System Health Monitor User Guide

Version 8.6

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Change Notices

The following change notices are provided to assist users of the System Health Monitoring application in determining the impact of changes to their processing.

If you have any questions or review comments about this document, please contact Odalys Castro at (312) 786-8817.

Date	Version	Description of Change
3/02/11	8.6	New user interface for Global View
11/01/10	8.5	No changes
8/16/10	8.4	No changes
5/3/10	8.3	New user interface for Equity Disqualify
7/10/09	7.2	Changes for XTP GUI
6/28/07	5.6	New user interface for XTP Fix Equity
5/23/07	5.5	New user interfaces for Admin Request GUI (AR GUI)
11/30/06	5.4	Update Definition interface changes
		New user interfaces for Log Viewer and Chart functionality
4/18/06	4.9	Updated the Alarm Definition window to include creating/updating alarm notification watchdogs
11/15/05	4.8	New sections corresponding to the new options in the XTP GUI Tools Menu
		New section for Historical Alarms
		Updated System Health user interfaces
6/24/05	4.2	Updated XTP Gui Monitor user interfaces
		New section for Audible Alarms
2/03/05	4.1	New user interfaces to monitor the Extreme Ticker Plant (XTP)
11/01/04	4.0	Updated System Health user interfaces

Date	Version	Description of Change
		CAS Monitor interface updates
		New user interface for Preferences
		New section for Alarms
6/22/04	3.0	New Orb Name Alias Admin user interface
		CAS Monitor interface updates
		Display of process status in Open Tasks toolbar
4/12/04	2.0	CAS Monitoring interface updates
		New user interface for Search and Filter options
		New System Summary User Interface
02/17/04	1.0	First draft.

Table of Contents

Introduction

Purpose

This user guide was written to assist CBOE Operators and Developers in managing, identifying and error troubleshooting the CBOE*direct* screen-based trading system.

Intended Audience

This user guide is intended for System Operators or any person interested in the state of the CBOE*direct* screen-based trading system.

Conventions Used in this Guide

The System Health Monitor application was designed so that you can perform all of your activities from several display windows. Some fields are sensitive to both right and left mouse clicks. Window control functions can also be activated by using keyboard commands.

Section 1 of the document illustrates how to perform the necessary functions of the monitoring tool. Additional information about window configuration and sizing can be found in Section 2: Reference Guide.

There are several conventions used throughout this guide to help trigger important information:

Bolding — Used to highlight menu selections (e.g., **Login**) and button names (e.g., **Update**)

↳ Note: — This notation is used to indicate important information you should note when performing the associated function.

Brackets [ ] — Used to highlight keyboard commands (e.g., [Alt]-[O]). Note that when [Alt] or [Ctrl] are used in conjunction with another key, hold down the first key while pressing the second.

Some button functions can be executed through keyboard commands. Hold down the [Alt] key and press the keyboard character of the underlined letter in the command. For example:

[Alt]-[R] Restores an active window

This mouse graphic with the right mouse button highlighted will appear in the margin when accompanying instructions relate to functions activated by clicking the ***right*** mouse button.

All other mouse commands (such as double clicking to display a window) refer to a normal left mouse click.

Process Status Values

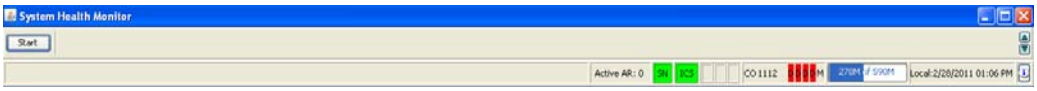
This graphic will appear in the margin when there is information relating to process status values.

Section 1: Screen-Based Trading System Health Monitor

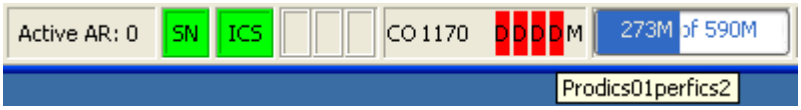
This section of the user guide will direct you through all functions of the System Health Monitor tool for CBOE*direct* and its interfaces with related CBOE systems.

Getting Started

When you launch the System Health Monitor application, the following menu window will display.



From this window, you have the ability to display various components of the CBOE*direct* screen-based trading system. In addition, you can quickly view the status of the System Health Monitor and Collector from the right-hand corner of the Open Tasks toolbar.



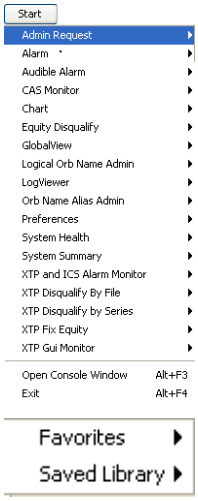
In the example above, “SN” indicates that the subscription for alarm notification is active. “CO 409” represents the Instrumentation Collector Server (ICS) where the instrumentor data is being received. If the instrumentor data were being received by the Event Channel (EC), the Open Tasks toolbar would display “EC”. In the example above, ICS is up.

The status of all ICS processes display as Master (M), Slave (S) or Down (D). In the example above, one process is in Master mode. The other processes are Down. A tool tip for the process status displays the Orb name of the ICS display.

If status information displays in red, two consecutive periods have passed where the number of instrumentors received is zero. If status information displays in yellow, one consecutive period has passed where the number of instrumentors received is zero.

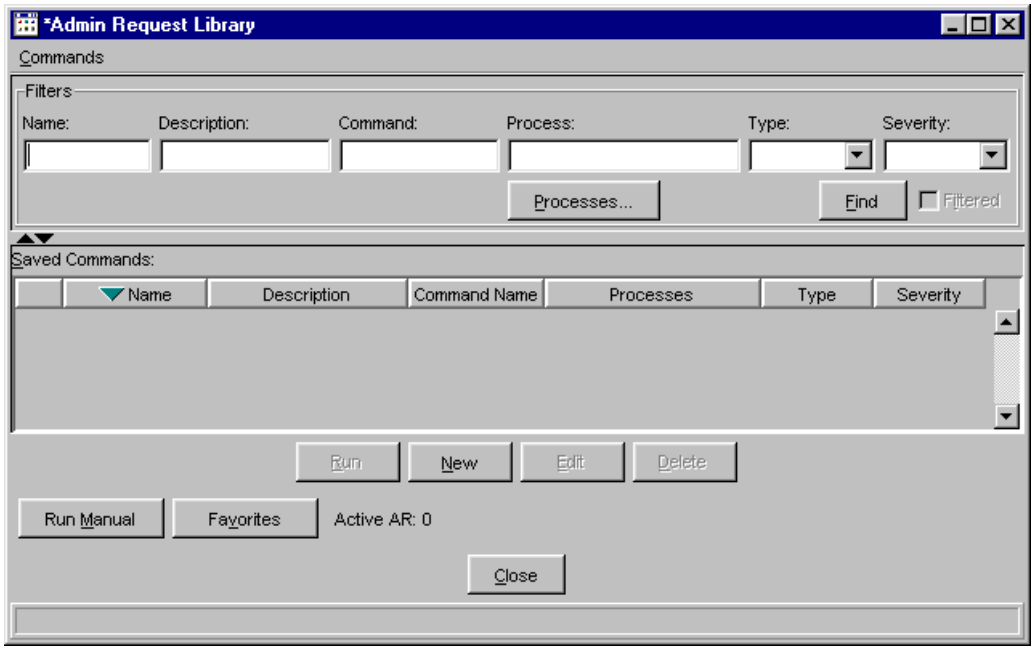
Once you have verified the status of the System Health Monitor and Collector, you can proceed to use all the functions of the System Health Monitor application.

Admin Request GUI



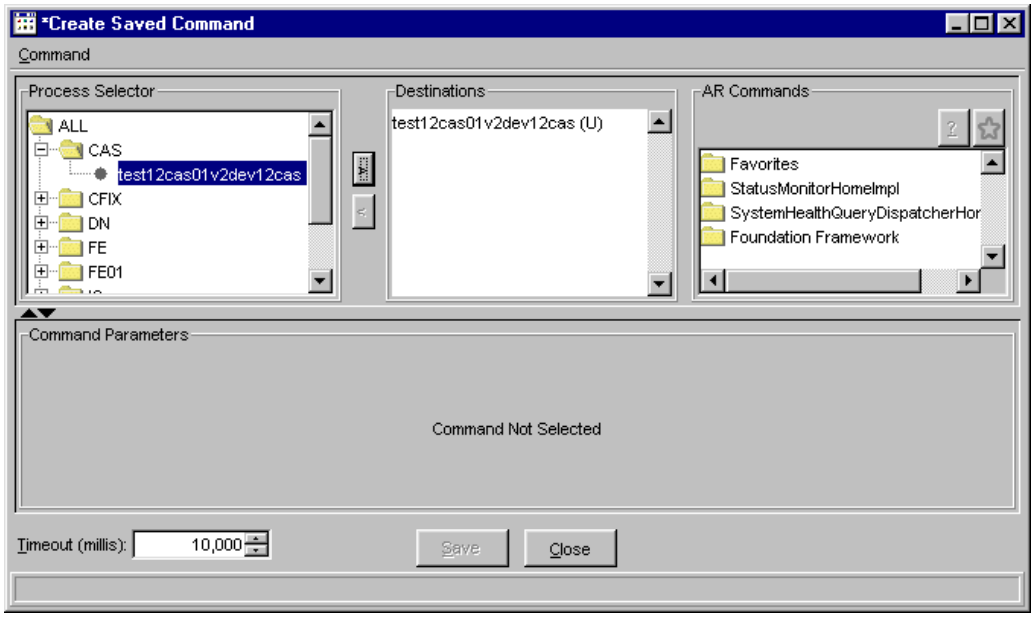
The **Admin Request** (AR) interfaces provide a backup tool for CBOE*direct* services usually running on the global server. If the global server is unavailable, Operations and Support groups can execute specific administrative commands through the AR interfaces to display critical system information and change system parameters, states and properties.

From the **Start** menu, click on **Admin Request** and then select **Saved Library**, **Create New Window**. The **Admin Request Library** window will display. From this window, you can create, edit and filter AR commands.

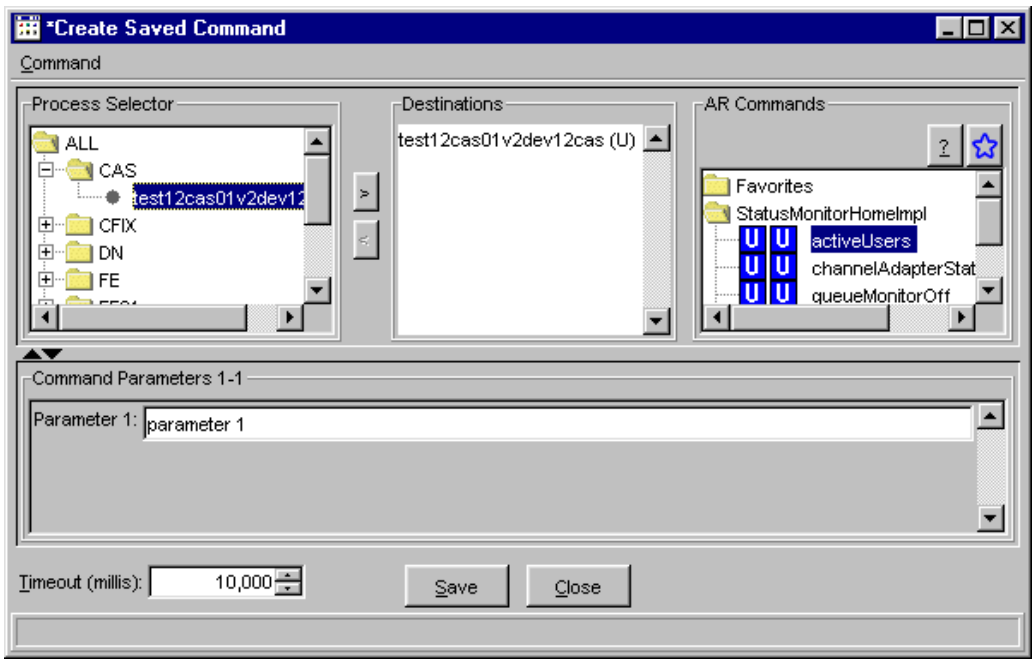


Create a Saved AR Command

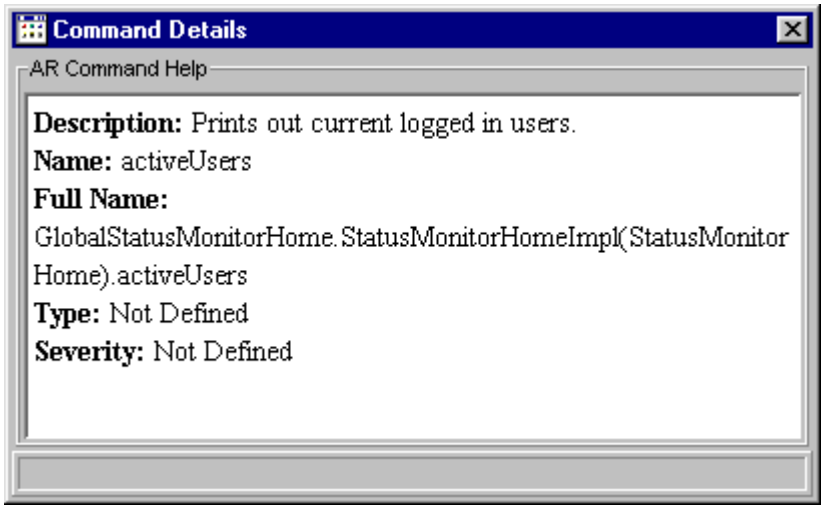
AR commands are created through the **Admin Request Library** window. To create a new command, click **New**. The **Create Saved Command** window will display.



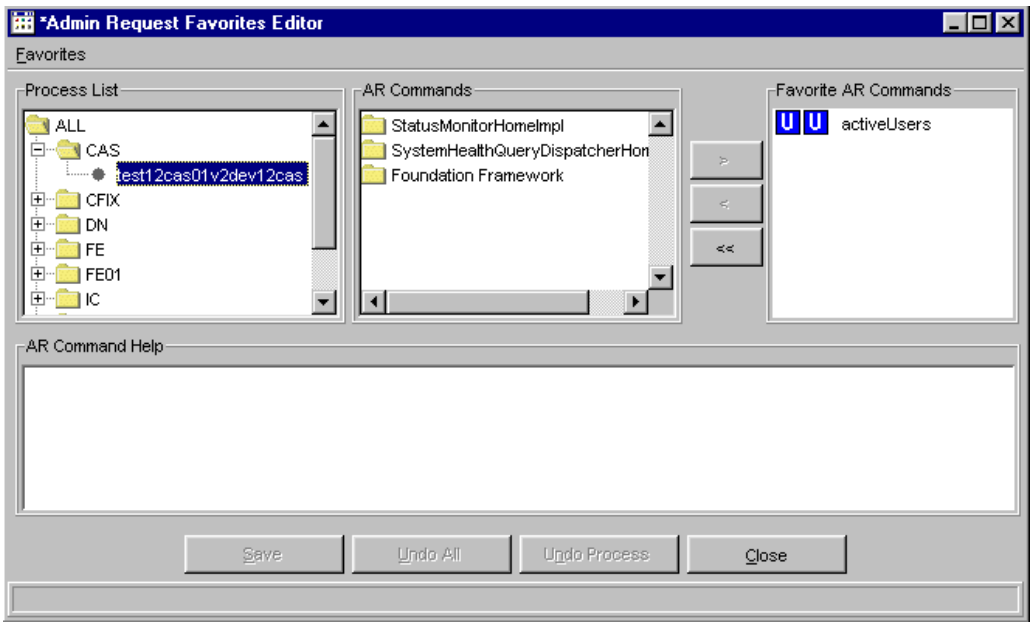
- From the **Process Selector** list, select the process that will be linked to the AR command.
- Click on the right-arrow  to move the process to the **Destinations** list box. The (U) at the end of the process name indicates that the process is Up. The AR commands display in the **AR Commands** list box.
- Select the AR command from the **AR Commands** list box. In the example below, the AR command **activeUsers** has been selected from the StatusMonitorHomeImpl folder. A text box appears in the Command Parameters section of the window.



- Enter the name of the command parameter in the text box. In the example above, the parameter command name is **parameter 1**.
- If desired, change the **Timeout (millis)**. The default is 10,000.
- To view the details of the selected AR command, click  . The Command Details window displays.

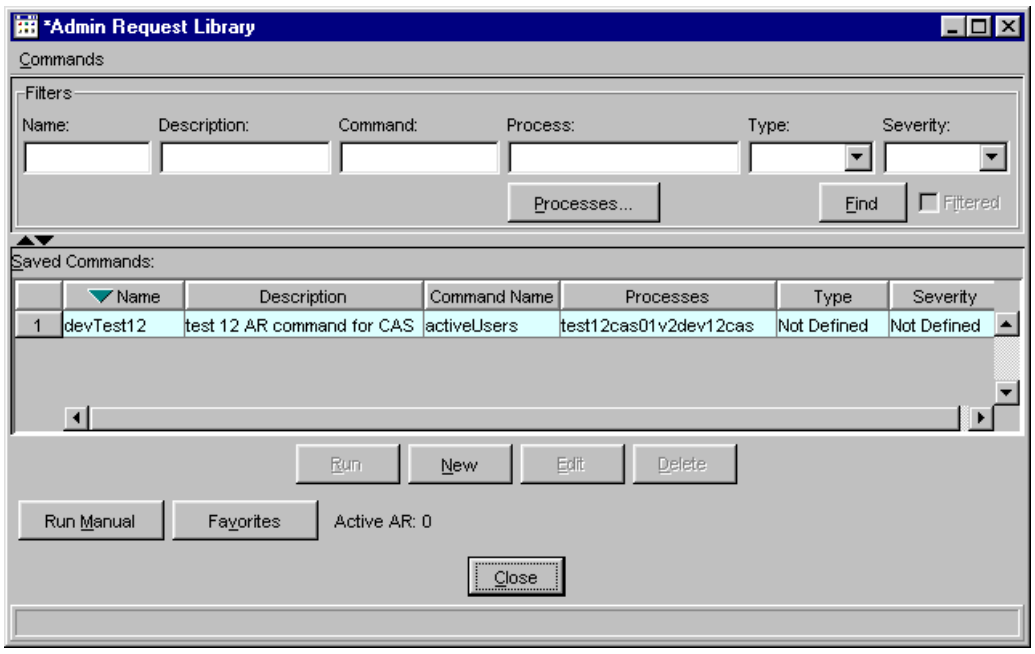


- To add the selected AR command to your Favorites selection, click  . The AR Command will display in your **Favorites** window.



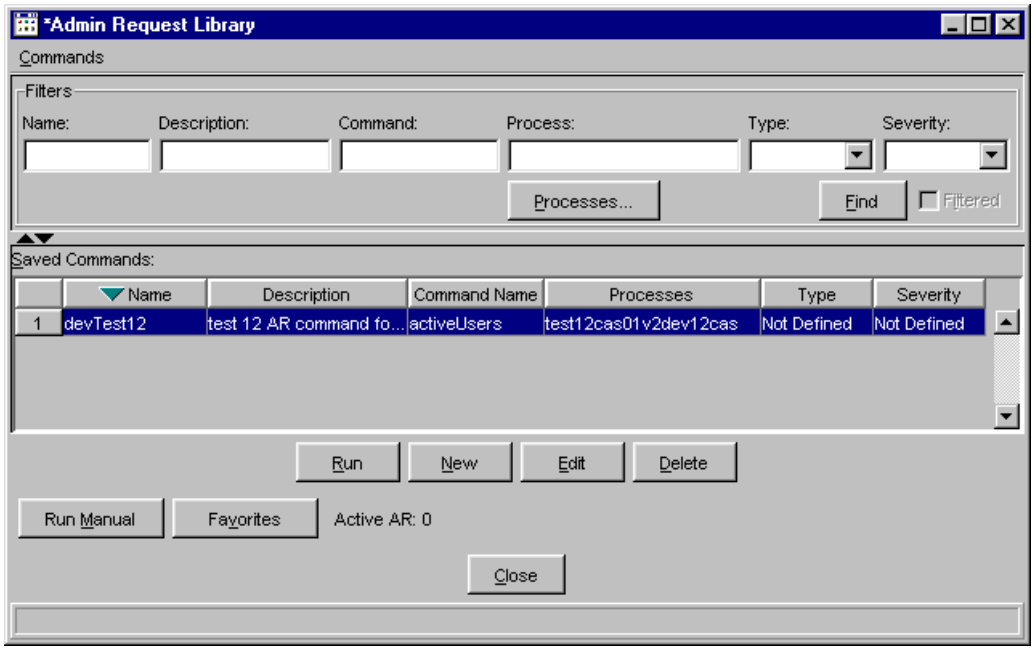
- To exit the window without creating the AR command, click **Close**.
- To save your created AR command, click **Save**. The **Save Command** window displays.

- Enter the AR command name and description in the corresponding text boxes.
- Click **Submit**, **Confirm**. The AR Command for the CAS displays in the **Admin Request Library** window.

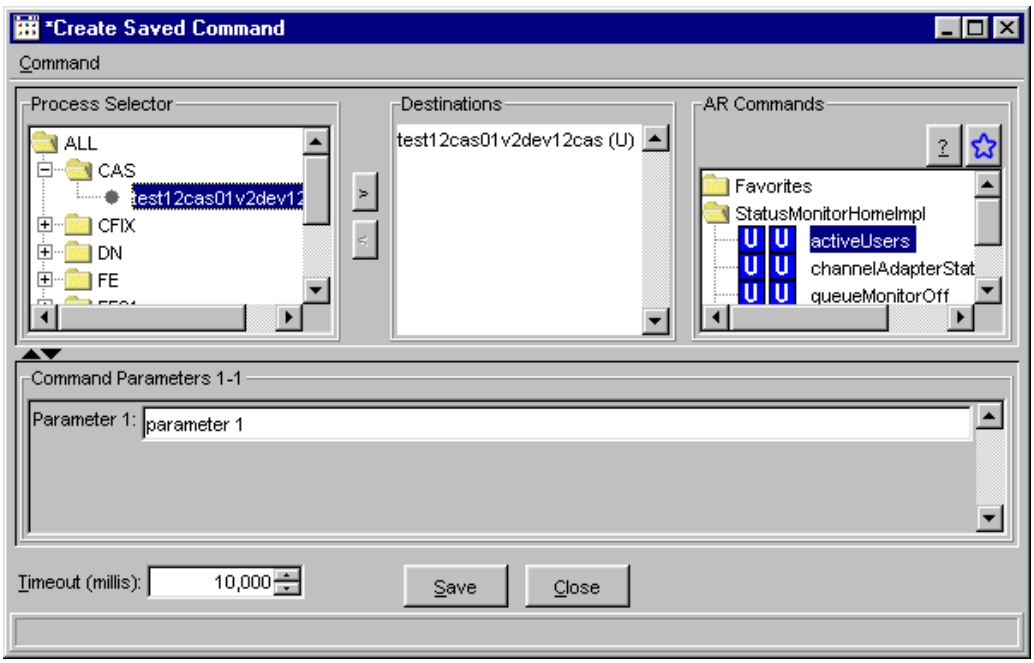


Create a New AR Command from an Existing Command

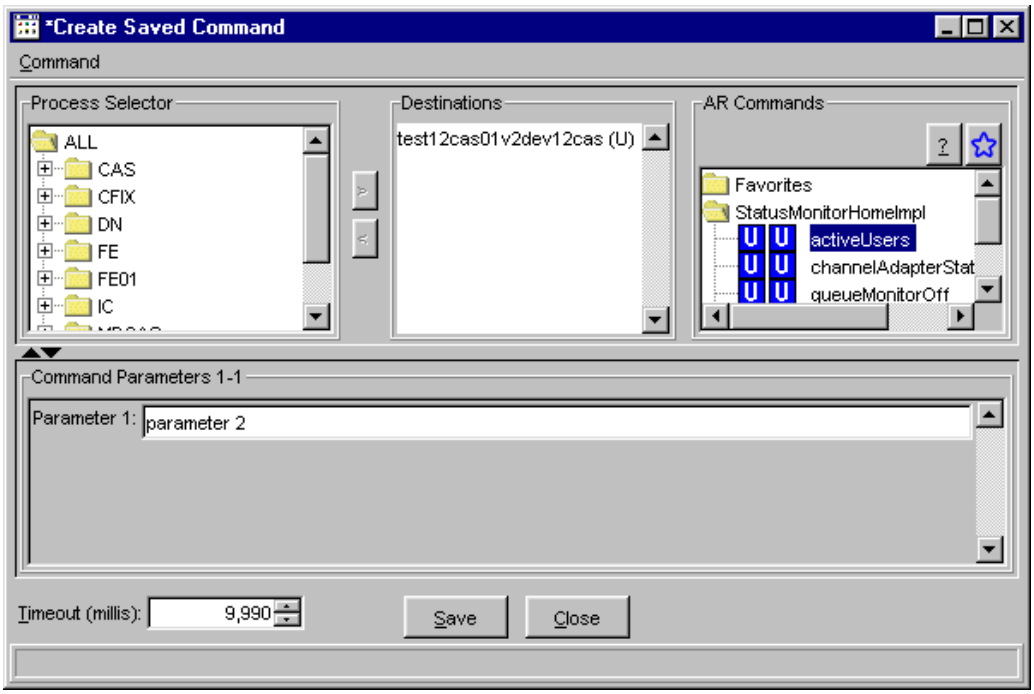
The AR interfaces allow you to create new commands from an existing template.



- Highlight a command from the **Saved Commands** section of the window.
- Click **New**. The **Create Saved Command** window displays with the details of the selected AR command.

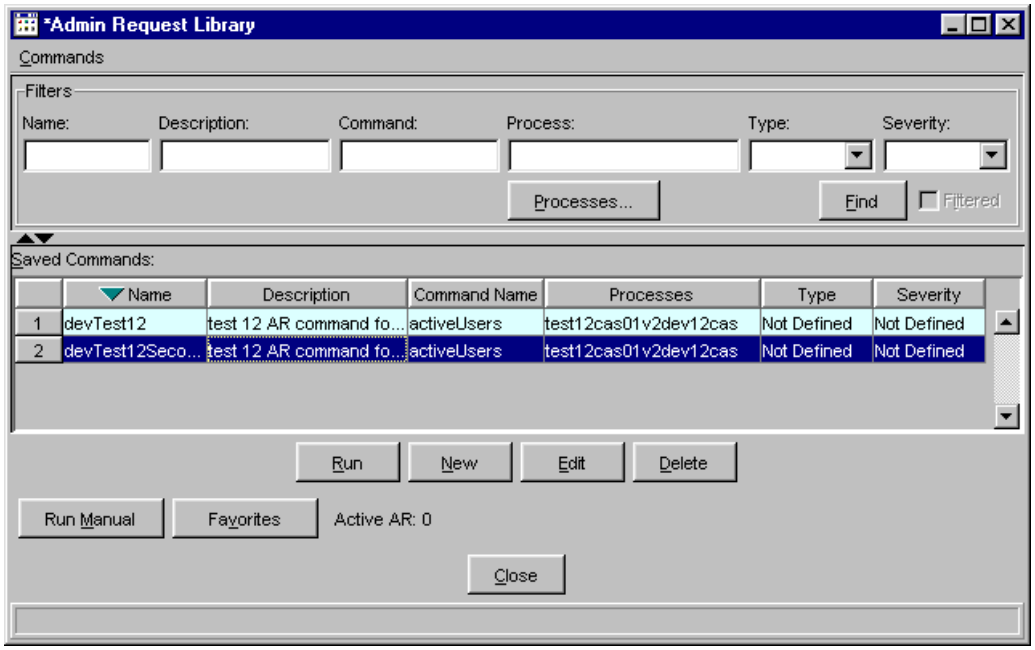


- Change the parameters and timeout values. Click **Save**.



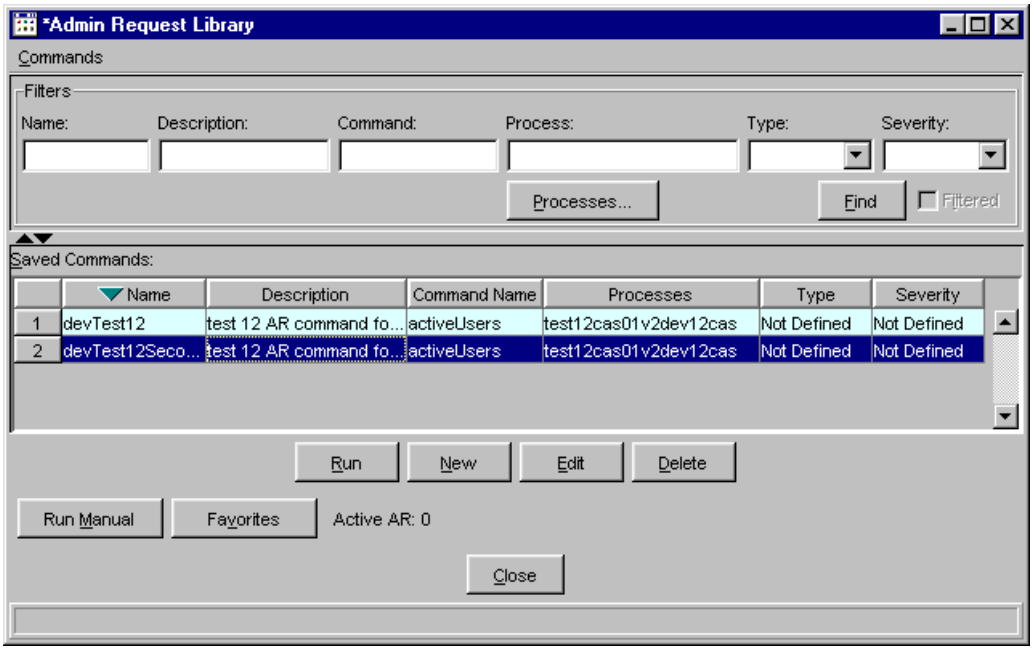
The **Save Command** window displays the name of the command as Copy of devTest12.

- Enter a new name and description for the new AR command. Cick **Submit**, **Confirm**. The new AR Command displays in the **Admin Request Library** window.

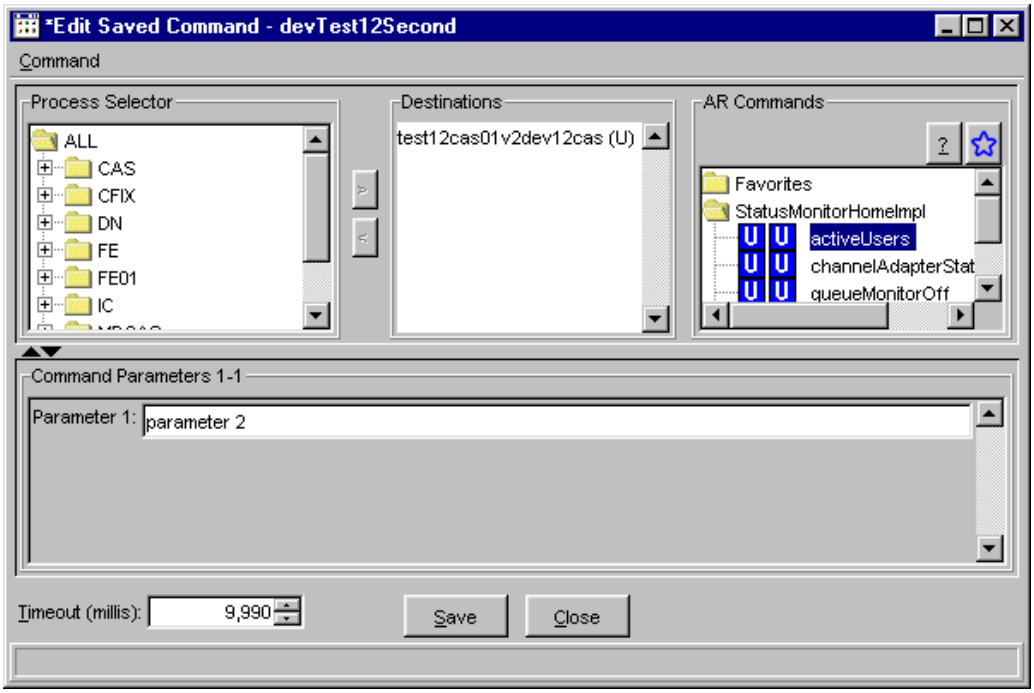


Edit an AR Command

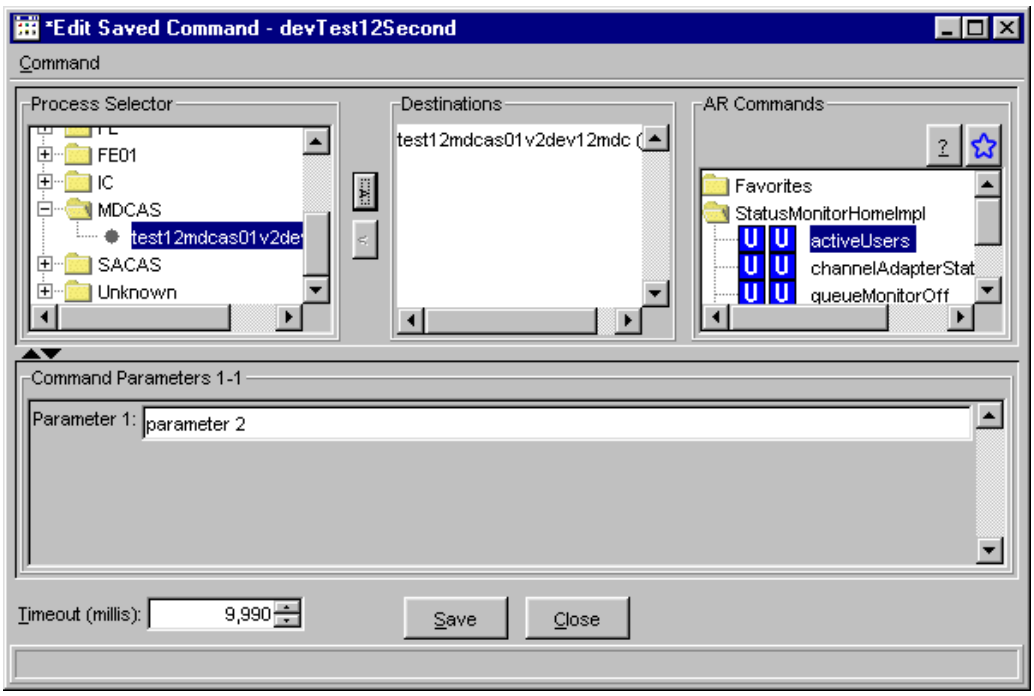
You can edit AR commands through the Admin Request Library window.



- Highlight a command from the **Saved Commands** section of the window.
- Click **Edit**. The **Edit Saved Command** window displays with the details of the selected AR command.

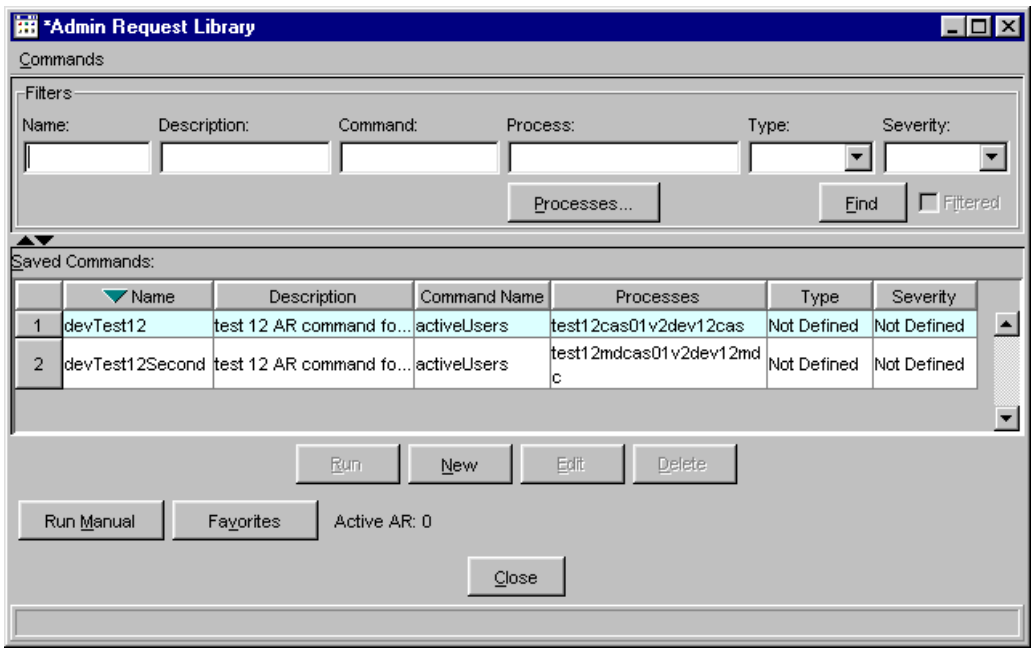


- You can edit the process, destination, AR Commands, etc. In the example below, the process was changed from CAS to MDCAS.



- To exit the window without editing the AR command, click **Close**.
- To save your edits, click **Save**. The **Save Command** window displays.

- Verify you want to keep the same command name and description.
- Click **Submit**, **Confirm**. The edited AR Command displays in the **Admin Request Library** window.



Edit Column Preferences

You can customize your AR windows by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

For detailed information, refer to the Edit Column Preferences section, page 171.

To print the Saved Commands table right mouse click on a data row. Select **Print Table**. Select the printer destination and click **Print**.

To export the table to a .csv or .txt file, right mouse click on a data row. Enter the file name and select the file type. Click **Save**.

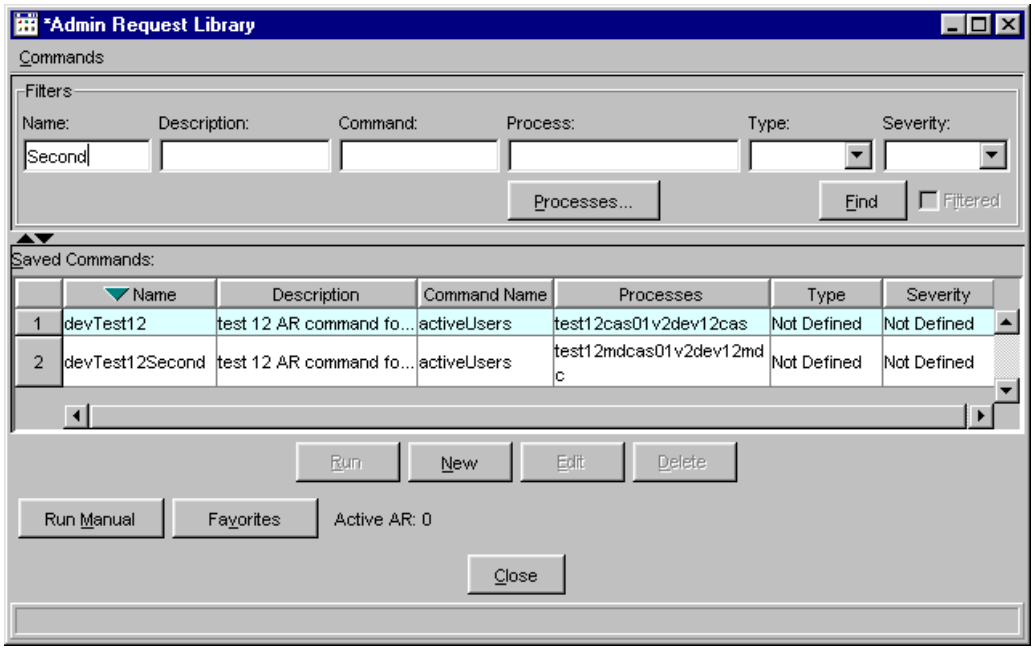
Sort and Rearrange Columns

You can sort any column on the AR windows at any time by clicking on the column heading. The column changes to reflect the sorted data.

To rearrange the display of the columns, place your cursor on the column heading, then using your mouse, click on the column and drag it to the desired position.

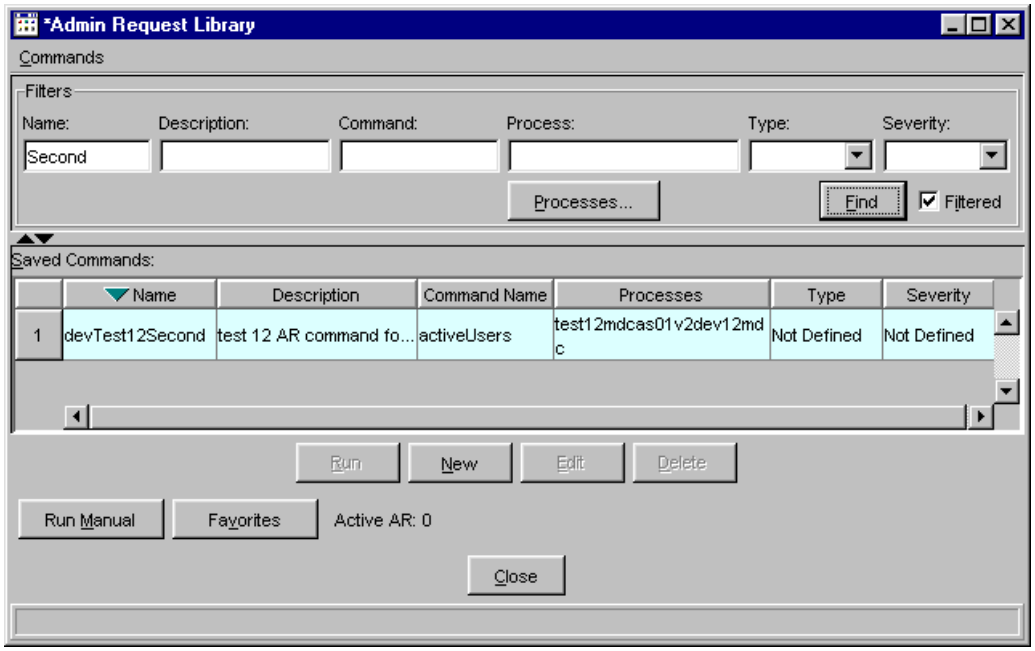
Filter AR Commands

You can filter AR commands through the systems filtering mechanism.



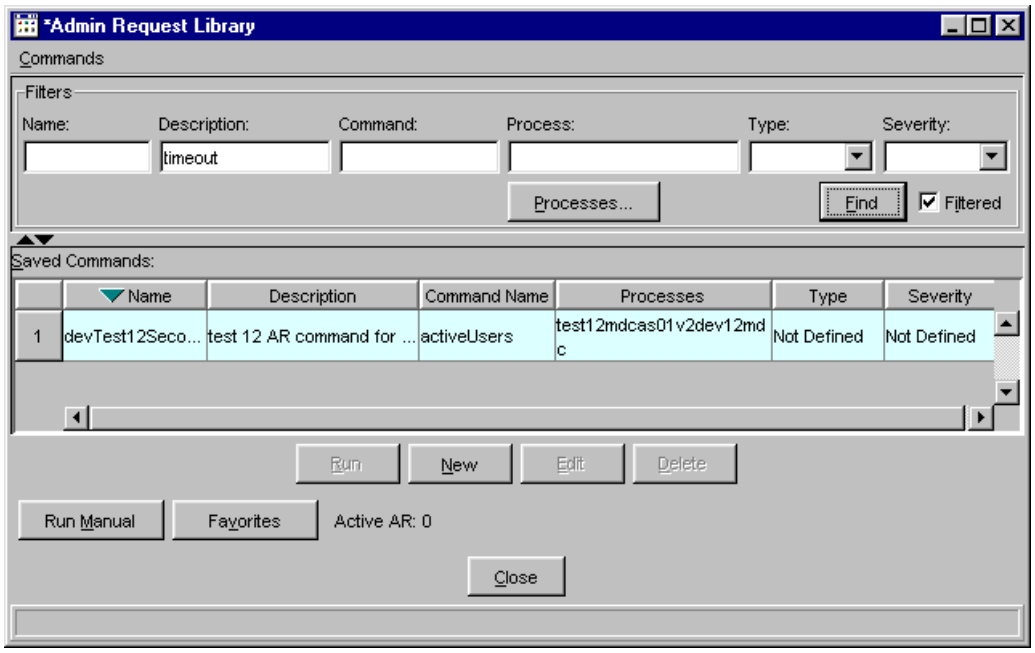
To filter an AR command by name:

- Enter part of the AR command name in the **Name** text field and click **Find**. In the example above, “Second” is entered in the **Name** text field. The results will display only the AR commands that have “Second” in their names.



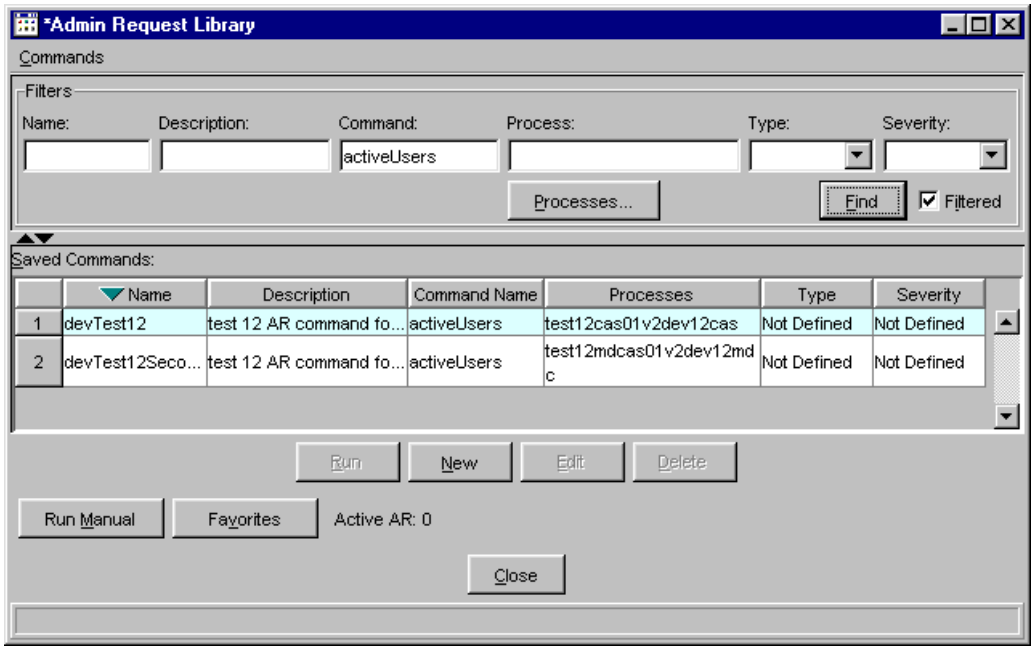
To filter by description:

- Enter part of the description name in the **Description** field and click **Find**. In the example below, “timeout” is entered in the **Description** field, resulting in the display of AR commands with “timeout” in the description.



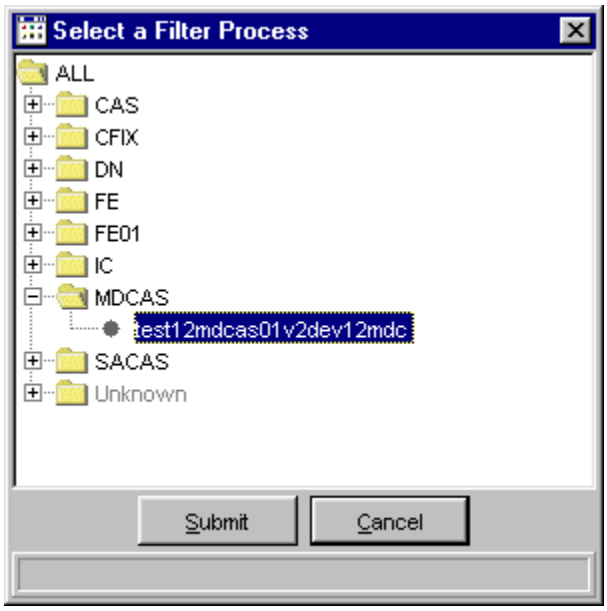
To filter by command name:

- Enter part of the command name in the **Command** field and click **Find**. In the example below, “activeUsers” is entered in the **Description** field, resulting in the display of AR commands with “activeUsers” in the command name.

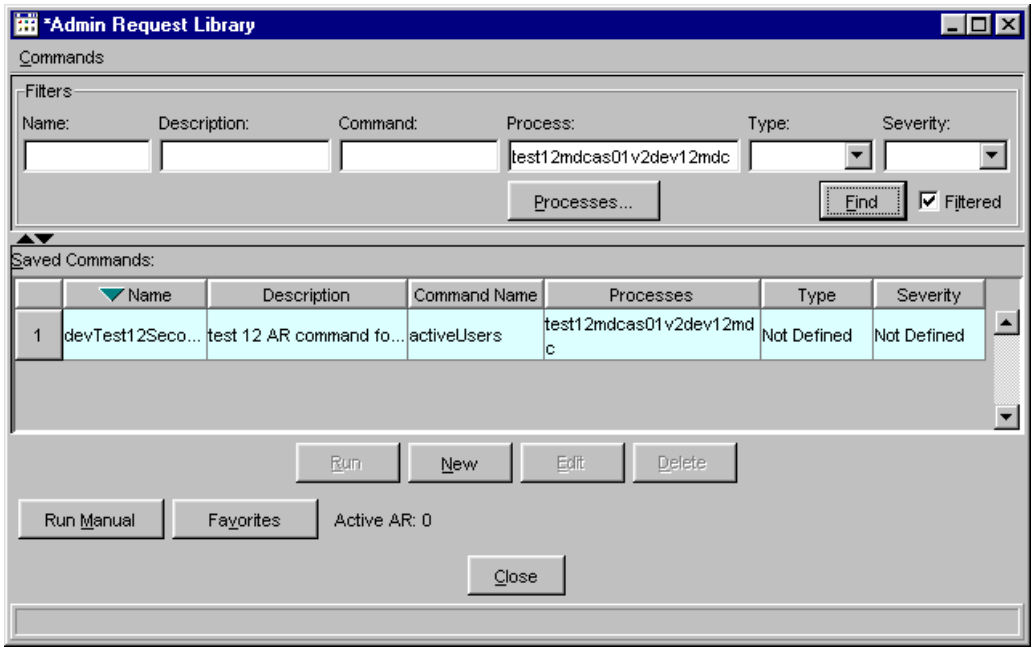


To filter by process name:

- Enter the process name in the **Process** field or click on the **Processes** button to select the process name.

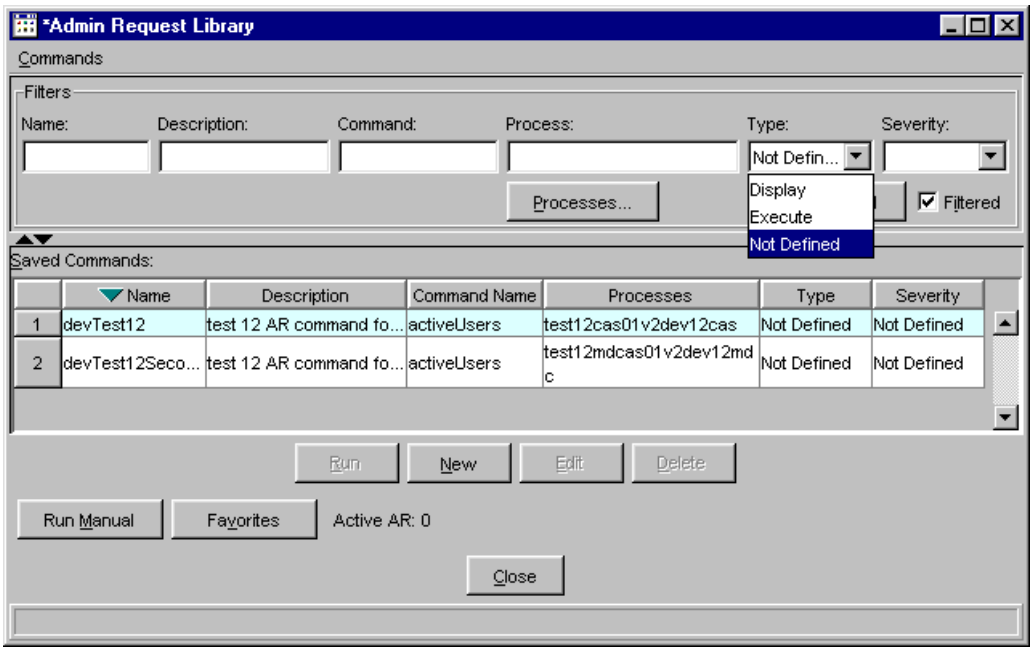


- To close the **Select a Filter Process** window without choosing a process name, click Cancel.
- Click **Submit**, **Confirm** to display the process name in the **Process** filter field. Click **Find**. In the example below, "test12mdcas01v2dev12mdc has been entered in the **Process** field. All AR commands that contain this process display in the **Saved Commands** section of the window.



