s" for server mode.
- **Interface Link:** Link number for data module Ethernet port from **Section 3.5**.
- **Interface Chan:** TCP channel number for Avaya IQ. In this case "5002".
- **Destination Node:** Avaya IQ server node name from **Section 3.3**.
- **Destination Port:** "0"
- **Session Local:** Corresponding channel number in **Proc Chan** field. In this case "1".
- **Session Remote:** Corresponding channel number in **Proc Chan** field. In this case "1".

The **Interface Chan** field contains the Avaya IQ TCP channel number, which is defined as part of the Avaya IQ installation. For the compliance testing, TCP channel number of "5002" was used.

```
change communication-interface processor-channels                Page   1 of  24
                       PROCESSOR CHANNEL ASSIGNMENT
Proc                  Gtwy      Interface          Destination      Session   Mach
Chan Enable   Appl.    To  Mode Link/Chan        Node        Port  Local/Remote IDnp
  1:   y    ccr             s    1   5002  avayaiq         0      1     1
  2:   n                                                   0
```

Figure 8: Processor Channel Assignment

3.7 Administer Measured VDN

Use the "change vdn n" command, where "n" is the extension of the VDN to be measured by Avaya IQ. Set the **Measured** field to "external" or "both" to enable measurement data on the VDN to be sent to Avaya IQ. Repeat this step for all VDNs that will be monitored by Avaya IQ.

```
change vdn 75000                                                 Page   1 of   3
                           VECTOR DIRECTORY NUMBER

                             Extension: 75000
                                 Name*: IQ VDN 1
                          Vector Number: 250
                    Attendant Vectoring? n
                   Meet-me Conferencing? n
                     Allow VDN Override? n
                                   COR: 1
                                   TN*: 1
                              Measured: both
          Acceptable Service Level (sec): 20
                 Service Objective (sec): 20
          VDN of Origin Annc. Extension*:
                               1st Skill*:
                               2nd Skill*:
                               3rd Skill*:
* Follows VDN Override Rules
```

Figure 9: Vector Directory Number (VDN) – Page 1

3.8 Administer Measured Skill

Use the "change hunt-group n" command, where "n" is the extension of the ACD/Skill group number to be measured by Avaya IQ. Set the **Measured** field to "external" or "both" to enable real-time measurement data on the ACD/Skill group and the associated agents to be sent to Avaya IQ. Repeat this step for all ACD/Skill groups that will be measured by Avaya IQ.

```
change hunt-group 250                                          Page   2 of   3
                                  HUNT GROUP

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


      Controlling Adjunct: none


        VuStats Objective:
 Timed ACW Interval (sec):                    Dynamic Queue Position? n
   Multiple Call Handling: none

                                 Redirect on No Answer (rings):
                                               Redirect to VDN:
                   Forced Entry of Stroke Counts or Call Work Codes? n
```

Figure 10: Hunt Group – Page 2

4 Configure Avaya IQ

Configuration of the IEX-RTA interface is performed by Avaya CSI and is outside the scope of these Application Notes. After the interfaces are configured, the user can follow the procedure below to enable the interface.

4.1 Enable IEX-RTA Interface

Use a terminal emulator to connect to Avaya IQ and log in with the proper credentials. At the command prompt, follow these steps:

- Change to the `/opt/Avaya/pserv/rta_iex` directory
- Run the **./menurta** command to display the **IEX-RTA Menu** shown below.