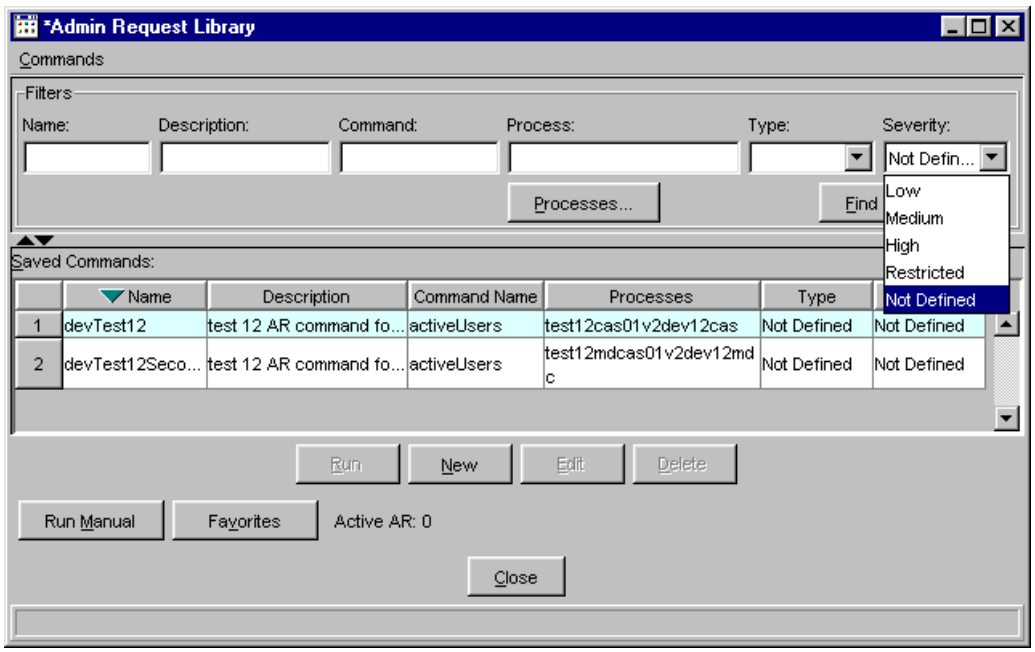
To filter by type:

- Select the command type from the **Type** dropdown list. Click **Find**. In the example below, "Not Defined" is selected from the **Type** dropdown list. The AR commands with a type of "Not Defined" display in the Saved Commands section of the window.



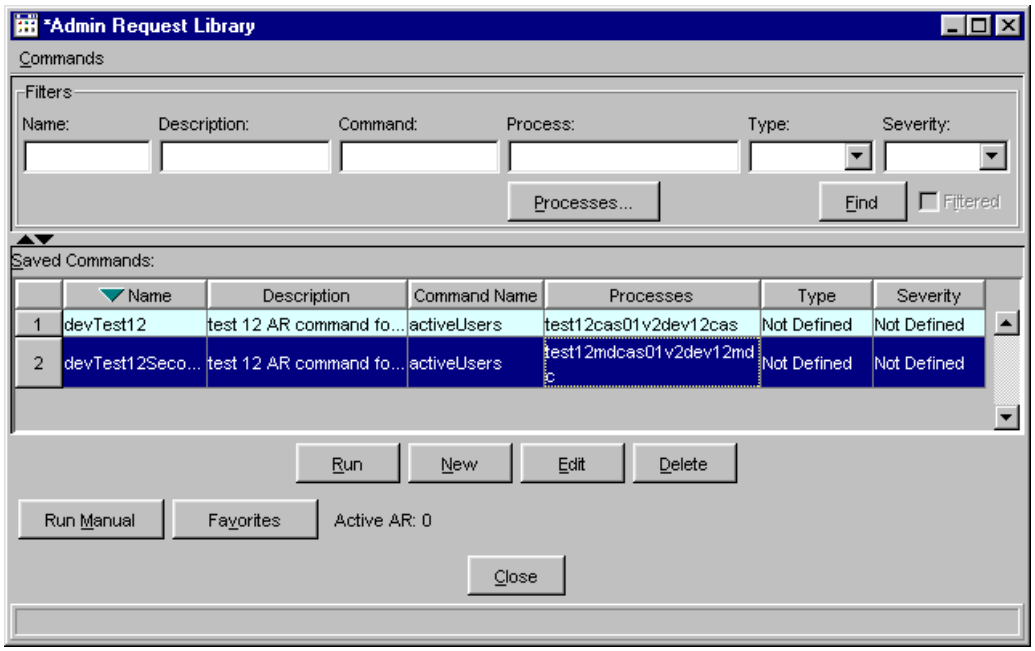
To filter by severity level:

- Select the severity level from the **Severity** dropdown list. Click **Find**. In the example below, "Not Defined" is selected from the **Severity** dropdown list. The AR commands with a severity level of "Not Defined" display in the Saved Commands section of the window.



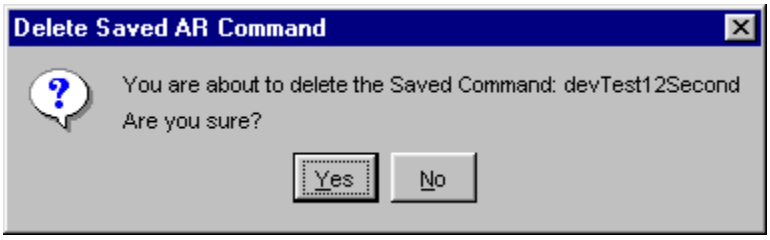
Delete AR Commands

AR commands can be deleted through the Admin Request Library window.



To delete a command:

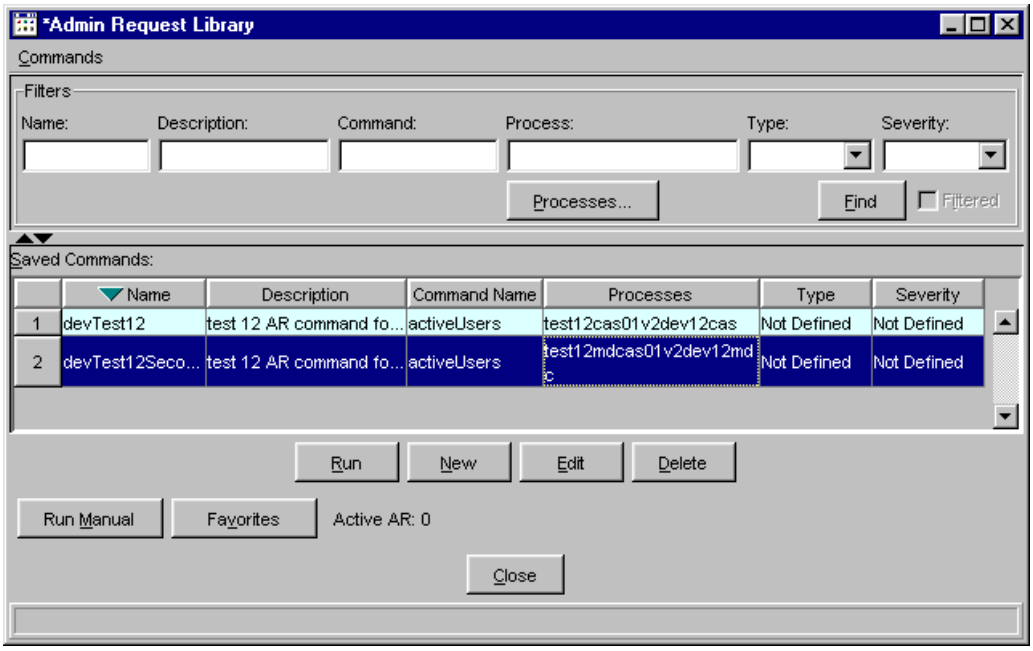
- Highlight the saved AR command you wish to delete. Click **Delete**. The system will prompt you to confirm the delete request.



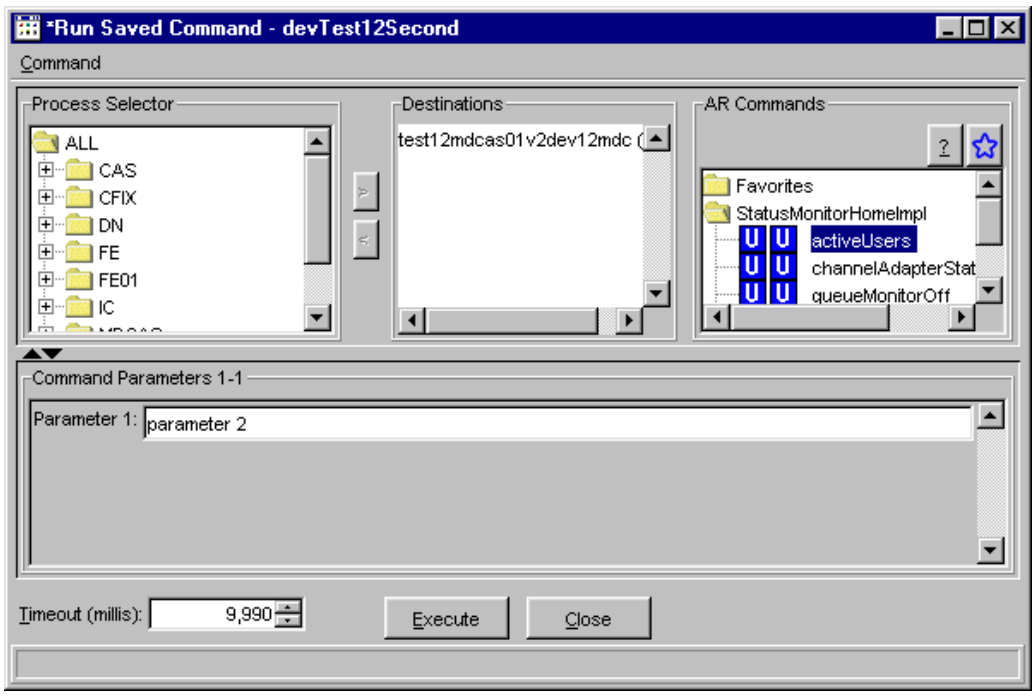
- Click **No** to close the window without deleting the AR command
- Click **Yes** to proceed with the deletion. The AR command will be removed from the Saved Commands section of the window.

Run AR Commands

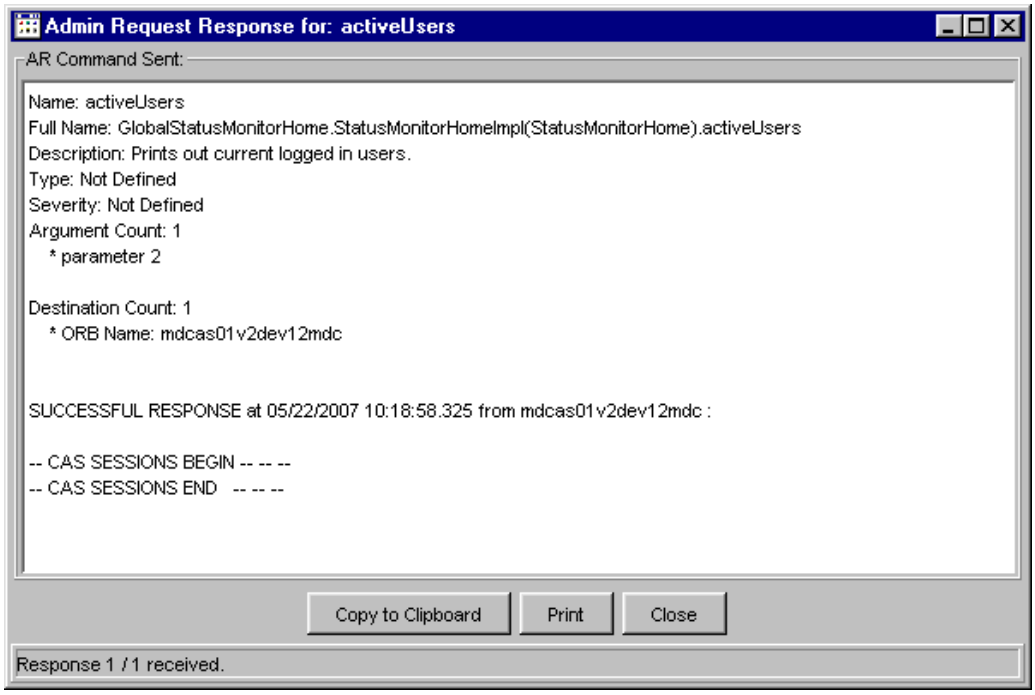
Once an AR command has been created and saved it can be executed through the Admin Request Library window.



- Select the saved AR command you wish to execute.
- Click **Run**. The **Run Saved Command** window displays. Verify that the destination list, parameter values and timeout values are correct.



- Or, you can manually run the command by clicking on the **Run Manual** button. Select the process, destinations and AR Commands.
- If you decide you do not want to run the command, click **Close**.
- Click **Execute** to run the AR command. The Admin Request Response window displays.

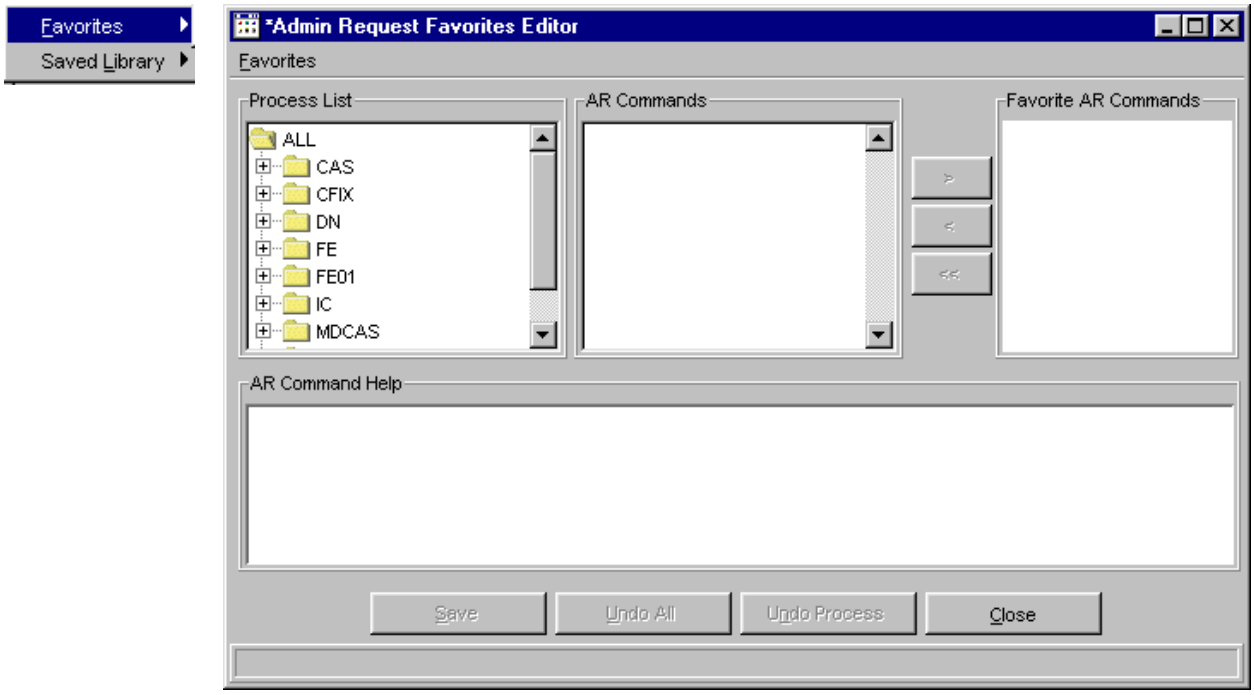


- To print the results of the run command, click **Print**. The results will print to the designated printer.

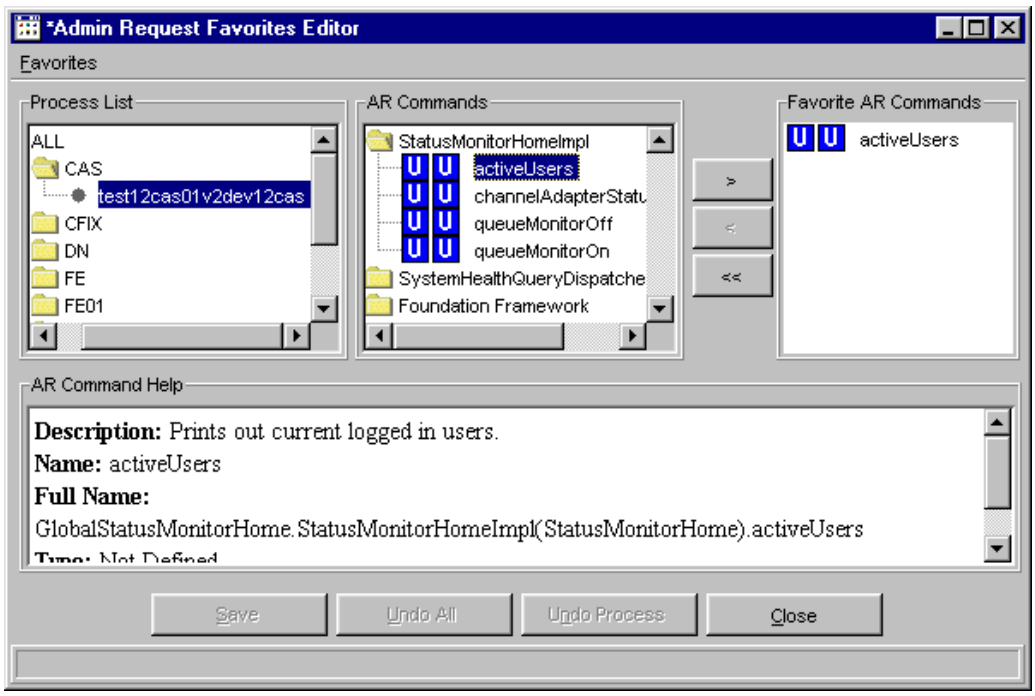
- To copy the results of the run command to the clipboard, click **Copy to Clipboard**.
- Open Notepad and select paste. The command results are copied to your Notepad.
- To exit the window, click **Close**. The system will direct you to the **Admin Request Library** window.

Edit Favorite AR Commands

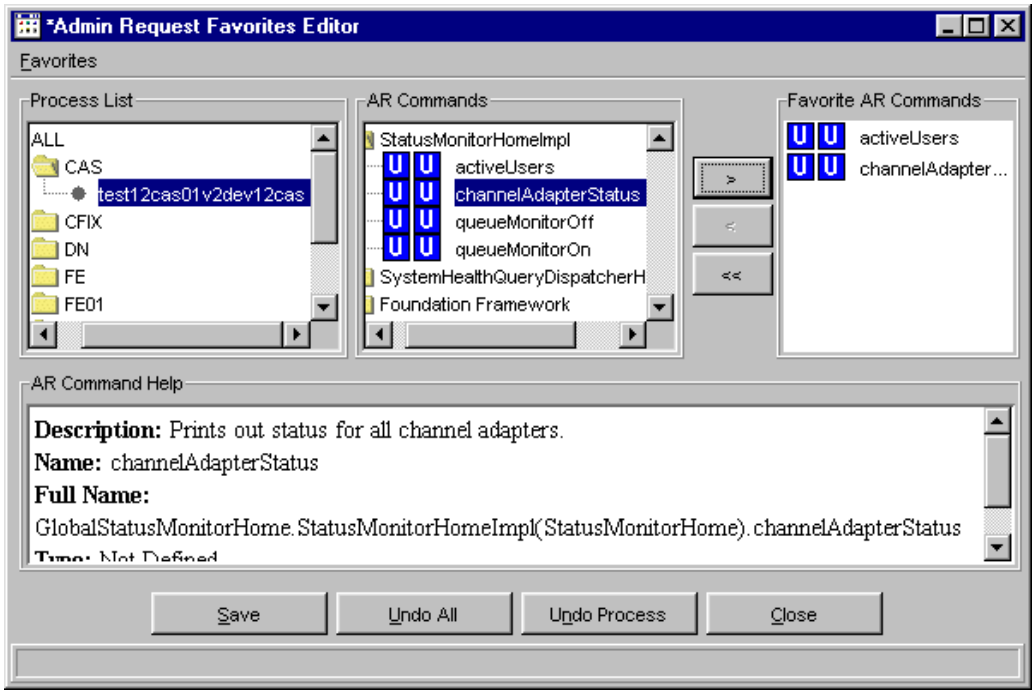
AR commands can be saved as Favorites and edited when desired. From the **Start** menu, click on **Admin Request** and then select **Favorites**, **Create New Window**. The **Admin Request Favorites Editor** window will display



- Select the process you want to edit from the **Process List**.
- Verify the AR Commands and Favorite AR Commands.



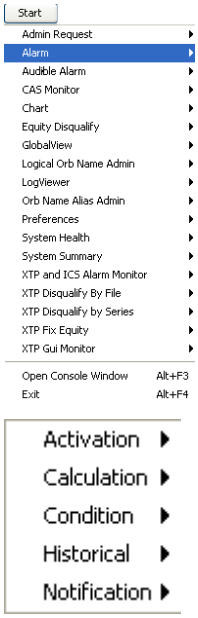
- To add a new AR command to the Favorites list, select the AR command and click >. The AR command will appear in the Favorite AR Commands list. Details of the AR command display in the **AR Command Help** box.



- To remove a Favorite AR command, select the command and click <.
- To remove all Favorite AR commands, select the commands and click <<.

- If you wish to withdrawal all the changes made to your Favorite AR commands, click **Undo All**. The process list will return to its original command list.
- To remove the newly added Favorite AR command, click **Undo Process**.
- Click **Save** to capture your changes.
- Click **Close** to exit the window.

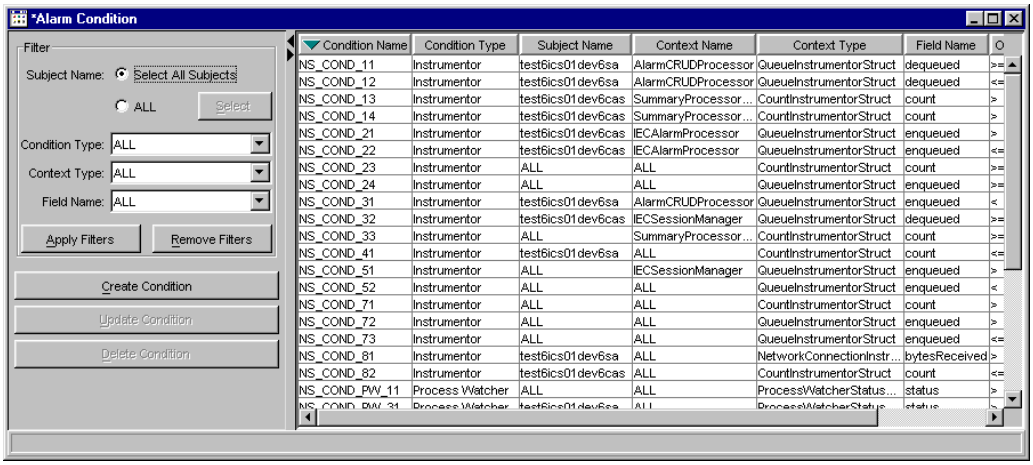
Alarms



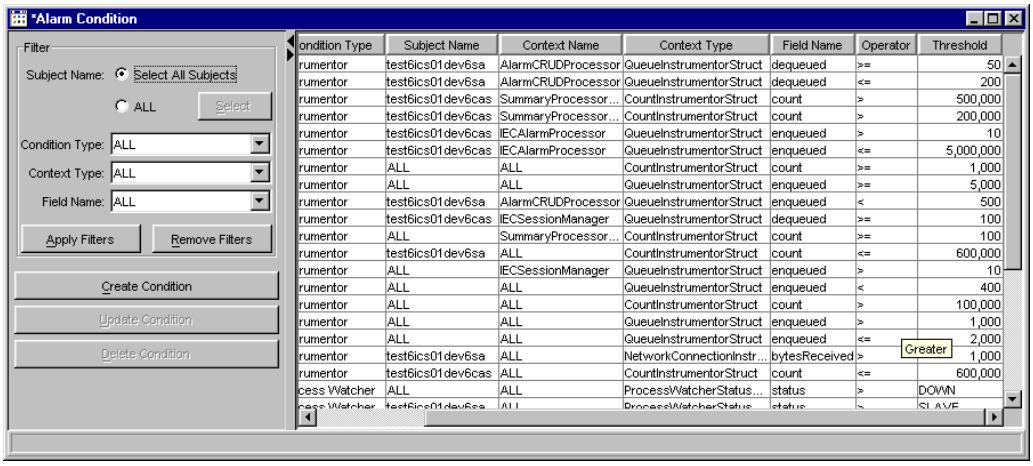
Situations that are considered critical to CBOE*direct* are highlighted through alarms in the System Health Monitor. From the **Alarms** section of the Start Menu, you can create alarm conditions for CBOE*direct* processes, activate alarms and view alarm notifications.

Set Alarm Conditions

If you want the System Health Monitor to notify you when a CBOE*direct* process is in a critical state, you must create a condition for that process. From the **Alarm** sub-menu, select **Condition, Create New Window**. The **Alarm Condition** window will display.



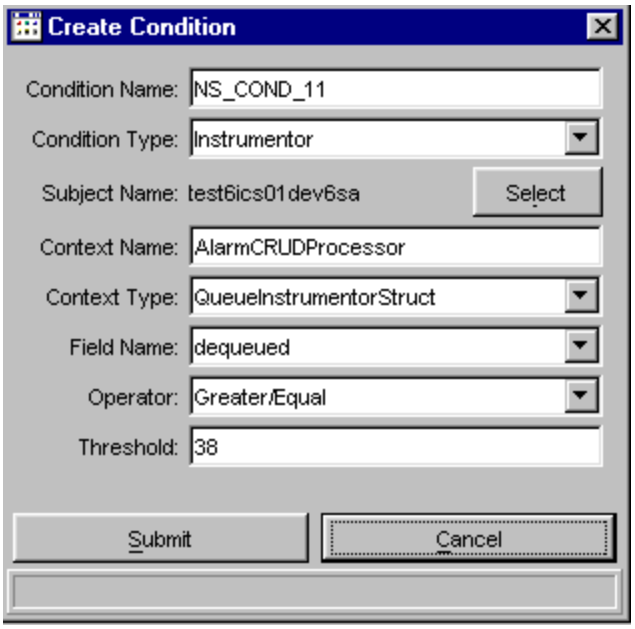
Scroll to the right to view additional data fields.



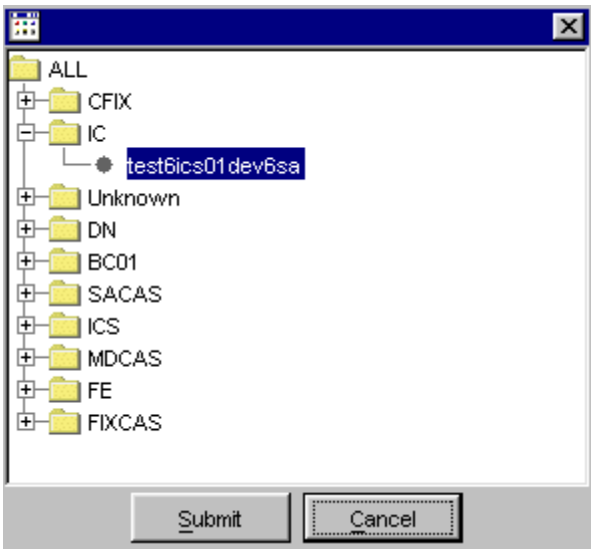
From this window, you have the capability to create, update or delete alarm conditions. For ease of readability, you can also select filters to sort the conditions.

Create an Alarm Condition

To create an Alarm condition, click **Create Condition** or right-mouse click on any data row and select **Create Condition**. The **Create Condition** window displays.



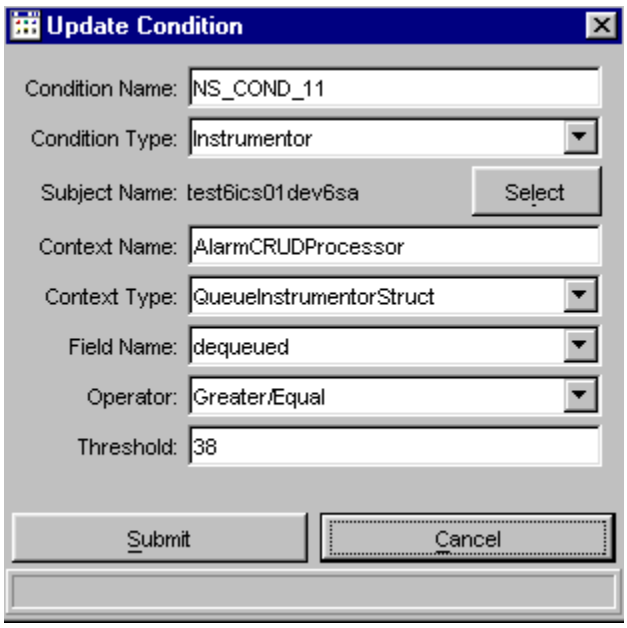
- Enter a logical name for the alarm condition in the **Condition Name** text box.
- Select the **Condition Type** (ie. Instrumentor or Process Watcher).
- Choose the **Subject Name** you are setting the condition for from the **Select** button.



- Enter the **Context Name** in the text field.
- Select the **Context Type** from the drop down list.
- Choose the **Field Name** where the condition will be monitored.
- Select the type of operation that will be monitored in the Field Name from the **Operator** drop down list.
- Enter the limit in the **Threshold** text field.
- Click **Submit**. Click **Confirm**. The alarm condition displays in the window field box.
- If you decide not to create a new alarm condtion, click **Cancel**. The system will return to the **Alarm Condition** window.

Update an Alarm Condition

To update an alarm condition, select the condition you wish to update and click **Update Condition** or right-mouse click on the data row and select **Update Condition**. The **Update Condition** window displays.



- Update the necessary fields.
- Click **Submit**. Click **Confirm**. The updated alarm condition displays in the window field box.
- If you decide not to update the condtion, click **Cancel**. The system will return to the **Alarm Condition** window.

Delete an Alarm Condition

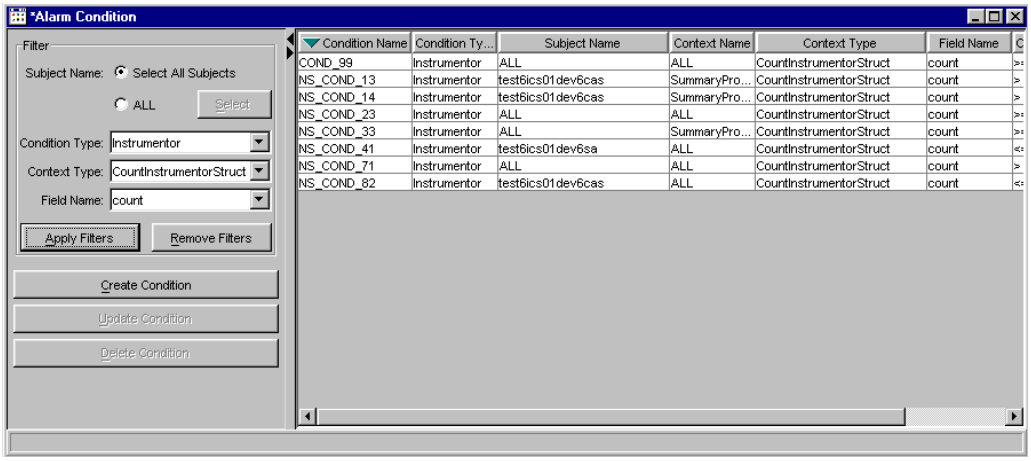
To delete an alarm condition, select the condition and click **Delete Condition**. The System Health Monitor will prompt you to verify you are sure you want to delete the condition. Click **Yes** to perform the deletion. Click **No** to cancel the request.

You can also delete a condition by right-mouse clicking on the condition data row you wish to delete and select **Delete Condition**.

Apply Filters

You can sort the alarm conditions by **Condition Type**, **Context Type** and **Field Name**.

From the **Filters** section of the window, select the Subject Name radio button. If you choose **Select all Subjects** the filtering mechanism will apply to all Subject Names. If you select **All** you can specify which component to sort.

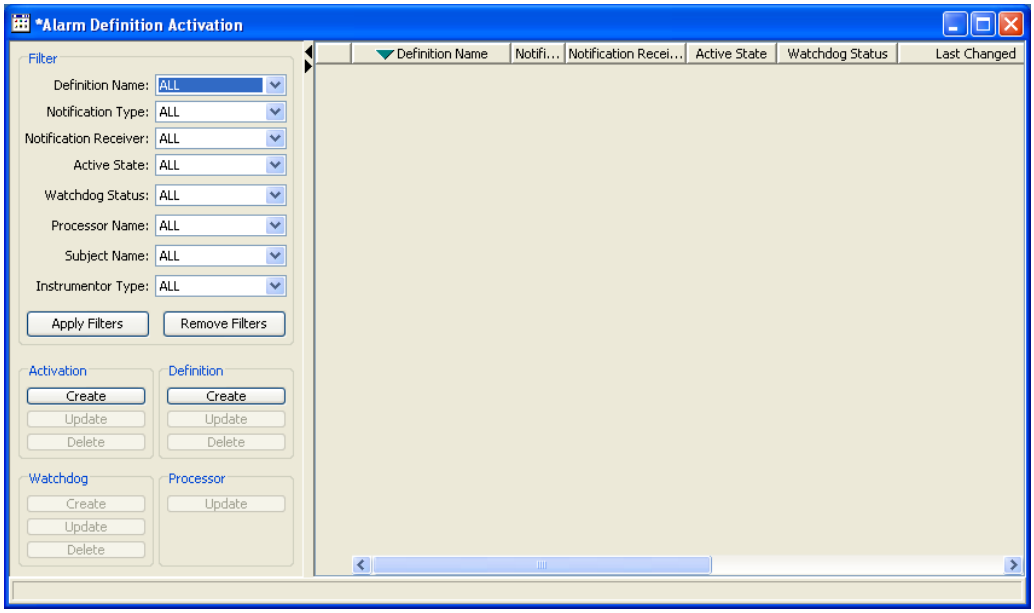


- To filter by condition type, select the **Condition Type** from the drop down list and click **Apply Filters**. The alarm conditions for the condition type you chose will display.
- To filter by **Context Type**, choose the context from the drop down list. Click **Apply Filters**. The alarm conditions for the context type you chose will display.
- To filter by **Field Name**, select the field name from the drop down list. Click Apply Filters. The alarm conditions for the field name will display.
- To remove the applied filters, click **Remove Filters**. All the alarm conditions display.

Alarm Activation

Once you have created alarm conditions, the **Alarm Definition Activation** window allows you to create definitions for the conditions and set activation.

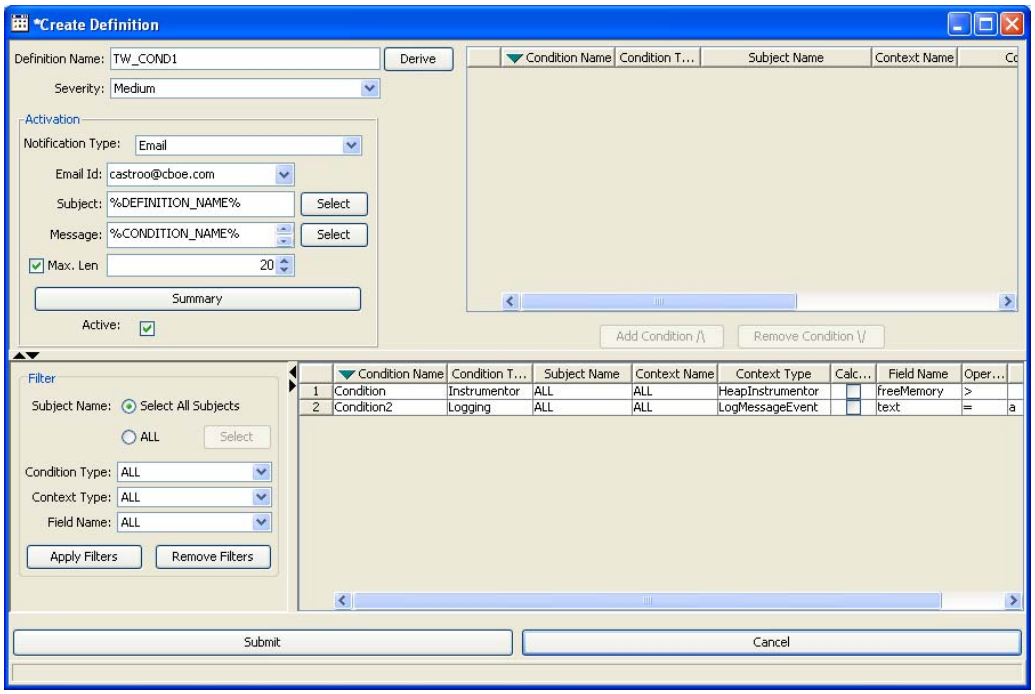
To display the window, select **Activation** from the **Alarm** sub-menu.



Create Alarm Definitions

To create an alarm definition:

- Click **Create Definition**. The **Create Definition** window will display with the **Alarm Condition** window at the bottom. *For alarm condition details, refer to the section: Set Alarm Conditions, page 31.*

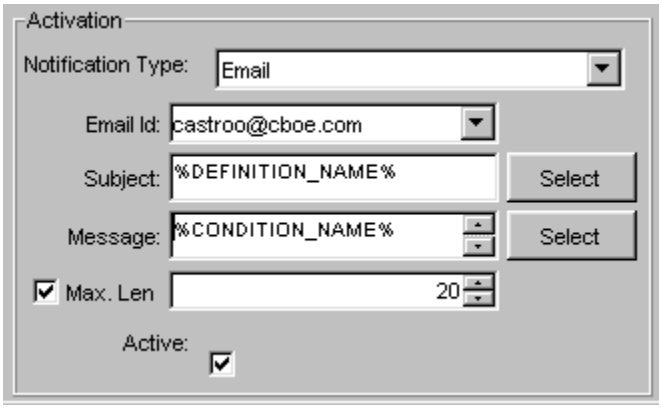


- Enter the **Definition Name** in the text box.
- Select the **Severity** level from the drop down list. *For alarm severity level details, refer to the Business Preferences section, page 99*.
- From the condition list box, select the alarm condition(s) you would like to apply to the definition. Click **Add Condition**. The alarm condition appears as a data row in the window.
- From the Activation section of the window, choose the **Notification Type**.

  Note: Global alarms activation will appear in all System Health GUIs and live past the life of the GUI.

  Local activation will be only sent to the System Health GUI that requests the alarm. Local alarm activations will be removed when the GUI is shutdown.

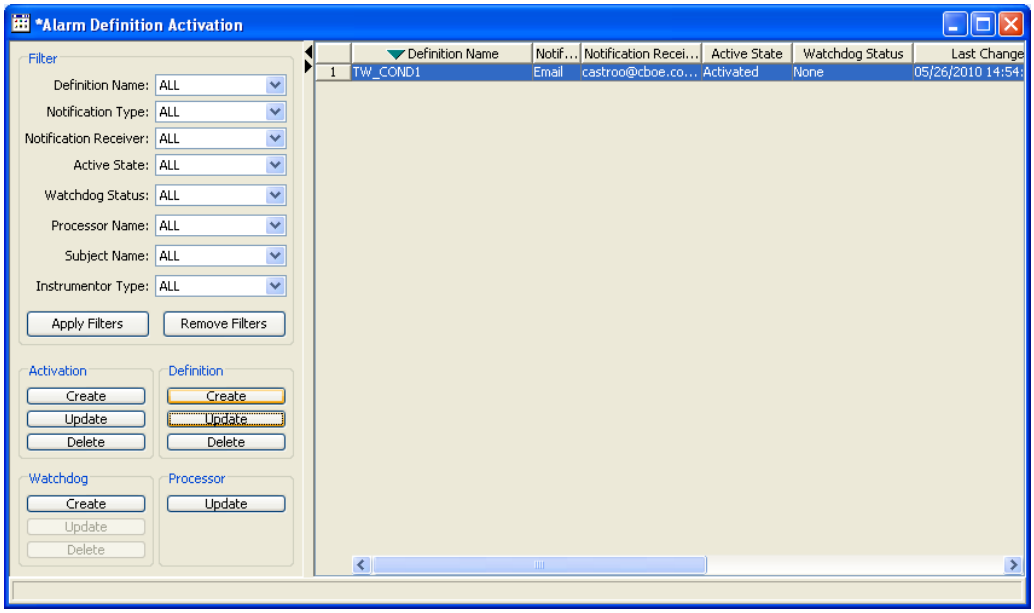
  Selecting Email activation will display additional fields



- Enter the **Email Id** in the required text box.
- Select the email **Subject** and **Message** information from the **Select** drop down lists.
- Select the **Max. Len** checkbox to enter the maximum length of the email.
- If you would like to start the alarm, select the **Active** checkbox. Deselect the checkbox, to deactivate the alarm.

If you wish to cancel your changes before submitting them into the system, click **Cancel**. The system will return you to the **Alarm Definition Activation** window.

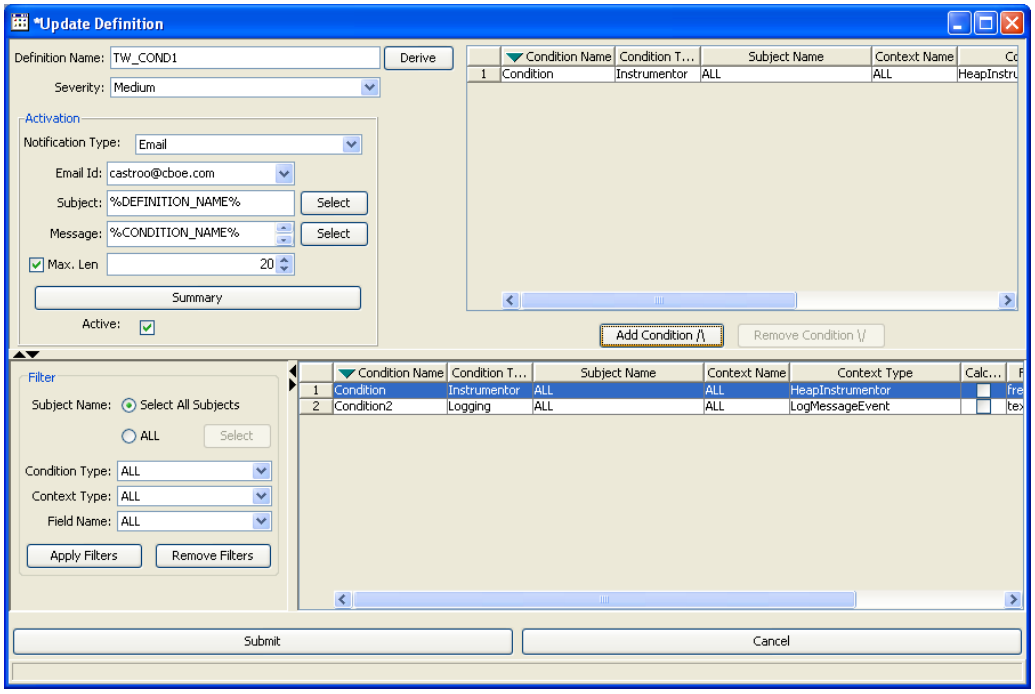
Click **Submit**. Click **Confirm**. The **Create Definition** window closes and the new definition appears in the **Alarm Definition Activation** window. Email activation is created after about 30 seconds.



Update Alarm Definition

To update an existing alarm definition:

- Select the definition from the **Alarm Definition Activation** window.
- Click **Update Definition**.



The **Update Definition** window will display. The **Definition Name** defaults to the definition name you selected in the **Alarm Definition Activation** window. Activation information and conditions for the definition name appear in the top portion of the window.

At this point, you can add new conditions or change the Activation status of the alarm definition.

- If you wish to cancel your changes before submitting them into the system, click **Cancel**. The system will return you to the **Alarm Definition Activation** window.
- Click **Submit**, Click **Confirm**. The **Update Definition** window closes and the updated definition appears in the **Alarm Definition Activation** window.

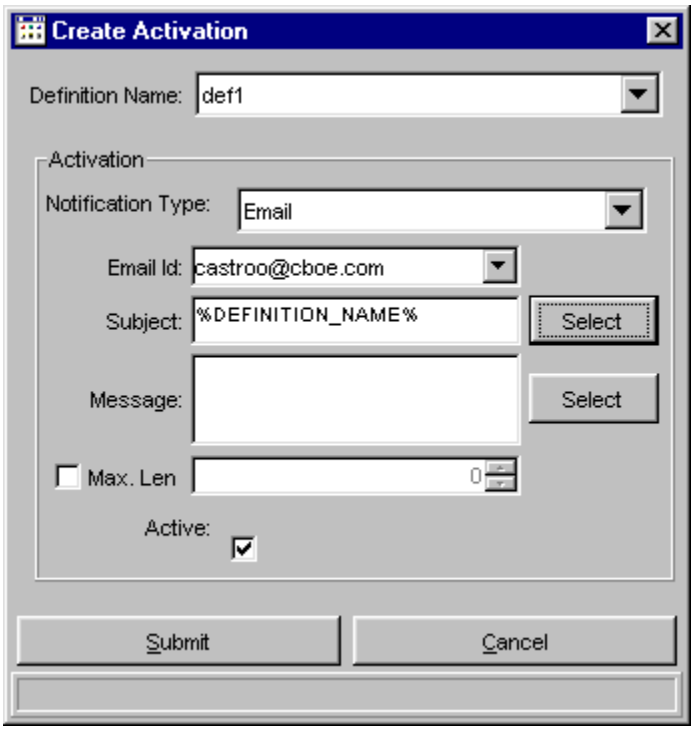
Delete an Alarm Definition

You can delete an alarm definition by highlighting the data row and clicking **Delete Definition** or by right-mouse clicking on the data row and selecting **Delete Definition**. The system will prompt you to confirm that you wish to delete the alarm definition and all its activations. Click **Yes** to confirm. The alarm definition is removed from the system. Click **No** to return to the Alarm Definition window without deleting the defintion.

Activate an Alarm Definition

To activate an existing alarm definition, return to the **Alarm Definition Activation** window and then:

- Select the alarm definition from the box list and click **Create Activation** or right-mouse click on the data row and select **Create Activation**.



- The **Create Activation** window will display with the set Definition Name, Notification Type, Notification Receiver and activation state. If you wish, you can change the Definition Name and Notification Type.

  Note: Global alarms activation will appear in all System Health GUIs and live past the life of the GUI.

  Local activation will be only sent to the System Health GUI that requests the alarm. Local alarm activitions will be removed when the GUI is shutdown.

  Selecting Email activation will display additional fields.

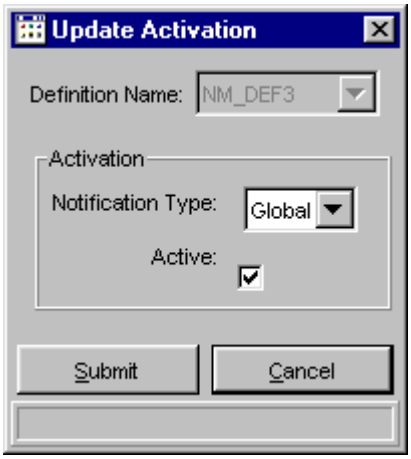
  - Enter the **Email Id** in the required text box.
  - Select the email **Subject** and **Message** information from the **Select** drop down lists.
  - Select the **Max. Len** checkbox to enter the maximum length of the email.
  - Select the **Active** checkbox to activate the alarm definition.

- If you wish to exit the Create Activation window without saving your changes, click **Cancel**. The system will return you to the Alarm Definition Activation window.
- To save your changes, click **Submit**. Click **Confirm**. The alarm definition and its conditions will be monitored by System Health.

Update Alarm Activation

To update the activation status of an existing alarm:

- Select the alarm definition from the box list and click **Update Activation** or right-mouse click on the data row and select **Update Activation**.



The **Update Activation** window will display with the selected Definition Name and Notification Type. The Definition Name will be grayed out and cannot be changed.

- If desired, change the Notification Type.

  Note: Global alarms activation will appear in all System Health GUIs and live past the life of the GUI.

  Local activation will be only sent to the System Health GUI that requests the alarm. Local alarm activitions will be removed when the GUI is shutdown.

  Selecting Email activation will display additional fields.

  - Enter the **Email Id** in the required text box.
  - Select the email **Subject** and **Message** information from the **Select** drop down lists.
  - Select the **Max. Len** checkbox to enter the maximum length of the email.
  - Select the **Active** checkbox to activate the alarm definition.

- Select the **Active** checkbox to activate the alarm definition or deselect the checkbox to deactivate the definition.
- If you wish to exit the Update Activation window without saving your changes, click **Cancel**. The system will return you to the Alarm Definition Activation window.
- To save your changes, click **Submit**. Click **Confirm**.

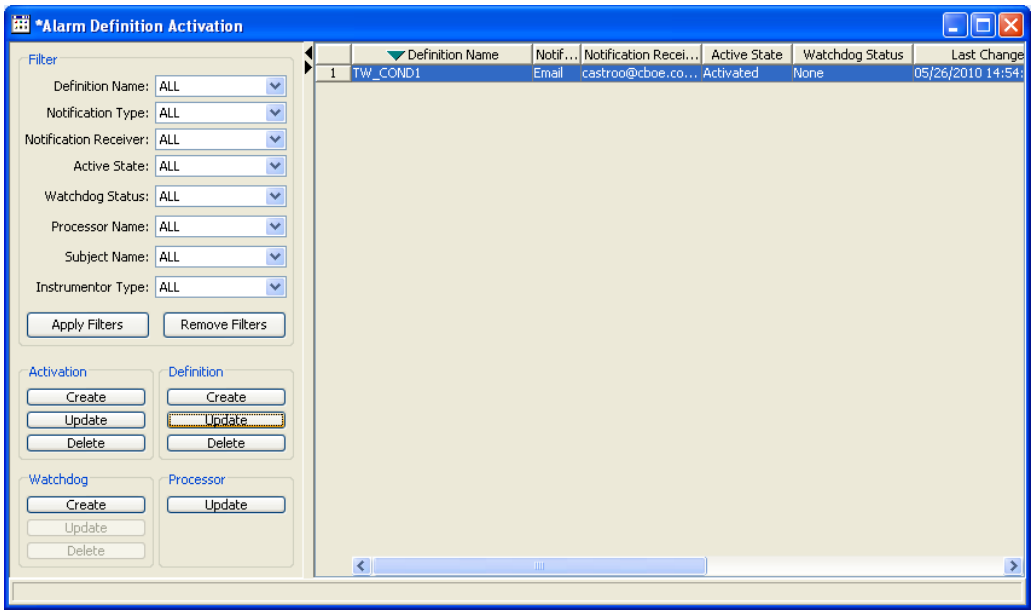
Delete Activation

You can delete an alarm definition activation by highlighting the data row and clicking **Delete Activation** or by right-mouse clicking on the data row and selecting **Delete Activation**. The system will prompt you to confirm that you wish to delete the alarm definition and all its activations. Click **Yes** to confirm. The alarm definition activation is

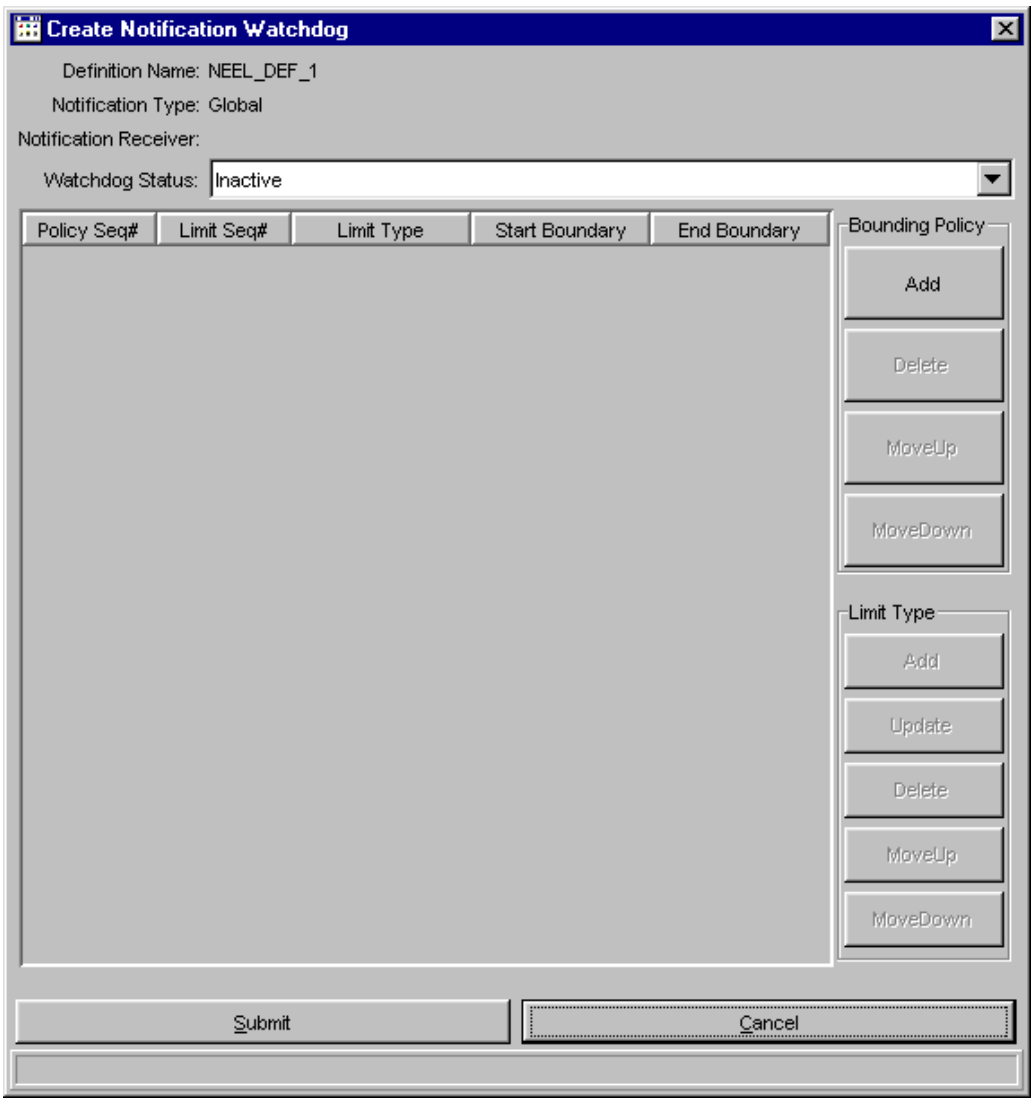
removed from the system. Click **No** to return to the Alarm Definition window without deleting the defintion.

Create Notification Watchdog

You can create alarm notification watchdogs to monitor the alarms setup for certain processes.

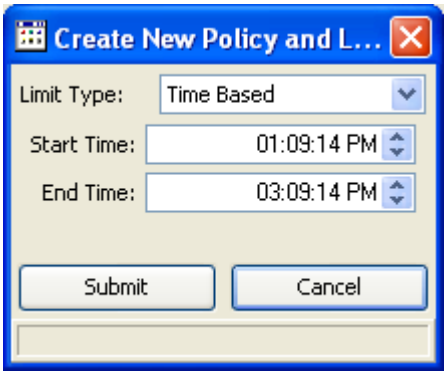


- From the **Alarm Definition** list, select the alarm definition you wish the watchdog to monitor. If a watchdog has not been created, the **Watching Status** column displays **None**.
- Click **Create Watchdog**. The **Create Notification Watchdog** window will display with the alarm definition name, notification type, notification receiver and watchdog status. The default for the watchdog status is **Inactive**.

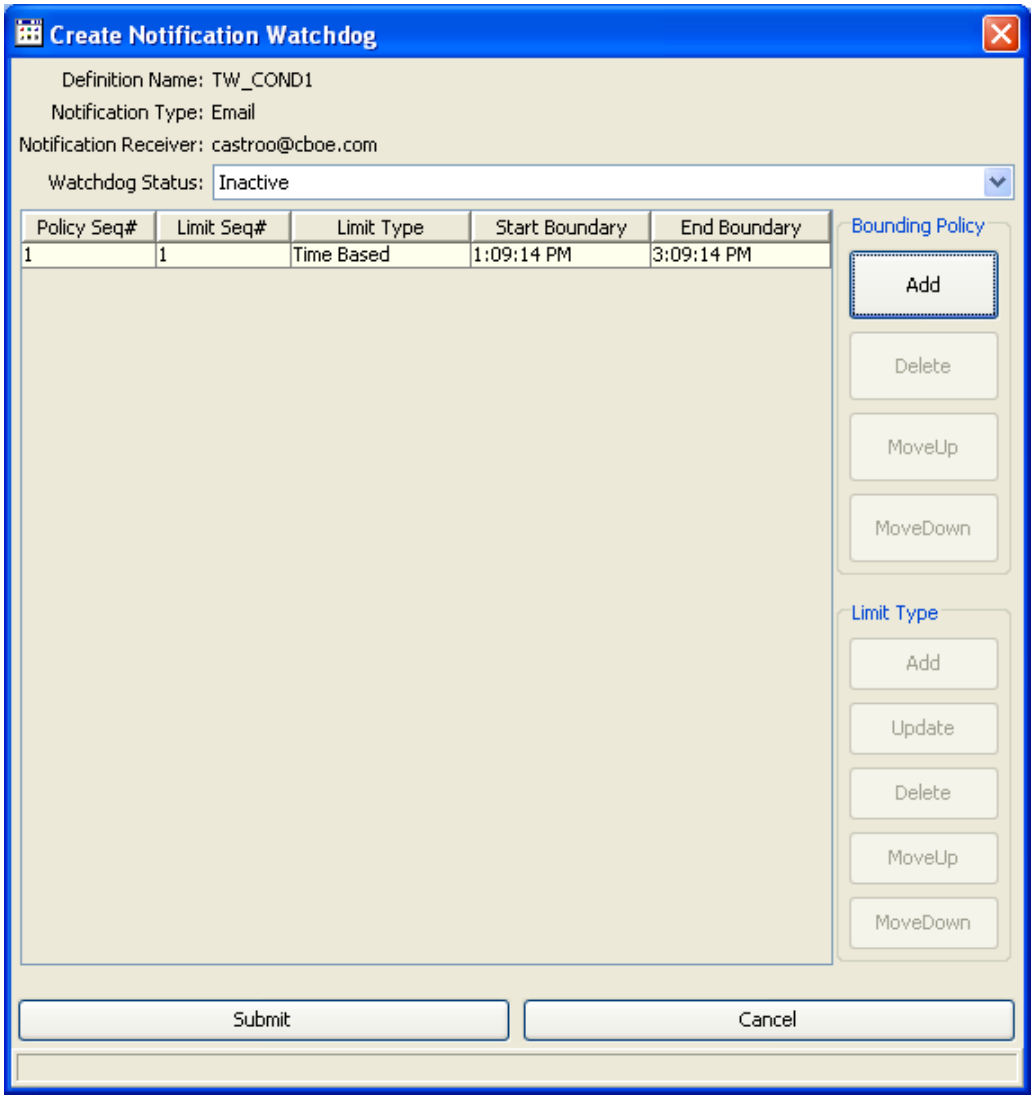


To create the watchdog notification you must add a bounding policy and limit type.

- From the **Watchdog Status** drop down list, choose to make the watchdog **Inactive**, **Active** or **Suspended**.
- From the **Bounding Policy** selections, click **Add**. The **Create New Policy and Limit Type** window will display.

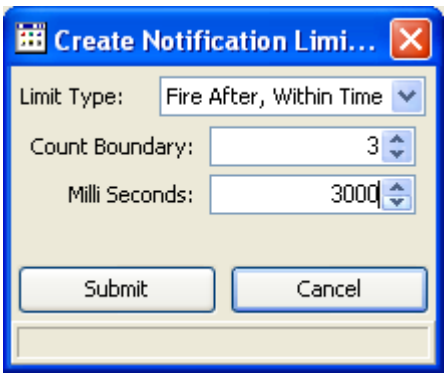


- Select the Limit Type. In the above example, the limit type is set to **Time Based**.
- Select the **Start Time** and **End Time** from the drop down lists. The end time must be set to a later time than the start time.
- Click **Cancel** to close the Create New Policy and Limit Type window without setting a limit.
- Click **Submit**, **Confirm**. The new policy and limits are added to the table on the Create Notification Watchdow window.

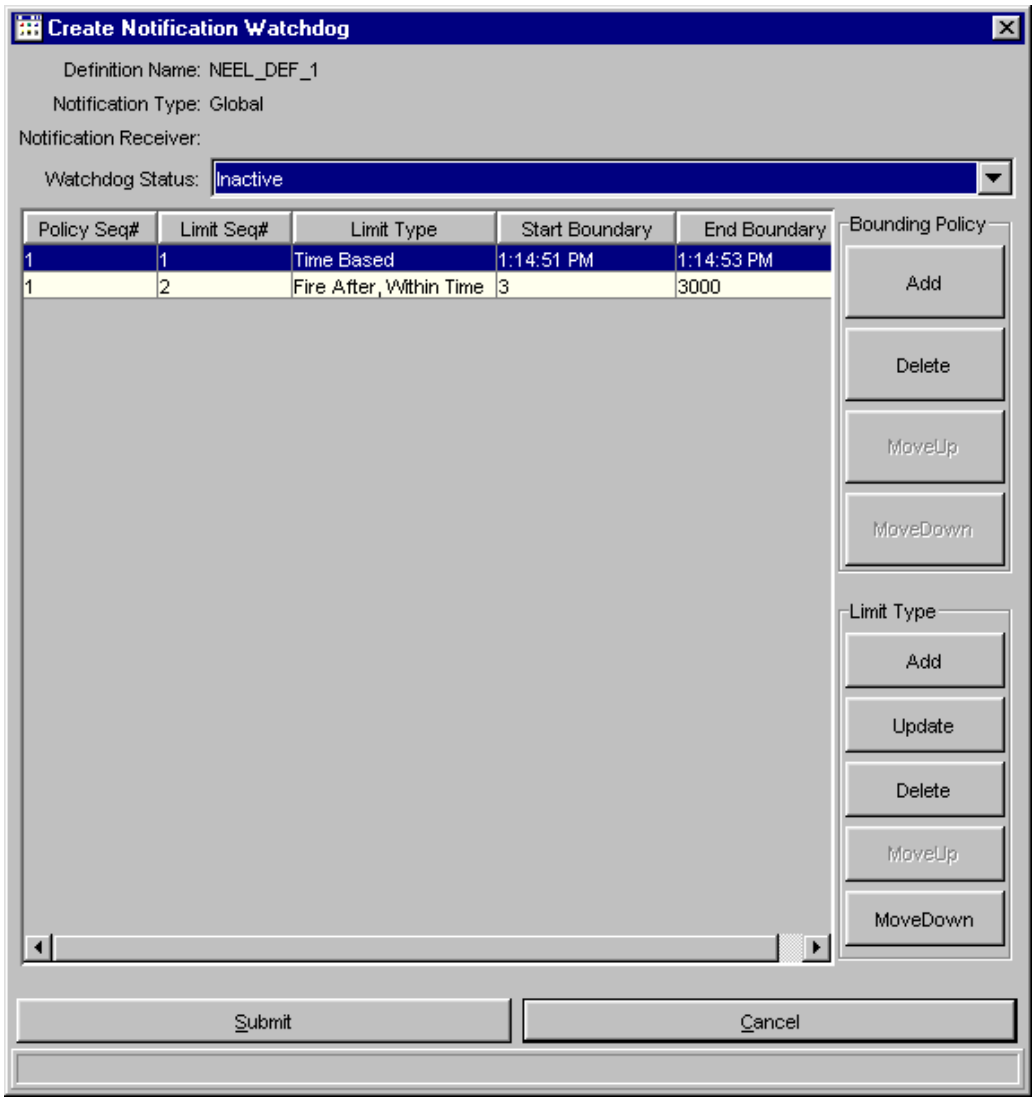


To set a limit type:

- Click **Add** from the **Limit Type** section. The Create Notification window will display.



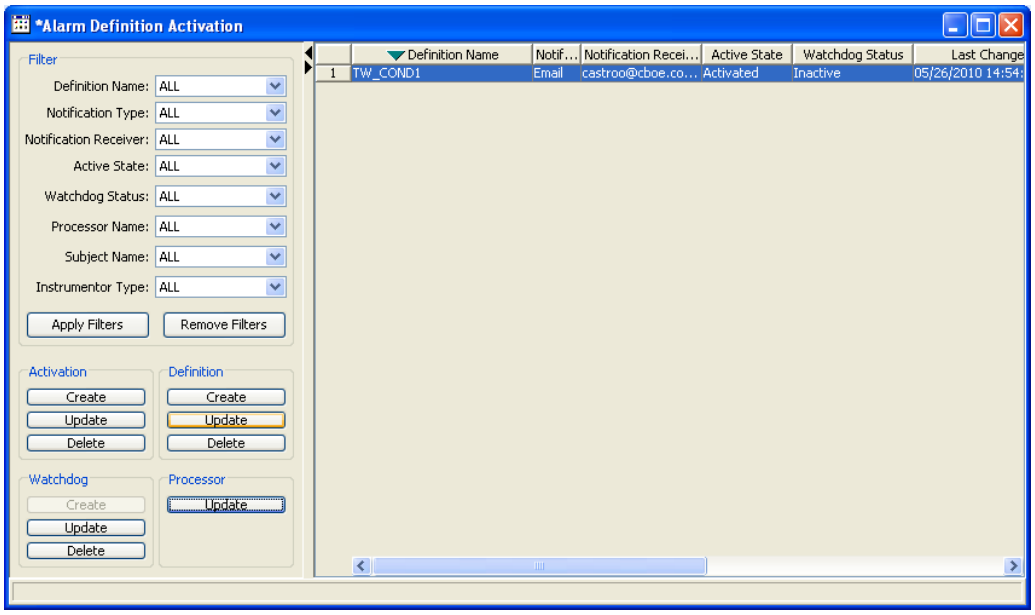
- In this example, the Limit Type is set to: **Fire After, Within Time**.
- The Count Boundary is set to **3** and the Milli Seconds to **3,000**.
- Click **Submit**, **Confirm**. The new limit is added to the Create Watchdog window.



The new limit has the same Policy Seq.# but the limit sequence is one greater than the previously highlighted Policy/Limit.

If you decide to not create the notification watchdog, click **Cancel**.

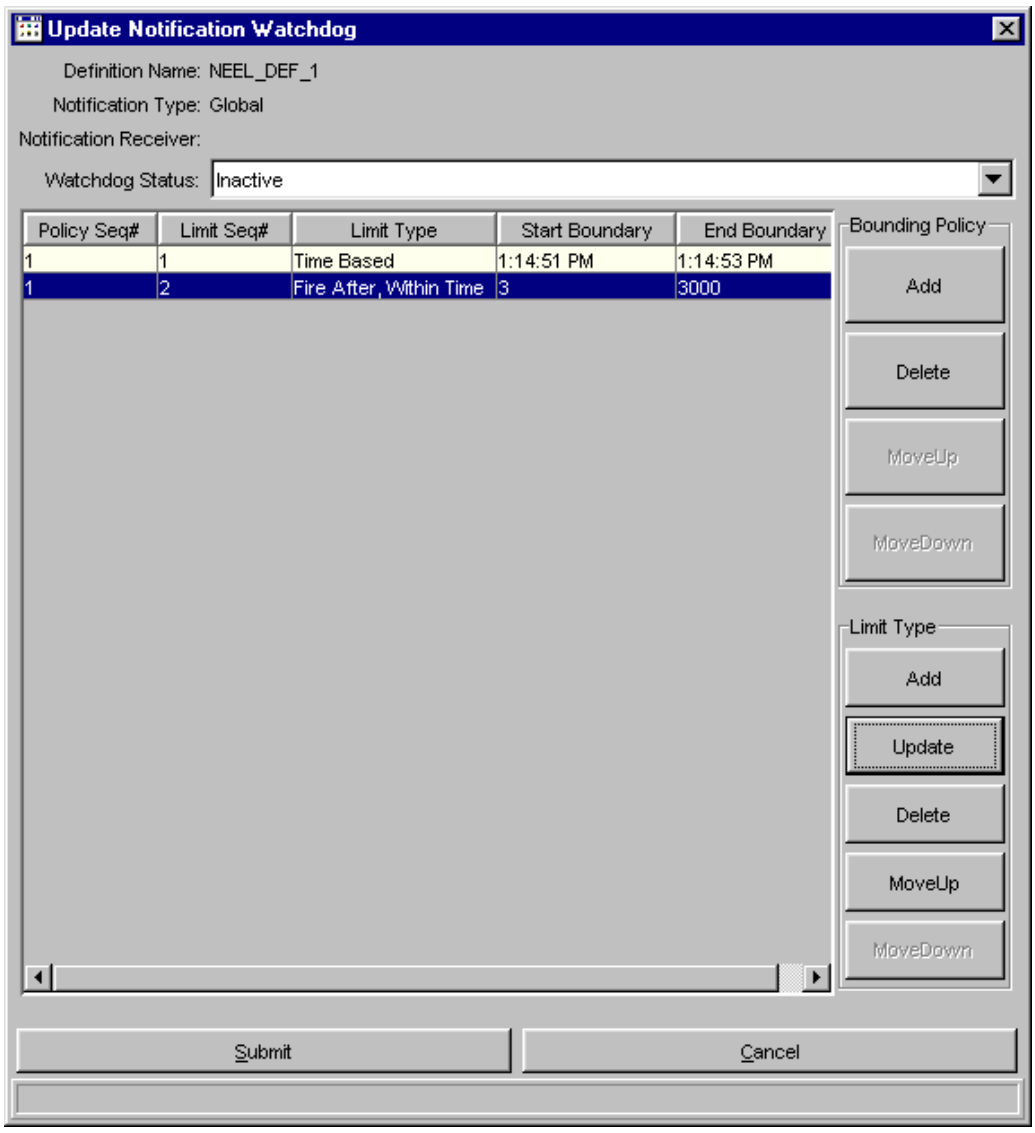
To enter the notification watchdog into the system, click **Submit**, **Confirm**. The notification watchdog will be added to the alarm definition and display as Inactive in the Watchdog Status column.



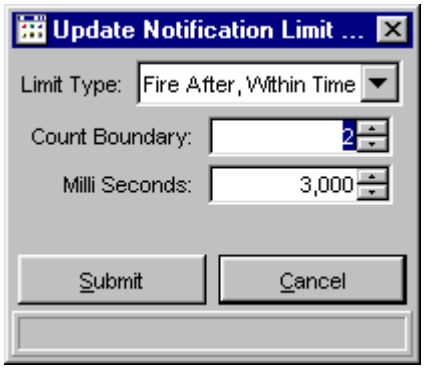
Update Watchdog

To update a notification watchdog:

- Select the alarm definition data row you wish to change and click **Update Watchdog**. The **Update Notification Watchdog** window will display.

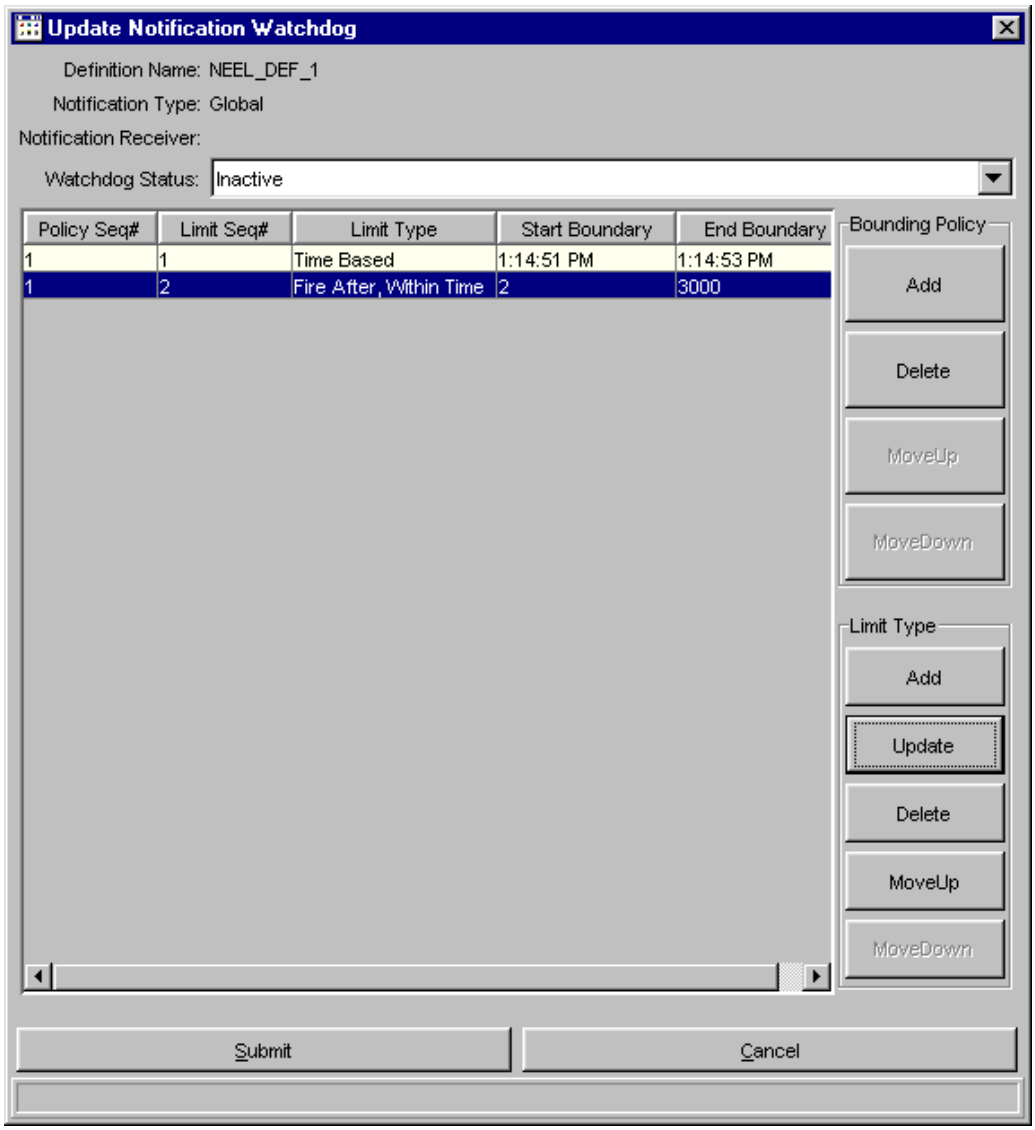


- Highlight the Policy or Limit you wish to change and click **Update**. The Update Notification Limit window will display.



- In the example above, the Count Boundary will be changed to **2**.
- Click **Cancel** to close the Update Notification Limit without making changes.

- Click **Submit**, **Confirm** to enter your changes.

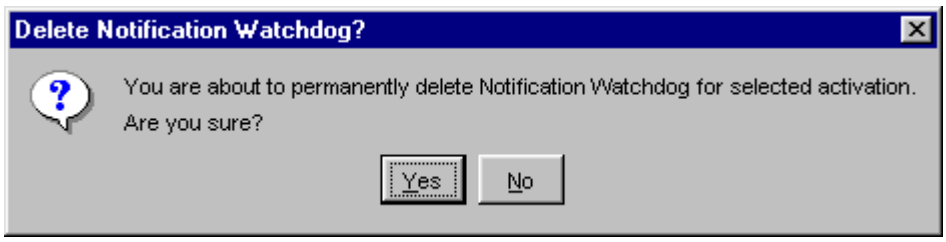


- To change the position of the limit type, highlight its row and select either **MoveUp** or **MoveDown**.
- To remove a limit type, highlight the data row and click **Delete**. The limit type will be immediately removed.
- Click **Cancel** to close the Update Notification Watchdog window without making changes.
- Click **Submit**, **Confirm** to enter your changes.

Delete Watchdog

To permanently remove a notification watchdog:

- Select the alarm definition.
- Click **Delete Watchdog**. The system will prompt you to verify the delete request.



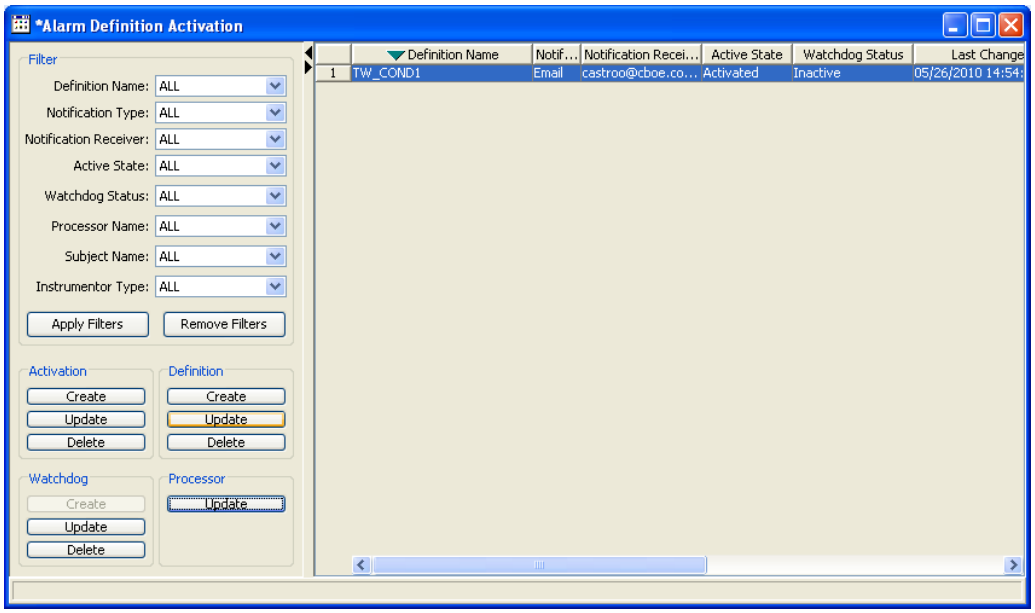
Click **No** to remove the request.

Click **Yes** to delete the notification watchdog for the alarm definition.

Apply Filters

You can sort the alarm definitions by **Definition Name, Notification Type**, **Notification Receiver** and **Active State**.

From the **Filters** section of the window, select the Definition Name, Notification Type, Notification Receiver and Active State. Click **Apply Filters**.



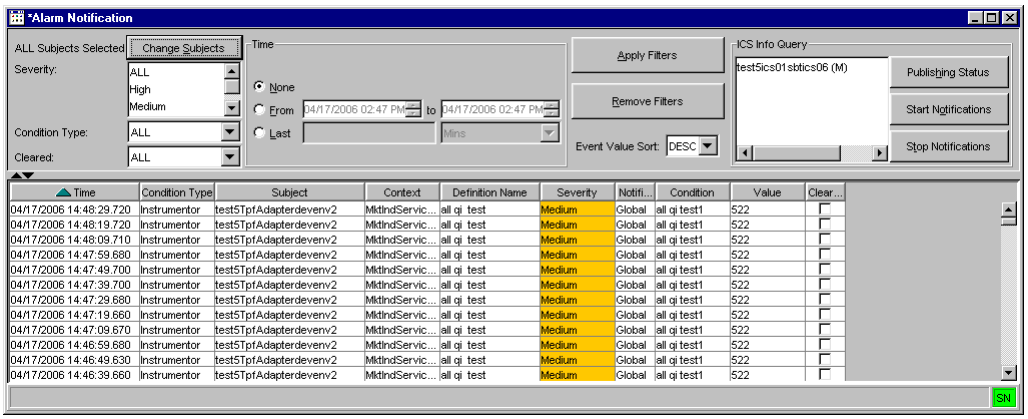
In the example above, the Alarm Definition window displays all defintion names with global notification types in deactive state with all types of notification receivers.

To remove the applied filters, click **Remove Filters**. All the alarm definitions will display.

Display Alarm Notifications

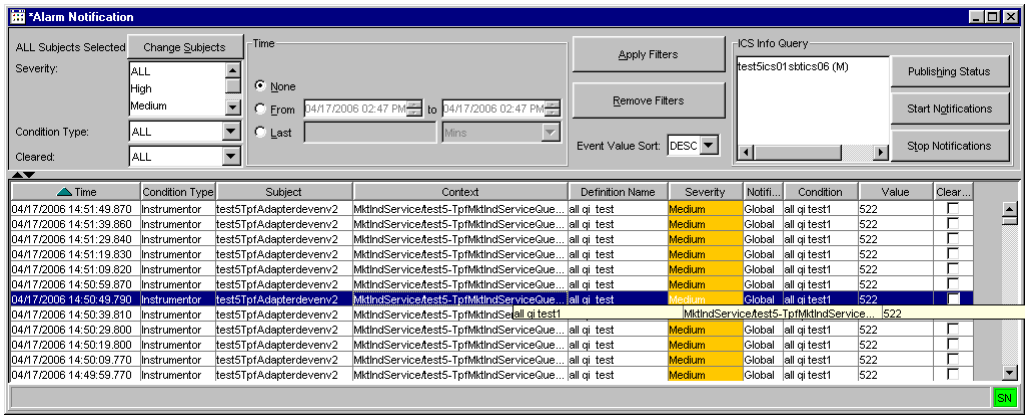
When the System Health Monitor alarm notifies you that a CBOE*direct* process is in a critical state, you can view the details of the notification through the **Alarm Notification** window.

From the **Start** menu, select **Alarms**, **Notification**, **Create New Window**. The **Alarm Notification** window will display.

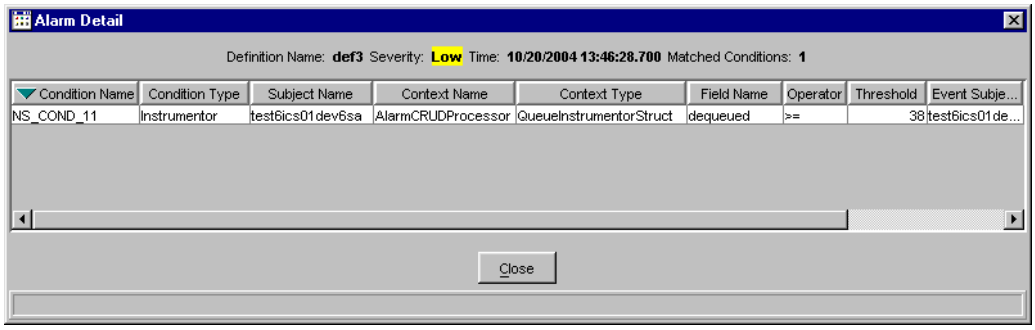


The notification window displays the time the alarm triggered, its condition and condition type, subject, context, defintion name, severity level, notification type and value.

A multi-line tooltip displays the full condition name, context name and values.



You can view additional information for a specific alarm by right-mouse clicking on the alarm's data row and selecting **Show Detail**.



Scroll to the right to view additional data fields.

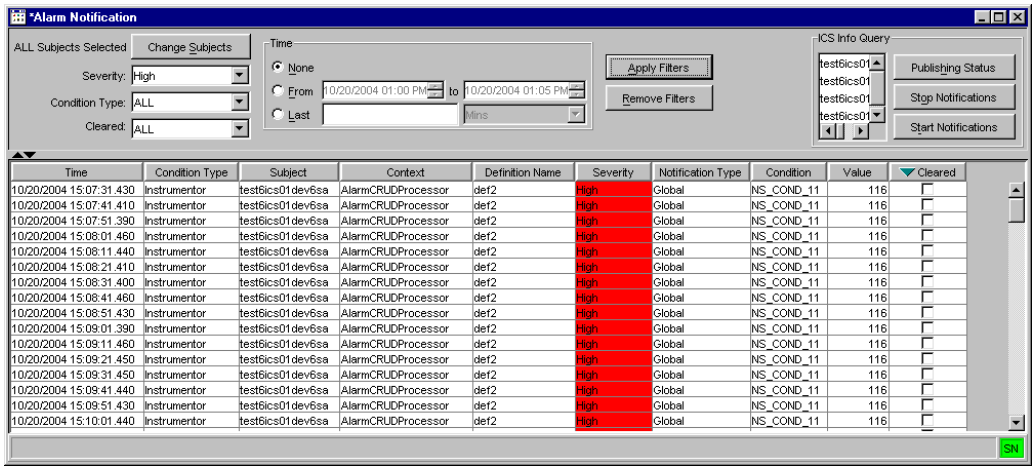
To return to the **Alarm Notification** window, click **Close**.

Apply Filters

You can sort alarm notifications by process/subject, severity, condition type, cleared status and time.

To select which process to filter, click **Change Subjects** and make your selection.

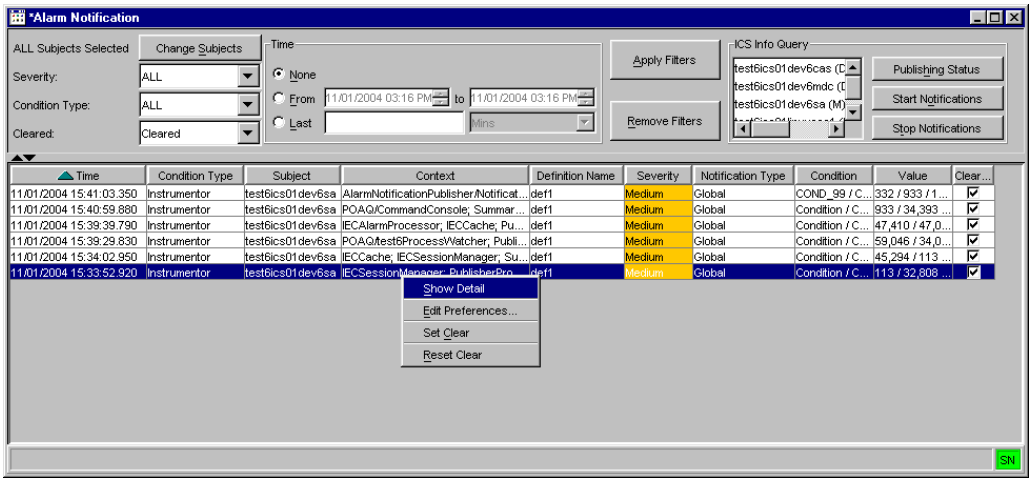
Select additional filters and click **Apply Filters**. The Alarm Notification window displays with the requested information.



To sort by time, select the **From** radio button in the **Time** section of the window and choose the time range to filter. Click **Apply Filters**.

Or, select the **Last** radio button to sort by minutes or hours. For example, enter the number 2 and select minutes from the drop down list. Click **Apply Filters**. The system will sort alarm notifications for the last two minutes.

To clear alarm notifications for multiple conditions:



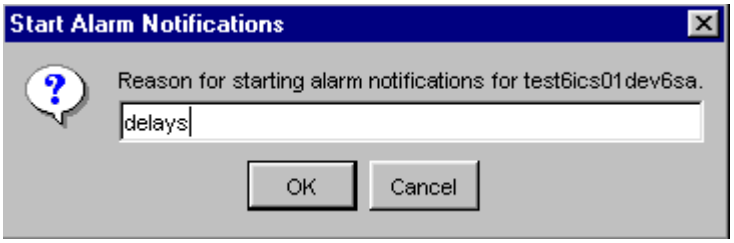
- Highlight multiple data rows and perform a right-mouse click. A sub-menu will display.
- Click **Set Clear**. The **Clear** column will display check boxes for the highlighted data rows.
- If you would like to query for only the cleared alarm notifications, select **Cleared** from the **Cleared** drop down list. Click **Apply Filters**. The system will display only the cleared alarms.
- If you would like to reset the alarms: highlight the data rows and choose the option, **Reset Clear**. The system will deselect the check boxes from the **Clear** column.
- To filter alarms notifications that are not cleared, select **Not Cleared** from the **Cleared** drop down list. Click **Apply Filters**. The system will display all the alarm notifications that have not been cleared.
- Click **Remove Filters** to edit out the applied filters and retain the original notification list.

To query ICS status, select the process from the **ICS Info Query** section of the window and click **Publishing Status**. The Alarm Notification Publishing State window displays with the state of the notification.

In the example above, alarm notification is publishing for test6ics01dev6sa.

Click **OK** to close the window.

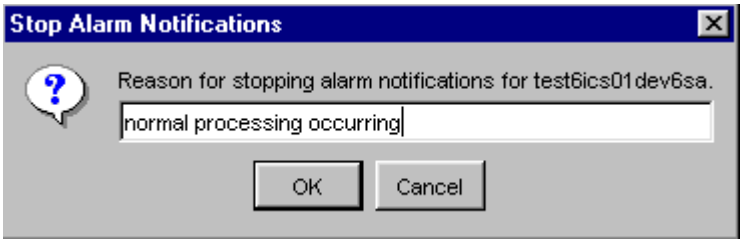
If you would like to begin monitoring conditions for the process, select the option: **Start Alarm Notifications**.



The **Start Alarm Notifications** window displays. Enter the reason for starting alarm notifications for the process and click **OK**. Alarm notifications will activate.

Click **Cancel** to close the window without starting notifications.

If you would like to stop alarm notifications for the process, select the option: **Stop Alarm Notifications**.

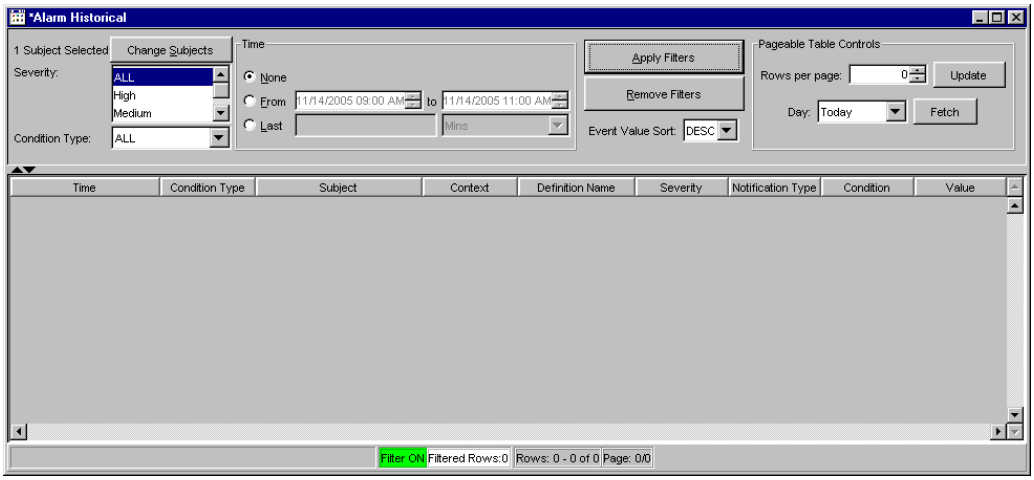


The **Stop Alarm Notifications** window displays. Enter the reason for starting alarm notifications for the process and click **OK**. Alarm notifications will deactive.

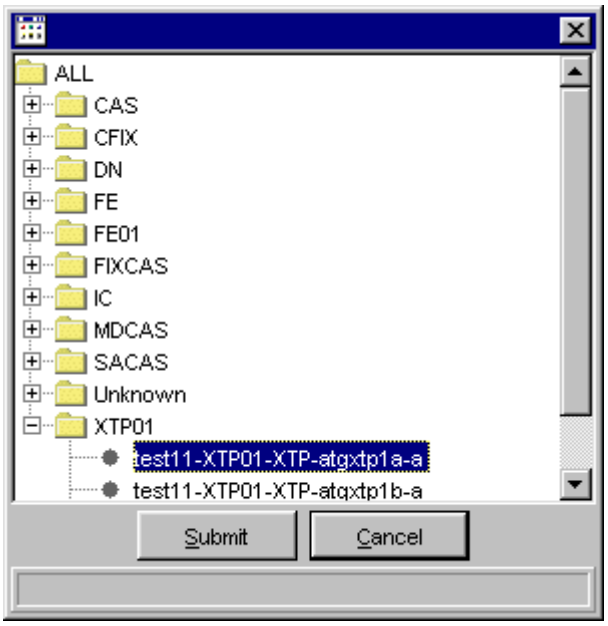
Click **Cancel** to close the window without starting notifications.

Historical Alarms Search

The Systems Health Monitor allows you to view alarms that occurred on previous days. From the **Alarm** sub-menu, select **Historical, Create New Window**. The **Alarm Historical** window will display.



- To view historical alarms by component:
  - Click the **Change Subjects** button. The component selection window will display.



- If you would like to view historical alarms for all components, select the **ALL** folder.
- If you would like to view historical alarms for one component, select the component from the corresponding folder. In the example above, the selection is for **test11-XTP01-XTP-atgxtp1a-a**.
- Click **Cancel** to exit the window without making a selection.
- Click **Submit** to enter your selection. The Alarm Historical window will display with the selected component.
- Select **Apply Filter** to retain your changes.
- Choose **Remove Filter** to override your selection and query alarms for all components.

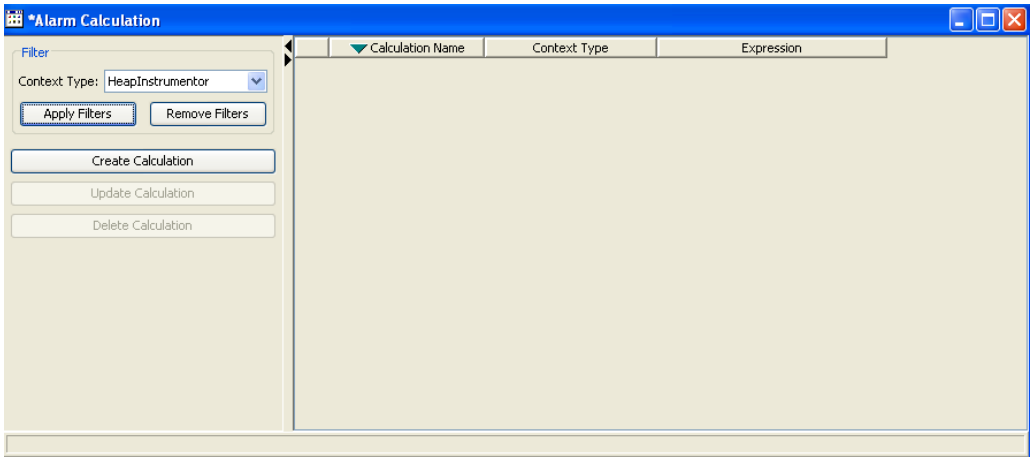
- Select the **Severity** and **Condition Type** you wish to view from the corresponding drop down lists.
- From the **Pageable Table Controls** section, select the day of the week for which you are interested in viewing alarms.
- Click **Fetch**. The Alarms for the selected component will appear in row format.
- Choose to sort by either ascending or descending order from the **Event Value Sort** drop down list.

➢ To view historical alarms by time:

- Select the **From** radio button and enter the desired time.
- Click on the **Last** radio button to enter the desired time in minutes or hours.
- Click **Fetch**. The Alarms for the selected component will appear in row format.
- Choose to sort by either ascending or descending order from the **Event Value Sort** drop down list.

Alarms Calculations

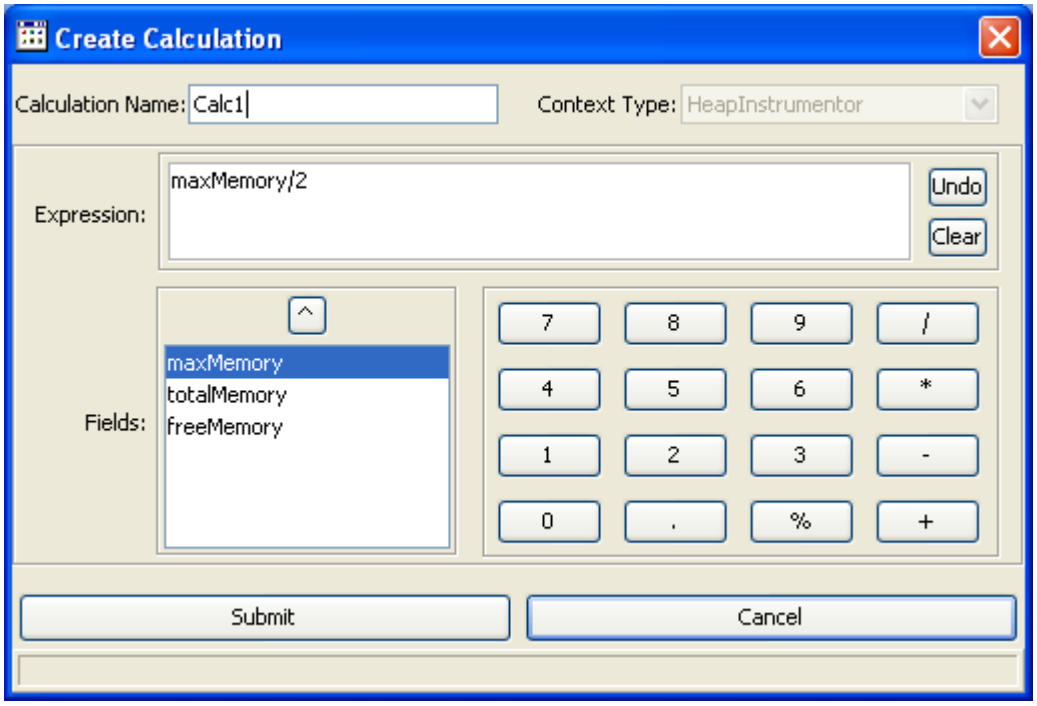
The Systems Health Monitor allows you to create alarms based on calculations. From the **Alarm** sub-menu, select **Calculation, Create New Window**. The **Alarm Calculation** window will display.



Create Alarm Calculations

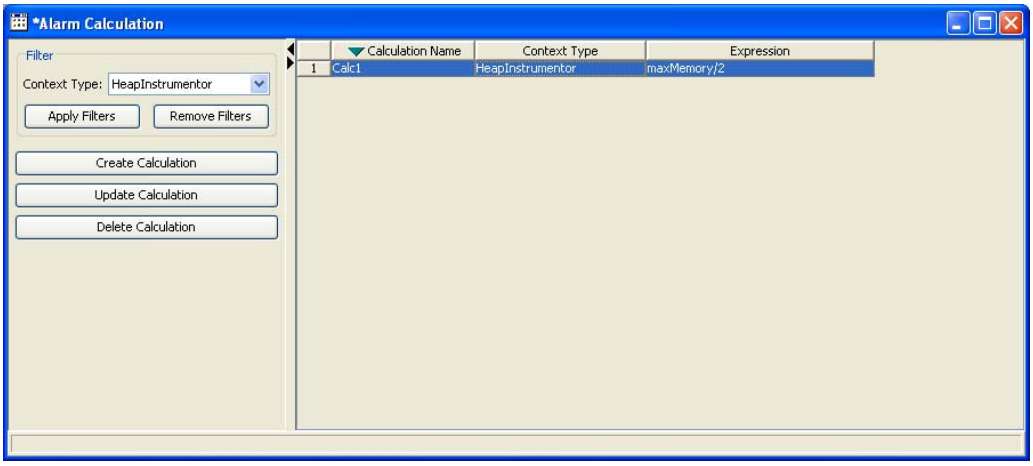
To create an alarm calculation for a specific instrumentor:

- From the **Context Type** drop down list, select the instrumentor.
- Click **Create Calculation**. The following window will display.



- Enter the calculation name in the corresponding text box.
- The Expression section of the window allows you to define the equation that activates the alarm. Use the numbers keyboard and predefined fields in the Fields text box to create your calculation. Click  to add a predefined field to the equation.

- To completed remove the expression, click **Clear**.
- To remove the last part entered into the equation, click **Undo**.
- Click **Cancel** to return to the Alarm Calculation window.
- Click **Submit**, **Confirm** to enter the alarm calculation into the system. The calculation name will display in the Alarm Calculation window.



➢ **Update Alarm Calculation**
To update an alarm calculation:

- Highlight the calculation you wish to update and click **Update Calculation**.
- The Update Calculation window will display. Make your modifications.
- Click **Submit**, **Confirm** to update the alarm calculation in the system.

➢ **Delete Calculation**
To delete alarm calculations:

- Highlight the calculation you wish to remove and click **Delete Calculation**. The system will prompt you to confirm your delete request.
- Click **Yes** to delete the calculation.
- Click **No** to remove your delete request.

Edit Column Preferences

You can customize your Alarm windows by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

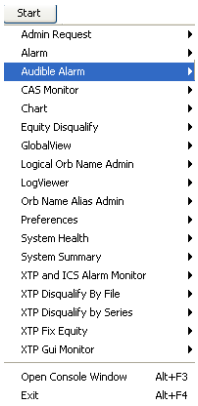
For detailed information, refer to the Edit Column Preferences section, page 171.

Sort and Rearrange Columns

You can sort any column on the Alarm windows at any time by clicking on the column heading. The column changes to reflect the sorted data.

To rearrange the display of the columns, place your cursor on the column heading, then using your mouse, click on the column and drag it to the desired position.

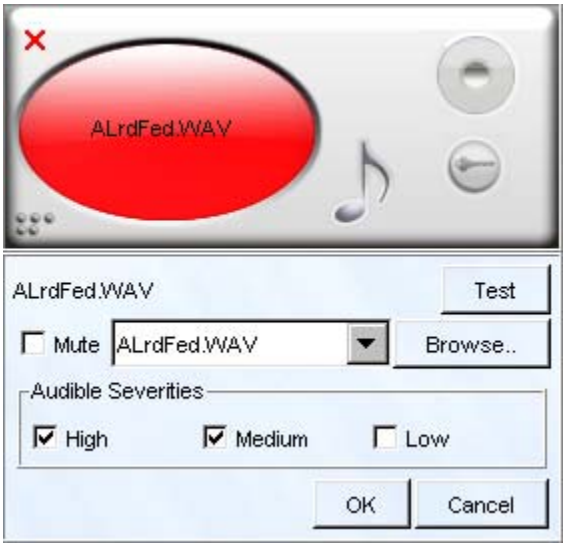
Audible Alarm



The System Health Monitor application allows you to set an audible alarm for different levels of severity.

To set the audible alarm, click the **Start** button from the Menu window. Select **Audible Alarm, Open**. The Audible Alarm window will display.

The audible alarm window displays based on the settings you choose. Click the settings button  to display the alarm options window below.

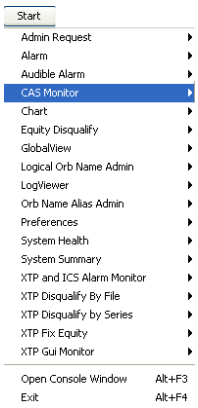


- Choose the audible sound from the drop down list. Or, click on the **Browse** button to expand your search.
- Click **Test** to listen to the alarm sound you selected.
- Set the **Audible Severities**. The above example configures the alarm to activate

when severity levels are High or Medium.

- If you would like the alarm alert to appear without any sound, select the **Mute** check box.
- Click **OK** to enter your audible alarm settings.
- Click **Cancel** at any time to exit the window. You can also exit the window by clicking on the **Dismiss Alarm Window** button,  or by clicking  .

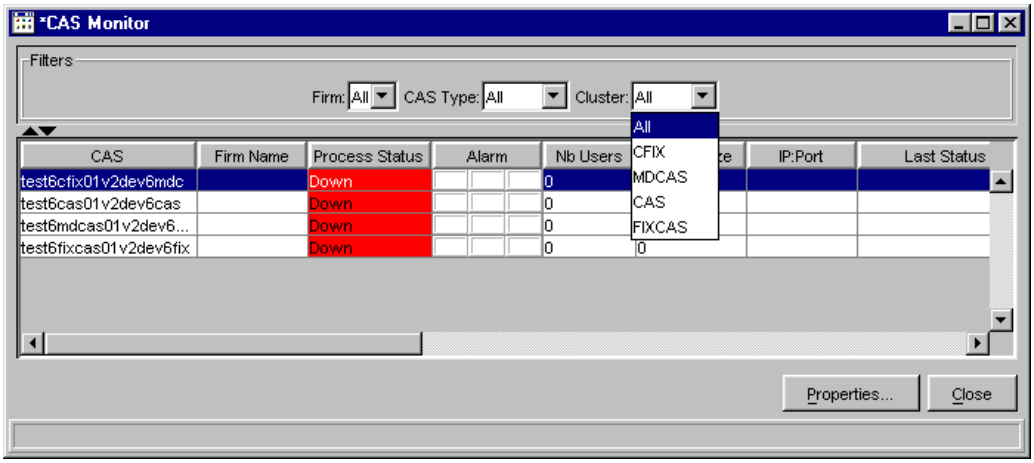
CAS Monitoring



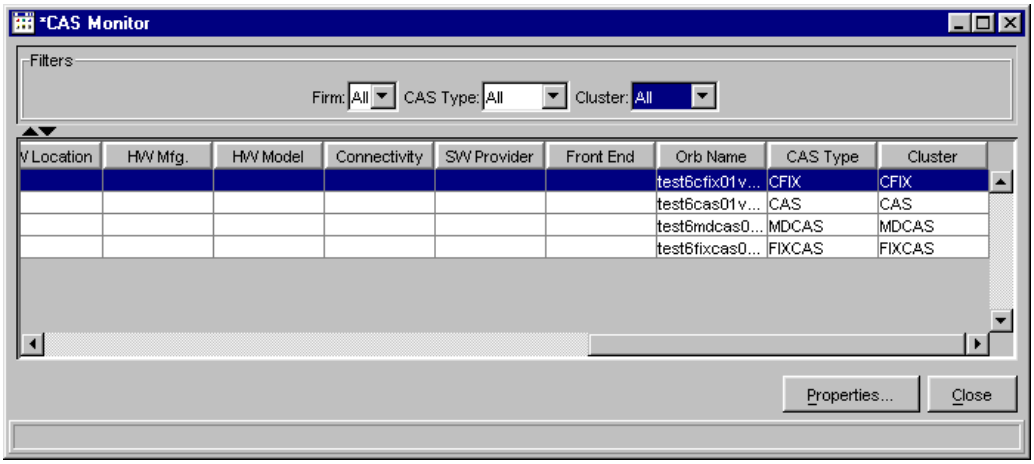
The System Health Monitor application allows you to view the status of CASs in relation to CBOE*direct*.

To open the CAS Monitor window, click the **Start** button from the Menu window. Select **CAS Monitor, Create New Window**. The CAS Monitor window will display. CAS data is automatically updated every n (30) seconds.

If at anytime you wish to exit the CAS Monitor window, click **Close**.



Move the scroll bar to the right to view additional data fields.



CAS Monitor Display

The CAS Monitor window displays a summary of the state of the CAS components in column format.