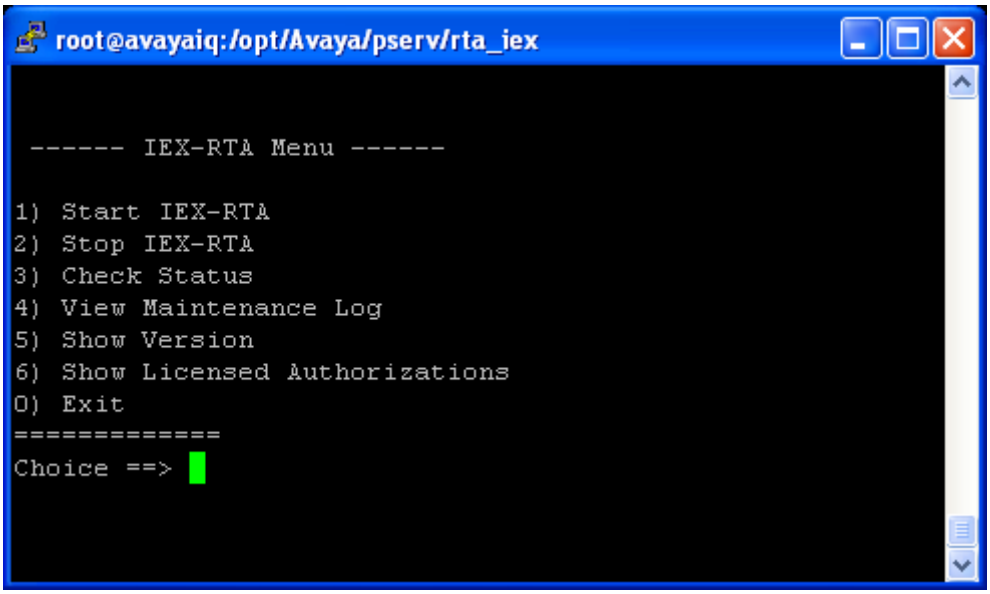

Figure 11: IEX-RTA Menu

The IEX-RTA interface may be stopped and restarted. Enter '2' to stop the interface, followed by the **Enter** key. When prompted for the session to stop, enter the session number corresponding to the Avaya IQ and IEX TotalView connection, followed by the **Enter** key. In the configuration, session number '1' was used. Avaya IQ indicates that the session is being stopped.

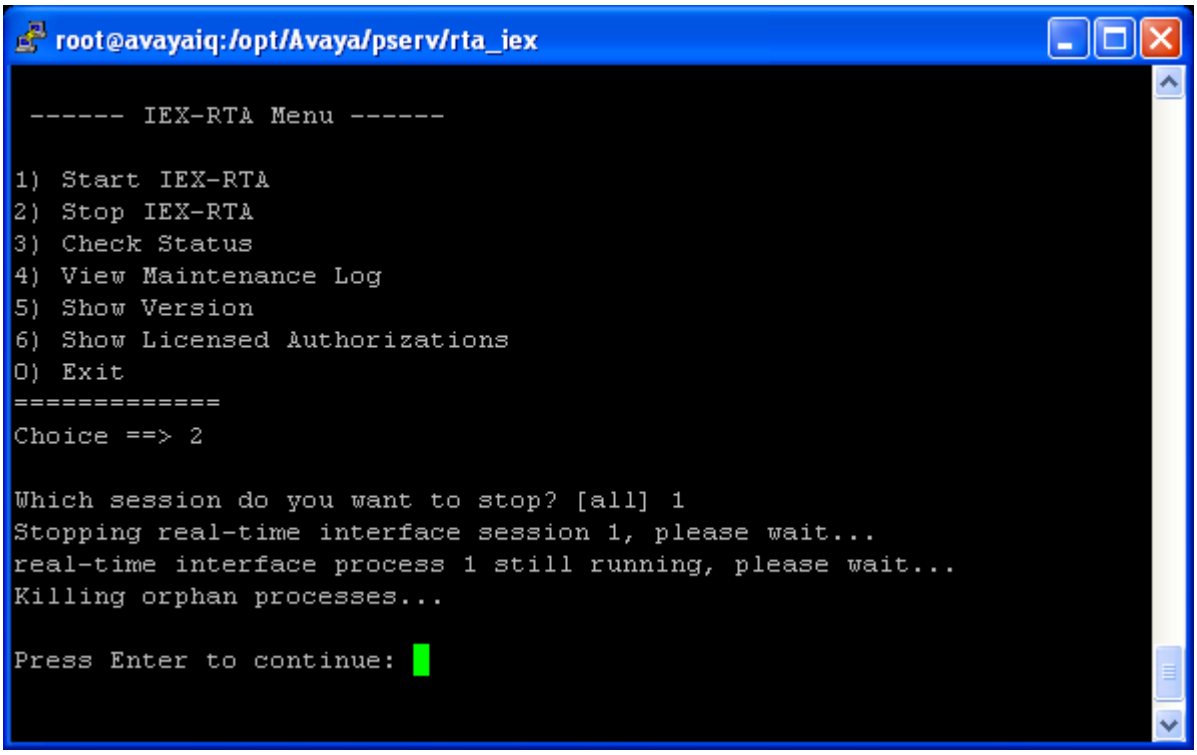

Figure 12: IEX-RTA Menu – Stopping a Session

From the **IEX-RTA** Menu, enter '1' to restart the interface, followed by the **Enter** key. When prompted for the session to start, enter the appropriate session number followed by the **Enter** key. Avaya IQ indicates that the session is being started.