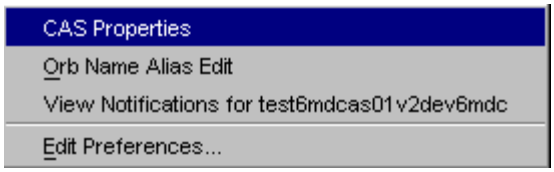
- The **CAS** column displays all the CASs used in a CBOE*direct* environment. The list will show all CAS, MDCAS, CFIX and FIXCAS processes for an environment. In the example above, the CAS column shows all the processes in the test6 environment.
- The **Firm Name** column shows which Firm is assigned to the CAS.
- The **Process Status** column displays the state of the process. The background color of the cell reflects the state of the process. If the process is **Up**, the background color displays in green. If the process is **Down**, the background color displays in red.
- The **Alarm** column indicates alarm state of High, Medium or Low for a process.
- The number of users on a particular CAS is shown in the **Nb Users** column.
- The queue size for the CAS processes will display in the **Queue Size** column.
  - **Note:** If you are monitoring a development or test environment, zero will usually display in the column.
  - **Note:** You must be subscribed to instrumentors for the CAS to see data in this field. For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.
- The IP address and port location display in the **IP:Port** column.
- The **Last Status** column reflects the time and date of the last change made to the data for the CAS. This column updates every 30 seconds.
- The **Memory Usage** column displays the system memory usage of the CAS in megabytes (Mb), if the CAS process status is Up. If the CAS process status is Down, the memory usage displays as 0.00 Mb.
- The **Heap Size** column shows the heap size for the CAS in megabytes (Mb), if the CAS process status is Up. If the CAS process status is Down, the heap size displays as 0.00 Mb.
- The version of code installed in the CAS displays in the **Version** column.
- The location of the CAS hardware appears in the **HW Location** column.
- The **HW Mfg**. column displays the name of the hardware manufacturer for the CAS.
- The **HW Model** column shows the CAS model number.
- The **Connectivity** column indicates the network connectivity provider for the CAS.
- The name of the CAS software provider displays in the **SW Provider** column.
- The **Front End** column references which FE connects to the CAS.
- The name of the Orb pertaining to the CAS appears in the **OrbName** column.
- The **CAS Type** column describes the kind of CAS that is being displayed.
- The **Cluster** column shows where the CAS is collected.

You can filter the CAS Monitor by Firm name, CAS Type or Cluster.

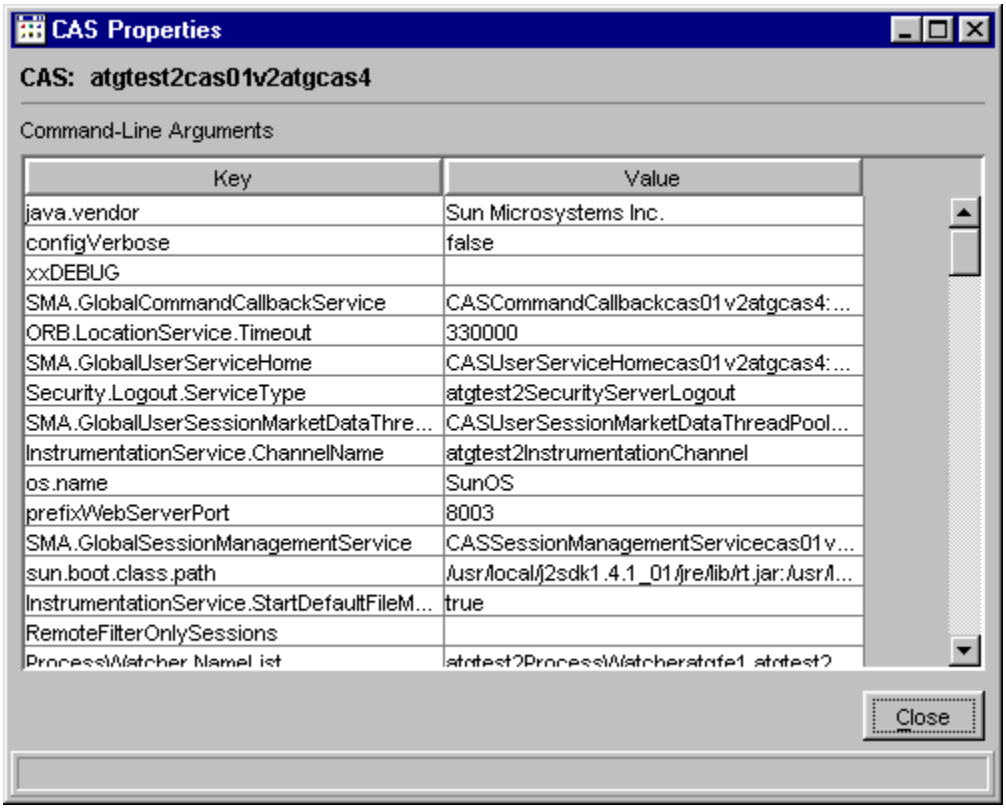
- To filter by **Firm** name, select the Firm from the drop down list in the **Filters** section of the window. The CASs for the select Firm immediately display on the CAS Monitor window.
- To filter by CAS type, make your selection from the **CAS Type** drop down list. Data for the selected type of CASs display on the CAS Monitor window.
- To filter by cluster, choose your cluster from the **Cluster** drop down list. The CASs that are collected in that cluster display on the CAS Monitor window.

View CAS Properties

The properties that have been defined for a CAS can be viewed at anytime as long as the CAS is up. Right mouse click on the CAS data row and select **CAS properties**,



or click on the **Properties** button. The **CAS Properties** window displays.



From this window, you can view the command line arguments that have been defined for the CAS.

- You can sort either the **Key** or **Value** columns by clicking on the corresponding column header. The columns change to reflect the sort.

- Click **Close** to exit the window and return to the CAS Monitor display.

Edit Column Preferences

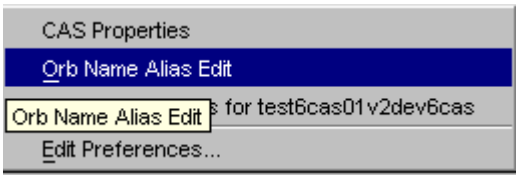
You can customize your CAS Monitor window by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

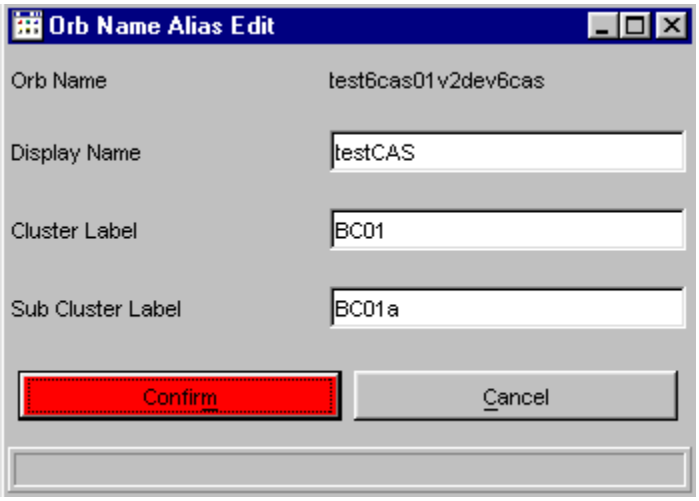
For detailed information, refer to the Edit Column Preferences section, page 171.

Edit the Orb Name

The system has been designed to display the Orb Name as the CAS name in the **CAS** column. If you wish to change the Orb Name in the **CAS** column to be more descriptive of the CAS, right mouse click on the CAS data field and select **Orb Name Alias Edit**.



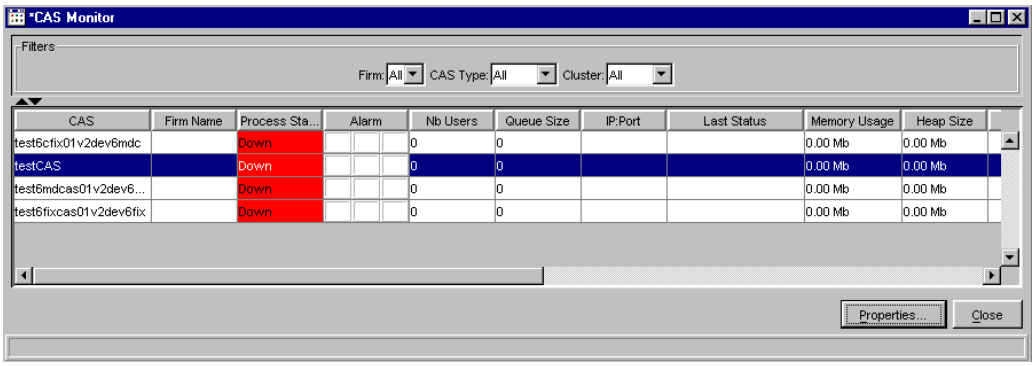
The **Orb Name Alias Edit** window displays.



The Orb Name displays with its values along with editable text fields for **Display Name**, **Cluster Label** and **Sub Cluster Label**.

- In the **Display Name** text field, enter the name you want displayed in the CAS column in place of the Orb Name.
- In the **Cluster Label** text field, enter the name of the server cluster (i.e. BC01)
- If you wish, you can enter the name of the sub cluster (i.e. BC01a) in the **Sub Cluster** Label text field.

- Click **Submit**. Click **Confirm**.



All the System Health Monitor windows automatically update with the edited fields. The **CAS** column changes to show the name typed in the **Display Name** text field, which in this example is testCAS. The Orb Name column will still show the full Orb Name.

In the **System Summary** window, BC01 displays in the Cluster list. BC01a displays in the Cluster list as the Sub Cluster of BC01. When you select the BC01 cluster checkbox, testCAS appears as a process under the BC01 Cluster.

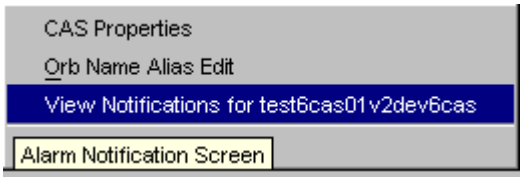
In the **System Health** window, BC01 displays as the Cluster, BC01a displays as the Sub Cluster and testCAS displays below the Sub Cluster.

↳ **Note:** Only one production box has permissions to change and store Orb Names. All other production boxes read the information from that box.

View Alarm Notification

As long as the CAS is up, alarm notifications can be viewed at anytime.

Right mouse click on the CAS data row you are interested in viewing and select **View Notifications**.



The Alarm Notification window will display. *For notification details, refer to the Display Alarm Notifications section, page 49*.

Sort and Rearrange Columns

You can sort any column on the CAS Monitor window at any time by clicking on the column heading. The column changes to reflect the sorted data.

To rearrange the display of the columns, place your cursor on the column heading, then using your mouse, click on the column and drag it to the desired position.

Save Window Preferences

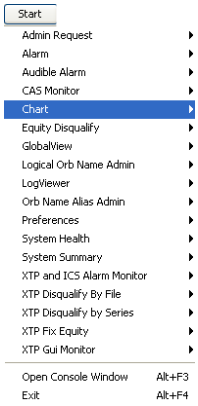
If you want to save your changes and automatically open the window with your preferences, be sure to save the configuration on the Open Tasks toolbar.

To save window preferences:

- Right mouse click on the corresponding window task button.
- Select **Save Configuration**. The Save Configuration window will display.
- Enter the Configuration Name for the window.
- Click **Submit**. Click **Confirm**. The saved window will appear when you open a new CAS Monitor window.
- If you decide you do not wish to save the new configuration, click **Cancel**.

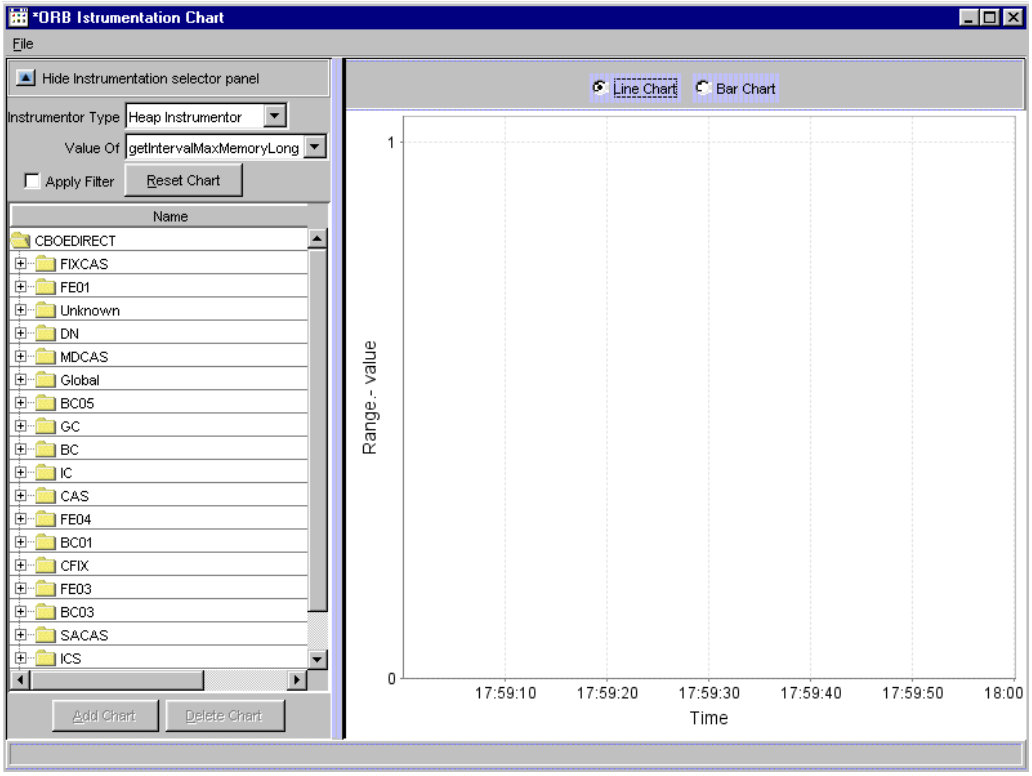
For detailed information, refer to the Save Configurations section, page 169.

Charting Instrumentation Data



The charting functionality in the System Health Monitor allows you to graph ORB instrumentation data for any component.

From the **Start** menu, select **Chart**, **Create New Window**. The **ORB Instrumentation Chart** window will display.

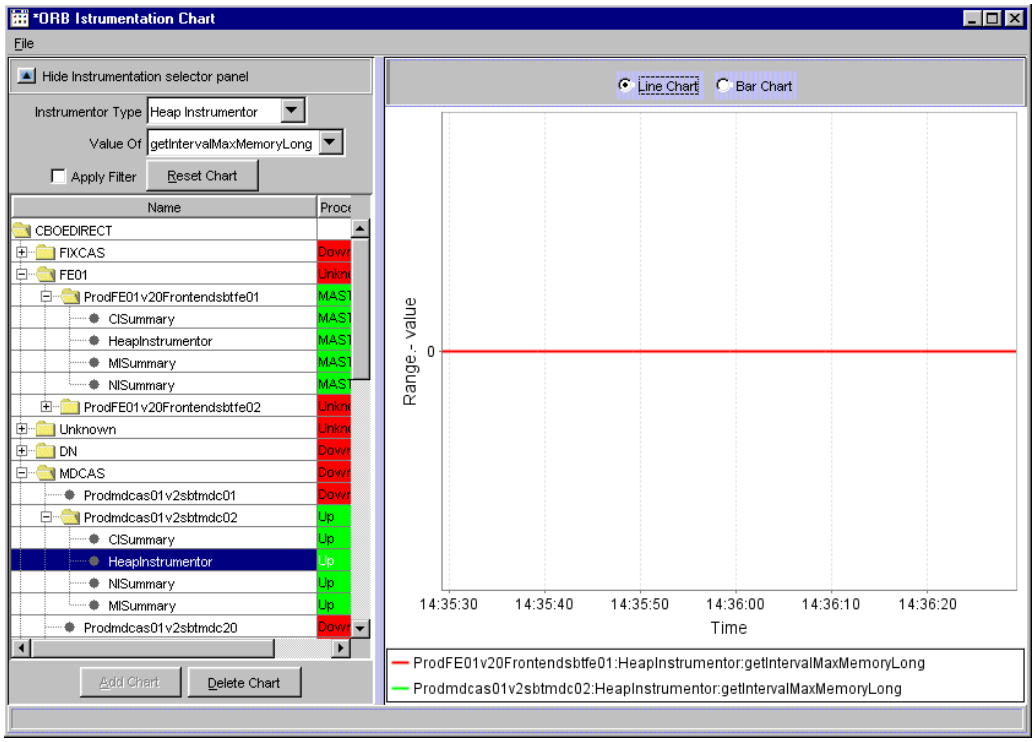


To chart instrumentation data:

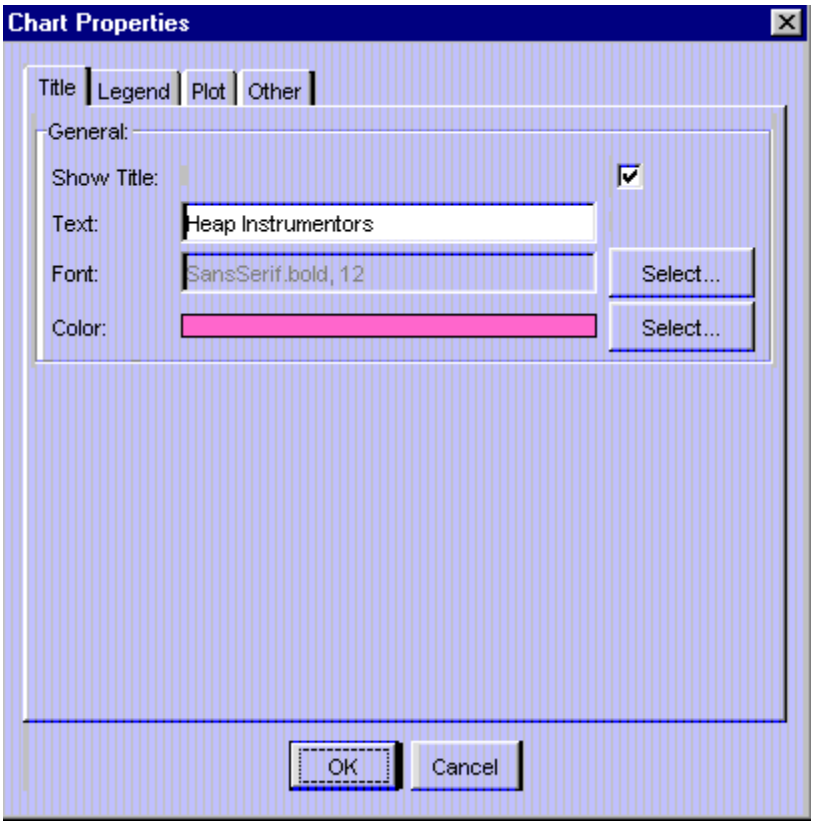
- Select the **Instrumentor Type** from the drop down list.
- Choose the value you wish to graph from the **Value Of** drop down list.
- Select the appropriate radio button for the type of chart you wish view.

- Choose the CBOEdirect component and process name (FIXCAS, FE, etc.)

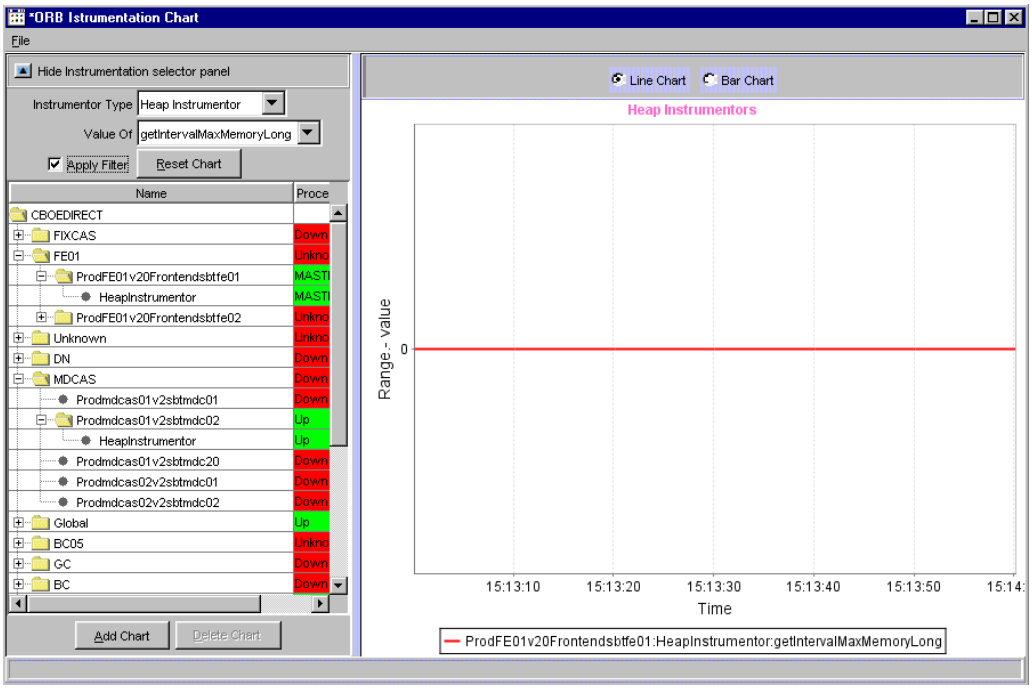
- Click on the instrumentor. Click **Add Chart.**
- To graph a second process, click on the instrumentor for that process. Click **Add Chart**. Instrumentation data will display to the right in chart format.



To change the look of the chart, select **File**, **Chart Properties**. The following window will display.

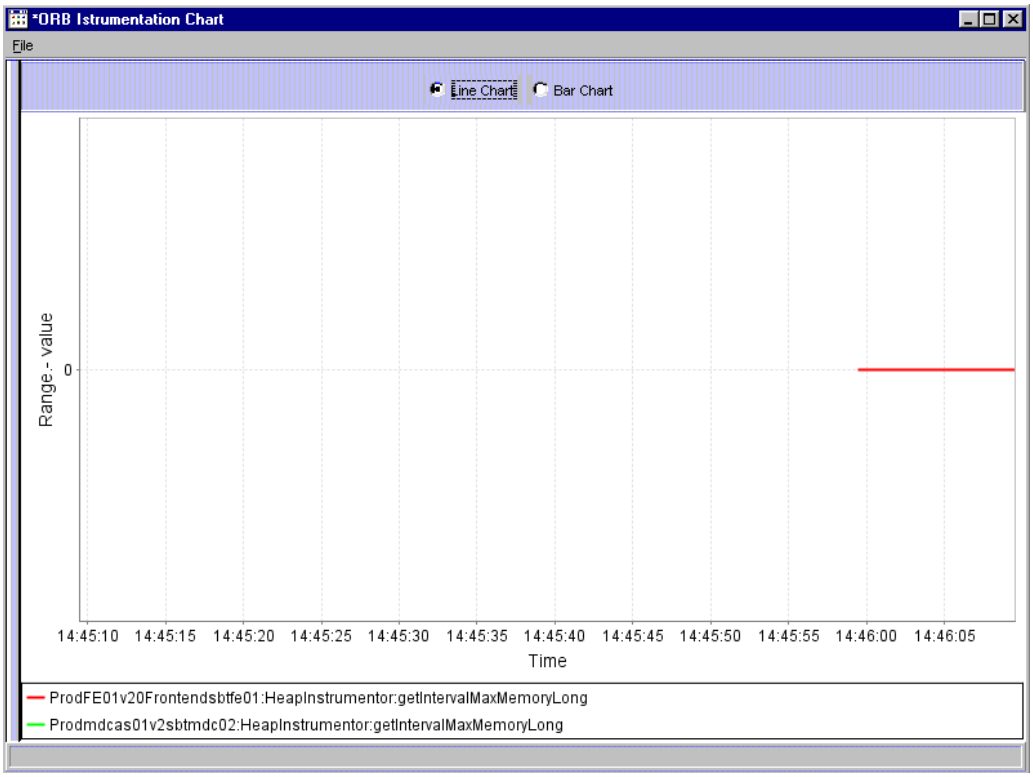


- Click on the **Show Title** checkbox to add a title for your chart.
- Enter the title for the chart in the **Text** box.
- Choose the font style and size from the **Font**, **Select** button.
- Click on the **Color**, **Select** button to choose the font color.
- Click **OK**. In the example above, the chart will display with the title "Heap Instrumentors."

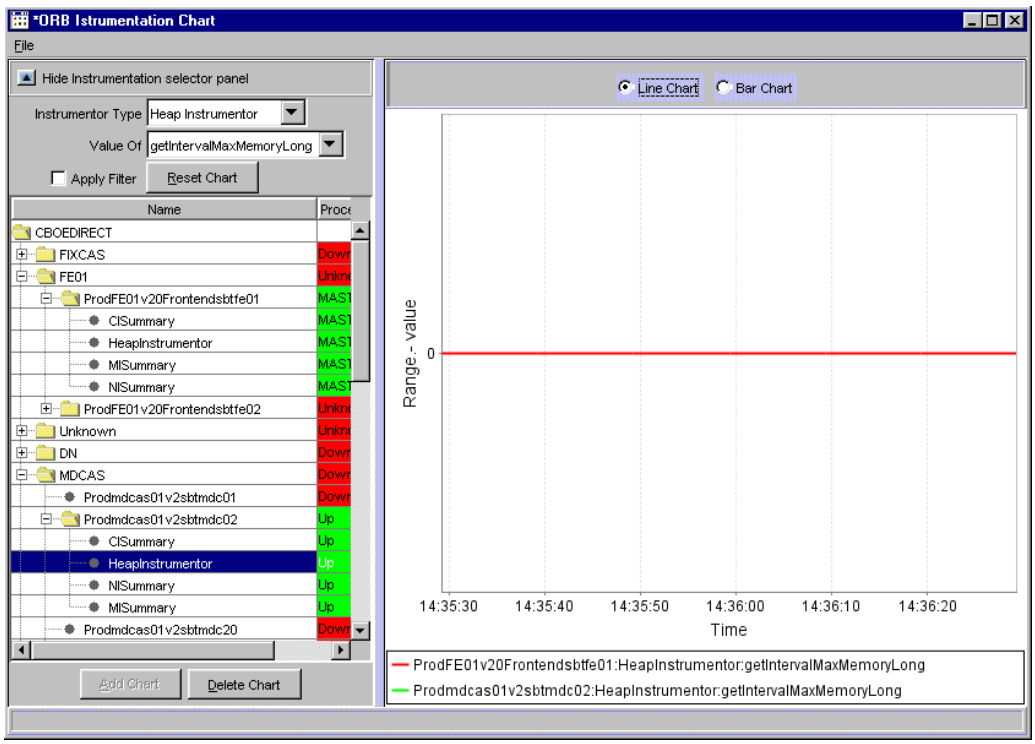


Click tabs **Legend**, **Plot** and **Other** to make other visual adjustments to the chart.

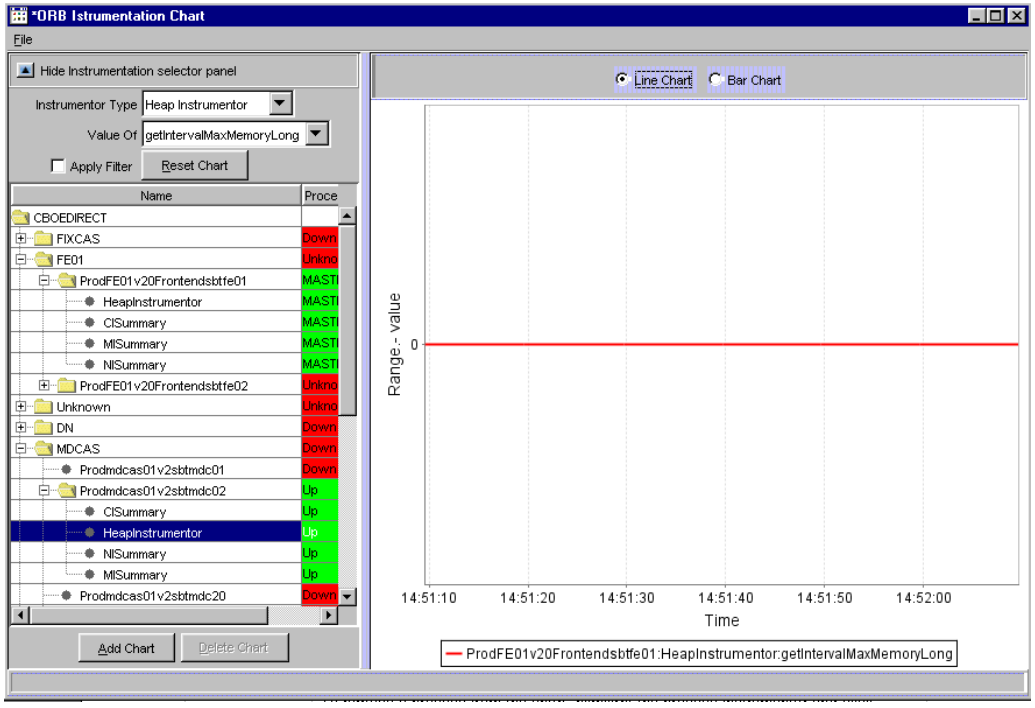
To expand the chart area, click **Hide Instrumentation selector panel**. The chart will expand the entire range of the window.



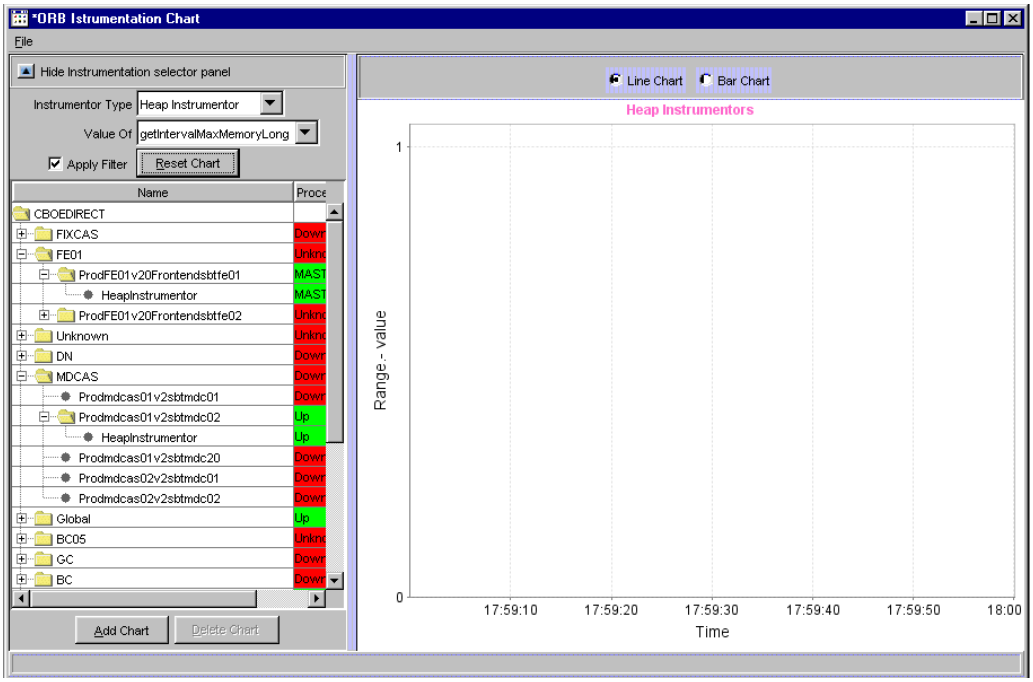
To unhide the Instrumentation selector panel, click **File**, **Settings**. The window will expand to include the panel.



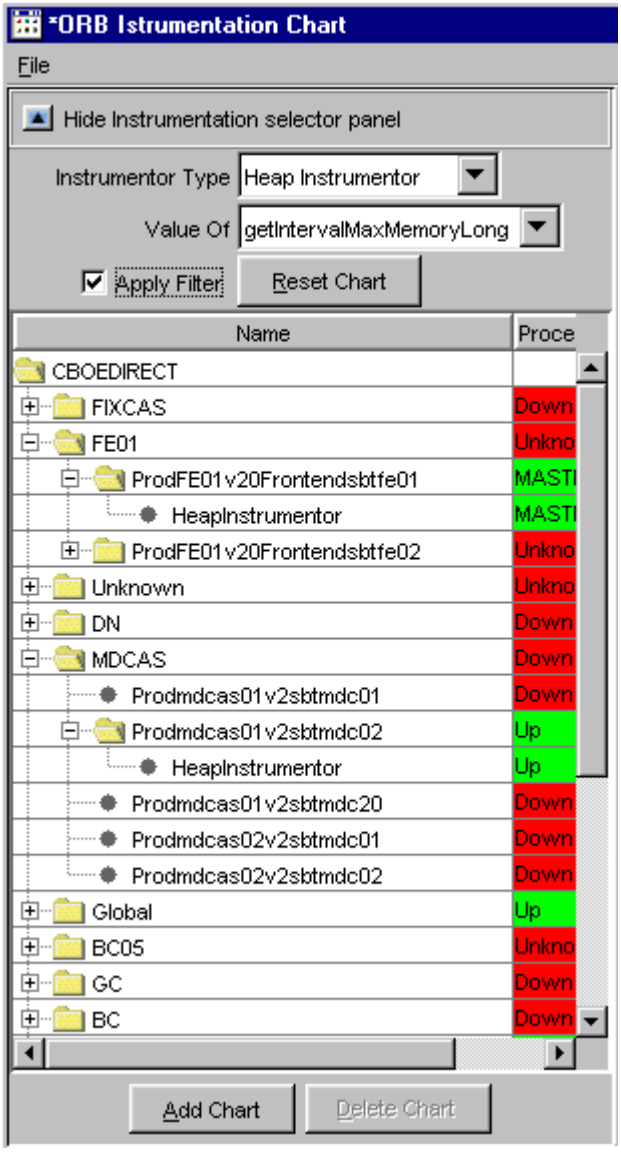
To remove a process from the chart, highlight the process instrumentor you wish to remove and click **Delete Chart**. The data will be removed from the chart. In this example, the "Prodmdcas01v2sbtmdc02.Heapinstrumentor" was removed.



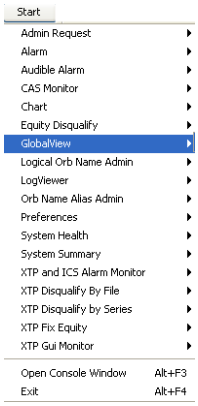
To clear the chart data at anytime, click **Reset Chart**. Instrumentation data for all processes will be removed.



To only display the selection of instrumentors for each process, click **Apply Filter**. The selector panel will update to display the components, processes and instrumentors.

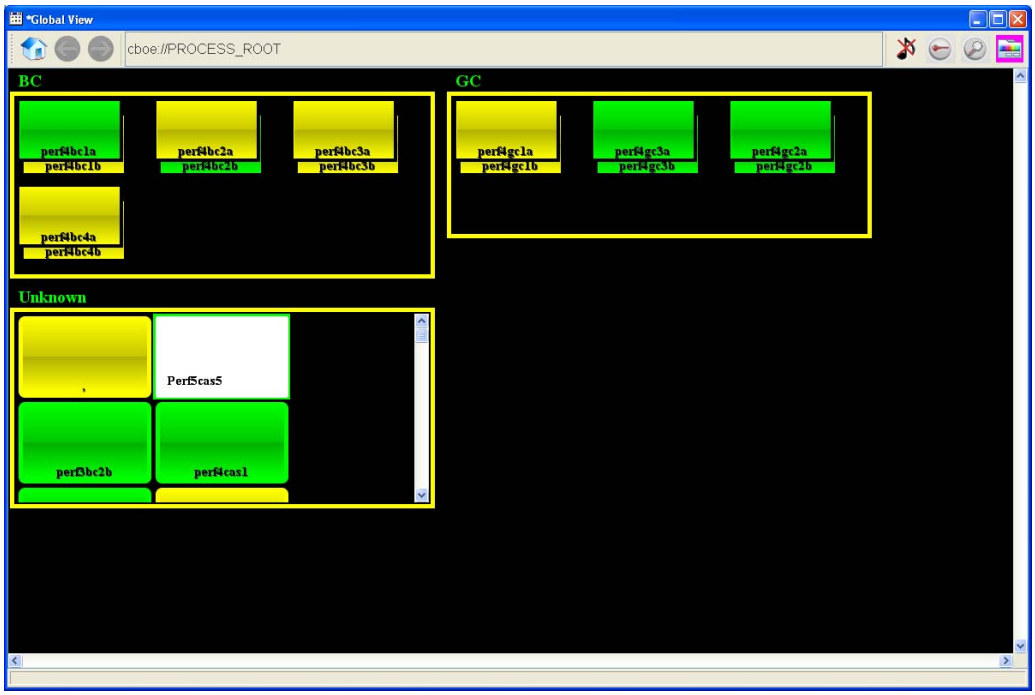

*ORB Istrumentation Chart
File
Hide Instrumentation selector panel
Instrumentor Type
Heap Instrumentor
Value Of
getIntervalMaxMemoryLong
Apply Filter
Reset Chart
Name
Proce
CBOEDIRECT
FIXCAS
Down
FE01
Unkno
ProdFE01v20Frontendsbtfe01
MASTI
HeapInstrumentor
MASTI
ProdFE01v20Frontendsbtfe02
Unkno
Unknown
Unkno
DN
Down
MDCAS
Down
Prodmdcas01v2sbtmdc01
Down
Prodmdcas01v2sbtmdc02
Up
HeapInstrumentor
Up
Prodmdcas01v2sbtmdc20
Down
Prodmdcas02v2sbtmdc01
Down
Prodmdcas02v2sbtmdc02
Down
Global
Up
BC05
Unkno
GC
Down
BC
Down
Add Chart
Delete Chart

Global View



The Global View section of the System Health Monitor allows you to observe the overall environment you are monitoring.

From the **Start** menu, select **Global View**, **Create New Window**. The **Global View** window will display.



From this window, you can monitor all the processes for the specified environment. The window defaults to the process root.

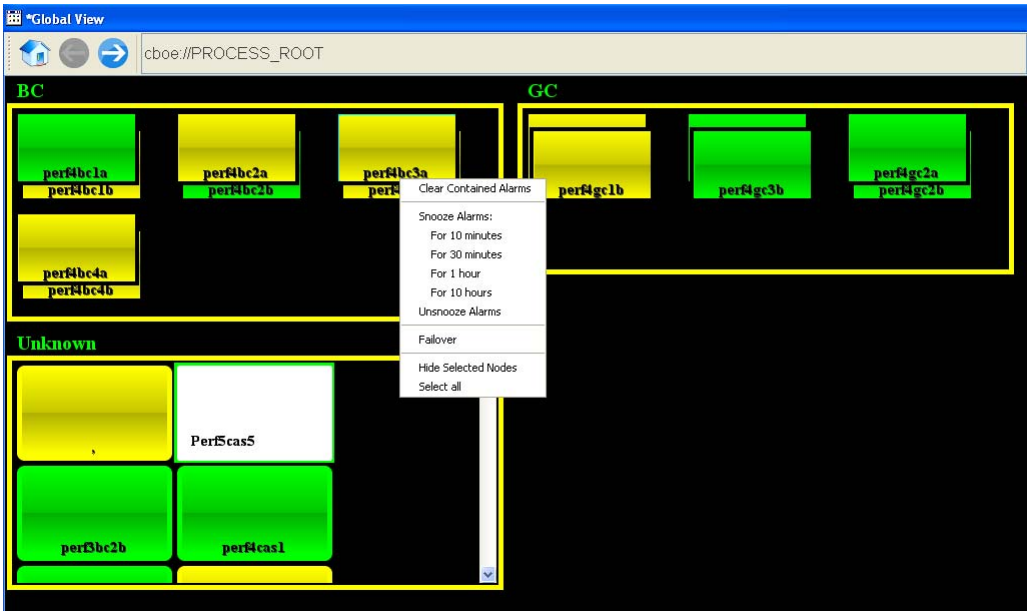
Global View windows are easily directed by navigation icons.

The home icon,  , always brings you to the Global View's main window.

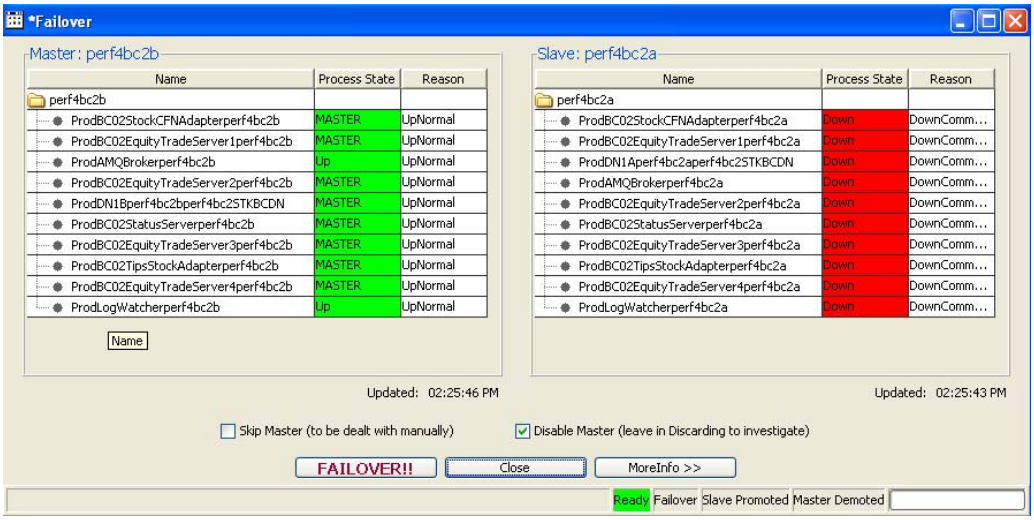
Use the left and right arrows,  , as you transition through the windows.

Failover Mechanism

The Global View window allows you to visually perform a cluster failover.



To perform a cluster failover, right-mouse click on the cluster you wish to failover and choose **Failover**. The following window will display.



The Master process displays on the left section of the window. The Slave process displays on the right. In the example above, perf4bc2b is master and perf4bc2a is slave.

Before you perform a failover decide if you want to disable the master process after the failover is performed or if you prefer to not disable the process.

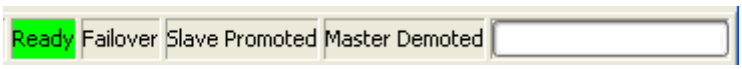
- To disable the master process, select the **Disable Master** checkbox.
- To leave the process as is, select the **Skip Master** checkbox.

Click **Close** to exit the window without performing a failover.

To perform a failover from master to slave, click **FAILOVER!!** The system will ask you to confirm the failover request.

To confirm the failover of perf4bc2b to perf4bca:

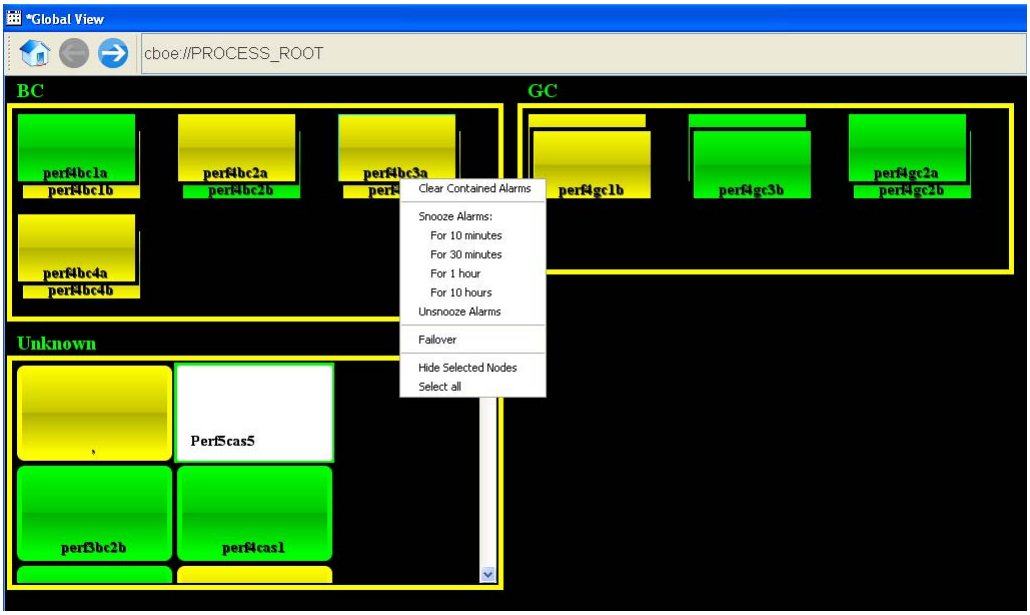
- Select the **Accept** radio button.
- Type “perf4bc2b” in the text box and hit the **Enter** key on your keyboard.
- You can click **Cancel** at anytime to withdrawal your failover request.
- To continue with the failover, click **Submit**, **Confirm**. The system will perform the failover from perf4bc2b to perf4bc2a. You can monitor the status of the failover from the status bar in the lower right-hand corner of the window.



The failover will be indicated by Failover, Slave Promoted, then Master Demoted. The time it took the cluster to failover will display in milliseconds.

Cluster Display and Alarm Options

The Global View gives you the option of customizing your cluster display and alarms.

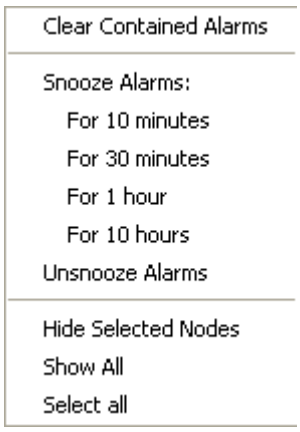


From the Global View's main window, you have the option to display all nodes or only selected nodes within a cluster.

To hide a particular node, right-mouse click on one node or on several nodes and select **Hide Selected Nodes**. The nodes will disappear from the window.

To remove all nodes from the cluster, choose **Select All** and click **Hide Selected Notes**.

When a node is hidden, the menu will display the option to **Show All**.



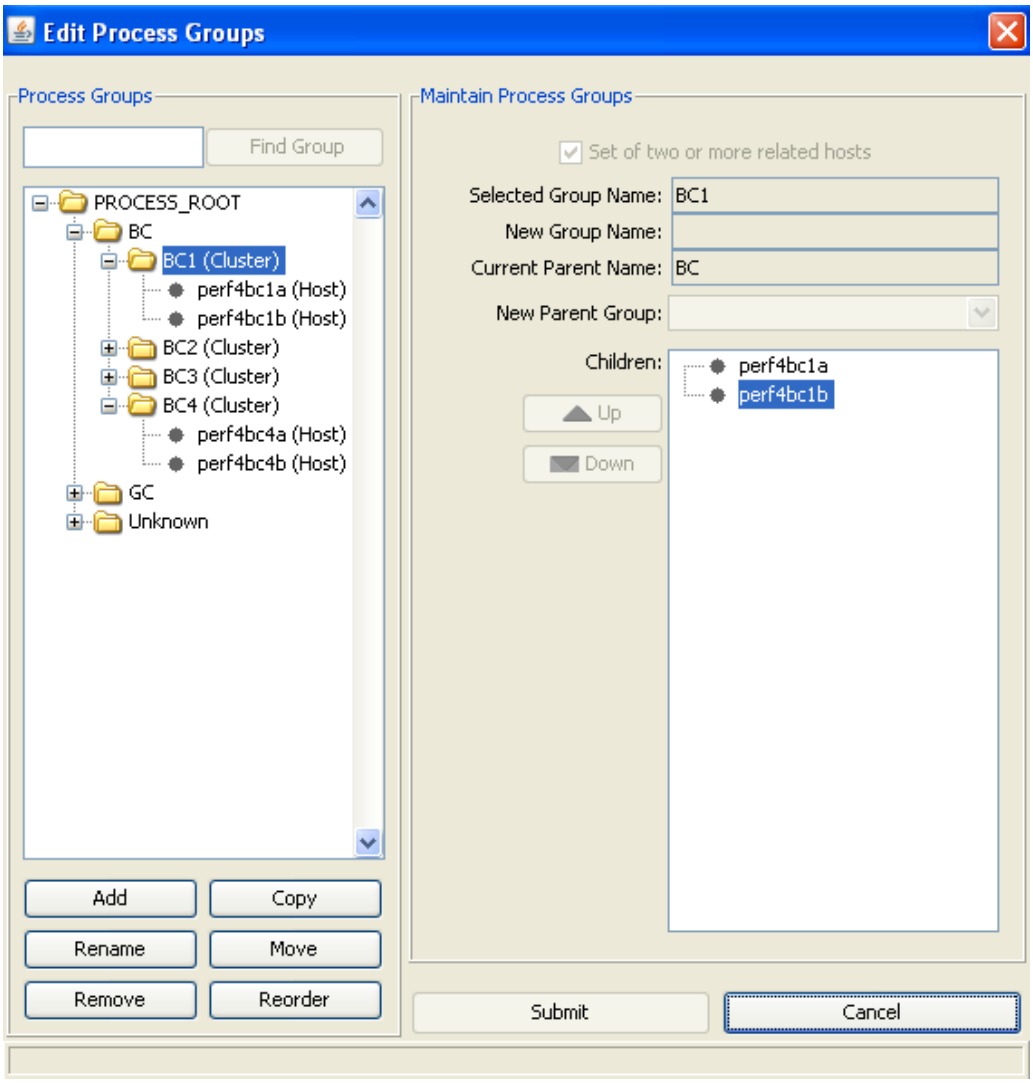
- Click **Show All** to display all the nodes in the cluster.

- To remove contained alarms from a cluster, right-mouse click on the cluster and select **Clear Contained Alarms**.
- By selecting the **Snooze Alarms** option, you can set the cluster alarms to snooze for 10 minutes, 30 minutes, 1 hour or 10 hours.
- To remove the alarm snooze option, select **Unsnooze Alarms**.

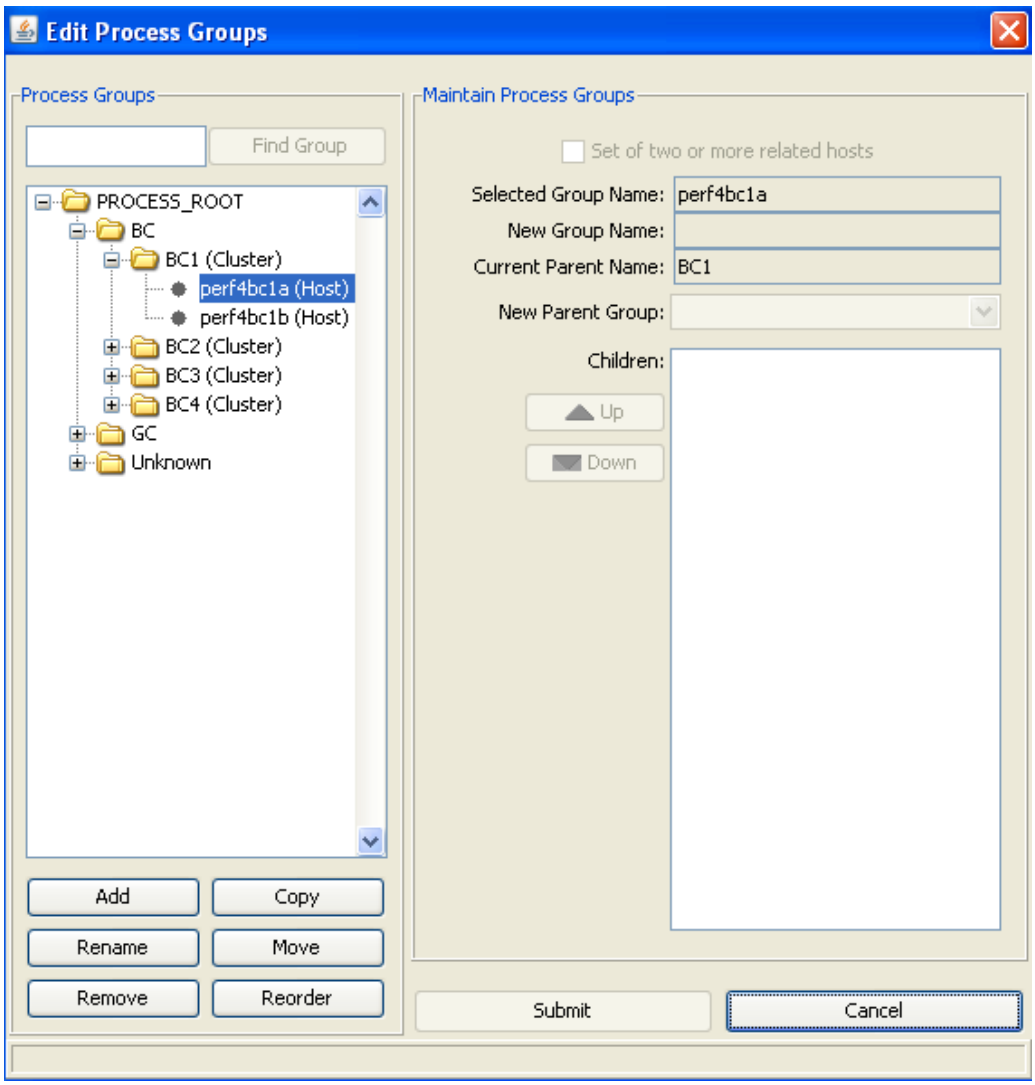
Edit Process Groups

Global View process groups can be created, moved, copied and removed.

To access the Global View process group window, click  . The Edit Process Groups window will display.



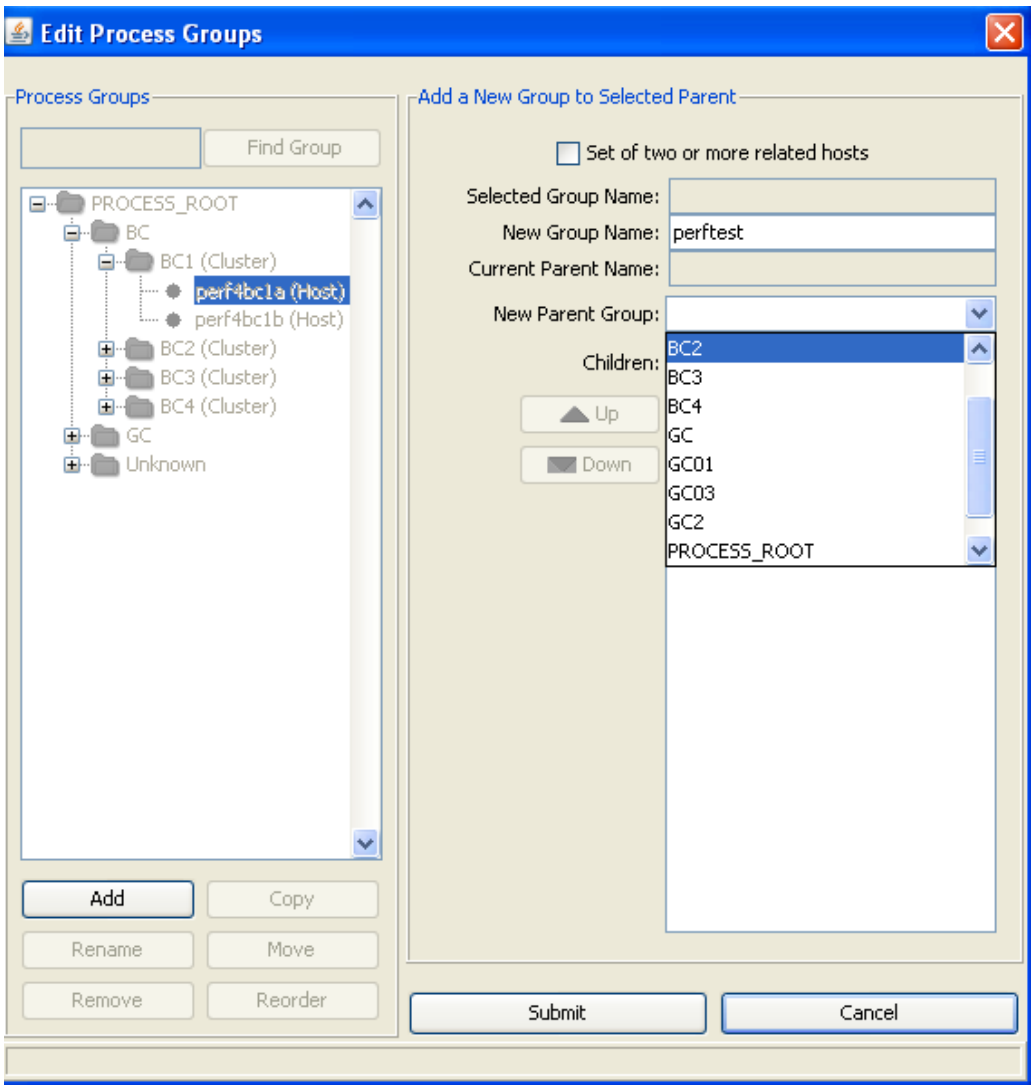
To quickly locate an existing process group, enter the group name in the Process Groups text box and click **Find Group**.



In the **Process Groups** section of the window, the process name appears highlighted.

The **Maintain Process Groups** section shows the parent name and the selected group name corresponding to the process.

To add a new process group to the Global View, click **Add**. The following window will display.



- Enter the process name in the **New Group Name** text box.
- Select the **New Parent Group** from the drop down list.
- Click **Submit**. The new process will appear in the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

To rename an existing process group:

- Hightlight the process group and click **Rename**.
- Enter the new name in the New Group Name text box.
- Click **Submit**. The new process name will appear in the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

To remove a process group:

- Hightlight the process group and click **Remove**.
- Click **Submit**. The process name will be removed from the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

To copy a process group:

- Hightlight the process group and click **Copy**.
- The process name appears in the New Group Name text box.
- Click **Submit**. A copy of the process group will appear under the Parent Group in the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

To move a group to a different parent group:

- Hightlight the process group and click **Move**.
- The process name appears in the New Group Name text box.
- From the drop down list, select the parent group where the process will be moved.
- Click **Submit**. A process group will appear under the Parent Group in the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

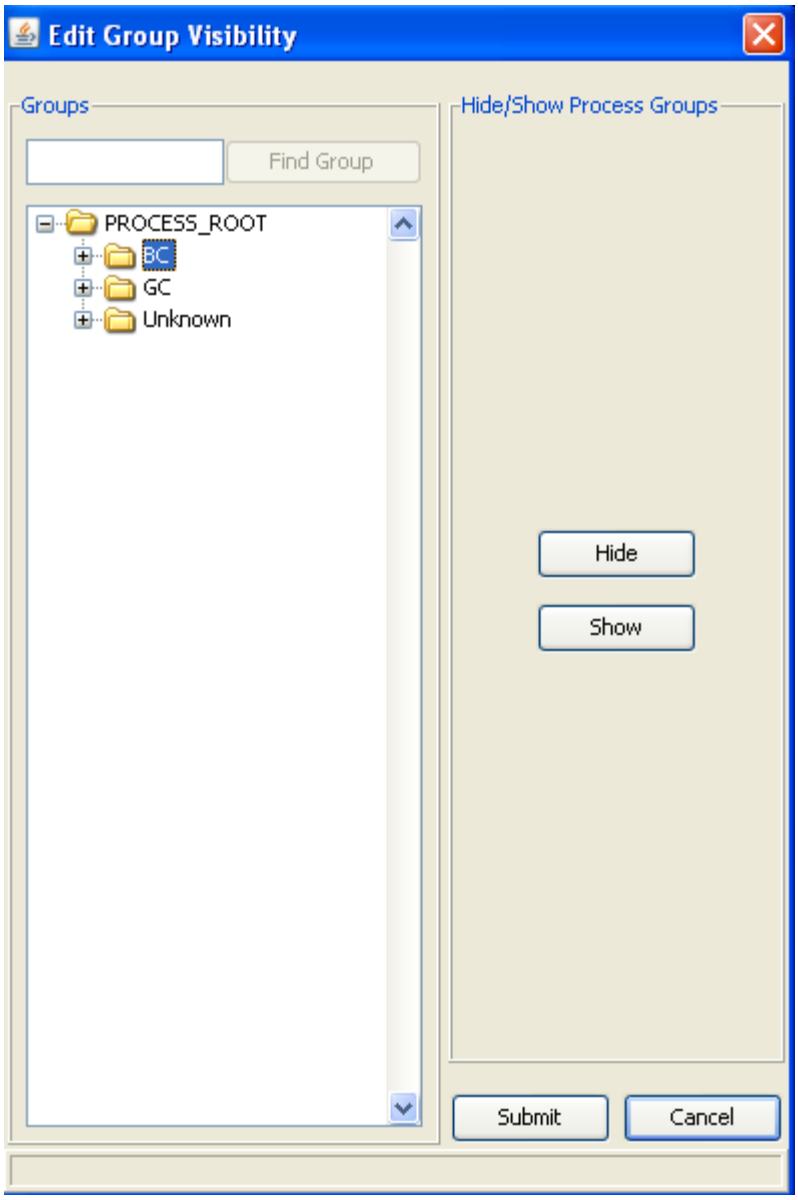
To rearrange members of a selected group:

- Hightlight the process group and click **Reorder**.
- The process name appears in the Maintain Process Groups section of the window.
- Rearrange the groups as desired.
- Click **Submit**. A process groups will appear in new order under the Process Groups directory tree.
- To withdrawal your changes, click **Cancel**.

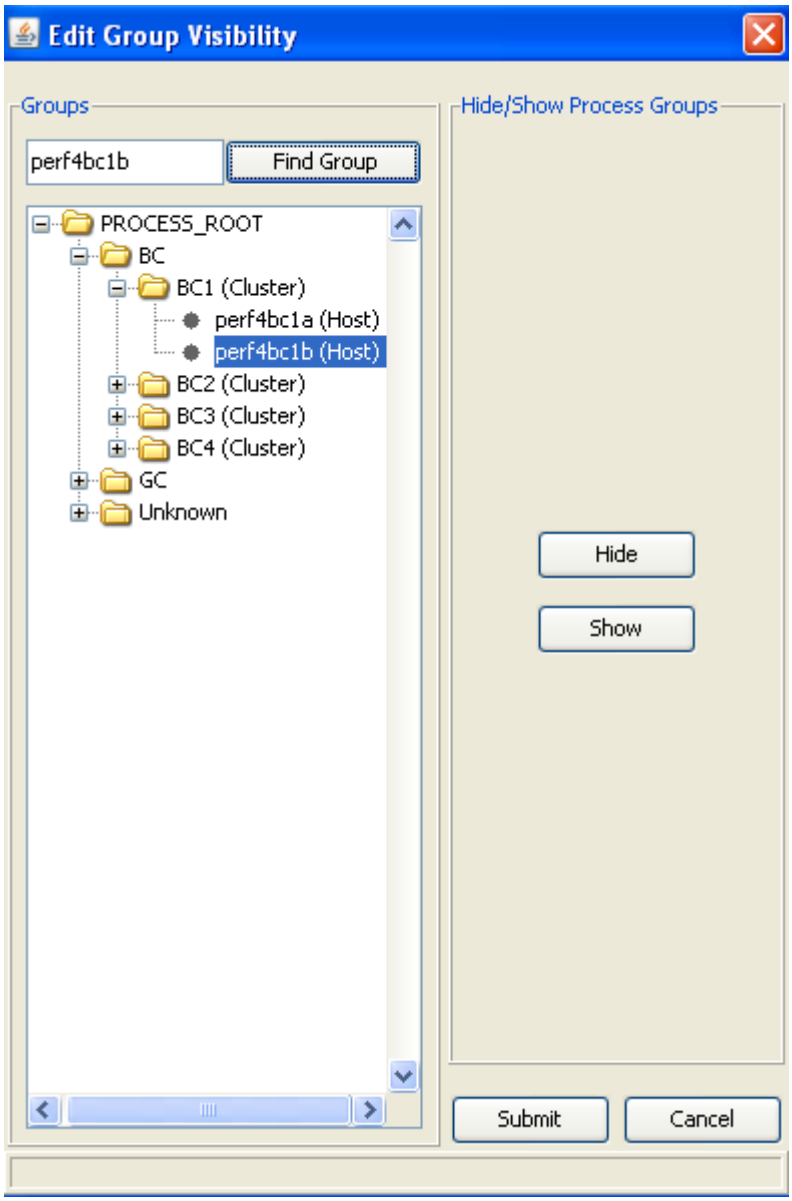
Edit Group Visibility

From the Global View, you can control which process groups you want to display.

To access the Global View process visibility window, click  . The Edit Group Visibility window will display.



To quickly locate an existing process group, enter the group name in the Process Groups text box and click **Find Group**.



The process name appears highlighted in the **Groups** section of the window.

To conceal a progress group:

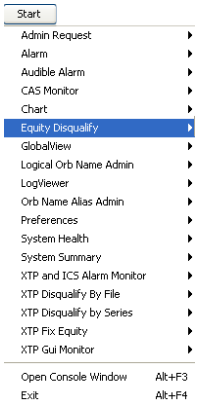
- Highlight the process group in the Groups directory tree.
- Click **Hide** and then click **Submit**. The process will be hidden from Global View.
- Click **Cancel** to withdrawal your request.

To display a progress group:

- Highlight the process group in the Groups directory tree.
- Click **Show** and then click **Submit**. The process will appear in the Global View window.

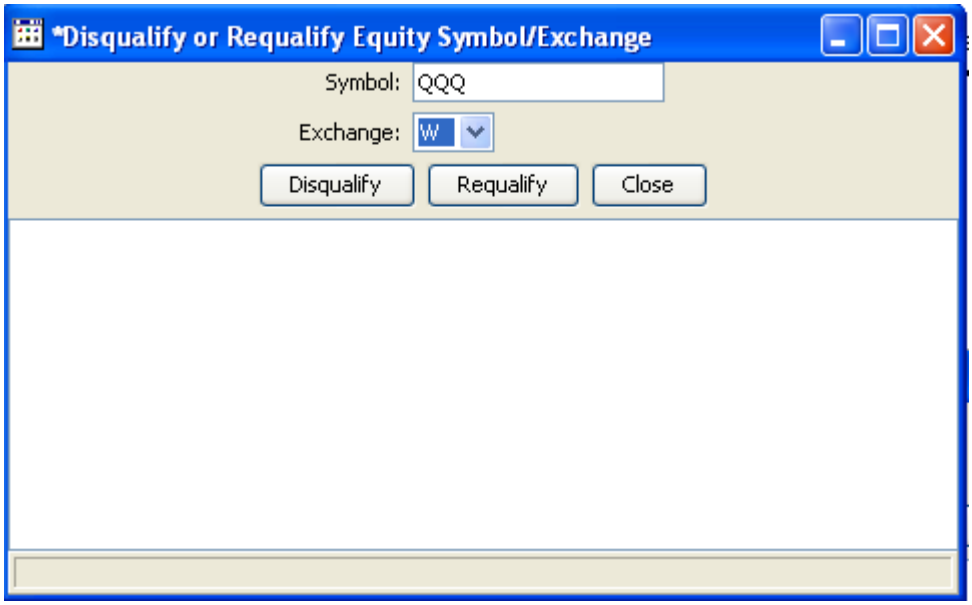
- Click **Cancel** to withdrawal your request.

Equity Disqualify



The Equity Disqualify window allows you to disqaulify or requalify symbols.

From the **Start** menu, select **Equity Disqualify**, **Create New Window**. The **Disqualify or Requalify** window will display.



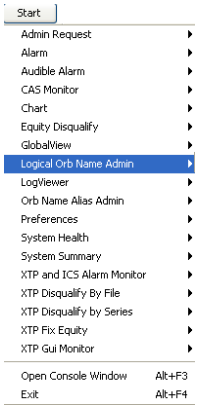
To disqualify a symbol:

- In the **Symbol** text field, type in the symbol you wish to disqualify.
- Select the **Exchange** where the symbol trades.
- Click **Disqualify**. The symbol will appear in the text box section of the window.

To requalify a symbol:

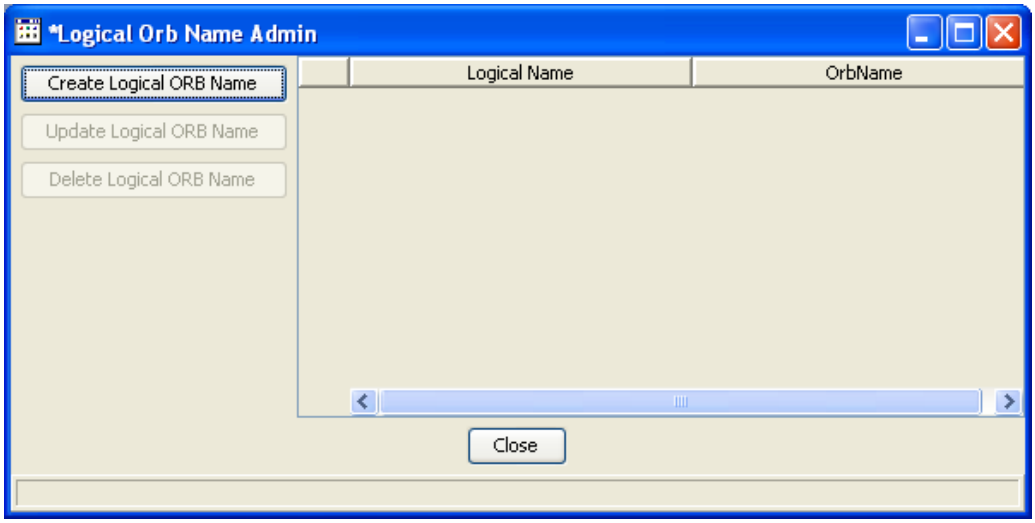
- In the **Symbol** text field, type in the symbol you wish to requalify.
- Select the **Exchange** where the symbol trades.
- Click **Requalify**.

Logical Orb Name Admin

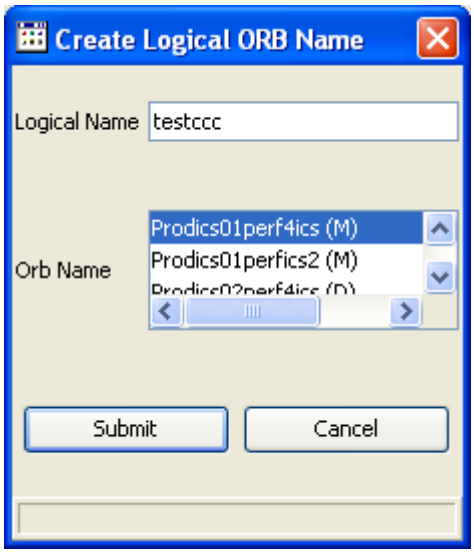


The Logical Orb Name Admin window allows you to create, update and delete Orb names from the system.

From the **Start** menu, select **Logical Orb Name Admin**, **Create New Window**. The following window will display.



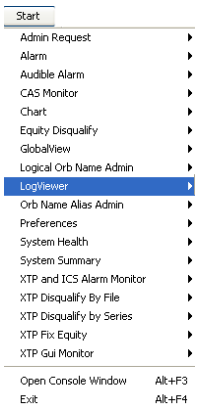
To enter a new Logical Orb Name, click **Create Logical ORB Name**. The following window will display



Enter the Orb name in the **Logical Name** text field and click **Submit**. The Orb name will appear in the Orb Name list box.

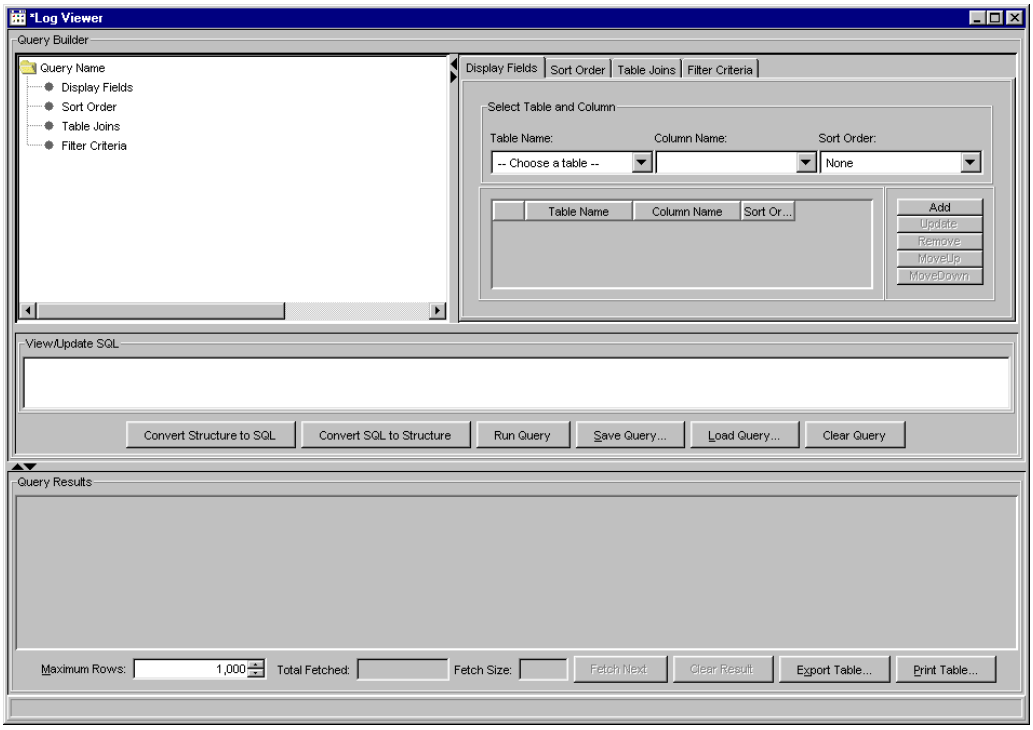
Click **Cancel** to close the Create Logical ORB Name window.

Log Viewer



The Log Viewer window allows you to build queries.

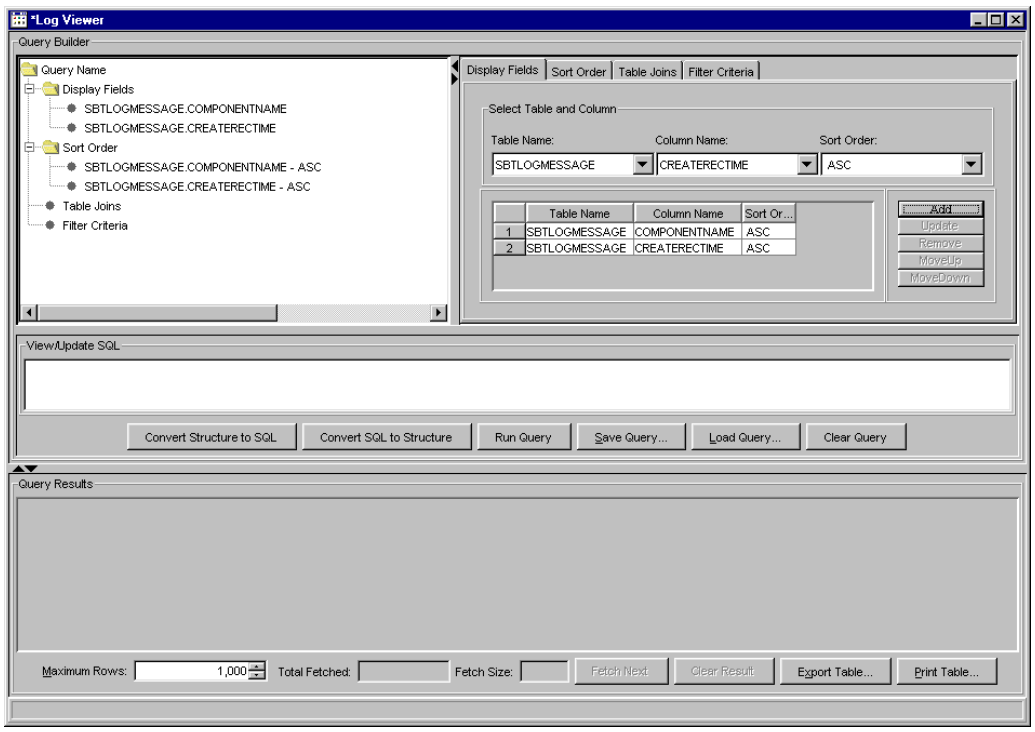
From the **Start** menu, select **Log Viewer**, **Create New Window**. The **Log Viewer** window will display.



➢ **Build a Query**

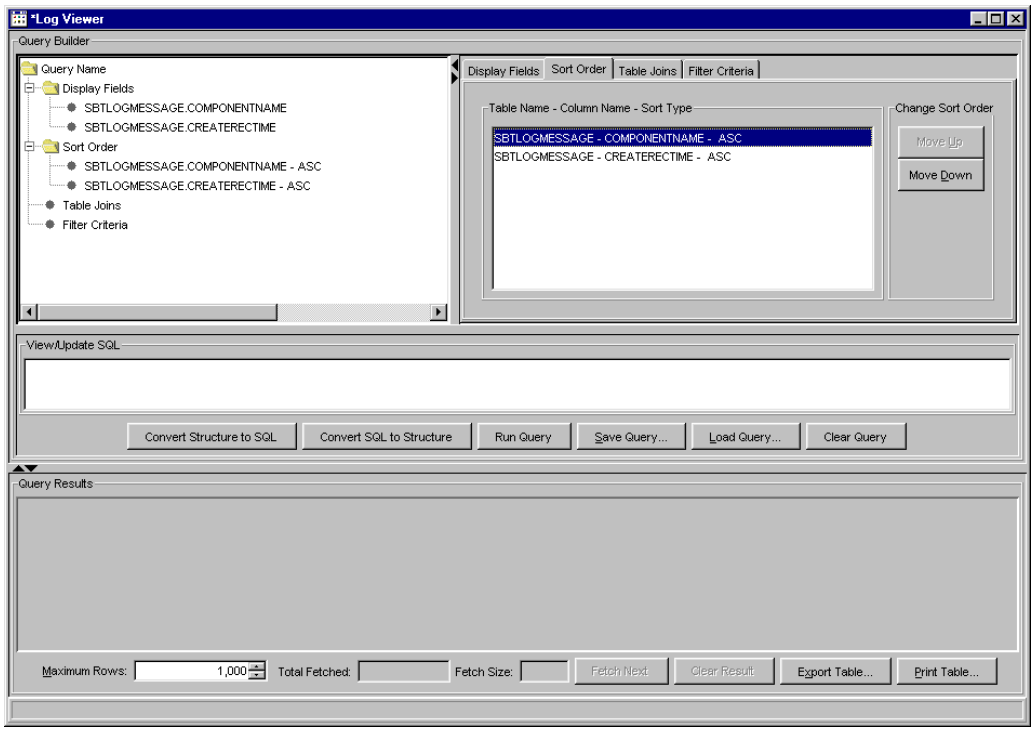
To build a query, start by making your table and column selections.

- From the Display Fields tab, select the **Table Name**, **Column Name** and Sort **Order** from the drop down lists.
- Click **Add**. The information you selected will display in the Query Name section of the window.



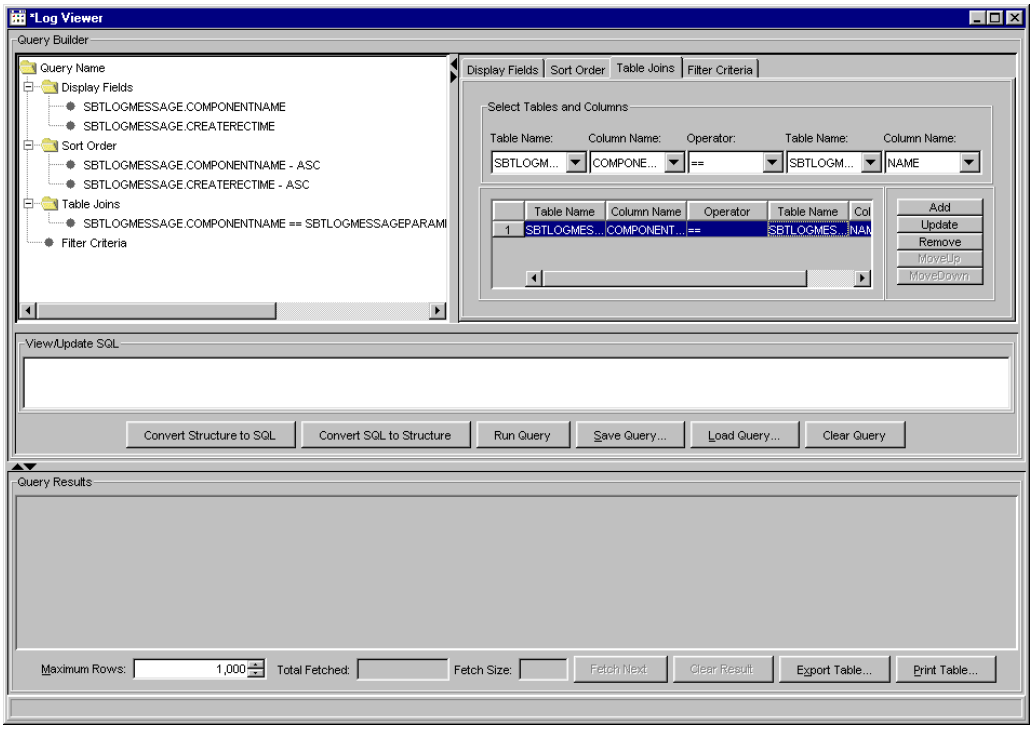
From the **Sort** tab, select the order (ascending or descending) in which you want the tables and columns to appear.

Highlight one of the table and column choices and click either **Move Up** or **Move Down** to arrange the fields.



From the **Table Joins** tab, you can elect to combine table and column names by specific operations (i.e, =, >=, etc.).

- Select your first **Table Name** and **Column Name** choice from the drop down list.
- Choose the **Operator** type from the drop down list.
- Select your second **Table Name** and **Column Name** choice from the drop down list.
- Click **Add**. The tables you selected to join will appear below the drop down boxes in row format.



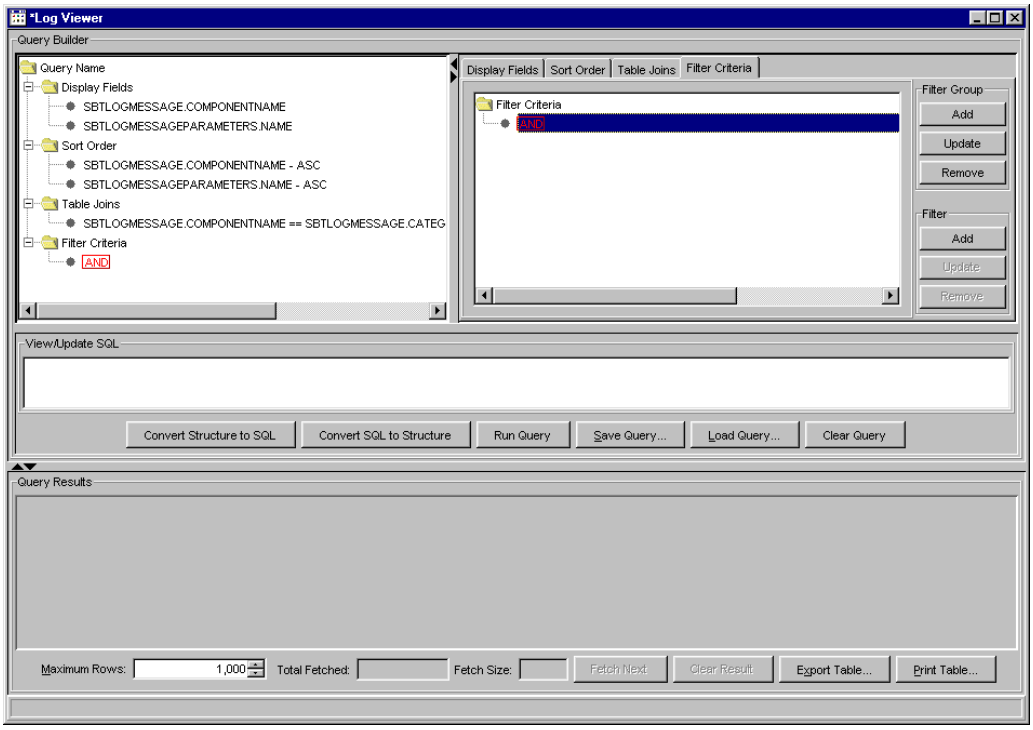
To update a table selection, highlight the desired row.

- Choose a different table name, column name or operator.
- Click **Update**. Your changes will override the previous selection.

To remove the table union, highlight the desired row and click **Remove**. The selection will be removed.

To reposition a row, highlight the row and click the **Move Up** and **Move Down** buttons until the desired position is reached.

To add filtering criteria to your query, click on the **Filter Criteria** tab.

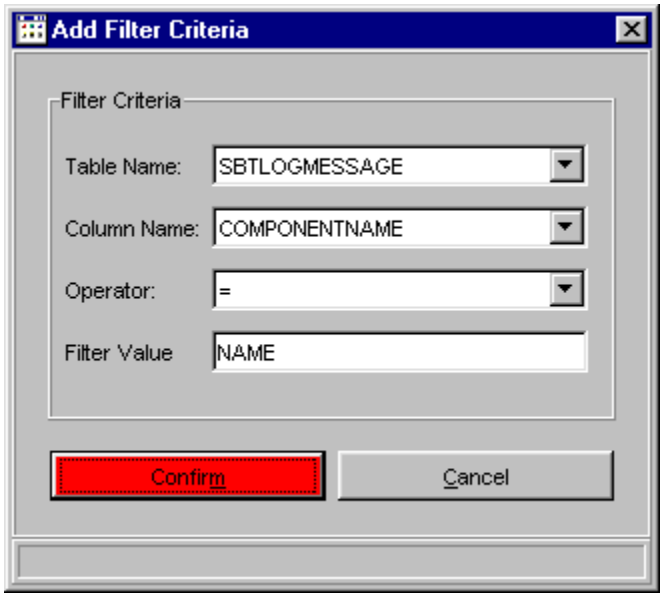


- From the Filter Group section, click **Add**. The **Add Filter Group** window will display.

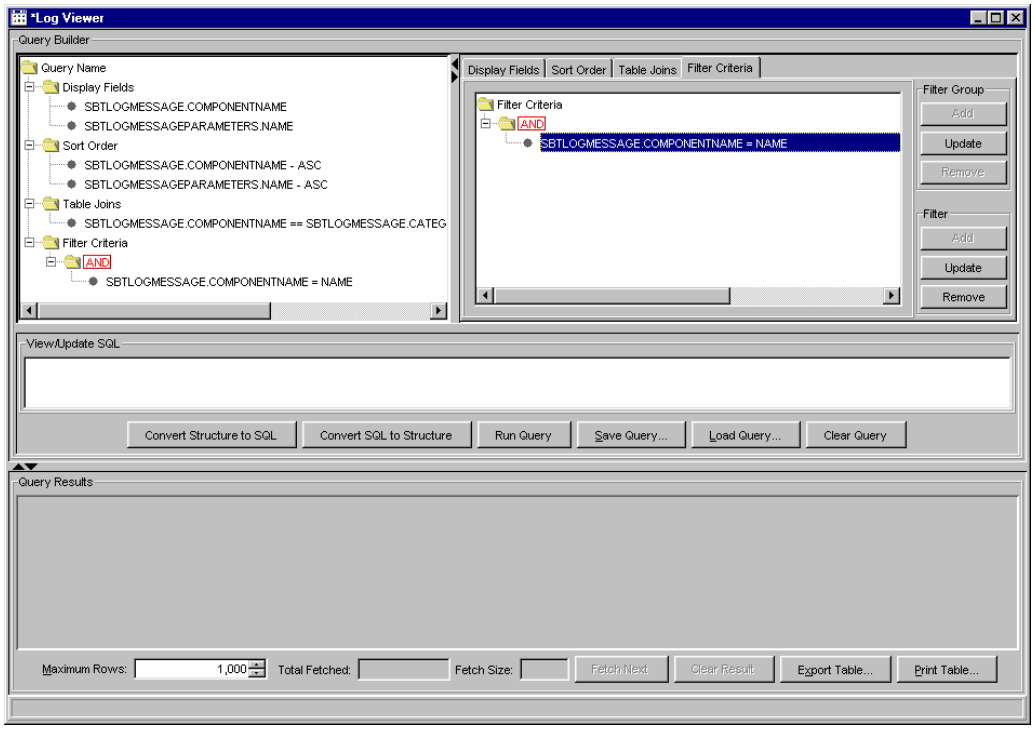
- To close the window without adding filter groups, click **Cancel**.
- Choose the **Operator** type from the drop down list. Click **Submit**, **Confirm**. The operator type will appear in the tab and in the Query Name section of the window.
- To update the filter group, highlight the operator type from the Filter Criteria tab and click **Update**. Change the operator type and click **Submit**, **Confirm**.
- To remove the filter group, highlight the operator type and click **Remove**.

Once you select your filter group, you can add your filter criteria.

- Highlight the operator type and click **Add** from the Filter section of the window. The **Add Filter Criteria** window will display.
- Click **Cancel** to exit the window without making any changes.



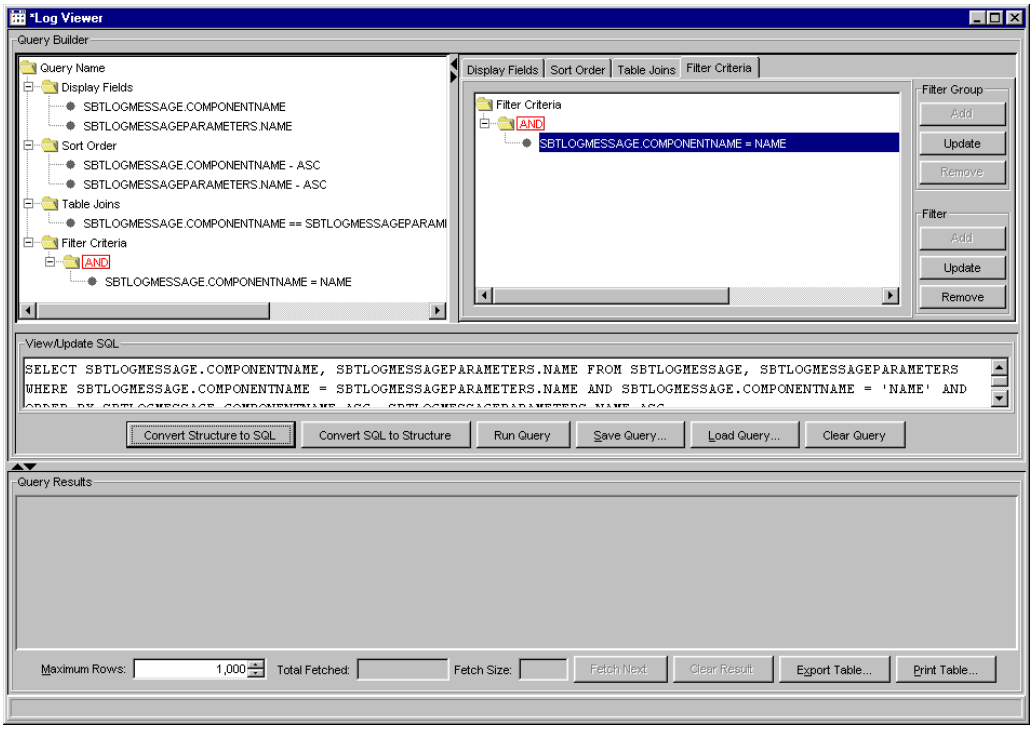
- Select the **Table Name**, **Column Name**, **Operator** and **Filter Value**.
- Click **Submit**, **Confirm** to enter your changes.



- To update your filter criteria, highlight the criteria and click **Update** in the Filter section of the tab. Make your changes and click **Submit**, **Confirm**. Click **Cancel** to close the window without making any changes.
- To remove the filter criteria, highlight the criteria and click **Remove**.

➢ **Convert Query**

You can convert your Structure query to a SQL query by clicking on the **Convert Structure to SQL** button. The SQL query will display in the **View/Update SQL** section of the window.



- To convert your query from SQL to Structure, click **Convert SQL to Structure**. The Structure query will display in the **View/Update SQL** section of the window.

➢ **Query Results**

To execute your query, click **Run Query**. The results will display in the **Query Results** section of the window.

Enter the maximum number of rows you want to display in the **Maximum Rows** text box.

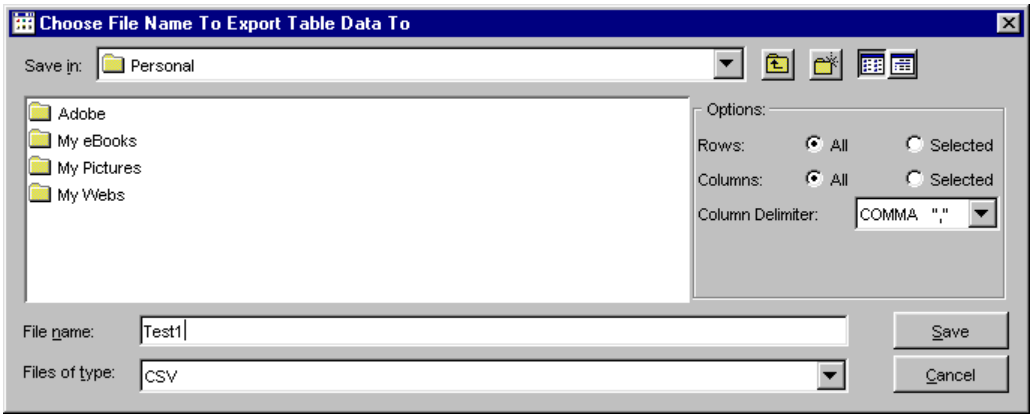
The **Total Fetched** text box shows how many data rows will be retrieved per query.

The **Fetch Size** text box displays how many data rows will be retrieved per request. The Fetch Size has been pre-defined to retrieve 100 rows.

To display additional data rows, click **Fetch Next**. The Total Fetched text box number will increase by the Fetch Size number.

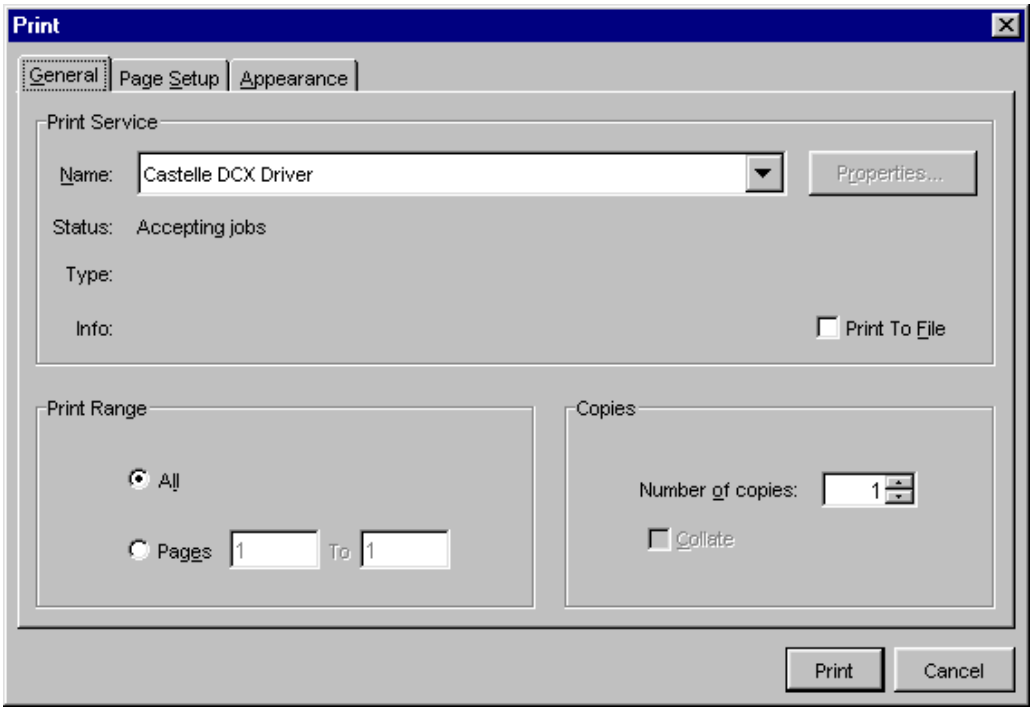
To clear your query results, click **Clear Result**.

Click **Export Table** to save the query results as Comma Separated Values (CSV) or HTML. Or, you can right-mouse click on any data row to display these options.



- Enter the **File Name**, select the **File type** and click **Save**.
- Click **Cancel** to exit the window without exporting the data.

To print a table, click on the **Print Table** button or right-mouse click on any data row and select **Print Table**.

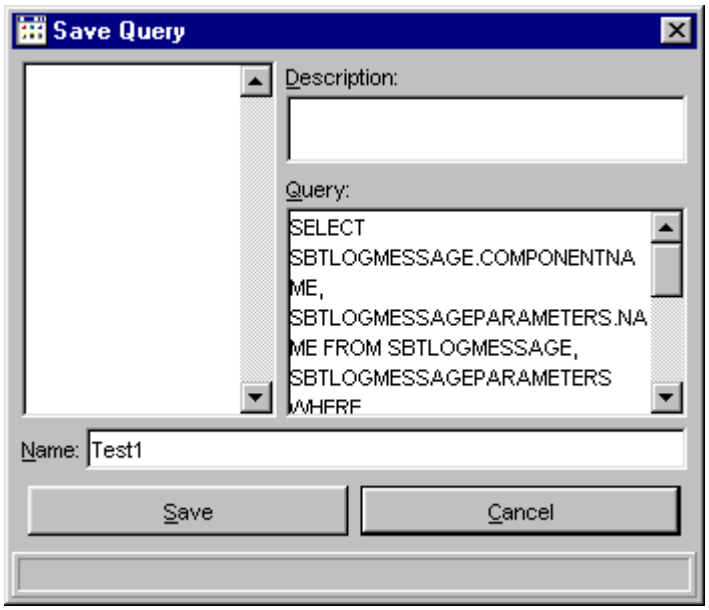


- Select your printer destination and options and click **Print**.
- Click **Cancel** to exit the Print window without printing.

➢ **Save Query**

Once you have built your query, you can save it for future use.

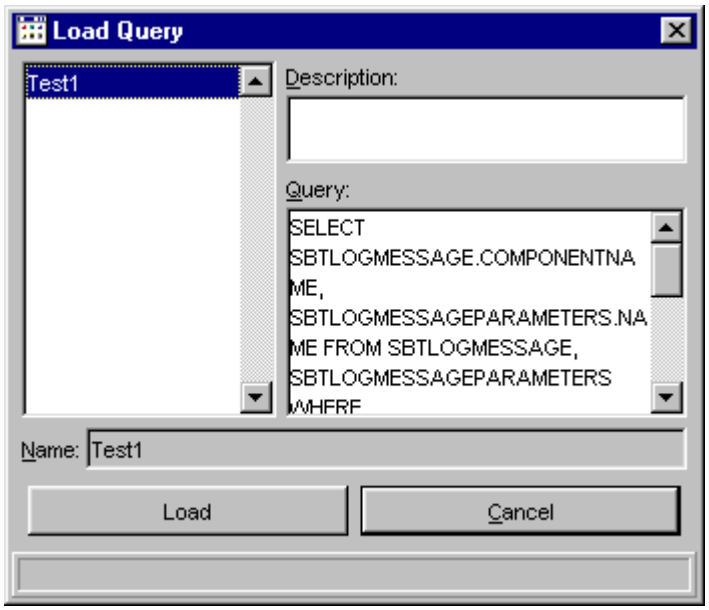
- Click **Save Query**. The following window will display.



- Enter the name of the query in the **Name** text box.
- Enter text to describe your query in the **Description** text box.

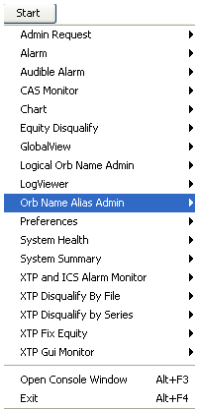
- Click **Cancel** to exit the window without saving the query.
- Click **Save** to store your query.

To open a pre-defined query, click **Load Query**. The following window will display.



- Highlight the query name. Click **Load**. The query will display in the Log Viewer window.
- Click **Cancel** to exit the window without loading the querying.
- To remove the query from the Log Viewer display, click **Clear Query**.

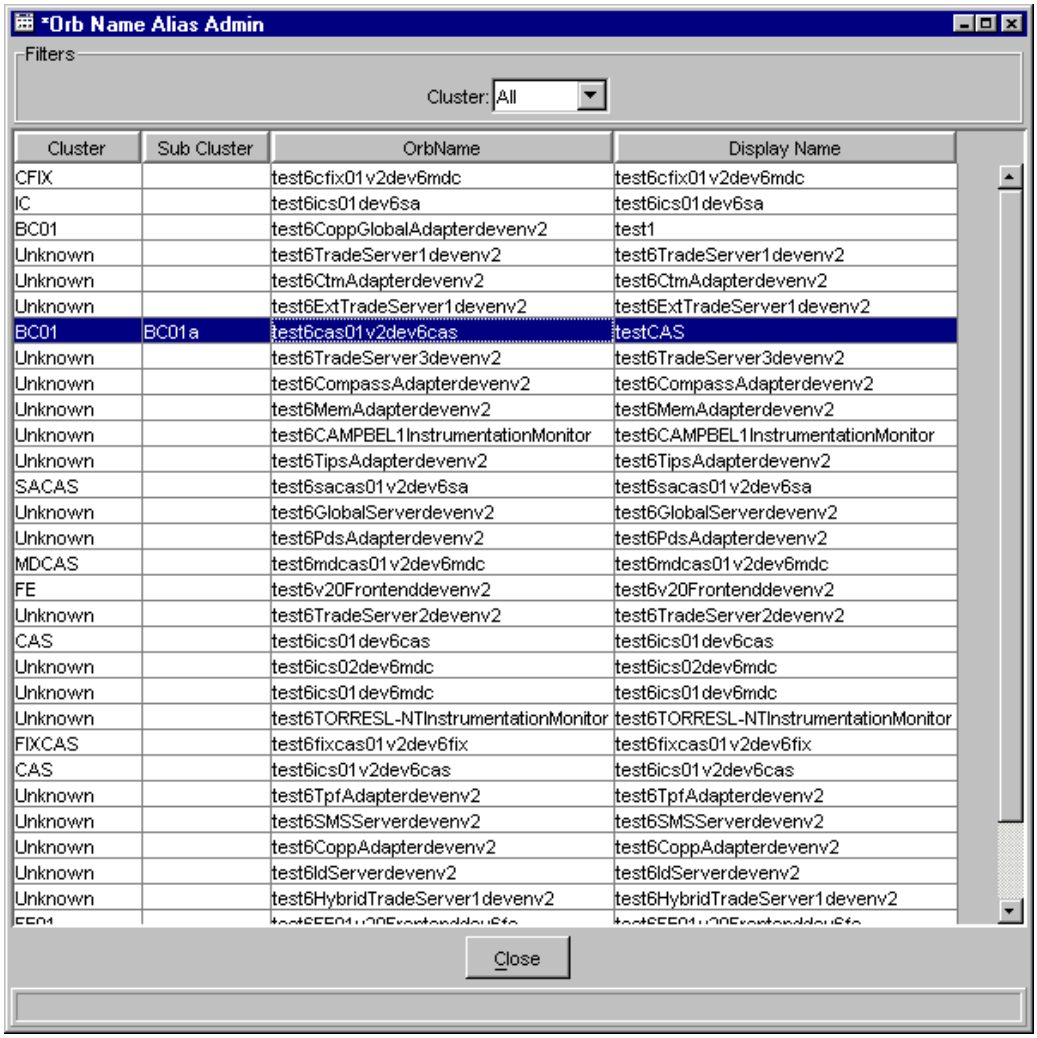
Orb Name Alias Admin



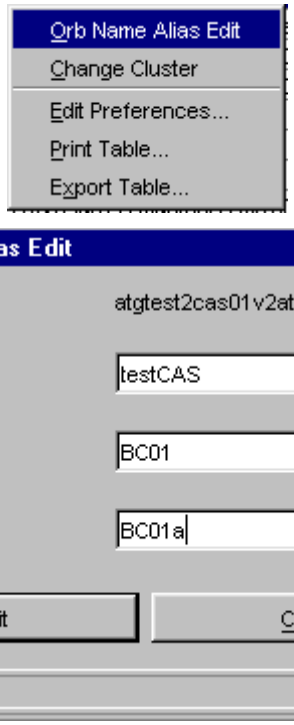
The Orb Name Alias Admin allows you to view and modify all processes in CBOE*direct* from one window.

From the **Start** menu, select **Orb Name Alias Admin**, **Create New Window**. The **Orb Name Alias Admin** window will display.

Click **Cancel** at any time to exit the window.



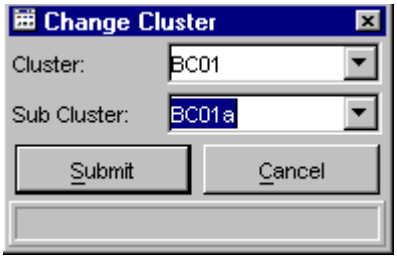
To edit the name of an Orb, right-mouse click on the OrbName row and select **Orb Name Alias Edit**.



The **Orb Name Alias Edit** window displays. The Orb Name displays with its values along with editable text fields for **Display Name**, **Cluster Label** and **Sub Cluster Label**. Edits in this window can only be performed on one row at a time.

- In the **Display Name** text field, enter the name you want displayed in the Display Name column in place of the Orb Name.
- In the **Cluster Label** text field, enter the name of the server cluster (i.e. BC01)
- If you wish, you can enter the name of the sub cluster (i.e. BC01a) in the **Sub Cluster** Label text field.
- Click **Submit**. Click **Confirm**. The **Display Name** column labels the Orb Name as testCAS. The **Cluster** and **Sub Cluster** columns display BC01 and BC01a, respectively. The Orb Name column will still show the full Orb Name.

You can change the cluster or sub cluster of an Orb Name by right-mouse clicking on the Orb Name row and selecting the **Change Cluster** option. The **Change Cluster** window displays.



You can select multiple rows to edit as long as the Orb Name will use the same cluster

and sub cluster.

Enter the new cluster in the **Cluster** field or you can select a cluster from the drop down list.

Enter the sub cluster in the **Sub Cluster** field. Click **Submit**. Click **Confirm**. The Orb Name Alias Admin window displays with the new cluster and sub cluster labels for all highlighted rows.

The Orb Name Alias Admin window can be filtered by cluster. Select the cluster from the **Cluster** drop down list in the Filters section of the window. The window displays only the Orb Name information based on your cluster selection.

You can customize your Orb Name Alias Admin window by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

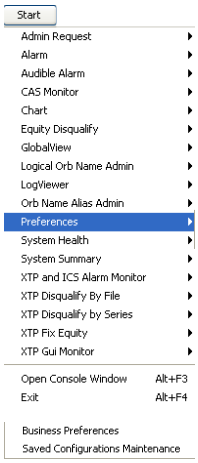
- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

For detailed information, refer to the Edit Column Preferences section, page 171.