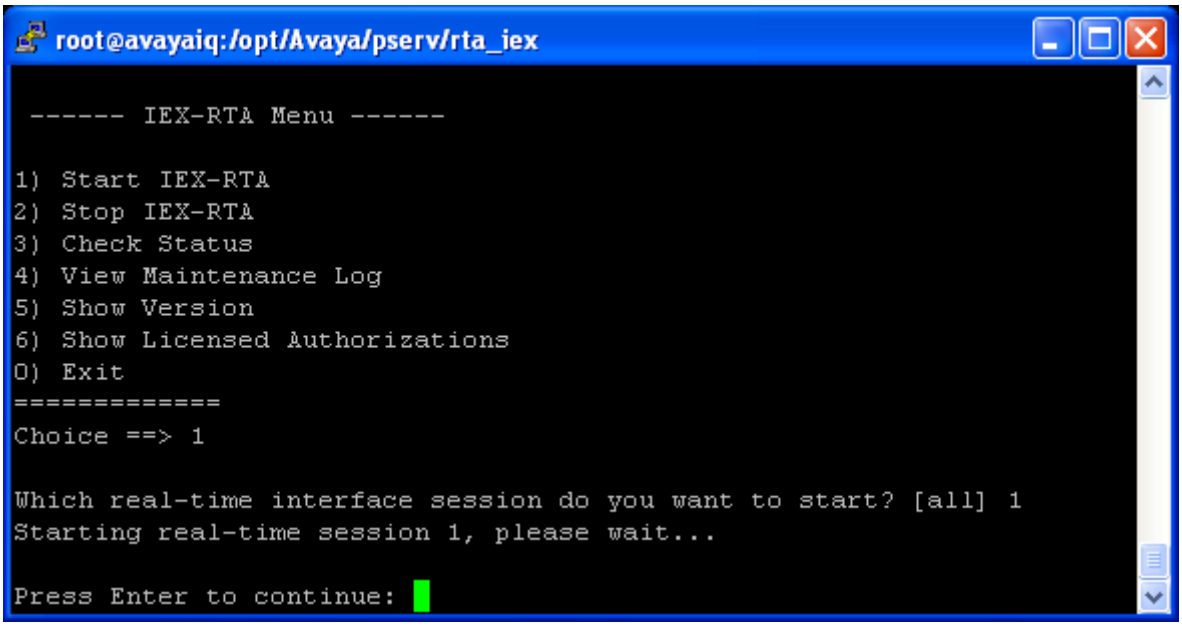

Figure 13: IEX-RTA Menu - Starting a Session

To check the session status, enter '3' at the **IEX-RTA Menu** followed by the appropriate session number as shown in **Figure 14**. The status screen should indicate that the session is running and connected to the IEX TotalView server.

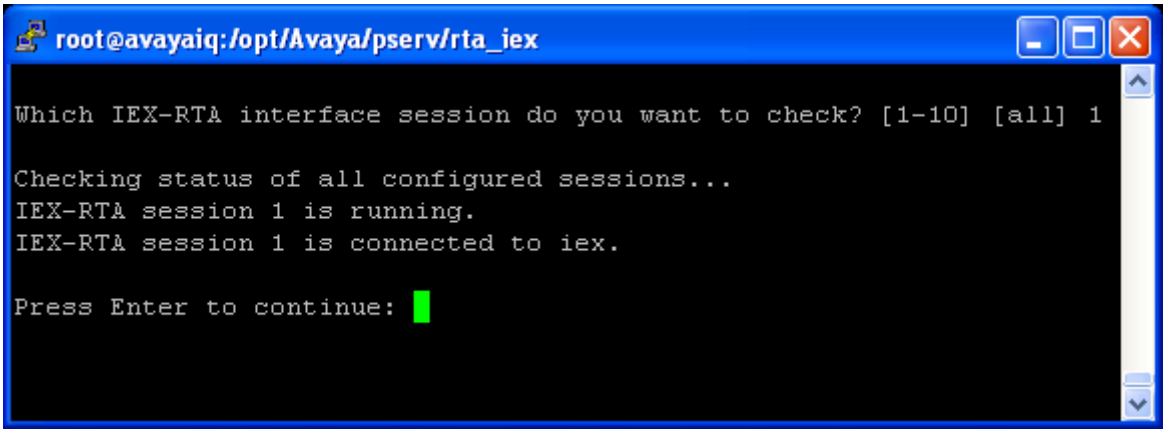

Figure 14: IEX-RTA Menu – Checking the Session Status

From the **IEX-RTA** Menu, enter '0' to exit from the menu, followed by the **Enter** key.

5 Configure IEX TotalView Workforce Management

The IEX TotalView system is installed and configured by an IEX implementation team. The customer is also provided with TotalView training, which includes how to configure contact center information, such as skills, VDNs, and agents, 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 [4] for the TotalView Reference Guides. It is assumed that the TotalView server has already been installed and configured with the Skills, Vector Directory Numbers (VDNs), and Agents configured in Avaya Communication Manager. This section will describe how to establish a connection to the TotalView server using the Supervisor Workstation and how to view real-time agent information. It is assumed that the TotalView Supervisor Workstation has already been installed on a Windows PC.