To print the Orb Name Alias table, right mouse click on a data row. Select **Print Table**. Select the printer destination and click **Print**.

To export the table to a .csv or .txt file, right mouse click on a data row. Enter the file name and select the file type. Click **Save**.

Preferences

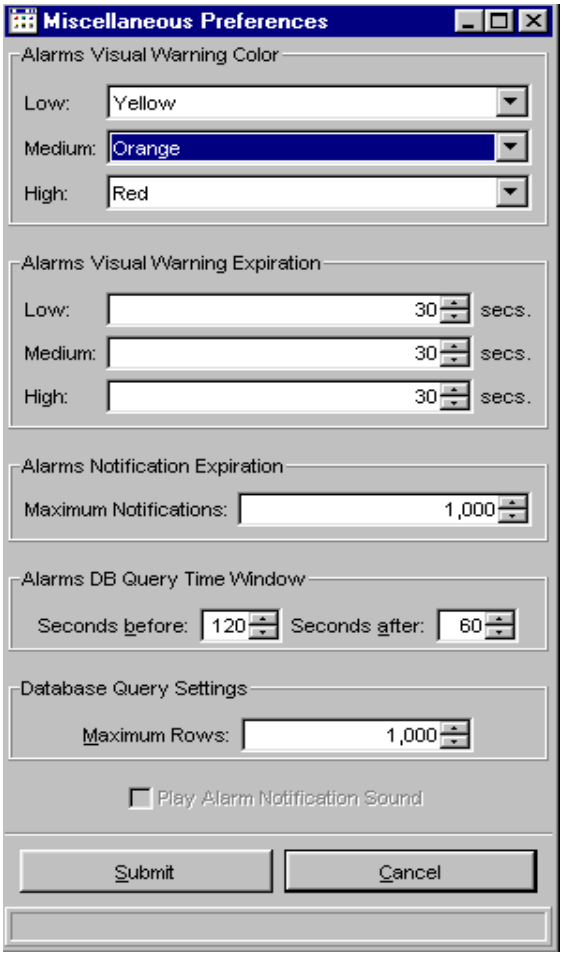


System Health Monitor configuration and alarm preferences are saved through the **Preferences** window.

From the **Start** menu, select **Preferences**. A sub-menu displays allowing you to choose business preferences or configuration preferences.

Business Preferences

To save alarm perferences, select **Business Perferences** from the **Preferences** sub-menu. The preferences window will display.



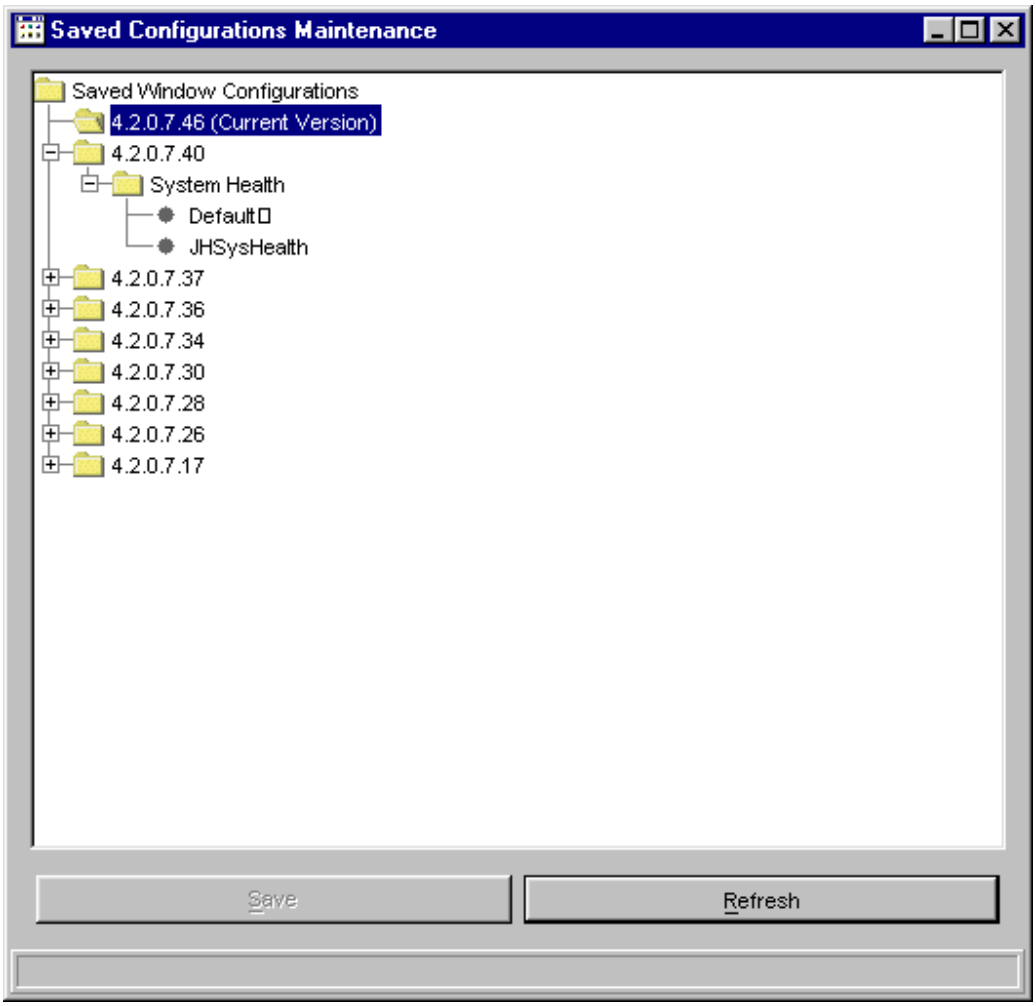
From this window, you can designate the colors and/or patterns and threshold values for alarms.

- Select the visual warning color for the severity of the alarm from the **Low**, **Medium** and **High** drop down lists.
- Input the alarms visual warning expiration time in seconds for low, medium and high severity levels.
- Enter the maximum number of alarm notifications before the alarm expires.
- Insert the before and after times in seconds for the database query.
- Enter the maximum rows for the database query settings.
- If you would like the alarm notification to be heard, select the **Play Alarm Notification** checkbox.
- To save your changes, click **Submit**. Click **Confirm**.
- If you decide to exit the preferences window without saving your changes, click **Cancel**.

Saved Configuration Maintenance

Previous versions of System Health Monitor are saved in the **Preferences** window.

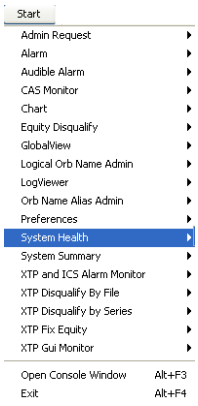
From the **Start** menu, select **Preferences**, **Save Configurations Maintenance**. The Saved Configuration Maintenance window will display.



From this window, you can apply your previously defined window configurations to the current version of the System Health Monitor. For example, to apply the default configurations for the System Health Monitor from version 4.2.0.7.40 to version 4.2.0.7.46, double-click on the folder labeled **4.2.0.7.40**. Click on the System Health folder. After the folder is highlighted, drag and drop it with your mouse onto the folder labeled System Health under version **4.2.0.7.46**. The system will prompt you to confirm the conversion.

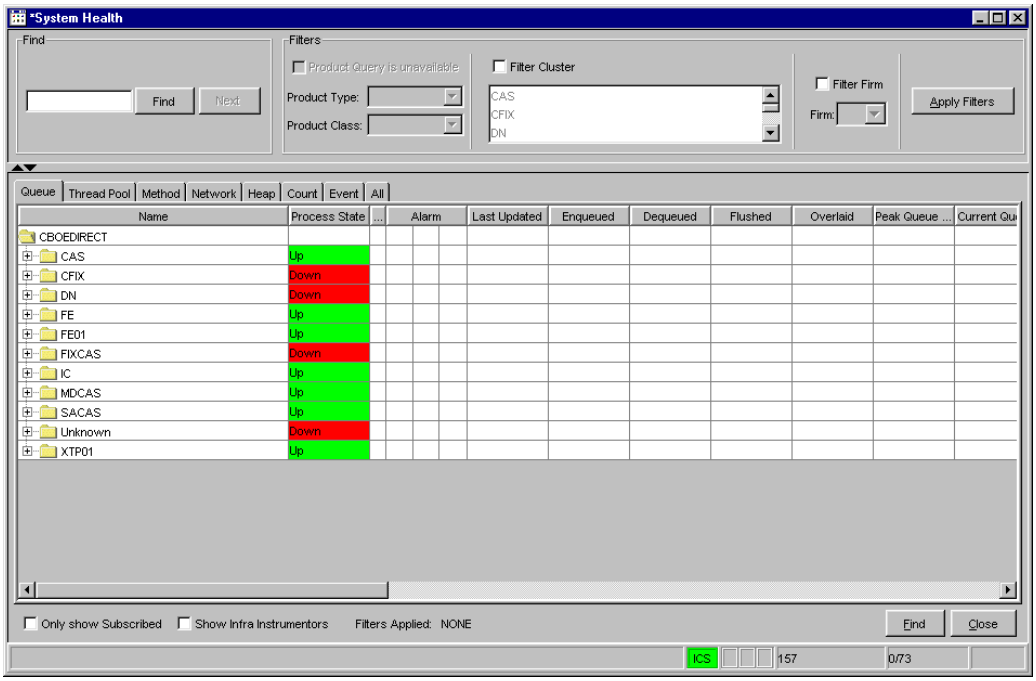
- Click the **Current Version** folder to expand the directory tree.
- Click **Refresh** to condense the Saved Window Configurations directory tree.

System Health



The System Health window of the System Health Monitor application allows you to monitor and manager the various components (SACAS, FE, BC, etc.) of CBOE*direct*. System Health data is automatically updated every n (30) seconds.

To display the System Health window, click **Start** from the main window. Select **System Health**, **Create New Window**. The System Health window will display.



The window displays with search options, filters and eight System Health tabs: **Queue**, **Thread Pool**, **Method**, **Network**, **Heap, Count, Event** and **All**. Each tab provides specific data for the components and sub-processes in column format. The **All** tab contains all of the individual tabs data fields. The columns that are common to each tab are:

- **Name** - the component and process names
- **Process State** - the status of the component and its processes
- **Subscribe Instrumentors** - denotes a component or process is set to subscribe for all instrumentors
- **Alarm** - indicates alarm state of High, Medium or Low for a process
- **Last Updated** - the date and time the information for the component or process

was updated

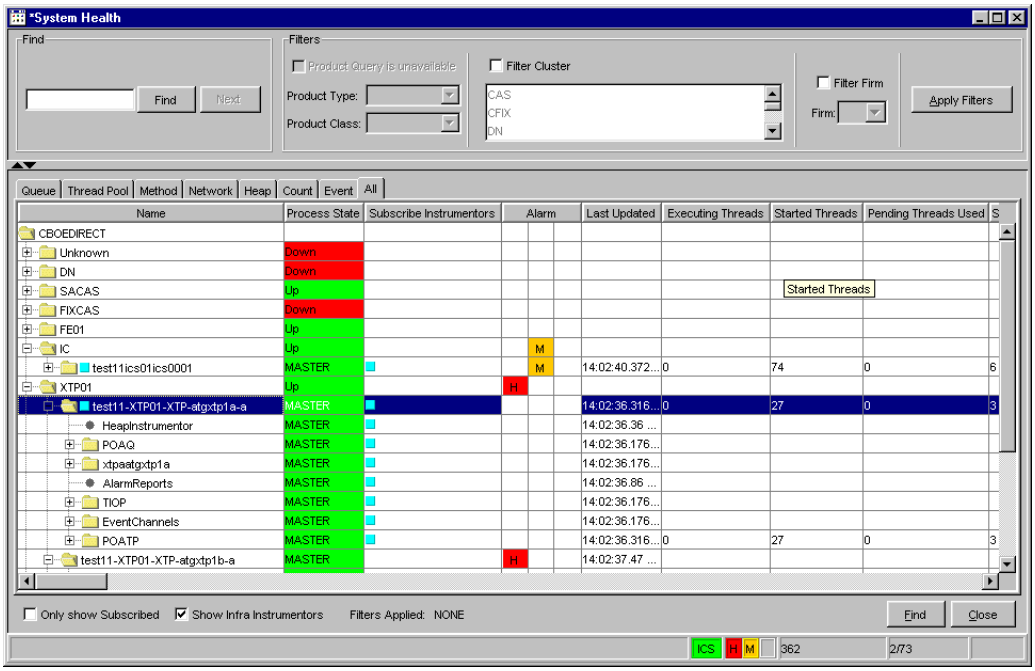
- **User Data** - free form text field
- **Firm Name** - the name of the Firm associated to the component
- **Orb Name** - the name of the Orb related to the component

This section of the user guide will walk you through all the functions of System Health using the **IC** component and the **All** tab as an example. Although only the IC will be used as an example, each of the functions described can be performed for any component in any System Health tab.

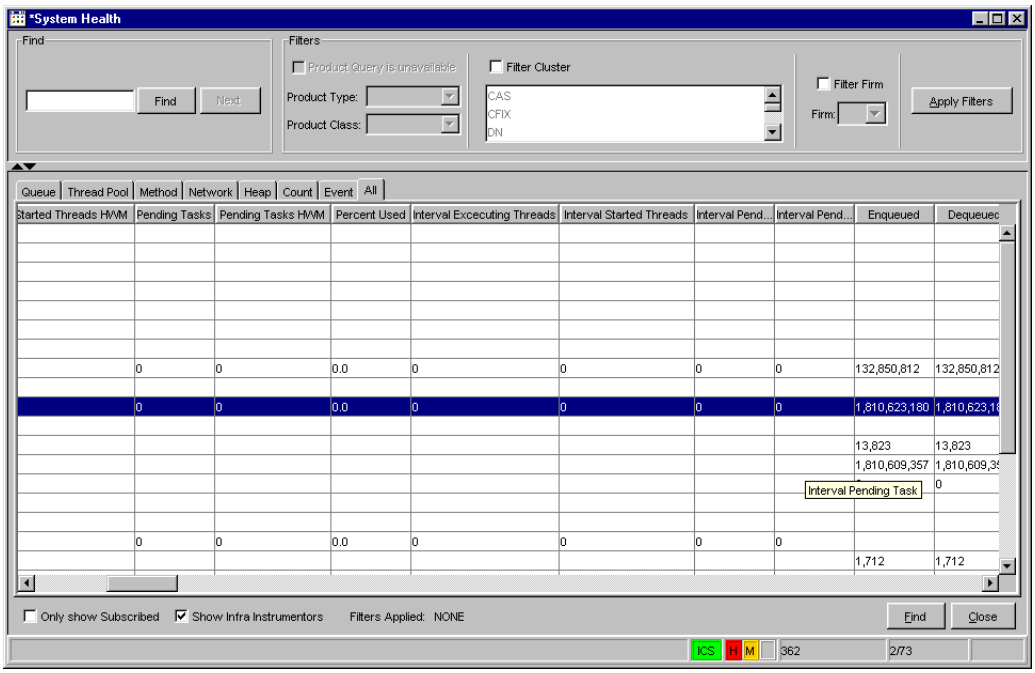
System Health Functionality

To begin using System Health functionality, click on the **All** tab to display all the data fields. From the **All** tab, you can view queue data, thread pool information, method call rates and peaks, network bytes sent through the system as well as disconnects and memory data.

If at anytime you wish to exit the System Health window, click **Close**.



Use your scroll bar to view additional data fields to the right of the window.



- **Access Components and Processes**

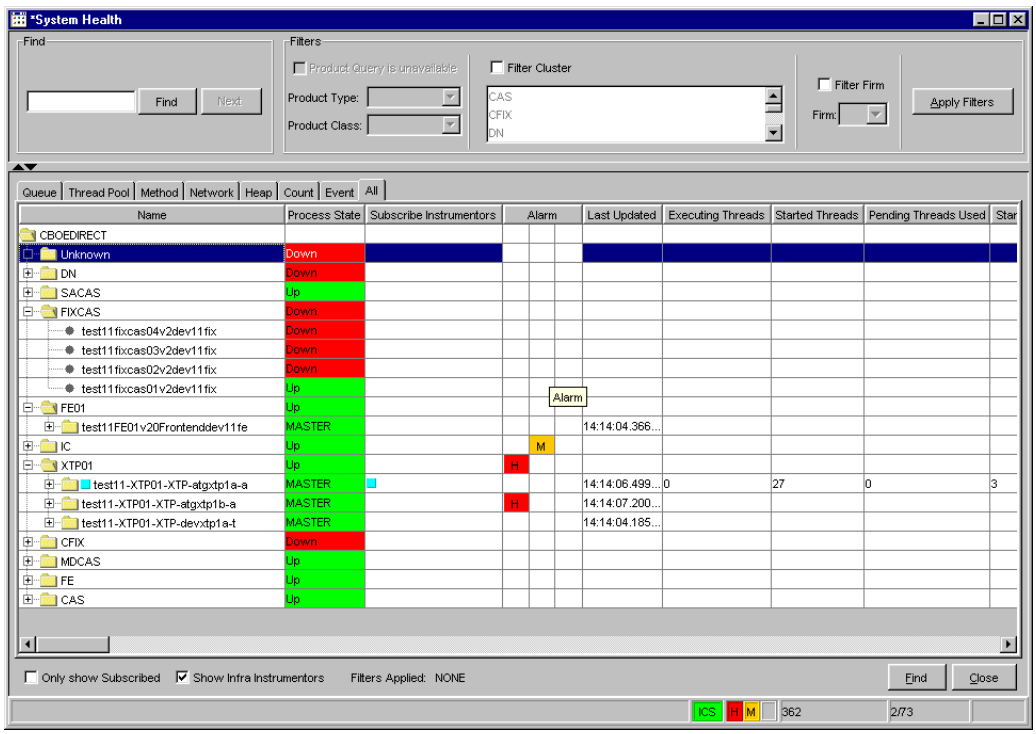
  Initially, the **ALL** tab appears with the **Name** column displaying the components at the base container level. You have the ability to determine what level of data you want to view by selecting which level of the component tree to display.

  If you wish to view the components at the process level, click the component's folder to expand the process list. In the example above, the **IC** tab has been expanded to display its processes.

- **Verify Process State**

  The **Process State** column displays the status of each process. The background color of the cell reflects the state of the process. For CAS processes (FIXCAS, SACAS, MDCAS and CFIX), if the process is **Up**, the background color displays in green. If the process is **Down**, the background color displays in red.

  The Server processes will show a process state of **Master**, **Slave, Unkown** or **Down**. Server processes include: IC, BC, GC or any component that is not a CAS.



See below for a list of Server process status identifiers.

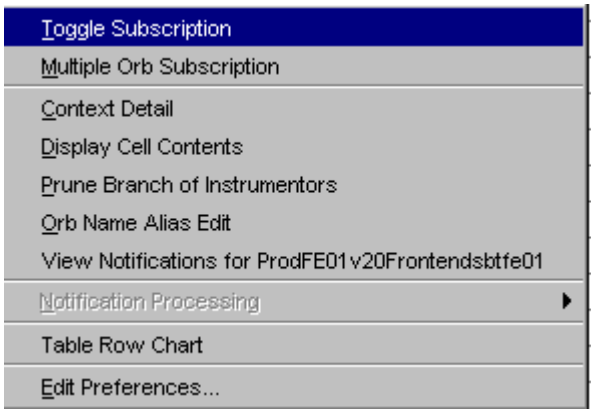
Process State Values

Server Status	Background Color
Up	Green
Master	Green
Slave	Blue
Unknown	Red
Down	Red

Note: If any of the processes are unknown or down for a cluster, the status of the entire cluster will display as **Down** or **Unknown**.

Subscribe for Instrumentors

To subscribe for Instrumentors for a process, right-mouse click on the process name. A new menu displays.

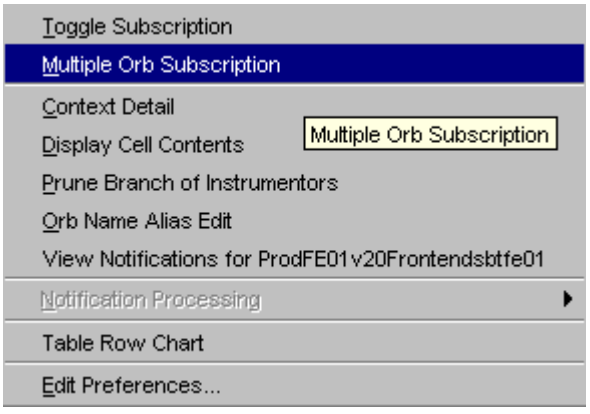


- Select the **Toggle Subscription** option. A blue box displays in front of the process name and in the **Subscribe Instrumentors** column, indicating the request for instrumentor information.
- You can subscribe for instrumentors for multiple processes by holding down the **Shift** or **Ctrl** key on your keyboard and highlighting the process names. Once the names are highlighted, right-mouse click on a row and select the **Toggle Subscription** option.
- To display Infra instrumentors, select the **Show Infra Instrumentors** checkbox on the System Health window. POATP, POAQ and TIOP processes will display beneath the processes.

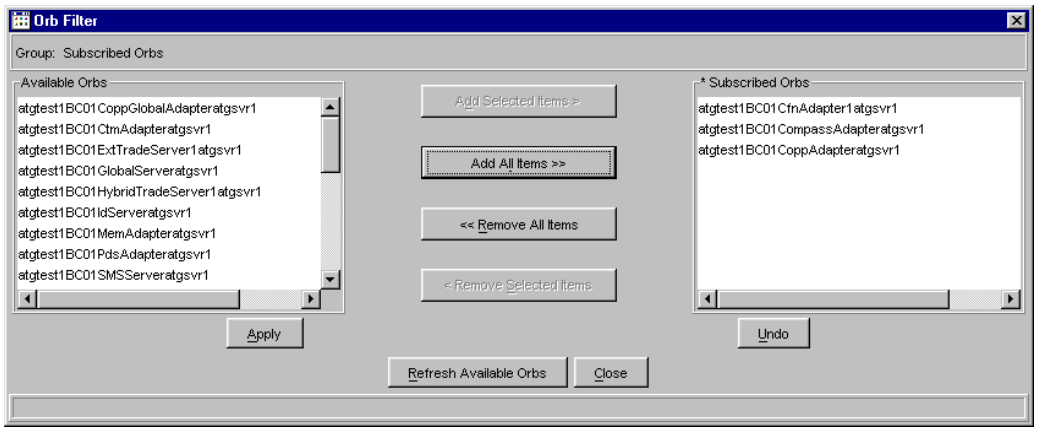
  ↳ **Note:** The total number of Instrumentors is noted in the lower right-center of the window. In the example above, the total number of instrumentors is 2,811.
- To only display the processes with subscribed instrumentors, click the **Only Show Subscribed** checkbox on the System Health window. The processes that do not request instrumentor subscriptions will be removed from the display.

Subscribe for Multiple Orbs

To subscribe for Multiple Orbs, right-mouse click on the CAS name. A new menu displays.



- Select the **Multiple Orb Subscription** option. The **Orb Filter** window displays.



- From the **Available Orbs** list box, select the Orbs you want to subscribe to. To subscribe to multiple Orbs, hold down the Shift Key on your keyboard and highlight the desired Orbs. Click **Add Selected Items**. The Orbs will appear in the **Subscribed Orbs** list box.
- To subscribe to all Orbs, click **Add all Items**. All the Orbs in the Available Orbs list box will display in the Subscribed Orbs list box.

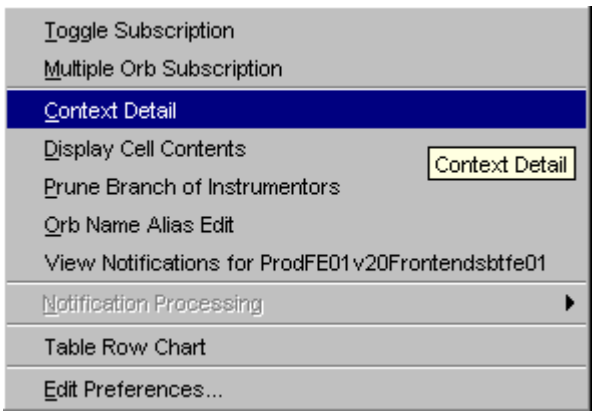
  ↳ **Note:** If the selected Orbs exceed the maximum number of Orbs set in the property file (currently set at 50), an error message will display. If you receive the error message, reduce the number of Orb subscriptions and continue.
- To unsubscribe from Orbs, select the Orbs from the Subscribed Orbs list. Click **Remove Selected Items**. The Orbs will display in the Available Orbs list box.
- To unsubscribe from all the Orbs, click **Remove All Items** or click **Undo**. The subscribed Orbs will appear in the Available Orbs list box.
- When you are satisfied with your selections, click **Apply**. Click **Close**. The subscribed Orbs will appear in the **All** tab as sub-processes of the CAS.

  ↳ **Note:** The subscribed and total number of Orbs appears in the lower right-center of the System Health window. In the example above, the number of **Subscribed/Total Orbs** is 48/48.
- To update the available Orbs selection, click **Refresh Available Orbs**. The available Orbs will update in the Available Orbs list box.

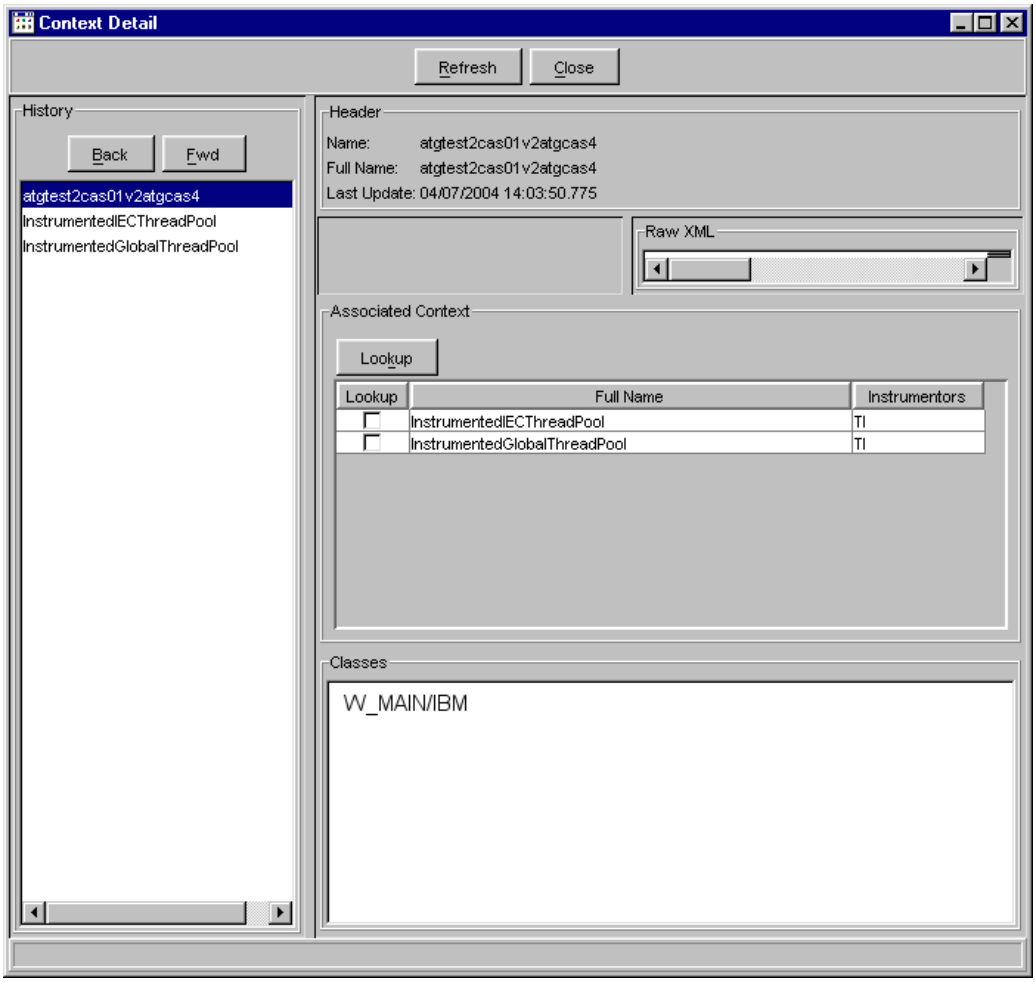
View the Context Details of a CAS

The System Health Monitor allows you to view background details of a CAS. Context detail is only available for CASs.

To view the context deails of a CAS, right-mouse click on the CAS name and select **Context Detail**.



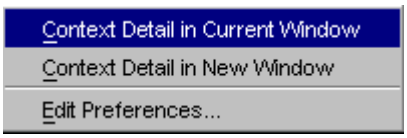
The **Context Detail** window displays.



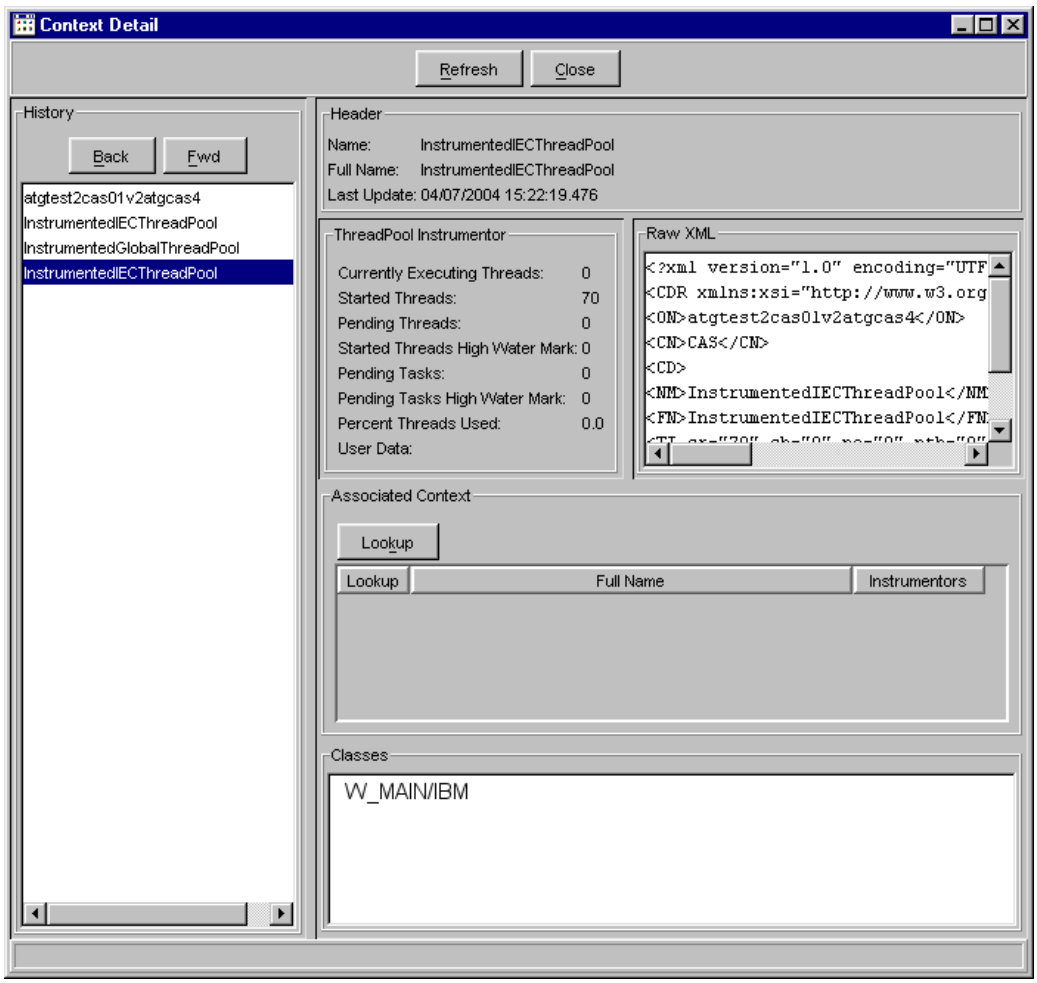
- Initially, the window displays with the **Header** information, which contains the full name of the CAS and the date and time it was last updated.
- The **Raw XML** section shows XML related to the CAS.
- The **Associated Context** section displays the full name of the instrumentors you are interested in.

- Product class information for the CAS appears in the **Classes** section of the window.
- The **History** section of the window displays the name of the selected CAS. The **Back** and **Fwd** buttons allow you to move backwards and forwards in the list, reflecting previous and refreshed data.
- Click the **Refresh** button to retrieve current instrumentor updates.
- Click the **Close** button to exit the window at anytime.

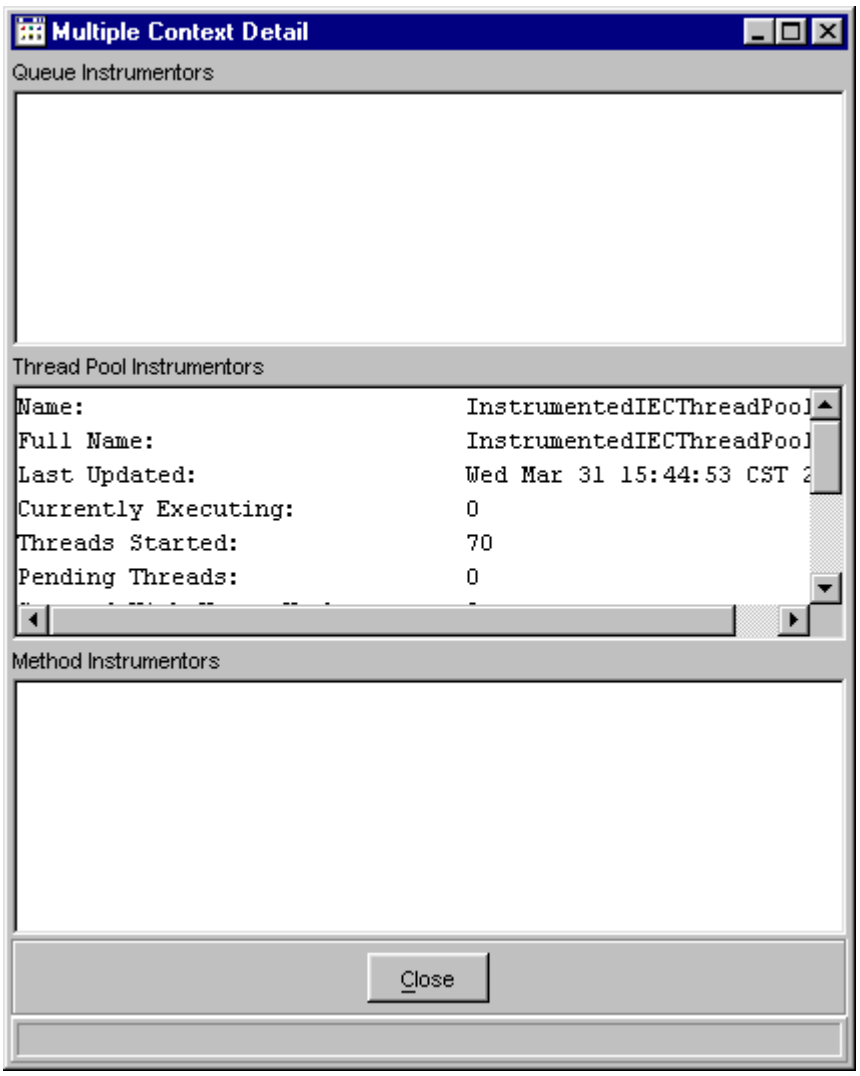
- To display related Thread Pool and XML data for an instrumentor, right-mouse click on the desired instrumentor in the **Associated Context** section. The following menu displays.



  - You have the option to displays the detailed data in the current window, or in a new window. Select **Context Detail in Current Window** to show the data in the current window. If you wish to open a new window, select **Context Detail in New Window**. The **XML**, **ThreadPool Instrumentor** and **History** sections update to display the requested data.



- To retrieve additional Thread Pool, Method or Queue instrumentor information, select the **Lookup** checkbox next to the instrumentors of your choice from the **Associated Context** section of the window. Click the **Lookup** button. The **Multiple Context Detail** window displays.



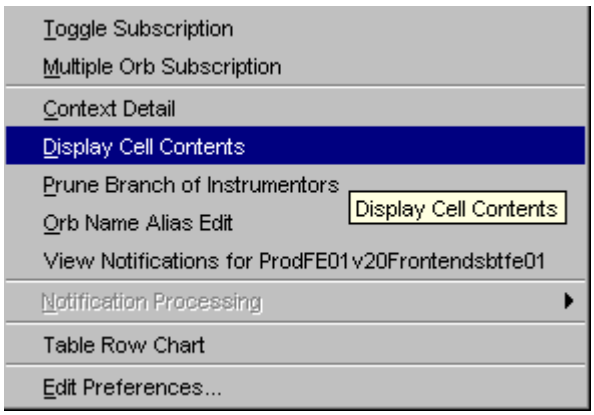
The **Thread Pool Instrumentors** section of the window displays with the following fields: Currently Executing Threads, Started Threads, Pending Threads, Start Threads High Water Mark, Pending Tasks, Pending Tasks High Water Mark, Percnet Threads Used and User data.

Information for Queue and Method Instrumentors display in their corresponding text boxes.

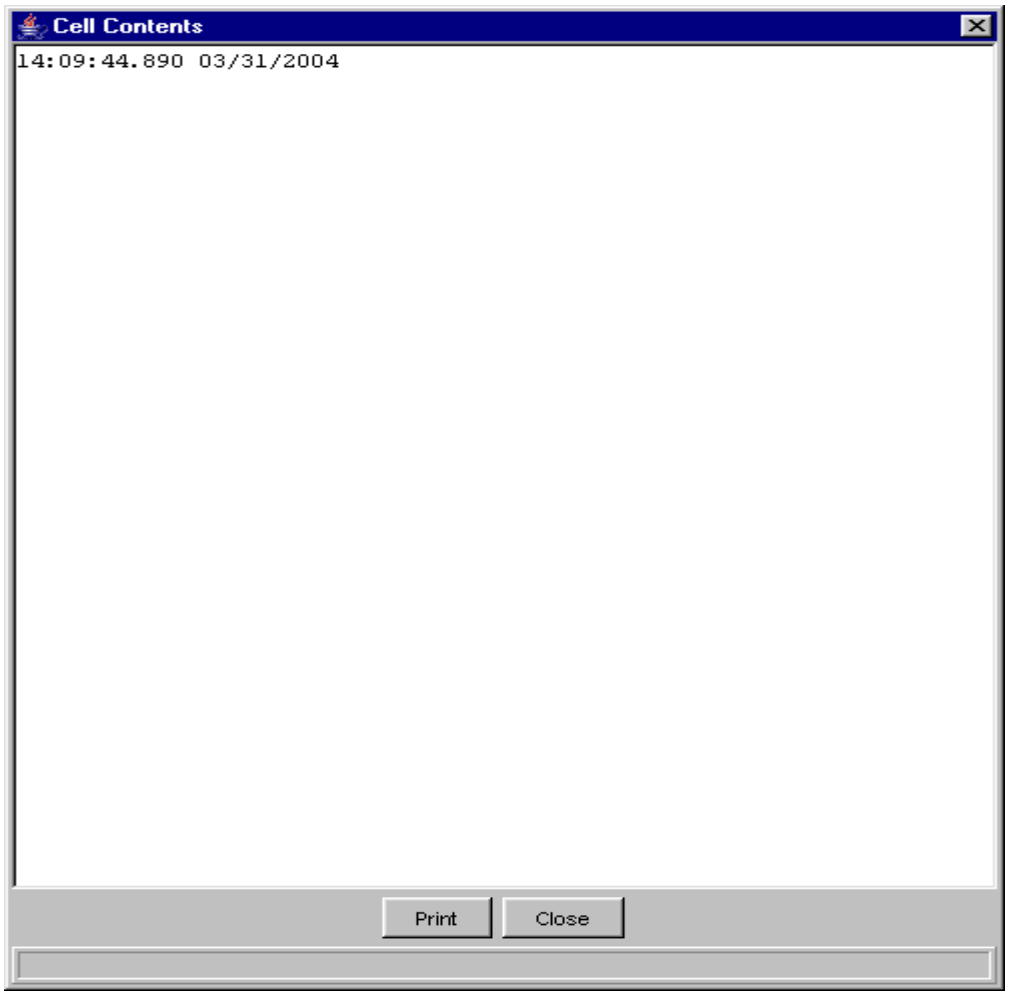
To copy the information in the window to Outlook or Microsoft Word, highlight the text. Press **Ctrl-C** to copy the contents to the clipboard. Open a Microsoft Word window and paste the clipboard into a document or paste the information into Outlook to send it as an email.

To exit the window at anytime, click **Close**.

Copy/Print Cell Information
Any cell data for any component can be copied or printed. For this example, right-mouse click in the **Last Updated** column cell for the CAS name, select **Display Cell Contents**.



The **Cell Contents** window displays with the information that appears in the cell.

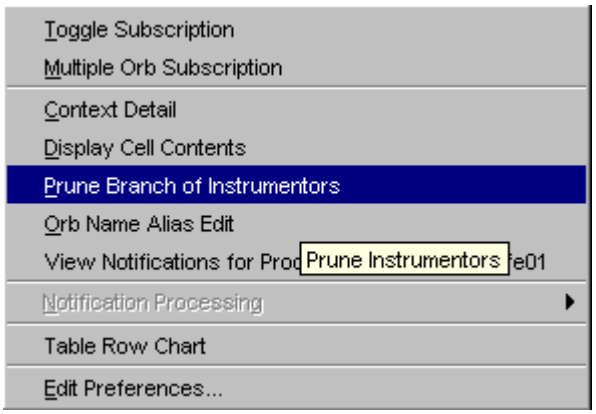


- To print the window, click **Print**. The window contents prints to a printer.
- To copy the information in the window, highlight the text. Press **Ctrl-C** to copy the contents to the clipboard. Open a Microsoft Word window and paste the clipboard into a document or you can paste the information into Outlook to send it as an email.

- To exit the window, click **Close**.

Condense Instrumentor Branches

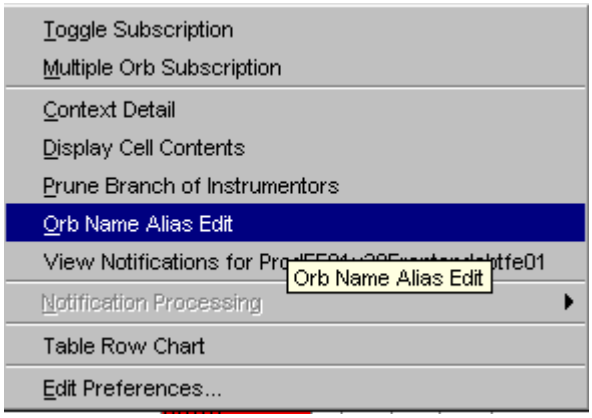
For ease of visibility, you can quickly condense the Instrumentor branches on any component. Right-mouse click on a component process and select **Prune Branch of Instrumentors**.



The instrumentors are immediately removed from the component tree. Within 30 seconds, the instrumentors reappear for monitoring.

Editing the Orb Name

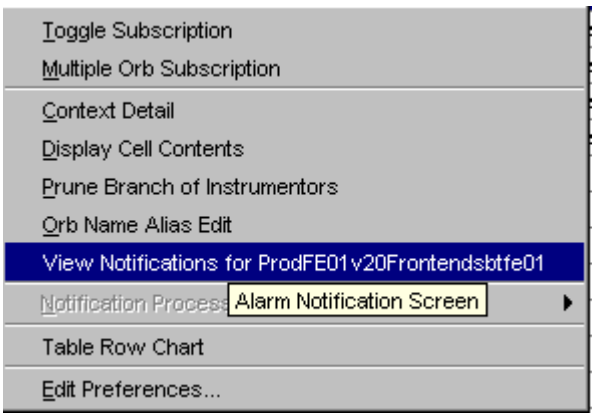
Changing the name of a process to be more descriptive can be accomplished by displaying a new label. Select a process and right-mouse click to display the menu below.



Select the **Orb Name Alias Edit** option. *For details on editing Orb Names, refer to the Edit the Orb Name section, page 62*.

View Notifications

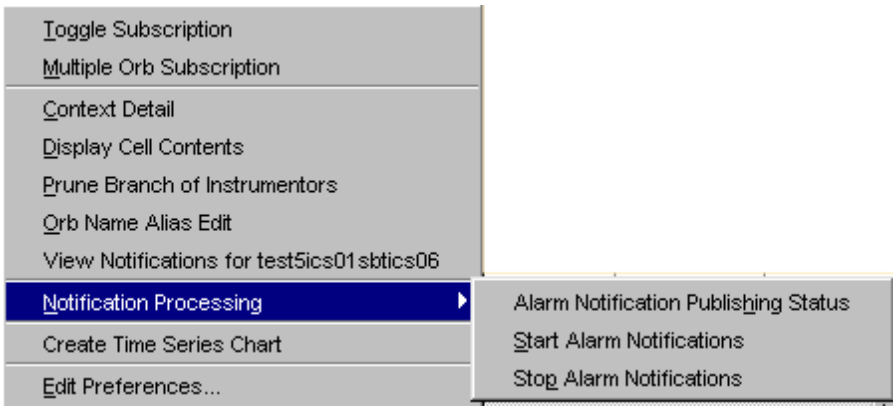
Detailed alarm notifications for a particular process can be viewed at anytime. Right-mouse click on the data row you are interested in viewing and select **View Notifications**.



The Alarm Notification window displays. *For detailed information, refer to the Edit Column Preferences section, page 171.*

Notification Processing

You can start/stop alarm notifications for a process from the **Notification Processing** option. Right-mouse click on the process and select **Notification Processing**.



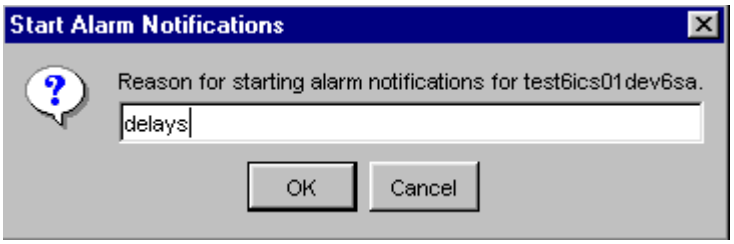
A sub-menu appears that allows you to: (1) view the publishing status of the alarms, (2) start alarm notifications and (3) stop alarm notifications.

If you select **Alarm Notification Publishing Status**, a window displays with the state of the notification.

In the example above, alarm notification is publishing for test6ics01dev6sa.

Click **OK** to close the window.

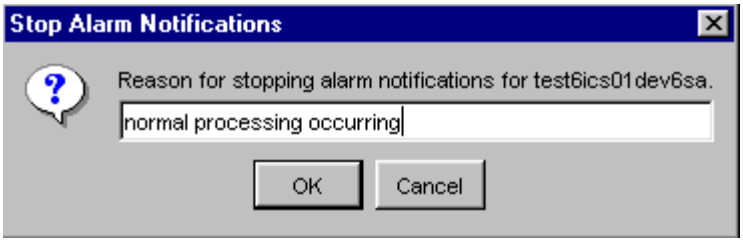
If you would like to begin monitoring conditions for the process, select the option: **Start Alarm Notifications**.



The **Start Alarm Notifications** window displays. Enter the reason for starting alarm notifications for the process and click **OK**. Alarm notifications will activate.

Click **Cancel** to close the window without starting notifications.

If you would like to stop alarm notifications for the process, select the option: **Stop Alarm Notifications**.

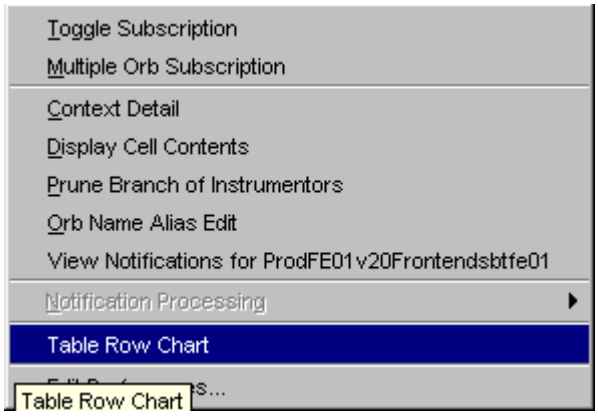


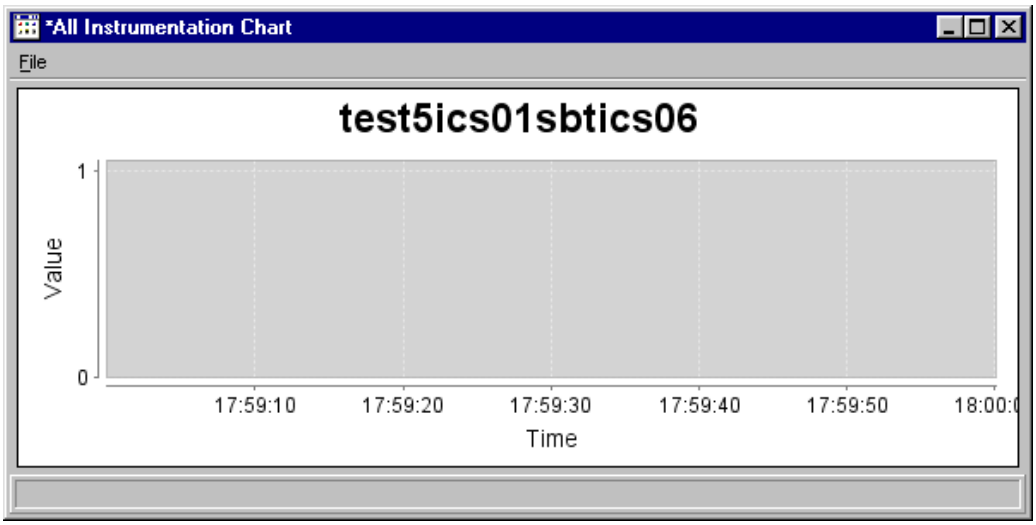
The **Stop Alarm Notifications** window displays. Enter the reason for starting alarm notifications for the process and click **OK**. Alarm notifications will deactive.

Click **Cancel** to close the window without starting notifications.

Table Row Chart

The **Table Row Chart** option allows you to graph the selected components time series. Right-mouse click on the component and select **Table Row Chart**.





The example above, shows the time series for test5ics01sbtics06.

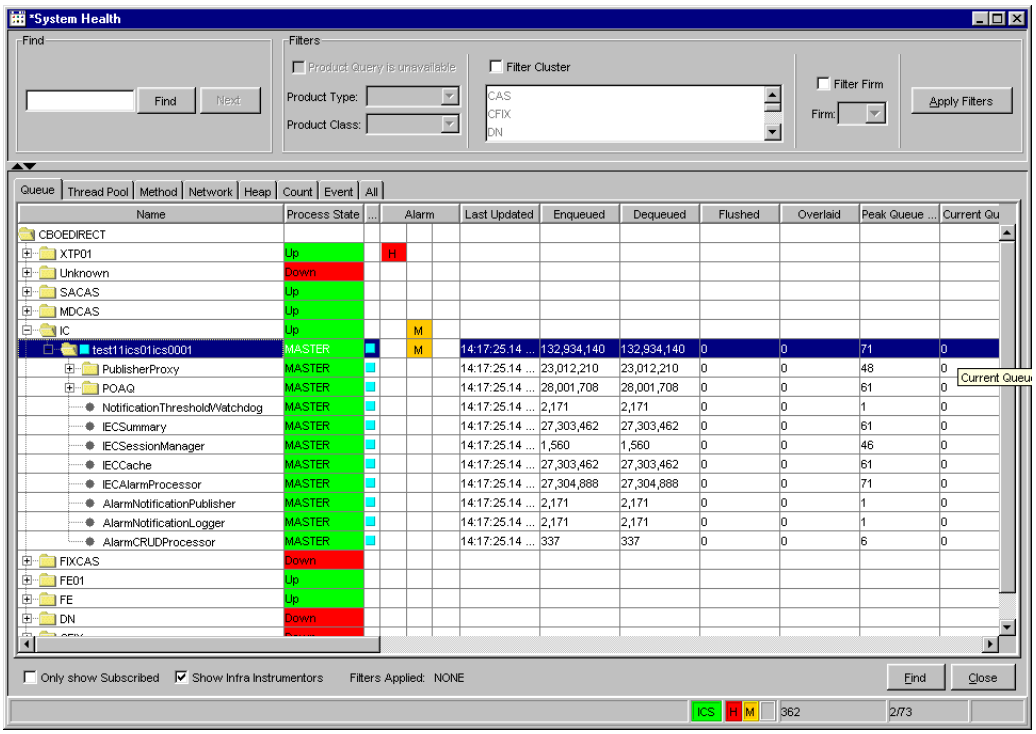
Edit Preferences

You can edit column preferences at any time. Right-mouse click on a data row. The **Edit Column Preferences** window displays.

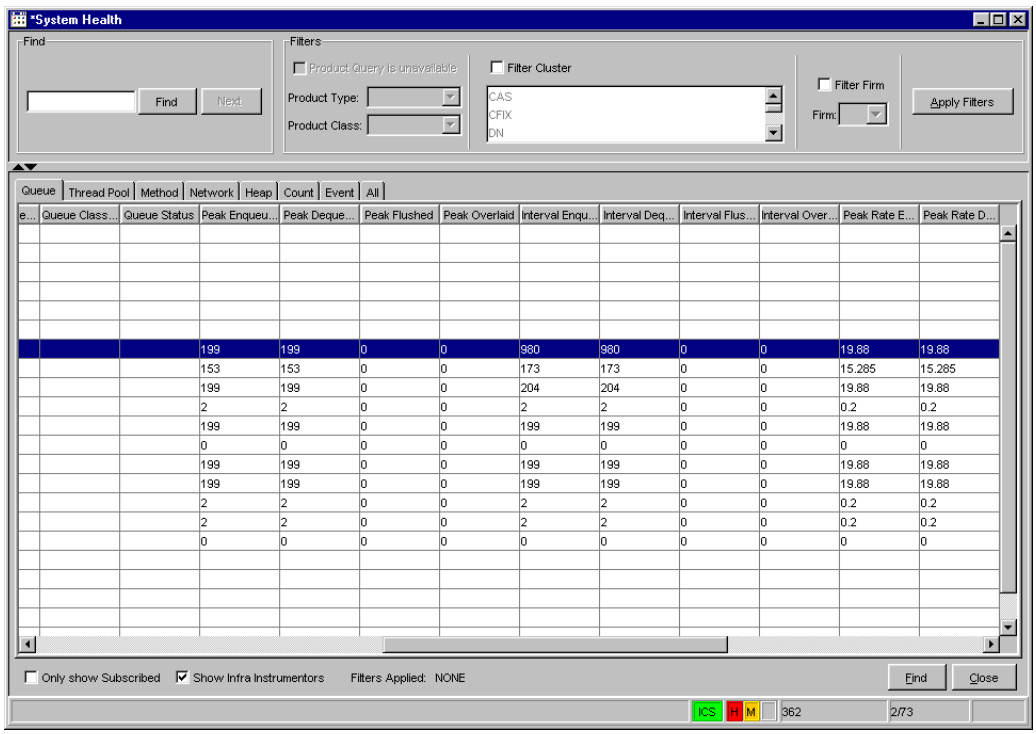
For detailed information, refer to the Edit Column Preferences section, page 171.

Queue

The **Queue** tab allows you to monitor specific queue information for CBOE*direct* components.



Use your scroll bar to view additional queue information.



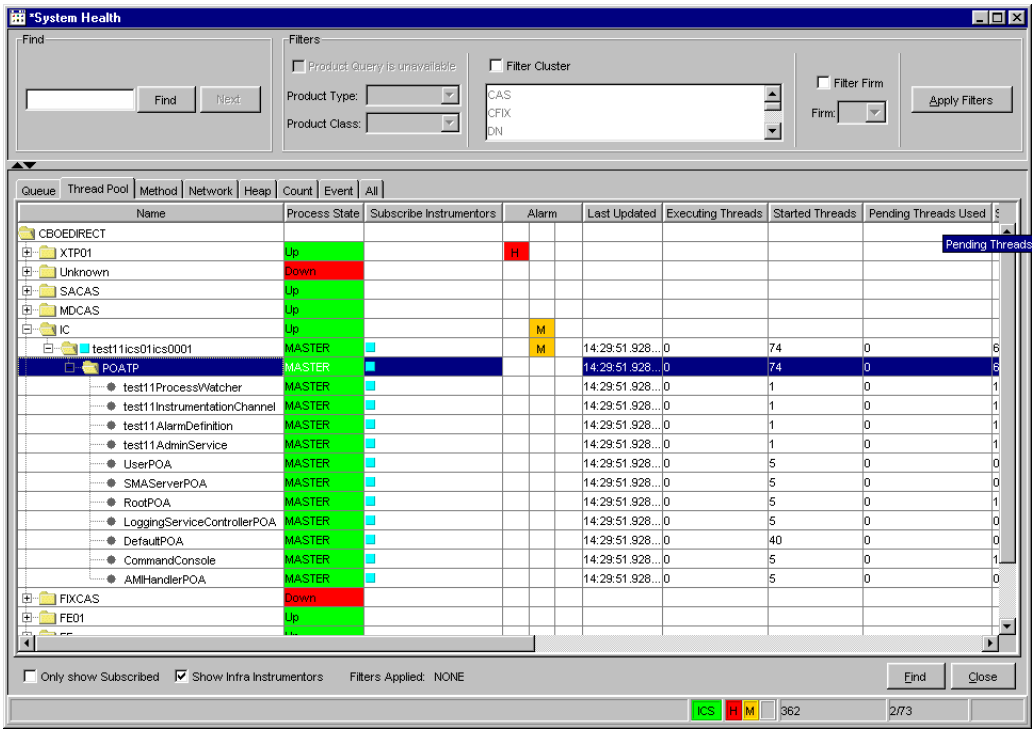
The **Queue** tab displays enqueued and dequeued data, peak queue information and average queue times.

Expand the IC folder to display its sub-processes. The **Queue** tab **Process State** column varies based on the state of the threads.

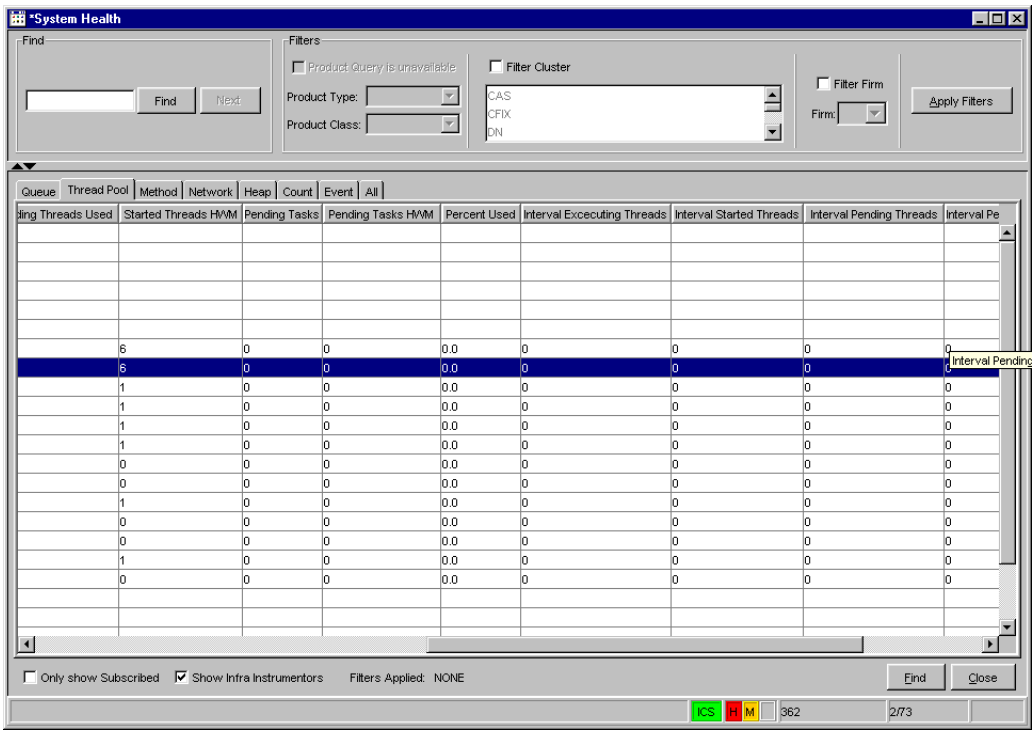
- If the thread is initializing, waiting or running, the background color of the cell displays in green.
- If the thread has not started, the background color of the cell displays in yellow.
- The background color of the cell displays in red if the thread has exited.
- A background color of white, states the queue status is not reported and should be ignored.

The **Queue** tab only displays queue instrumentors, not thread pool, method, heap or network instrumentors. For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Thread Pool Click on the **Thread Pool** tab to view threading information for CBOE*direct* components.



Use your scroll bar to view additional thread pool fields.



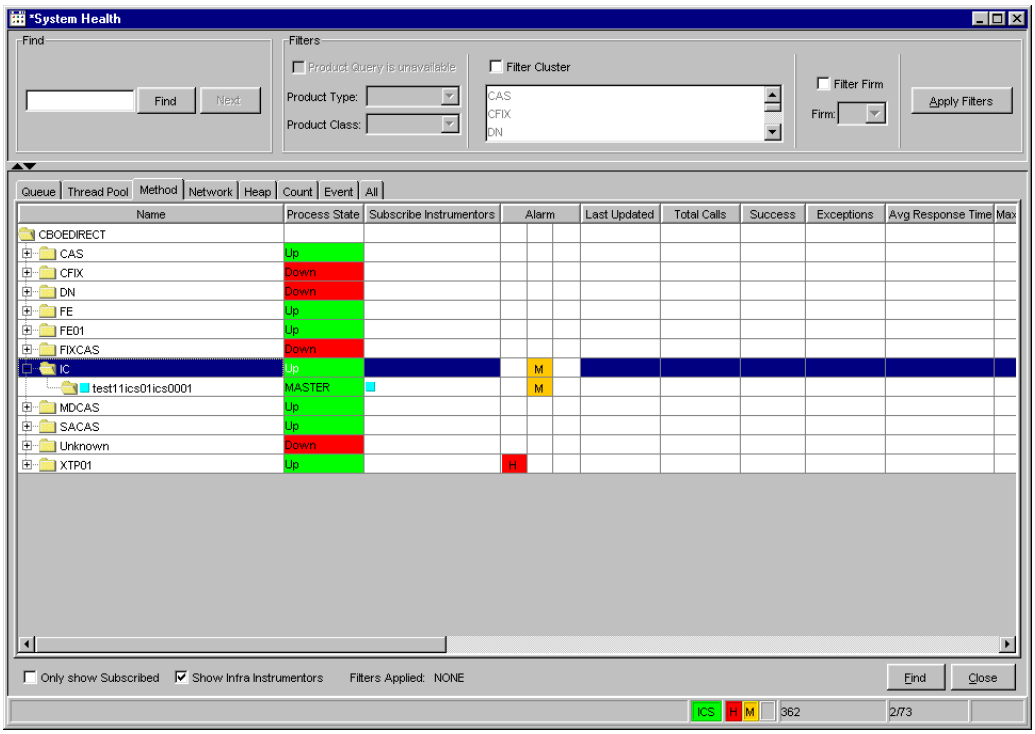
The **Thread Pool** tab provides current thread pool information as well as data that occur at peak intervals.

Expand the IC folder to display its sub-processes. To determine the state of any process in the Thread Pool tab, refer the *Verify Process State* section of the document, page 104.

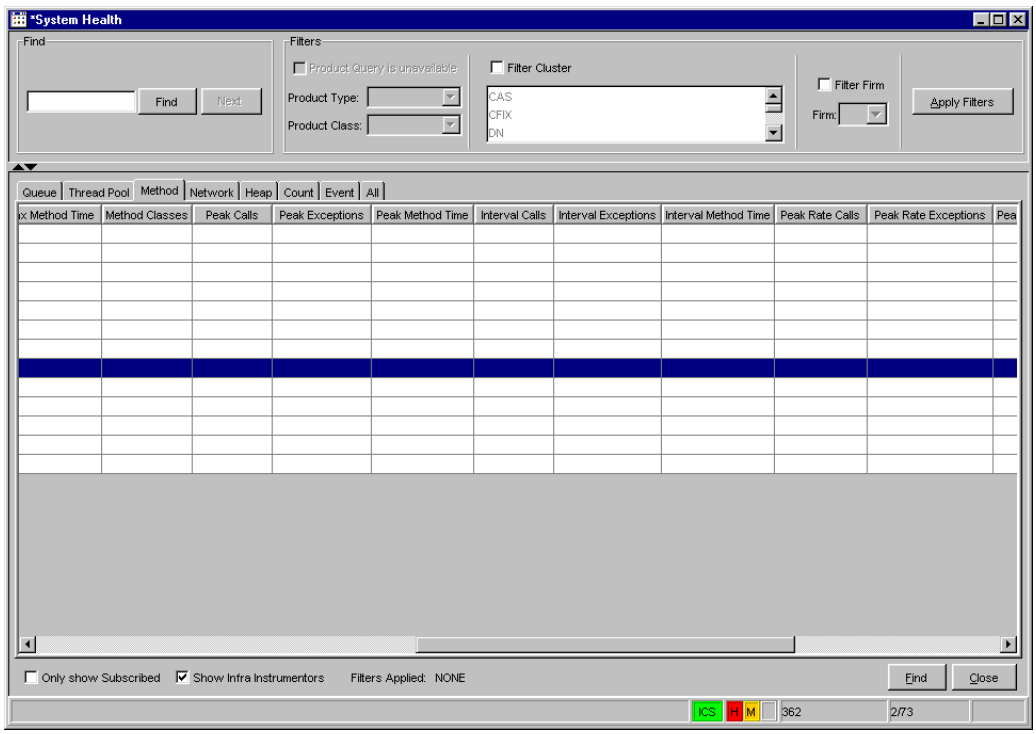
The Thread Pool tab displays only thread pool instrumentors. For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Method

Click on the **Method** tab to display the number of method calls accessed through CBOE*direct*, as well as peak and average method rates.



Scroll to the right to view additional method data.

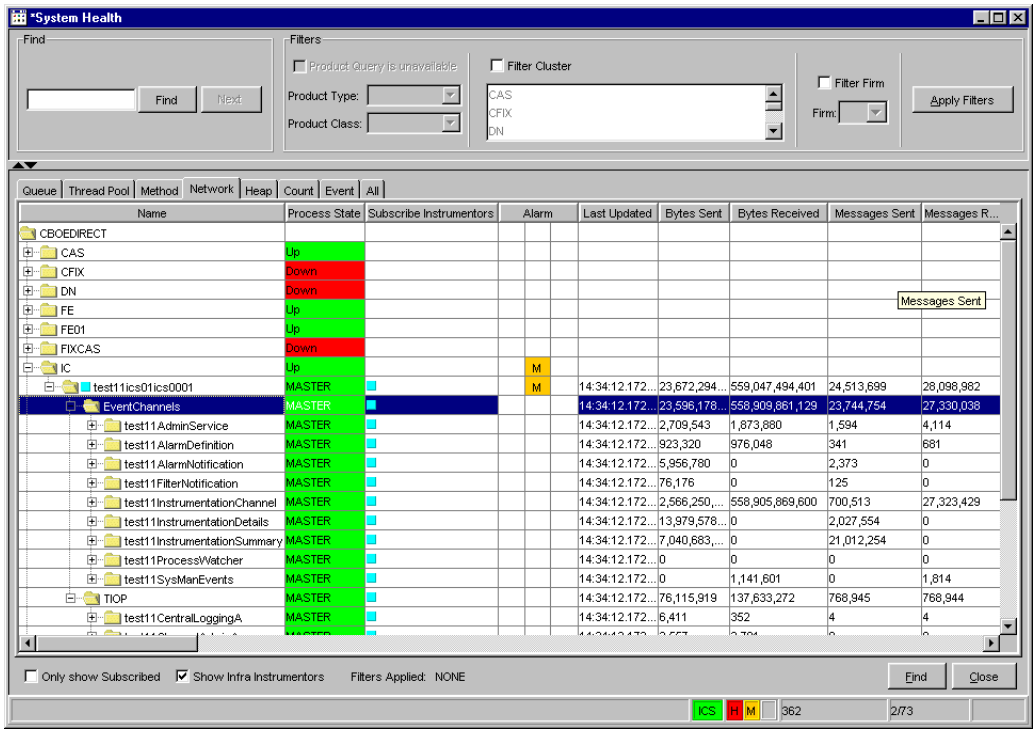


Expand the IC folder to display its processes. The **Method** tab does not display instrumentors.

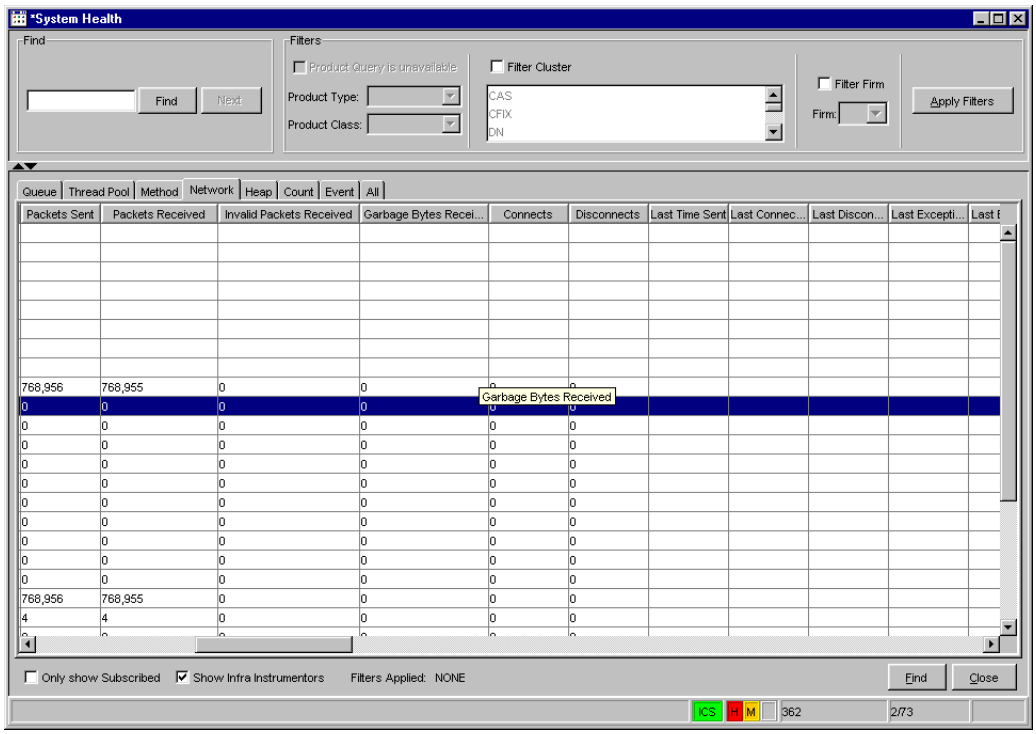
> **Note:** All times are represented in milliseconds.

To determine the state of any process in the **Method** tab, refer the *Verify Process State* section of the document, page 104.

Network Click on the **Network** tab to view the number of bytes sent through CBOE*direct*, network disconnects and external adapter information.



Use your scroll bar to view additional network information.



The **Network** tab **Process State** column varies based on the state of the adapters.

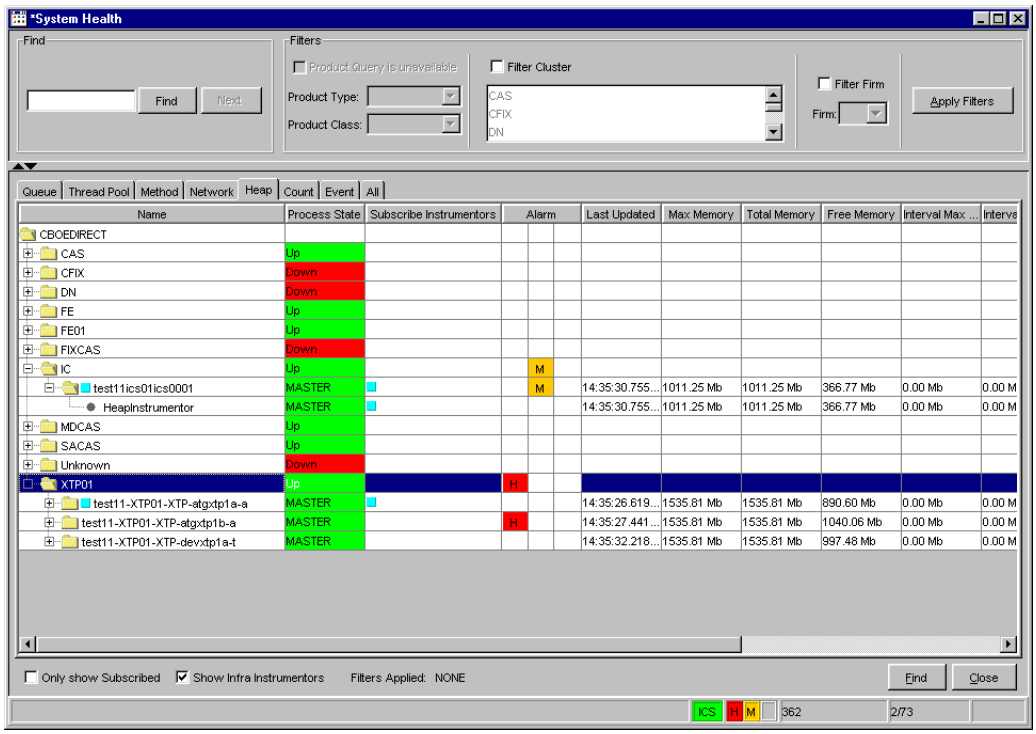
- If an adapter is Up or initializing the background color of the cell displays in green.

- The background color of the cell displays in red if the adapter is down.

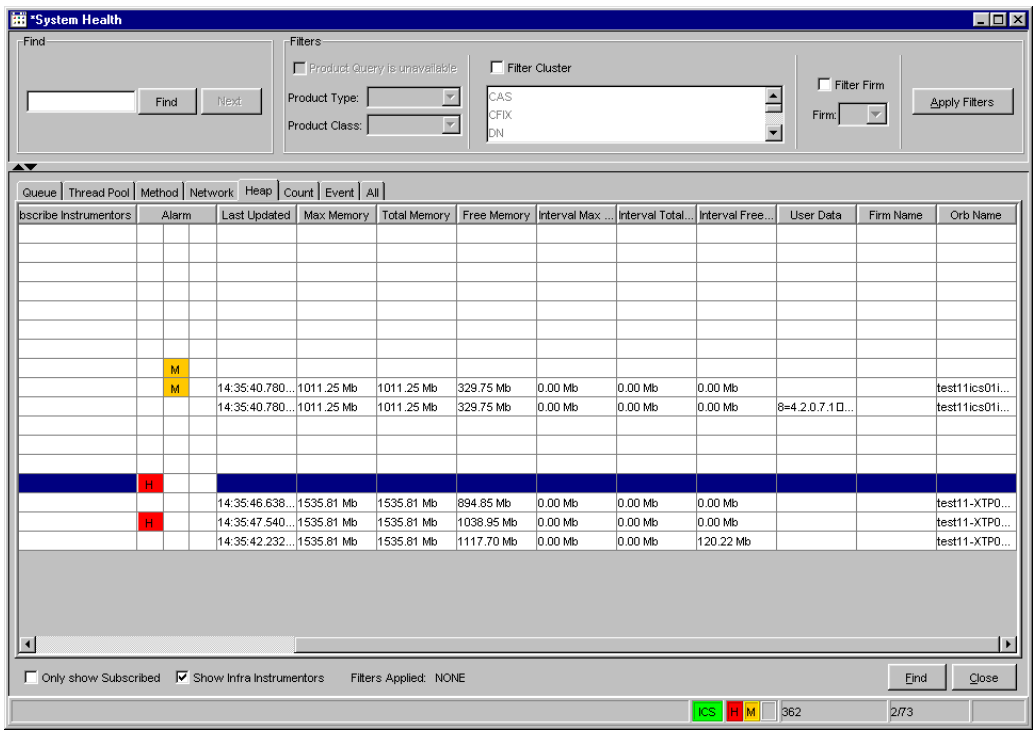
The **Network** tab displays only network instrumentors. For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Heap

To view system memory usage for any component and its processes, click on the **Heap** tab.



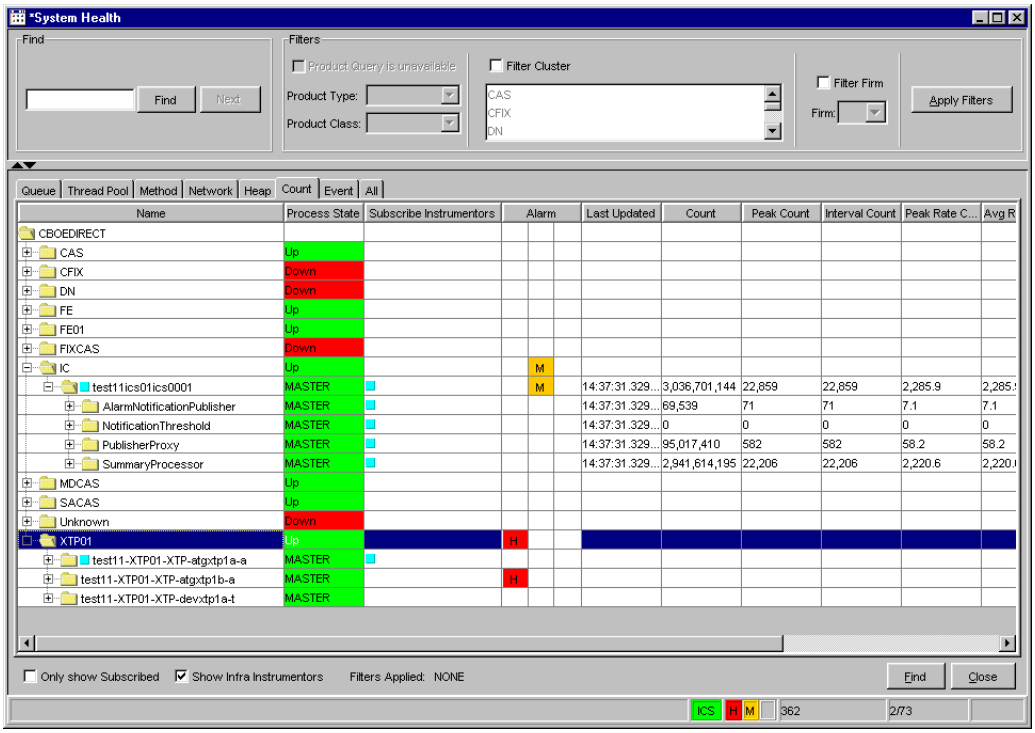
Scroll to the right to view additional heap data.



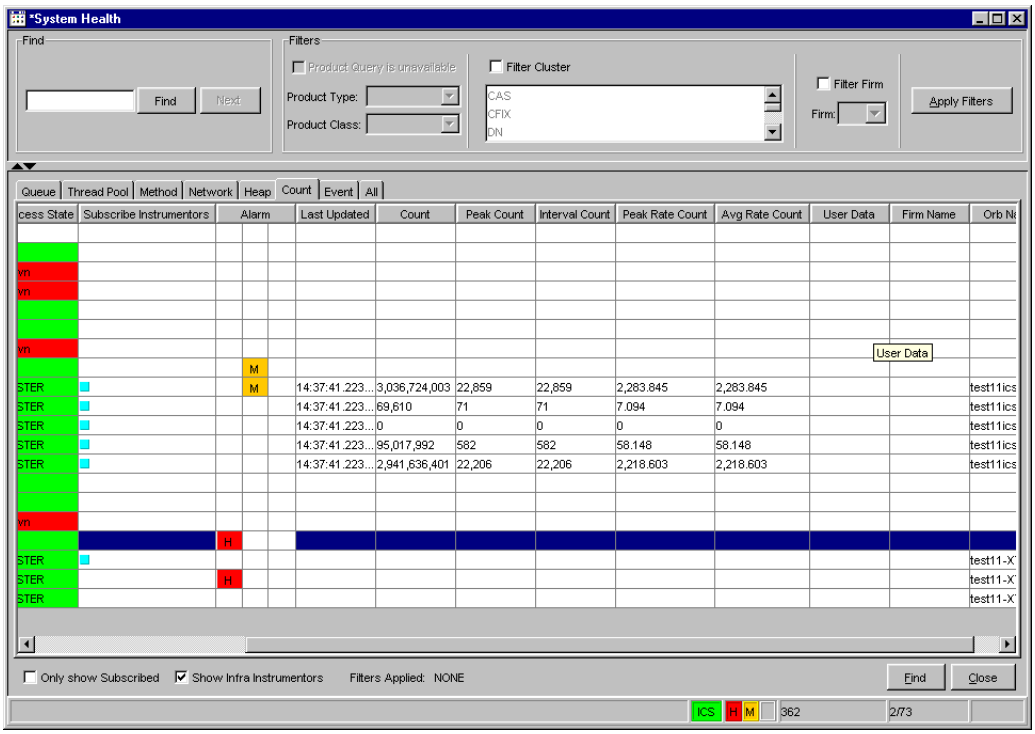
Expand the IC folder to display its sub-processes. To determine the state of any process in the **Heap** tab, refer the *Verify Process State* section of the document, page 104.

The **Heap** tab displays only heap instrumentors. For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Count To view the message count for any component and its processes, click on the **Count** tab



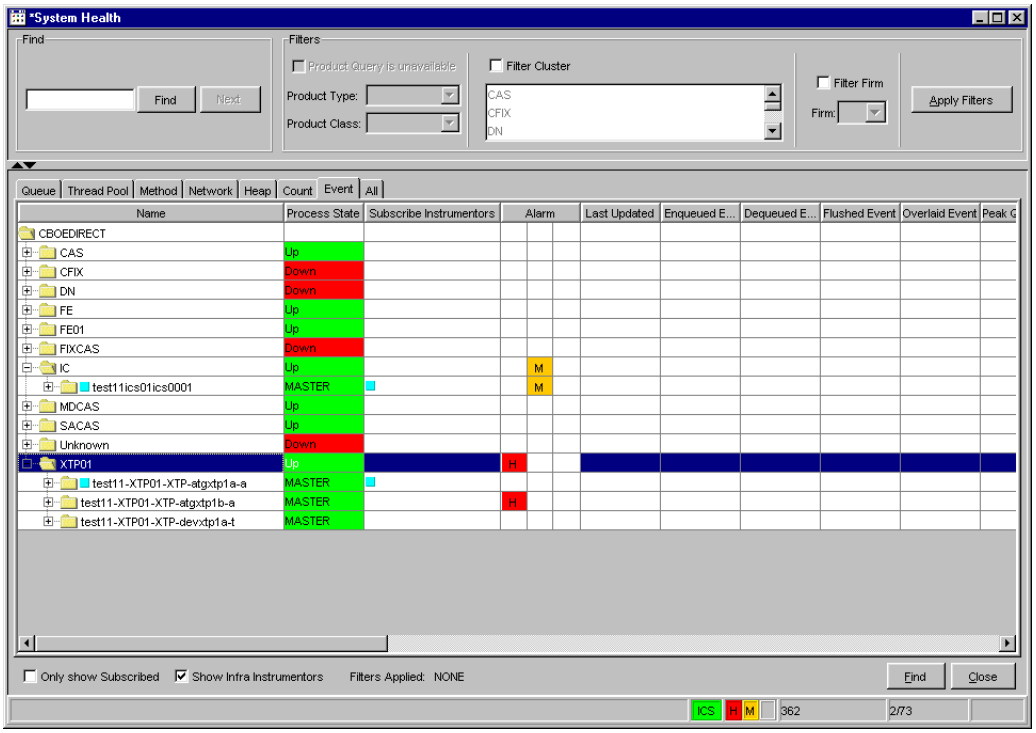
Scroll to the right to view peak and total data counts.



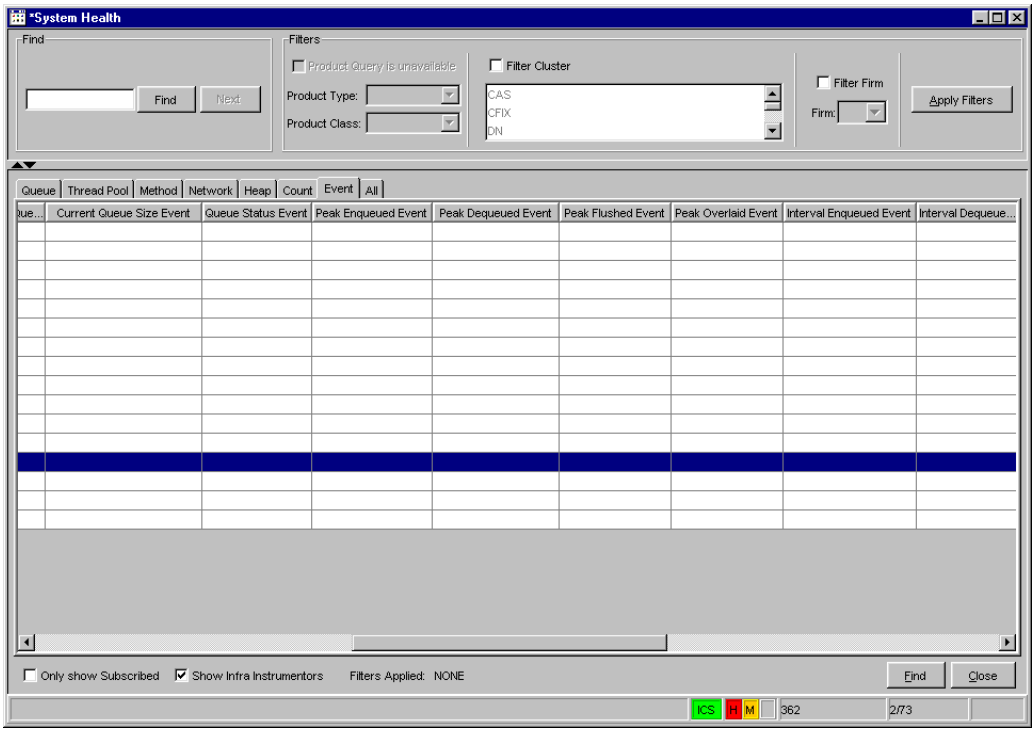
Expand the IC folder to display its sub-processes. To determine the state of any process in the **Count** tab, refer the *Verify Process State* section of the document, page 104.

For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Event Click on the **Event** tab to monitor the impact of event channels through CBOE*direct*.



Scroll to the right to view additional data fields.

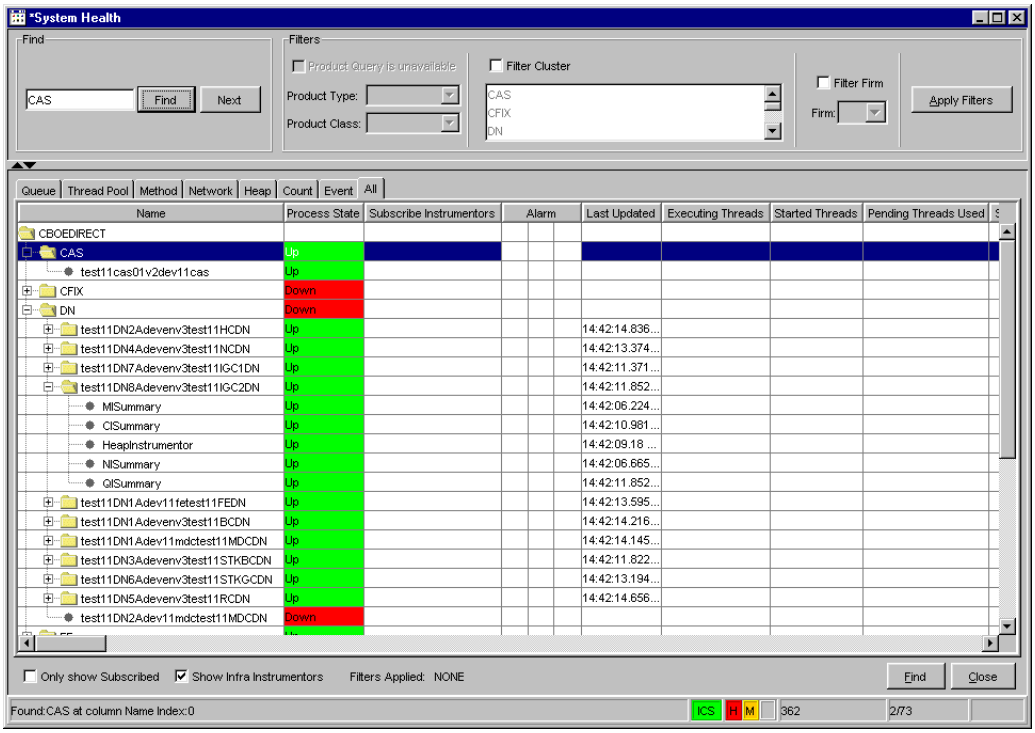


Expand the IC folder to display its processes and related event channels. To determine the state of any process in the **Event** tab, refer the *Verify Process State* section of the document, page 104.

For instructions on how to subscribe to instrumentors and Orbs, refer to the *Subscribe for Instrumentors* section of the document, page 105.

Filter and Search Options

The filter and search options in the System Health Monitor tool allows you to quickly locate specific information. The **Find** and **Filter** sections are located at the top section of the System Health window.



To find a specific component or process:

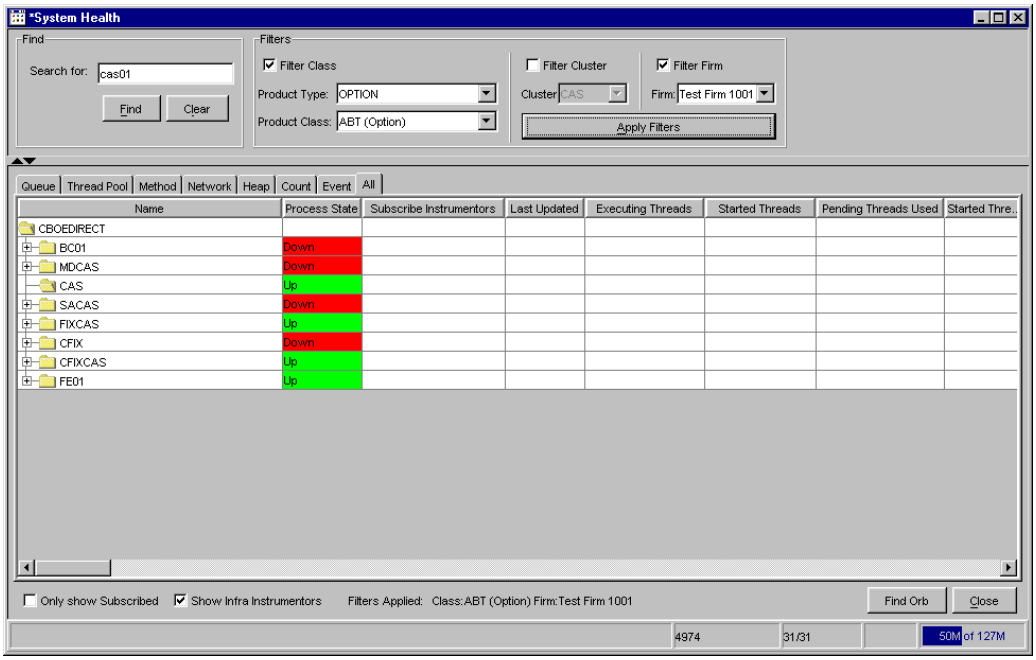
- Partially enter the component name or process name in the **Find** text field. In the example above, the search is for CAS.
- Click **Find**. The row in the component tree where the CAS is located is highlighted.
- Click **Next** to scroll to the following components or processes with CAS in its name.

To filter information by class:

- Select the **Filter Class** checkbox.
- Select the **Product Type** and **Product Class** from the drop down lists.
- Click **Apply Filters**. All instrumentors that do not contain class ABT disappear. At the bottom of the window, the filter label shows **Filters Applied: Class ABT (Options)**.

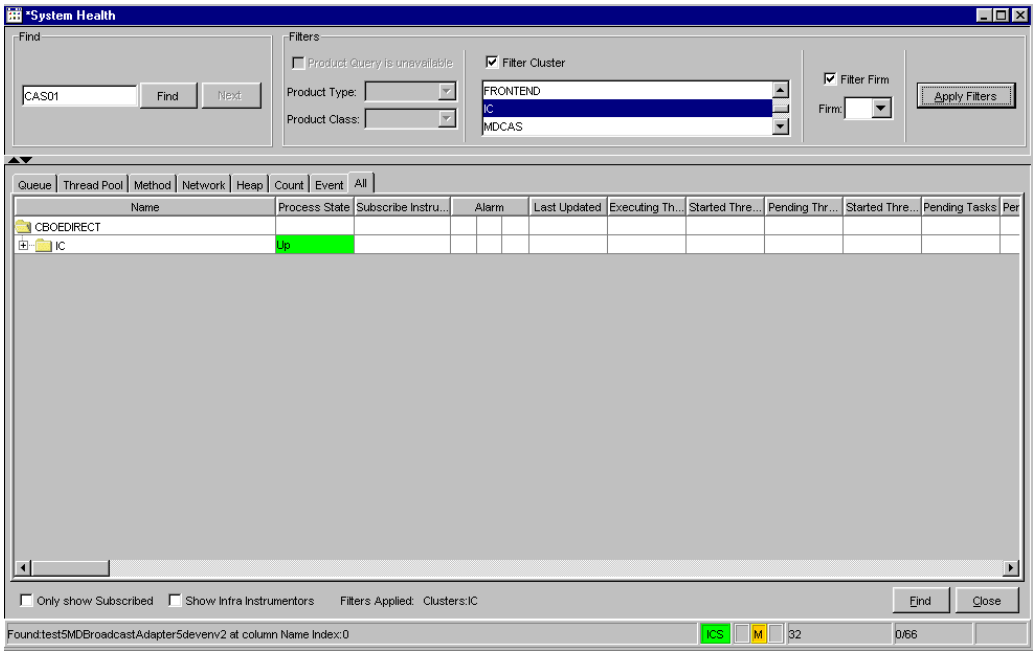
To filter by Firm:

- Deselect the **Filter Cluster** checkbox.
- Select the **Filter Firm** checkbox and select a **Firm** from the drop down list.
- Click **Apply Filters**. All processes that are not in the Firm are removed. The filter label at the bottom of the window displays: **Filters Applied: Class ABT (Option) Firm: Test Firm 1001**.



To further filter your request by cluster, select the **Filter Cluster** checkbox. Then select the cluster from the **Cluster** drop down list. In the example below the IC has been selected.

Click **Apply Filters**. All the clusters, except for the IC, are removed. Only the data rows that contain the ABT class display in the components tree. The filter label at the bottom of the window shows **Filters Applied: Cluster: IC**.



To turn off all filters, deselect the **Filter** checkboxes and click **Apply Filters**. All the clusters and processes display. The filter label at the bottom of the window reads: **Filters Applied: NONE**.

To quickly find a specific component, click the **Find** button. The **Find** window displays.

- Enter the specific component you are searching for in the text box. In the example above, CAS has been entered in the search field.
- Click **Find**. The system scrolls to the CAS process, expanding the tree to properly show the process.
- Click **Next** to scroll to the following process or component with CAS in its name.

Sort and Rearrange Columns

You can sort any column on the System Health window at any time by clicking on the column heading. The column changes to reflect the sorted data.

> **Note:** The sort is not refreshed.

To rearrange the display of the columns, place your cursor on the column heading, then using your mouse, click on the column and drag it to the desired position.

Edit Column Preferences

You can customize your System Health window by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

For detailed information, refer to the Edit Column Preferences section, page 171.

Save Window Preferences

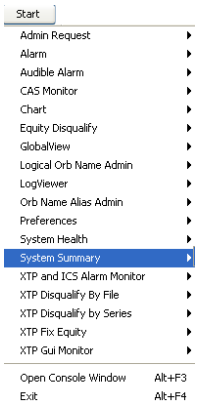
If you want to save your changes and automatically open the window with your saved window preferences, be sure to save the configuration on the Open Tasks toolbar.

To save window preferences:

- Right mouse click on the corresponding window task button.
- Select **Save Configuration**. The Save Configuration window will display.
- Enter the Configuration Name for the window.
- Click **Submit**. Click **Confirm**. The saved window will appear when you open a new System Health window.
- If you decide you do not wish to save the new configuration, click **Cancel**.

For detailed information, refer to the Save Configurations section, page 169.

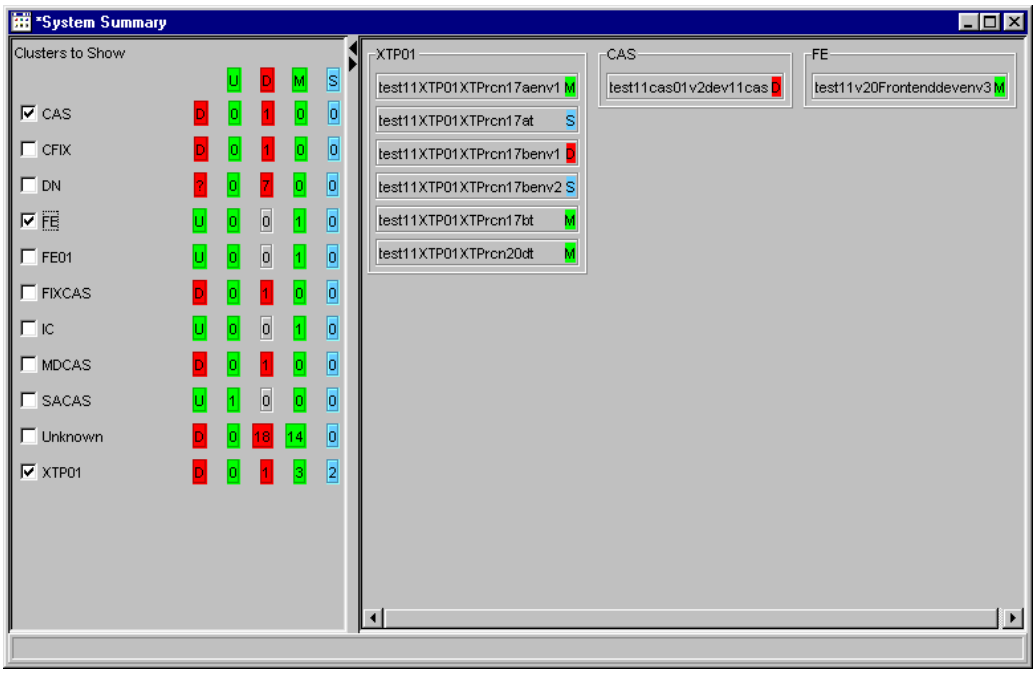
System Summary



The **System Summary** window contains a list of the CBOE*direct* components and processes along with their state of availability. This window allows you to quickly monitor the state of a component or process.

To open the System Summary window, click the **Start** menu button and select **System Summary, Create New Window**. The System Summary window displays.

This window can remain open throughout the duration of your monitoring.



Cluster Summary

When you initially open the **System Summary** window, the CBOE*direct* clusters display with checkboxes to the left. To the right of the clusters are five columns that list the state of the clusters. The column to the far left, with no label, is the Process State Summary column. This column represents the worst status of all in the cluster.

The remaining columns are labeled as follows:

- U column - represents the number of Up processes. In the example above, one process is up in the SACAS cluster.
- D column - represents the number of Down processes. In the example above, there are seven processes that are down in the DN cluster.
- M column - represents the number of Master processes. FE01 has one process in master mode.
- S column - represents the number of Slave processes. CAS has zero processes in slave status.

Process status identifiers are as follows.

Process State Values

Server Status	Background Color
Up (U)	Green
Master (M)	Green
Slave (S)	Blue
Unknown (?)	Red
Down (D)	Red

Process Summary

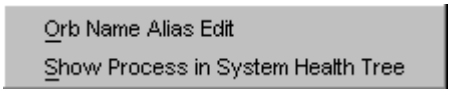
To display the processes of any cluster, click on the checkbox next to the cluster. The processes for that cluster appear to the right of the window.

To quickly scroll to the processes of a listed cluster, right-mouse click on the specific cluster. A menu displays with the following option:

Click on the option. The window will scroll to the cluster's process list.

If the System Health window is active, you have the option to quickly view any of the processes in that window.

- Right-mouse click on the process. The following menu displays.

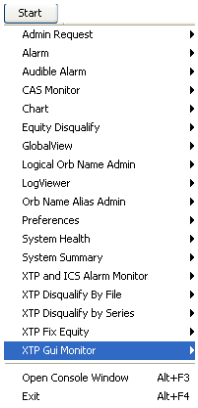


- Select **Show Process in System Health Tree**. The System Health window opens and expands to the appropriate process.

To edit the Orb Name of one of the process, right-mouse click on the process and select **Orb Name Alias Edit**. The **Orb Name Edit** window displays.

For details on editing the Orb Name, refer to the Edit the Orb Name section on page 62.

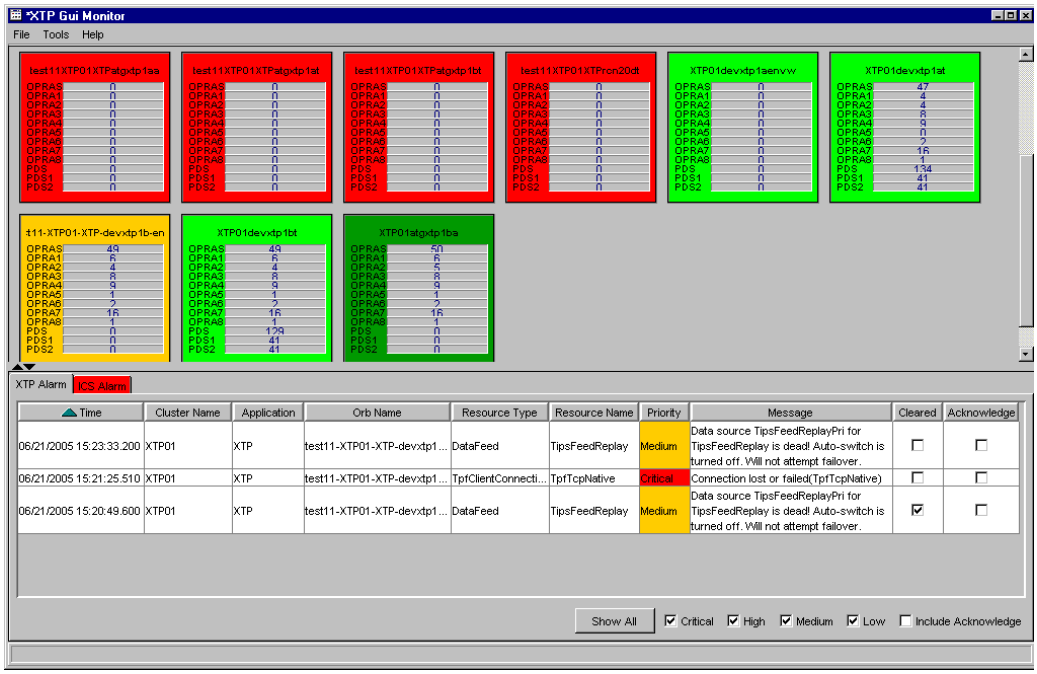
XTP Monitoring



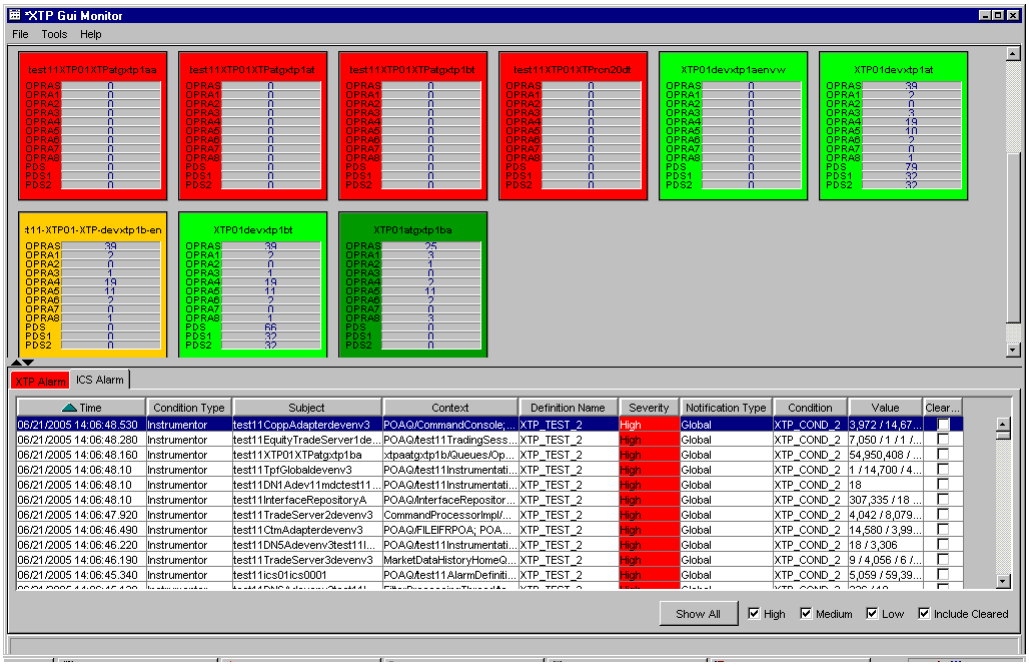
The System Health Monitor application allows you to view the state of the Extreme Ticker Plant (XTP) processes in relation to CBOE*direct*.

To open the XTP GUI window, click the **Start** menu button and select **XTP Gui Monitor, Create New Window**. The XTP Gui Monitor window displays.

You can exit the window at anytime from the File menu by selecting **File**, **Close**.



The XTP Gui monitor contains two panels of information. The top panel displays an icon for each XTP process in the environment. The lower panel contains a scrollable table displaying alarm notifications in two tabs, one for XTP alarms and one for ICS alarms. The alarm tabs turn red to notify the user when new alarms arrive and the tab is not visible.