5.1 Configure 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 15**. 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 Avaya IQ and click on the **Selected** checkbox. When completed, click the **OK** button.

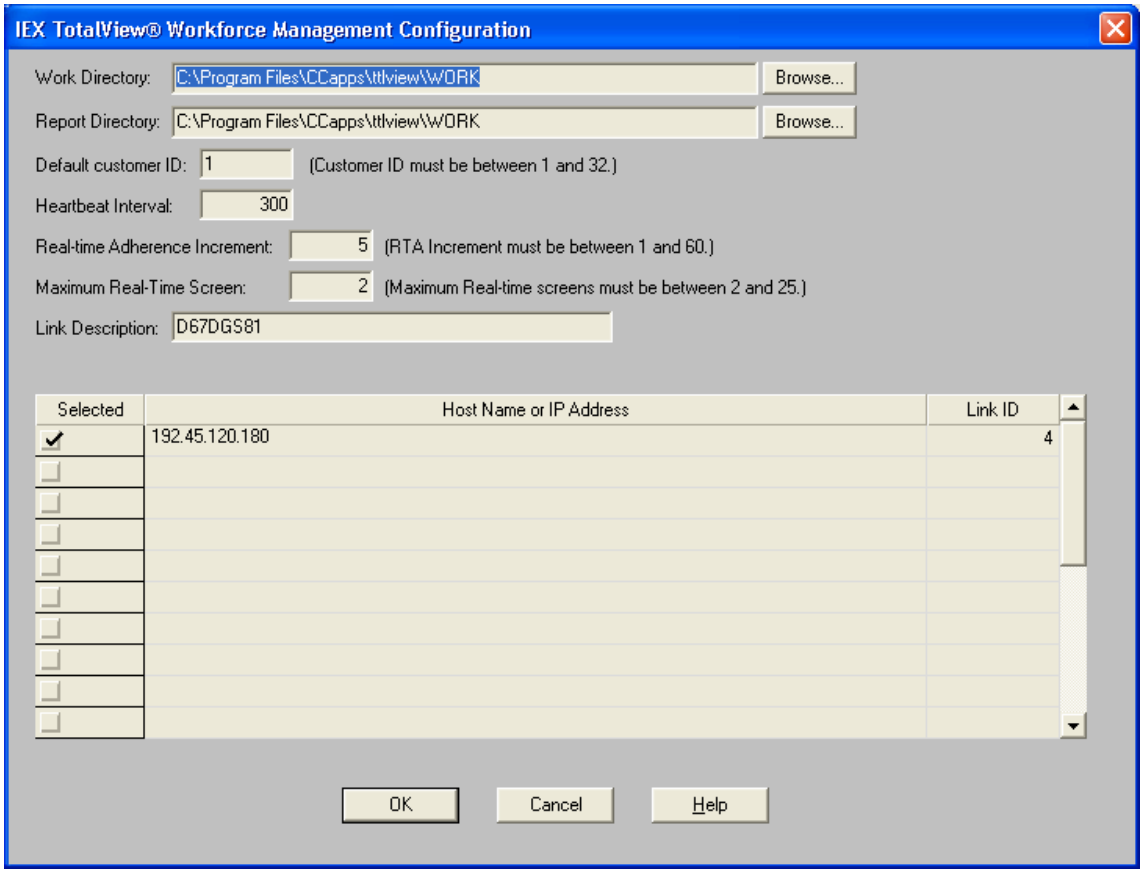

Figure 15: TotalView Configuration

5.2 View Real-Time Agent Information from TotalView Supervisor Workstation

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 proper credentials and then click **OK**.

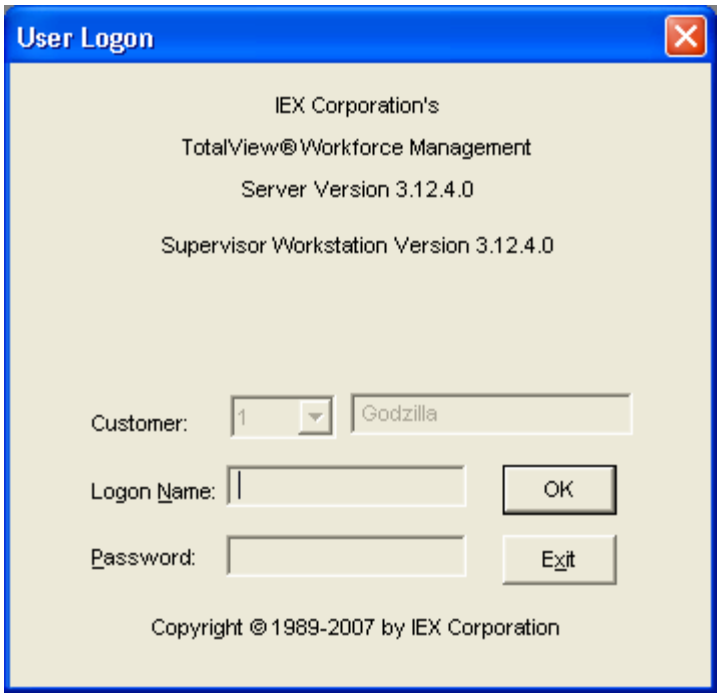

Figure 16: TotalView Supervisor Workstation User Logon

Once logged in, the TotalView main window is displayed as shown in **Figure 17**. 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 18**.

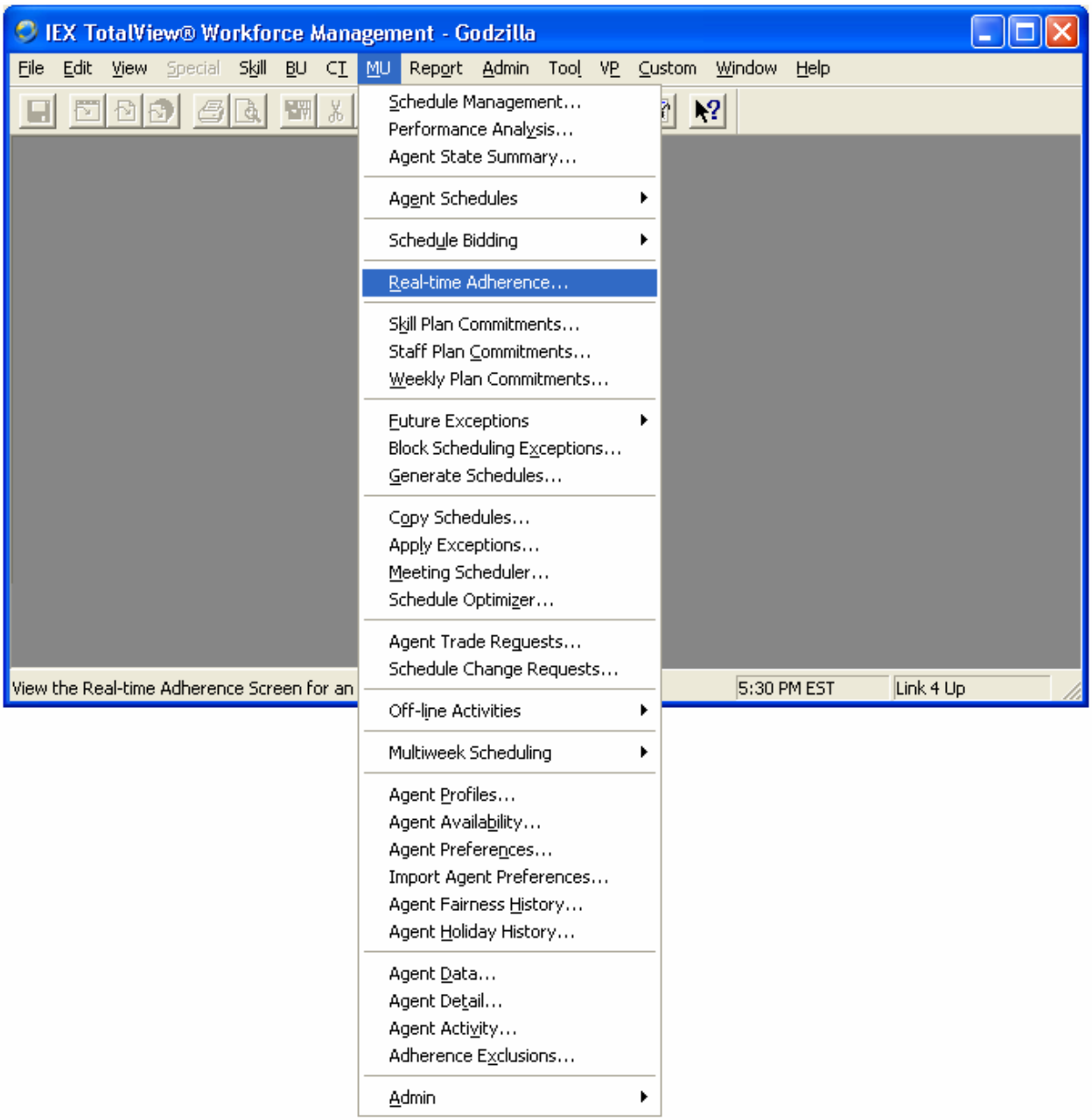

Figure 17: TotalView Supervisor Workstation Main Window

From the **Real-time 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 IQ. This option was already configured by IEX during the TotalView system configuration. Click the **OK** button.

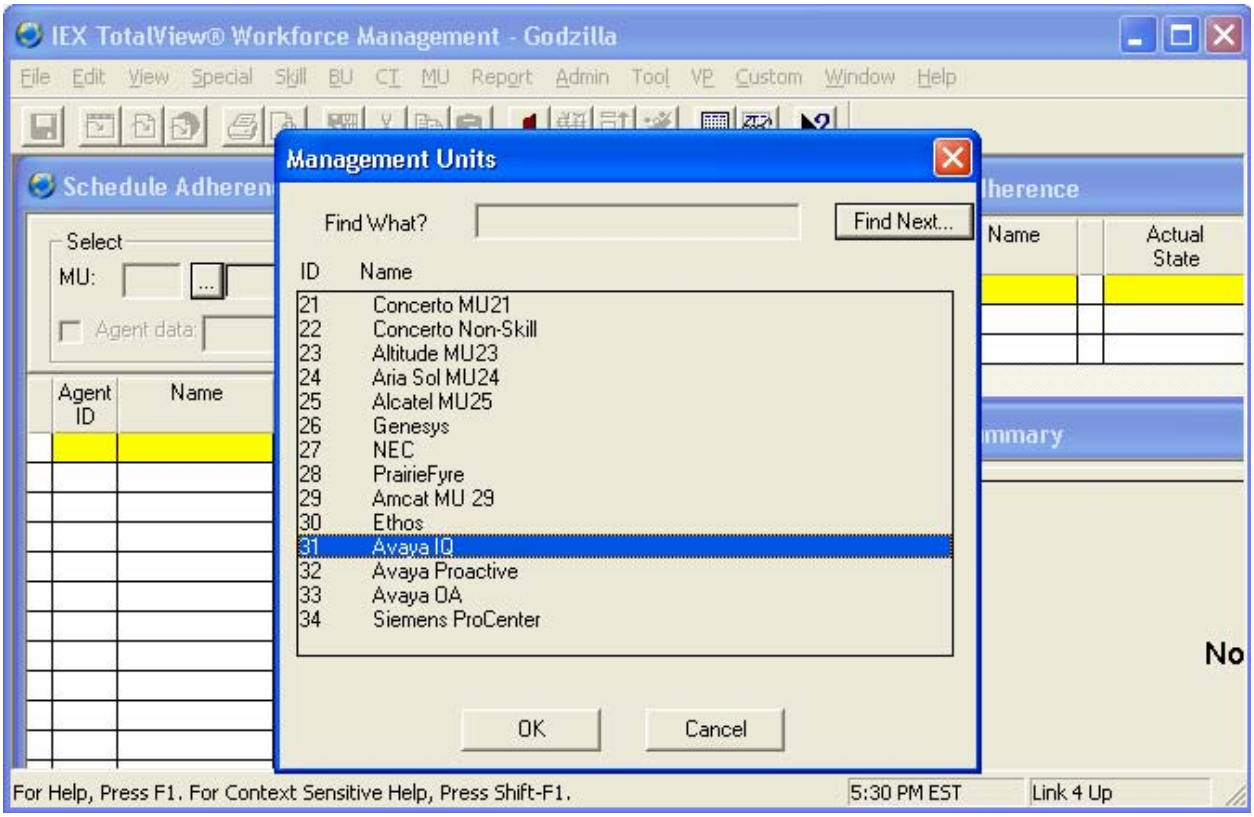

Figure 18: Real-time Adherence Window

The **Real-time Adherence** window is now displayed with agent state data for all agents in the ACD call center on Avaya Communication Manager. 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.

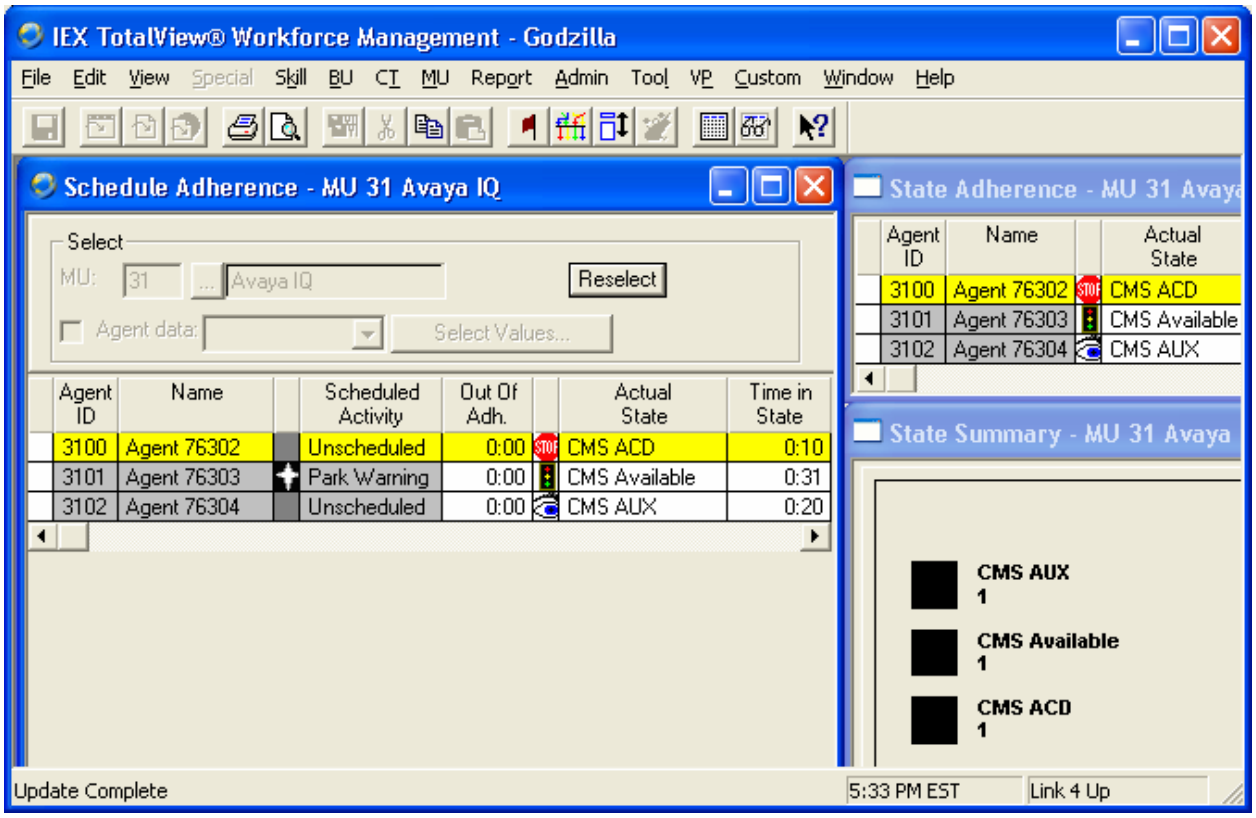

Figure 19: Real-time Adherence Window with Agent State Data

6 Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on verifying that IEX TotalView can receive, parse and display the agent state data sent by Avaya IQ. In addition, the accuracy of the Avaya IQ agent state data was also verified.

The serviceability testing focused on verifying the ability of IEX TotalView to recover from adverse conditions, such as disconnecting the network interface and restarting the IEX-RTA interface from Avaya IQ.

6.1 General Test Approach

The feature test cases were performed manually. Incoming calls were made to the monitored ACD/Skill and VDN groups and routed to available agents. This allowed the agents' work mode to change and be sent to IEX TotalView. In addition, manual work mode changes were made from the agent telephones to generate agent state changes and populate specific fields in the agent data streams. The accuracy of the agent data was also verified on TotalView.

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

6.2 Test Results

All test cases were executed and passed.

7 Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya IQ, and IEX TotalView.

7.1 Verify Avaya Communication Manager

Verify the status of the processor interface channel by using the "status processor-channels n" command, where "n" is the processor channel number from **Section 3.6**. Verify that the **Session Layer Status** is "In Service", and that the **Socket Status** is "TCP connected", as shown below.

```
status processor-channels 1
                        PROCESSOR-CHANNEL STATUS

          Channel Number: 1
    Session Layer Status: In Service
           Socket Status: TCP connected
             Link Number: 1
               Link Type: ethernet
   Message Buffer Number: 0

            Last Failure: Far end sent disconnect messag
                      At: 05/08/08 11:44
```

Figure 20: Processor-Channel Status

Verify the status of the TCP/IP link number by using the "status link n" command, where "n" is the TCP/IP link number assigned to the C-LAN used to connect to the Avaya IQ server from **Section 3.5**. Verify that the **Link Status** is "connected", and that the **Service State** is "in-service/active", as shown below.

```
status link 1                                                 Page   1 of   5
                               LINK/PORT STATUS

                 Link Number: 1
                 Link Status: connected
                   Link Type: ethernet
                   Link Name: CRM CLAN LINK
       Service Port Location: 01A0417
 Service Port Data Extension: 50000
               Service State: in-service/active
                   Node Name: clancrm
           Source IP Address: 192.45.120.75
                 Subnet Mask: 255.255.255.0
           Broadcast Address: 192.45.120.255
            Physical Address: 00:04:0d:4a:ef:9c
                     Enabled? yes
            Maintenance Busy? no
             Active Channels: 1
```

Figure 21: Link/Port Status

7.2 Verify Avaya IQ

From an Internet browser, access the Avaya IQ OAM Interface by entering `https://<IP Addr>:28443/CS-OAM` as the URL. Log in with the proper credentials. From the OAM interface, select the **Enterprise** tab in the left pane and navigate to Sites→Default Admin Site→<site name> to display the status of all the Avaya IQ processes. Ensure that all the processes have been started as indicated by a green LED besides each process as shown in **Figure 22**.

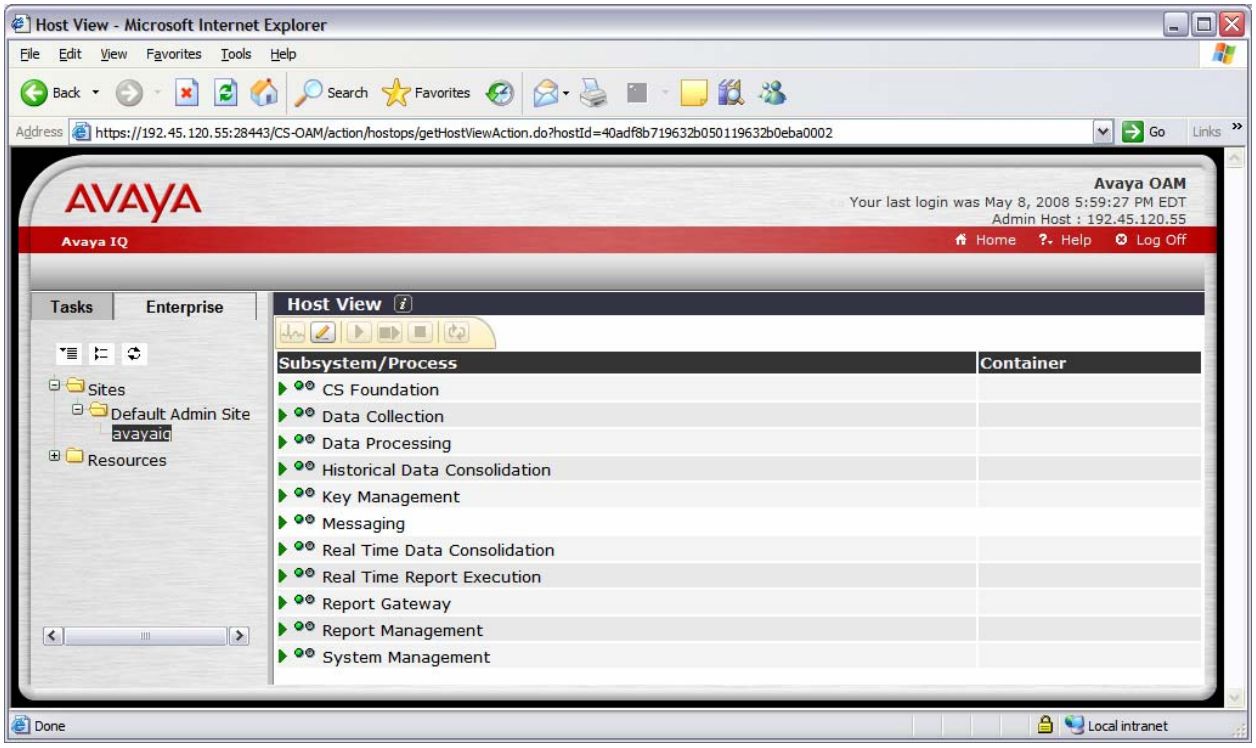

Figure 22: Avaya IQ Process Status

To verify that the session between Avaya IQ and IEX TotalView is in the "connected" state, start the IEX-RTA Menu and choose option '3' to check the session status as shown in **Figure 14**.

8 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

9 Conclusion

These Application Notes describe the configuration steps required for IEX TotalView to successfully interoperate with Avaya Communication Manager using the IEX-RTA interface of Avaya IQ. All feature and serviceability test cases were completed successfully.

10 References

This section references the product documentation 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] *Avaya IQ Overview*, Release 4.1, March 2008, available at http://support.avaya.com.

[3] *Avaya IQ Administration*, Release 4.1, March 2008, available at http://support.avaya.com.

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

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.