Alarm Notification Panel

XTP Alarm

Alarm notifications for XTP components in relation to CBOE*direct* are displayed in the lower panel of the XTP GUI Monitor window in the XTP Alarm tab. The columns are labeled as follows:

- Time - denotes the date and time when the alarm activated
- Cluster Name - identifies the name of the XTP cluster
- Application - represents where the alarm occurred
- Orb Name - indicates the XTP server that generated the alarm
- Resource Type - displays the kind of resource (i.e. data feed, queue, etc.) that triggered the alarm
- Resource Name - identifies the name of the resource that triggered the alarm
- Priority - indicates the seriousness of the alarm
- Message - displays the alarm message
- Cleared - checkbox indicating that the alarm has been cleared/uncleared by the user
- Acknowledge - checkbox indicating that the alarm has been acknowledged/unacknowledged

ICS Alarm

Alarm notifications for ICS components in relation to CBOE*direct* are displayed in the ICS Alarm tab. Column descriptions are as follows:

- Time - denotes the date and time when the alarm activated
- Condition type – the component that is being monitored
- Subject – the XTP server (Orb name) that generated the alarm

- Context – the sub-component that is being monitored
- Definition Name – the name given to the alarm definition
- Severity - indicates the seriousness of the alarm
- Notification Type – indicates the kind of notification, i.e. global, local, email
- Condition – the list of all conditions in alarmed definition
- Value – the value that caused the alarm to activate
- Cleared - checkbox indicating that the alarm has been acknowledged by the user.

Filter Alarms by Priority

You have the option to filter alarms according to priority by selecting/deselecting the alarm severity checkboxes shown on the lower portion of the XTP GUI Monitor window.

- To view notifications for all alarm priority levels, click **Show All**. The **Critical**, **High**, **Medium**, **Low** and **Include Acknowledge** checkboxes will display selected. The XTP Alarm Display will update to include processes that have generated alarms with high, medium and low priority levels. The **Acknowledge** checkbox in the display will be selected for alarms that have been verified by the user.
- To display only critical level alarms, select the **Critical** checkbox and deselect the other alarm level checkboxes. Alarms that were generated at the critical level will display.
- To show only high level alarms, select the **High** checkbox and deselect the other alarm level checkboxes. Alarms that were generated at the high level will display.
- To view only medium level alarms, select the **Medium** checkbox and deselect the other alarm level checkboxes. Alarms that were produced at the medium level will display.
- To display only low level alarms, select the **Low** checkbox and deselect the other alarm level checkboxes. Alarms that were created at the low level will display.
- If you would like to display alarms that have been acknowledged by the user, select the **Include Acknowledge** checkbox. The XTP Alarm Display will update to include these alarms.

Cleared and Acknowledge Checkboxes

Alarm data rows display with **Cleared** and **Acknowledge** checkboxes. If the **Cleared** checkbox is selected for a data row, that means the alarm has been cleared by the XTP server.

- If you select the **Acknowledge** checkbox for a data row that has been cleared, the checkbox will remain selected.
- If you select the **Acknowledge** checkbox for an alarm data row that has not yet been cleared by the server, the **Acknowledge** checkbox will return to deselected after a few seconds.
- If the **Cleared** checkbox is deselected, the **Acknowledge** checkbox will also display deselected.

XTP Process Status

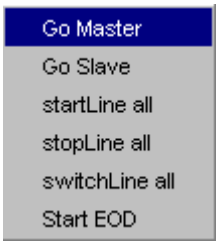
The top panel of the window displays an icon for each XTP process in the environment. XTP process status identifiers are as follows.

Process State Values

Process Status	Background Color
Master	Green
Slave	Blue
Down - defined but not currently running	Red
Unknown - defined but not properly configured	Orange

Change Process Status

The System Health Monitor application gives you the ability to change the state of XTP processes through the XTP process icons. Click on any process icon in the environment. Or, if you wish to change the state of multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each process and then right-click on one of the selected icons. The following menu will display.



- Go Master

  To change a process from slave state to master state:

  - Right-mouse click on a slave process icon. Or, if you wish to change the state of multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each the process icons that are in slave mode and then right-click on one of the selected icons.
  - Select **Go Master**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The icon color changes to green. The System Health window **Process State** column will change accordingly for that XTP process.
  - Click **Cancel** to return to the XTP GUI Monitor without sending the **Go Master** command. The system will return to the XTP GUI Monitor window.

- Go Slave

  To change the process status from master to slave:

  - Right-mouse click on a process icon that is in master state. Or, if you wish to change the state of multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each of the process icons that are in master mode and then right-click on one of the selected icons.

- Click **Go Slave**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The icon color changes to blue. In addition, the color and text change accordingly in the **Process State** column of the System Health window for that XTP process.
- Click **Cancel** to return to the XTP GUI Monitor without sending the **Go Slave** command. The system will return to the XTP GUI Monitor window.

➢ startLine all

To start the datafeed lines for a process that is in master mode:

- Right-mouse click on the master process icon. Or, if you wish to start the datafeed lines on multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each of the process icons that are in master mode and then right-click on one of the selected icons.
- Select **startLine all**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The datafeed lines for the process will start and display as "Up" in the **Adapter Status** column of the System Health Monitor window.
- Click **Cancel** to return to the XTP GUI Monitor without sending the **startLine all** command. The system will return to the XTP GUI Monitor window.

➢ stopLine all

To stop the datafeed lines for a process that is in master mode:

- Right-mouse click on the master process icon. Or, if you wish to stopt the datafeed lines on multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each of the process icons that are in master mode and then right-click on one of the selected icons.
- Select **stopLine all**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The datafeed lines for the process will stop and display as "Down" in the **Adapter Status** column of the System Health Monitor window.
- Click **Cancel** to return to the XTP GUI Monitor without sending the **stopLine all** command. The system will return to the XTP GUI Monitor window.

➢ switchLine all

To switch the datafeed lines from primary to backup or from backup to primary:

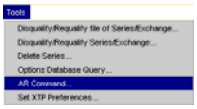
- Right-mouse click on the master process icon. Or, if you wish to switch the data feed lines on multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each of the process icons that are in master mode and then right-click on one of the selected icons.
- Select **switchLine all**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The datafeed lines for the process will display with the data source name in the **Data Source** column of the XTP Details window (described below) and the **User Data** column of the System Health Monitor **Network** tab.

- Click **Cancel** to return to the XTP GUI Monitor without sending the **switchLine all** command. The system will return to the XTP GUI Monitor window.

➢ StartEOD

To start the end of day procedures for a process:

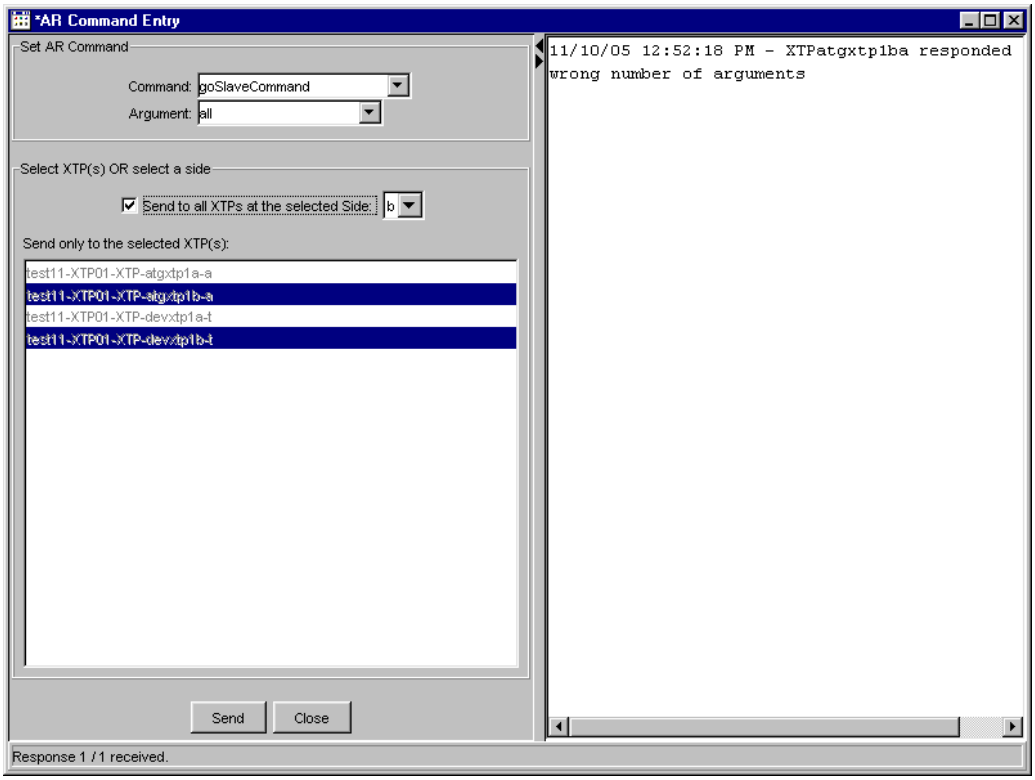
- Right-mouse click on the master process icon. Or, if you wish to start EOD on multiple process icons, hold down the **[Ctrl]** key on your keyboard and left-click on each of the process icons that are in master mode and then right-click on one of the selected icons.
- Select **StartEOD**. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. Verify the result of the request in the information dialog.
- Click **Cancel** to return to the XTP GUI Monitor without sending the **StartEOD** command. The system will return to the XTP GUI Monitor window.



Change Process Status Using AR Commands

Process status changes can be performed from the **Tools** menu in the XTP GUI Monitor window.

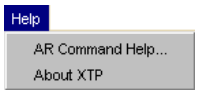
- From the **Tools** menu, select **AR Command**. The following window displays.



- Select the command you wish to perform for the process from the **AR Command** drop down list.
- Select the argument from the **Argument** drop down list.

- To send the AR command to all XTP processes on either the A side or B side of the system, select the check box, **Send to all XTPs at the selected Side** and expand the drop down list. Choose A side, B side or none. If you choose either the A side or B side, the corresponding processes will be highlighted in the **Send only to the selected XTP(s)** text box.
- To send AR commands to specific XTP processes, choose the processes from the **Send only to the selected XTP(s)** text box.
- Click **Send**. The right panel of the **AR Command Entry** window will display the response returned from the XTP server. Process status changes will be visible in the System Health Monitor window.
- Click **Cancel** to exit the **AR Command Entry** window without making any changes.

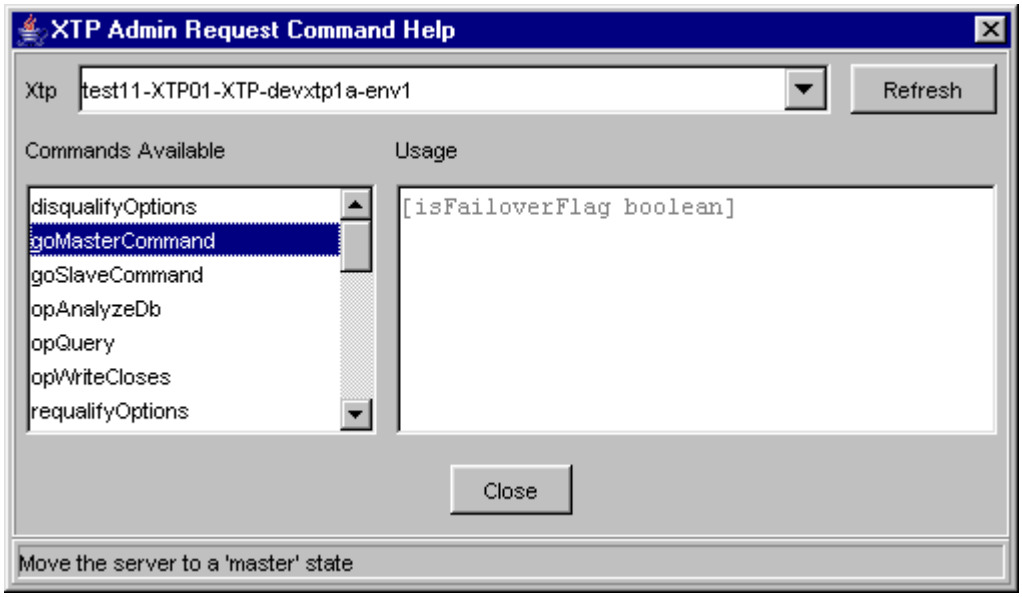
  ↳ **Note:** The **AR Command** and **Argument** text boxes are editable and can be used for defining new commands and arguments.



AR Command Help

The AR Command Help function enables you to display all admin request commands and their usage for selected XTP processes.

From the **Help** menu, select **AR Command Help**. The following window displays.



- From the XTP drop down list, select an XTP process that is either in Master or Slave mode. The available admin commands will display in the **Commands Available** list box.
- Click on a command to display its description in the **Usage** text box.
- To update the window, click **Refresh**.
- To exit the window, click **Close**.

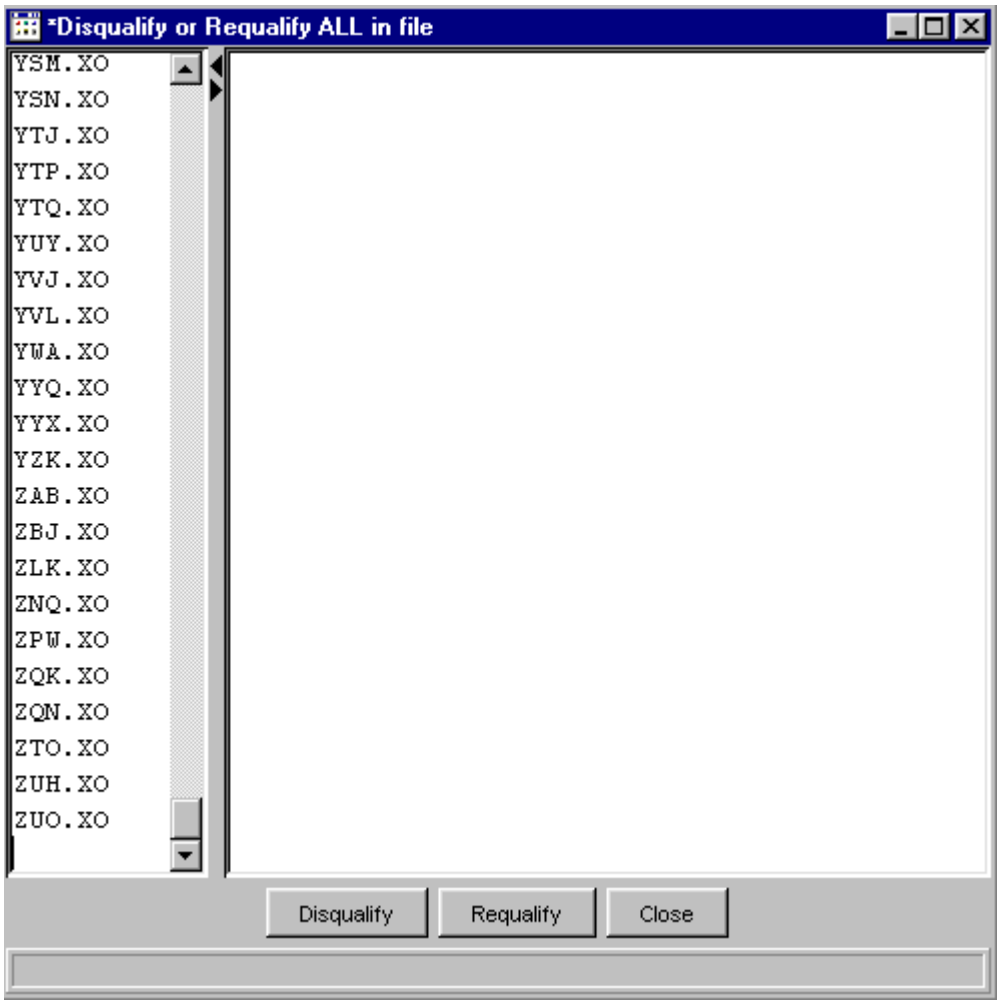
Disqualify and Requalify Series and Exchanges for Monitoring

Disqualify/Requalify File of Series and Exchanges

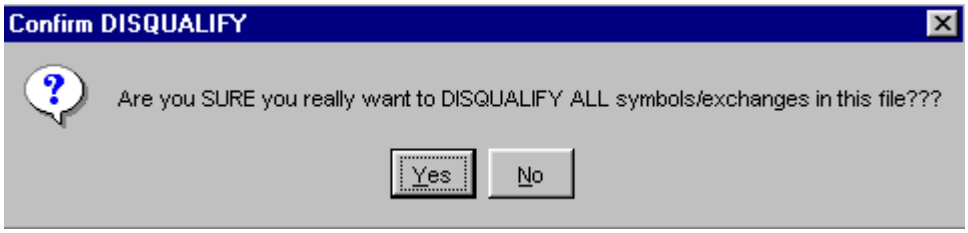
There may be occasions when you will need to stop monitoring series and Exchanges within a process. The disqualify/requalify function will allow you to exclude/include the series and Exchange files from NBBO calculation.

From the **Tools** menu, select **Disqualify/Requalify file of Series/Exchange**. This window can also be opened through the **Start** menu by selecting **XTP Disqualify by File**. The **Disqualify or Requalify ALL in file** window will display.

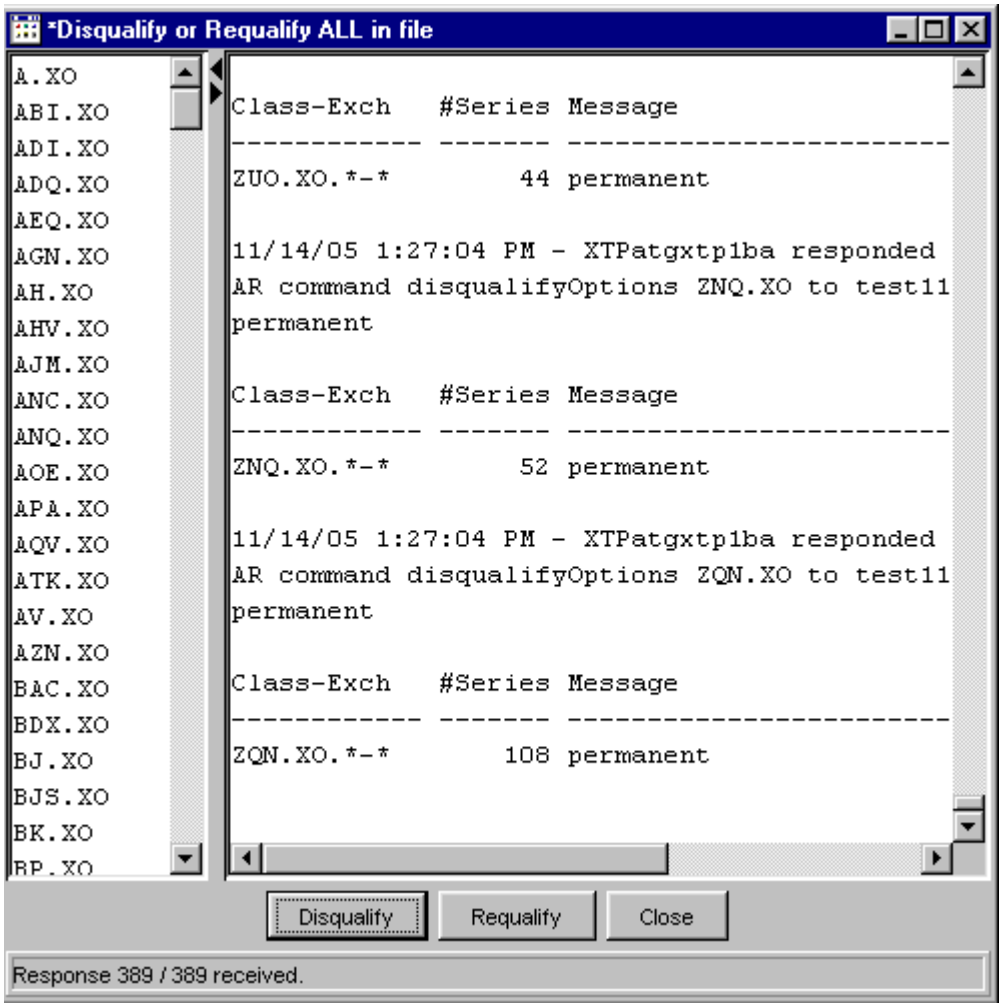
Click **Close** at anytime to exit the window.



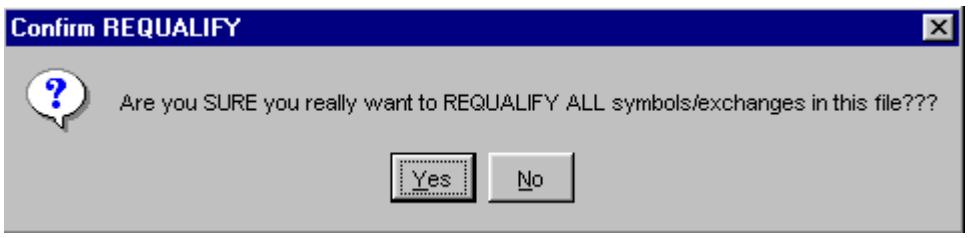
- Click **Disqualify** to exclude all symbols and exchanges in the file from NBBO calculation. The XTP Monitor GUI will prompt you to confirm the disqualification request.



- Click **No** to exit the window without disqualifying the file.
- Click **Yes** to continue with the disqualification request. The request will be sent to all XTP processes. The text portion of the window will display with the disqualification information.



➢ To requalify all the symbols and exchanges in the file for NBBO calculation, click **Requalify**. The system will prompt you to confirm the requalification request.

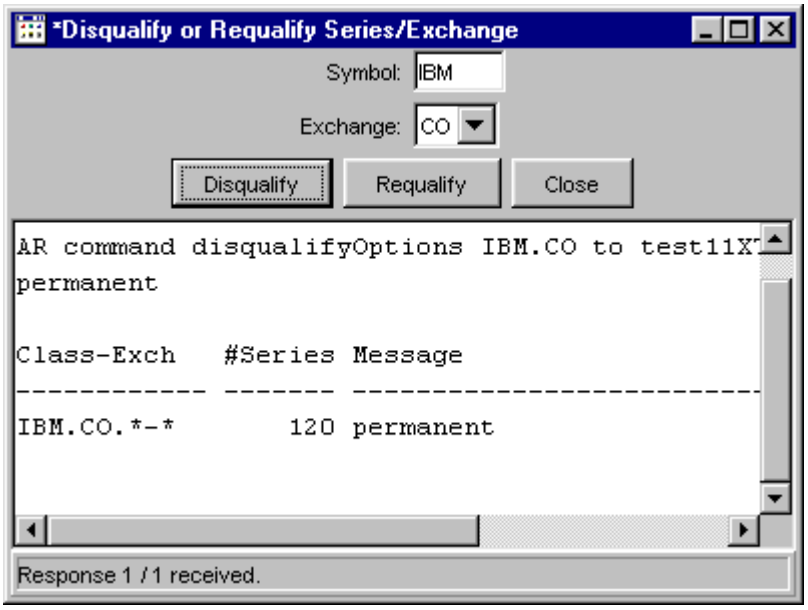


- Click **No** to exit the window without requalifying the file.
- Click **Yes** to continue with the requalification request. The request will be sent to all XTP processes. The text portion of the window will display with the requalification information.

Disqualify/Requalify Series and Exchange

To disqualify or requalify a specific series and Exchange from NBBO calculation, click on the **Disqualify/Requalify Series/Exchange** option in the **Tools** menu to open the **Disqualify or Requalify Series/Exchange** window.

This window can also be opened through the **Start** menu by selecting **XTP Disqualify by Series.**



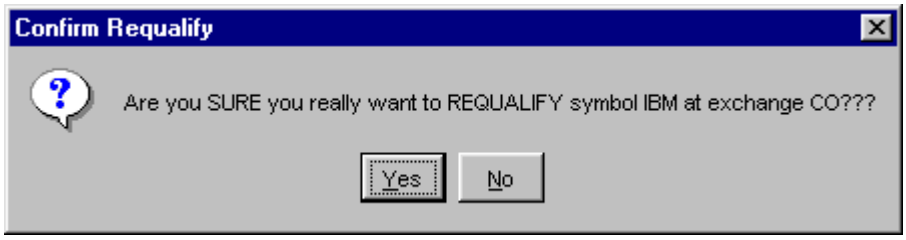
➢ To disqualify a product class and Exchange from NBBO calculation:

- Enter the class in the **Symbol** text box.
- Select the Exchange from the **Exchange** drop down list.
- Click **Disqualify**. The system will prompt you to confirm the disqualification.

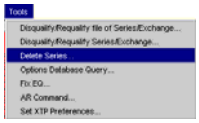
- Click **No** to cancel the disqualification request.
- Click **Yes** to proceed with the disqualification request. The request will be sent to all XTP processes. The disqualification information will display in the text box portion of the window.

➢ To requalify a product class and Exchange for NBBO calculation:

- Enter the class in the **Symbol** text box.
- Select the Exchange from the **Exchange** drop down list.
- Click **Disqualify**. The system will prompt you to confirm the disqualification.



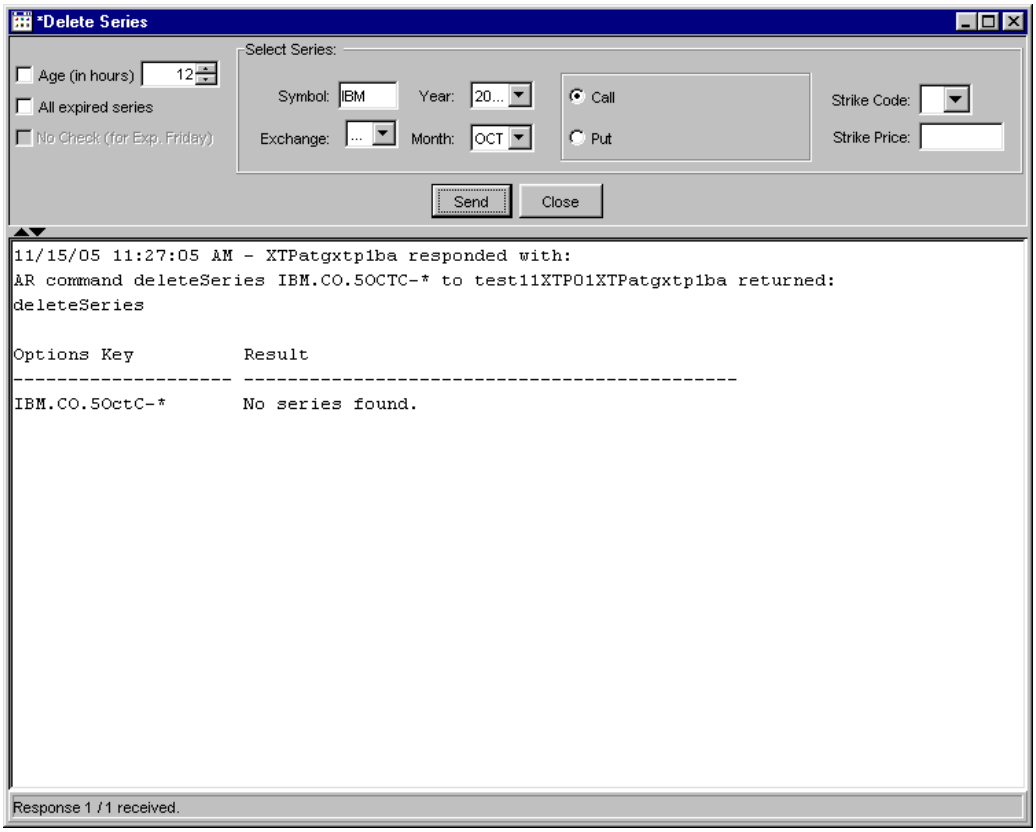
- Click **No** to cancel the requalification request.
- Click **Yes** to proceed with the requalification request. The request will be sent to all XTP processes. The requalification information will display in the text box portion of the window.



Delete a Series from Monitoring

Specific series, series that have expired or series with no activity for a number of hours can be removed from monitoring. To remove a series from monitoring, select **Delete Series** from the **Tools** menu. The **Delete Series** window displays.

Click **Close** at anytime to exit the window.



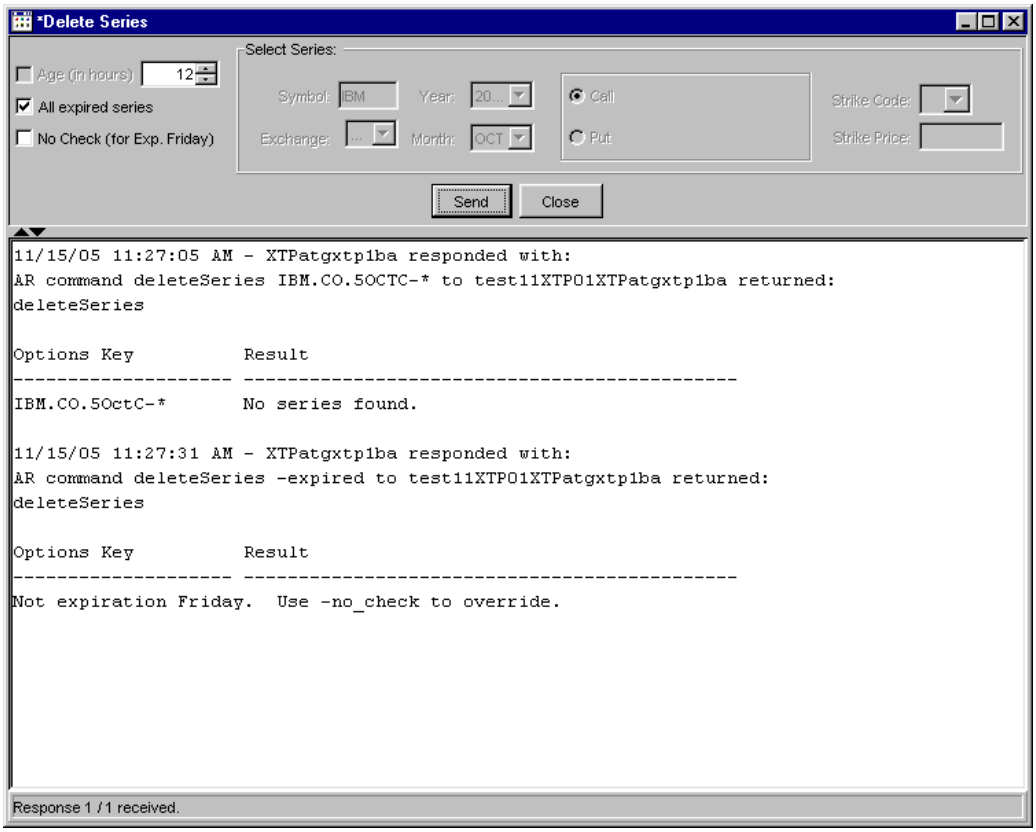
To delete a specific series:

- Enter the product class symbol in the **Symbol** text field.
- Select the Exchange from the **Exchange** drop down list.
- Select the year and month from the drop down lists.
- Choose the **Call** or **Put** series by clicking on the corresponding radio button.
- If desired enter the **Strike Price** and select the **Strike Code** .
- Click **Send**. The result of the series delete request will display in the response window.

Remove Expired Series from Monitoring

To remove expired series from XTP monitoring:

- Select the **All expired series** checkbox.

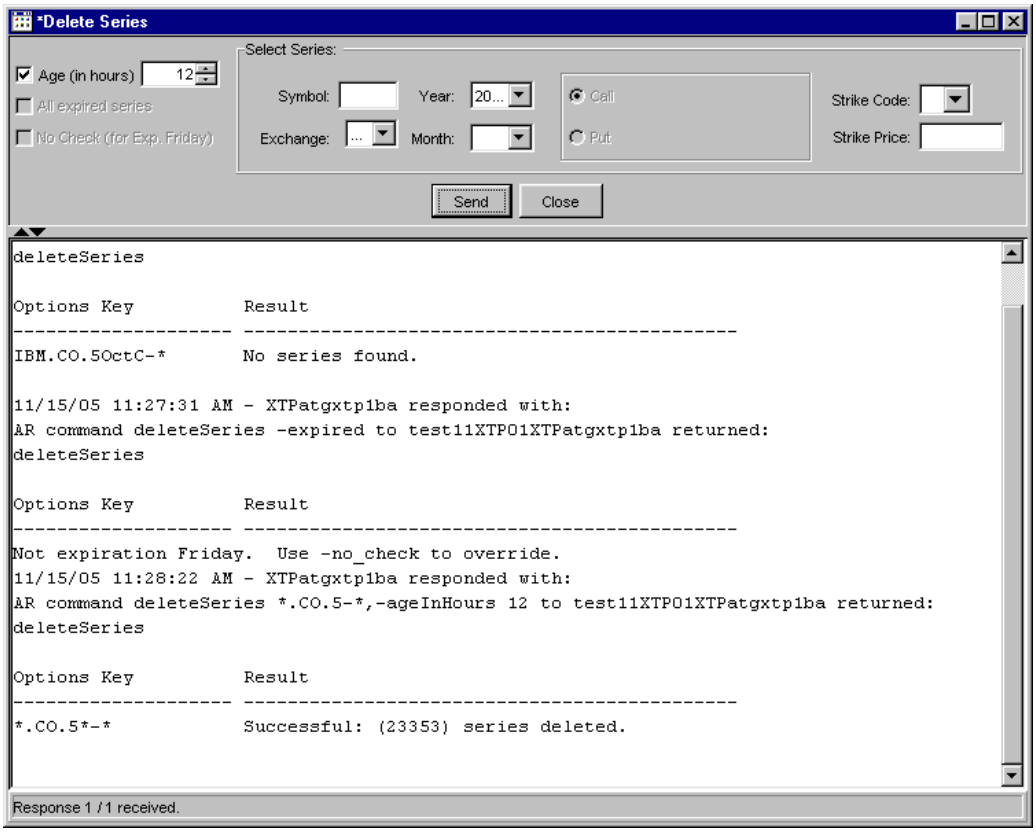


- Click **Send**. The result of the request will display in the response window.

Remove All Series With No Activity

To remove all series with no activity for a certain number of hours:

- Select the **Age (in hours)** checkbox.
- Enter the hours in the **Age (in hours)** text field. Or select the hour by clicking on the up/down arrows until the desired number of hours is reached.

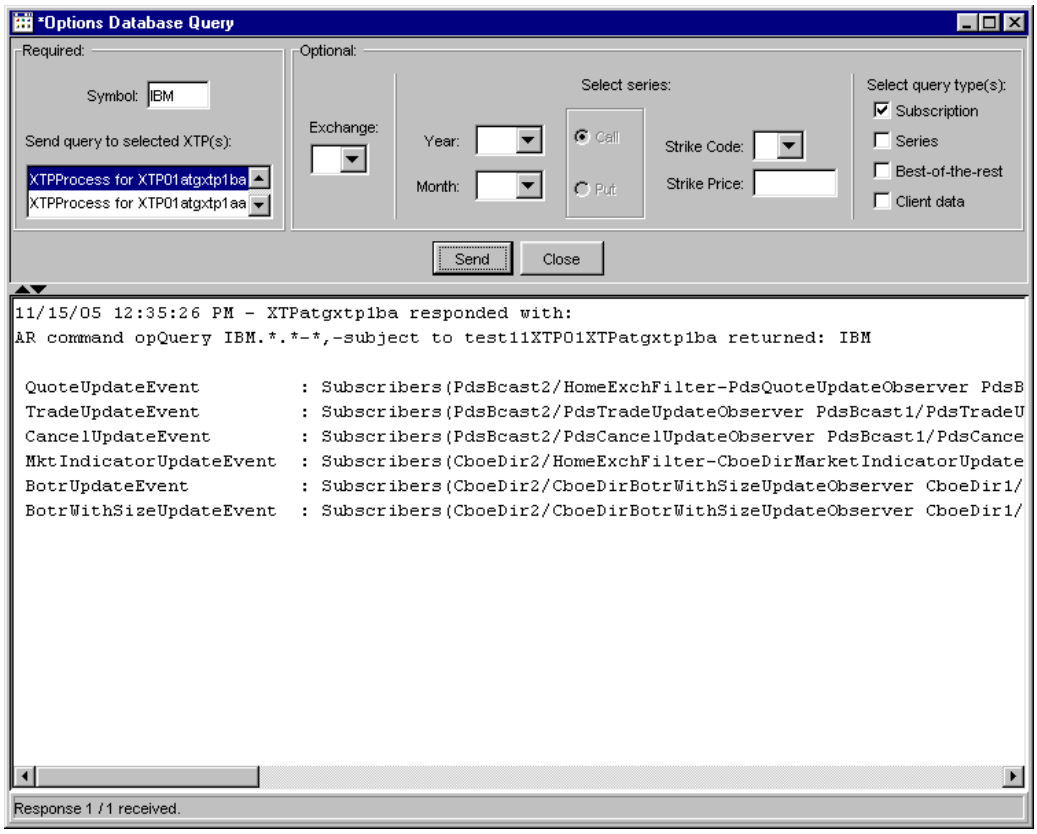


- Click **Send**. The result of the request will display in the response window.

Options Database Query

The System Health Monitor allows you to query the options database for XTP processes. From the **Tools** menu, select **Options Database Query**. The following window displays.

Click **Close** at anytime to exit the window.

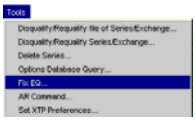


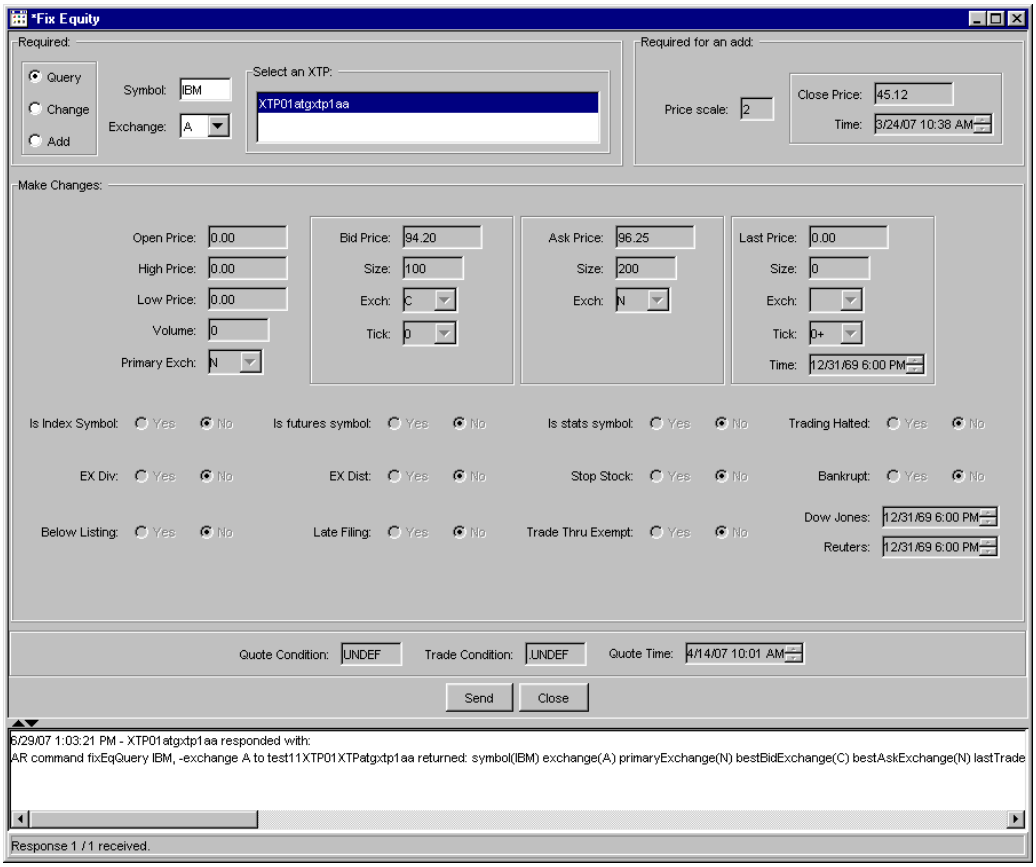
- Enter the product class in the **Symbol** text box
- From the **Send query to selected XTP(s)** drop down list, select one or more of the XTP processes to query.
- The **Select query type(s)** panel allows you choose specific query types (i.e, **Subscription, Series, Best-of-the-rest and Client data**). Select one or more of the radio buttons to include in your query. However, if you would like to query for everything, leave the checkboxes deselected.
- You can futher filter your query by **Exchange, Year, Month, Call, Put, Strike Code and Strike Price**.
- Click **Send**. The response window displays the queried information. In the example above, all the subscriptions for symbol IBM in the XTP01atgxtp1ba process was requested.

XTP FIX Equity

To query, change or add Fix Equity data, click on the **Fix EQ..** option in the **Tools** menu. The Fix Equity window will display.

This window can also be opened through the **Start** menu by selecting **XTP Fix Equity.**



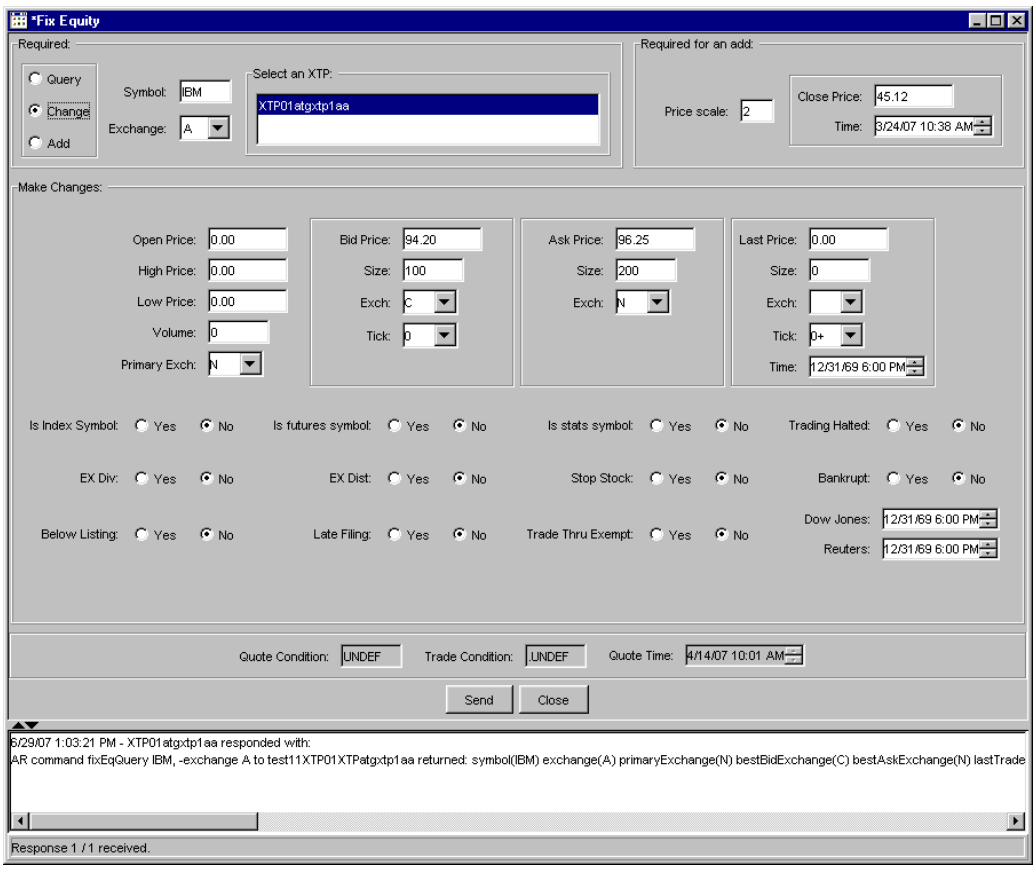


To query for Fix Equity data by symbol and exchange:

- Select the **Query** radio button.
- Enter the symbol (class) in the **Symbol** text box.
- Choose the exchange from the **Exchange** drop down list.
- **Select an XTP** from the corresponding text box.
- Click **Send**. The detailed information for the symbol is returned from the XTP server and displays in the results section at the bottom of the window and also displays in the dialog fields, which remain disabled.

To modify the displayed data:

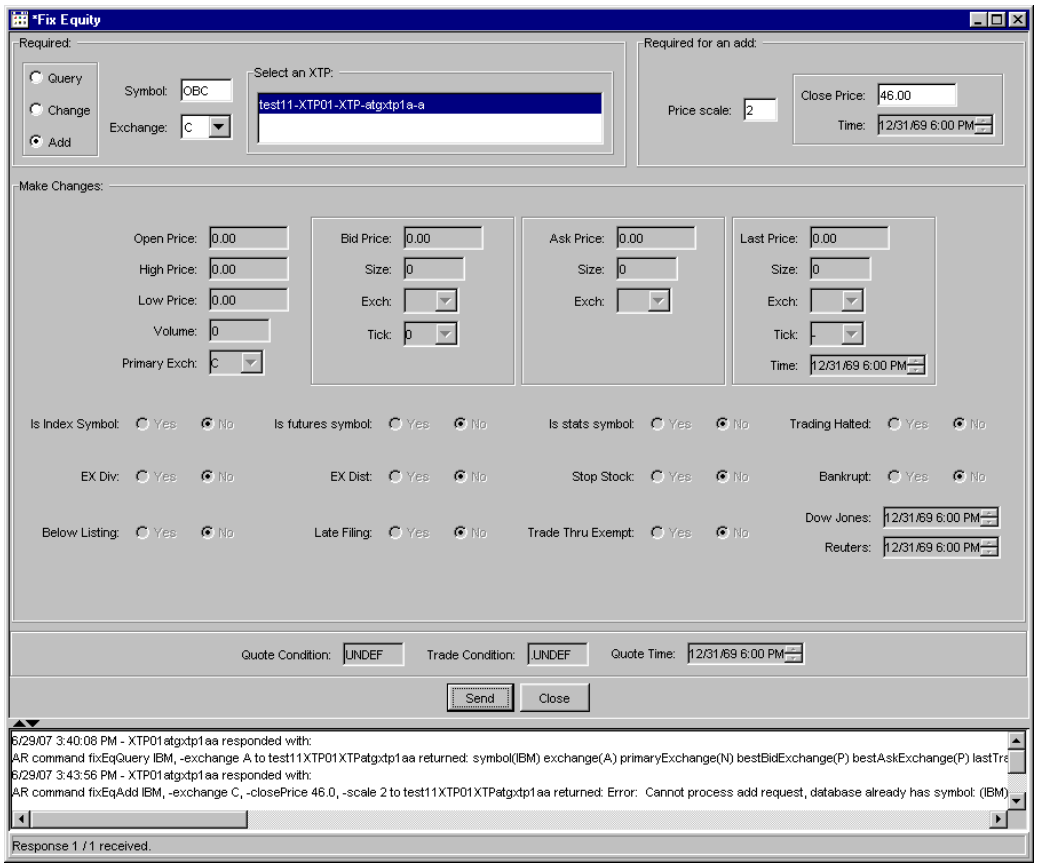
- Select the **Change** radio button. All fields are enabled, except for Quote Condition, Trade Condition and Quote Time.



- If you wish to exit the window without making any changes, click **Close**.
- Make the required data changes. Click **Send**. The changed information for the class displays in the results section in the lower part of the window and in the dialog field.

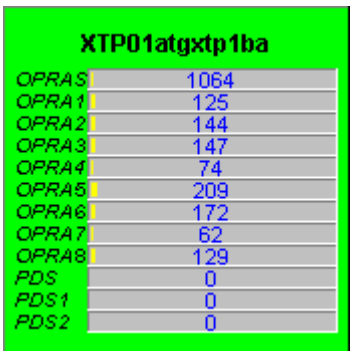
To add a new class Symbol and Exchange to the system:

- Select the **Add** radio button. All fields are disabled, except Symbol, Exchange, Select an XTP, Price scale and Close Price.
- Enter the class **Symbol** and select the **Exchange**.
- Enter the **Price scale** and **Close Price**. Click **Send**. If the class symbol and exchange already exist, the system will return an error message. Otherwise, the data for the new class will be returned and displayed.

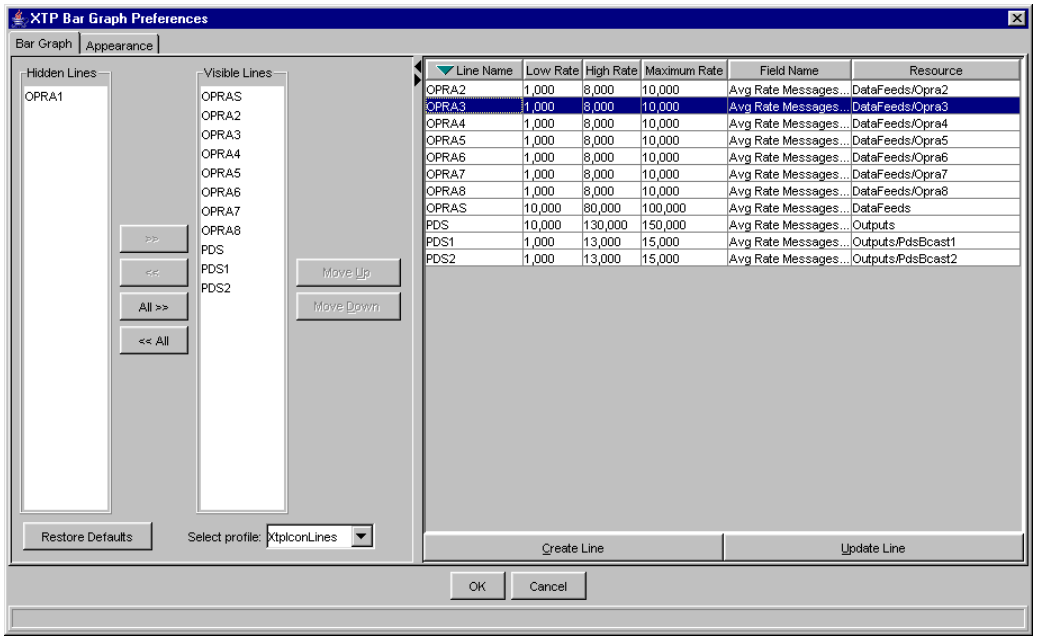


XTP Process Preferences

XTP processes must be configured to display at least one XTP component (i.e. datafeed lines, outputs, queues, etc.). In the example below, all the data feed lines are shown for process **XTP01atgxtp1ba**.



You have the ability to set which component you wish to view. From the Tools menu, select the **Set XTP Preferences** option. The **XTP Bar Graph Preferences** window will display with the current configuration.



The window displays with two tabs: Bar Graph and Appearance. The Bar Graph tab contains list boxes for **Hidden Lines** and **Visible Lines** and a details table. The Visible Line list box shows all the visible components for XTP. Components that are defined in the configuration file and not selected are displayed in the Hidden Lines list box. The details table displays the configuration of each component.

By default, the **Select profile** drop down list only contains the XtpIconLines. You can created new profiles by typing in a new name into the drop down list, which is editable, and then clicking **OK**.

If after making your changes, you decide to retain the original values, click **Restore Defaults**. The original values will display.

Bar Graph Tab

- Remove XTP Components from the Display

  If you wish to hide some of the visible components, highlight your selection from the **Visible Line** list box and click **<<**. The components lines will appear in the **Hidden Line** list box and will be removed from the details table.

  To move all visible components to the **Hidden Line** list box, click **<< ALL**. All the data feed lines will appear in the **Hidden Line** list box.

  ↳ **Note:** XTP processes must have at least one visible component.

  Click **OK**. The XTP process icons will display without the components that have been hidden.

  To close the preferences window without making any changes, click **Cancel**.

- Add XTP Components to the Display

  To add hidden components to the visible list, make your selection from the **Hidden Line** list box and click **>>**. The components will appear in the **Visible Line** list box and in the details table.

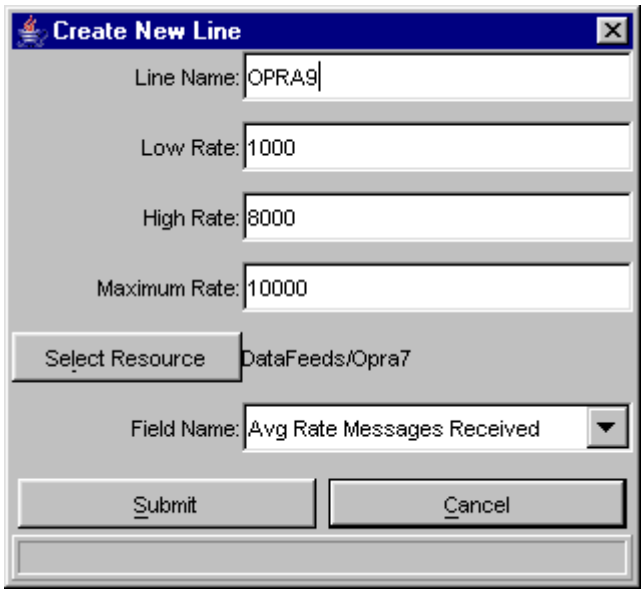
  To move all the hidden components to the **Visible Line** list box, click **>> ALL**. All the components will appear in the **Visible Line** list box. You can adjust the placement of the components by clicking on the **Move Up** or **Move Down** buttons until the desired position is reached.

  Click **OK**. The XTP process icons will display with the components that have been added to the **Visible Line** list box.

  To close the preferences window without making any changes, click **Cancel**.

- Create a New Component

  The System Health Monitor allows you to create new XTP process components for monitoring. Click **Create Line**. The **Create New Line** window will display.

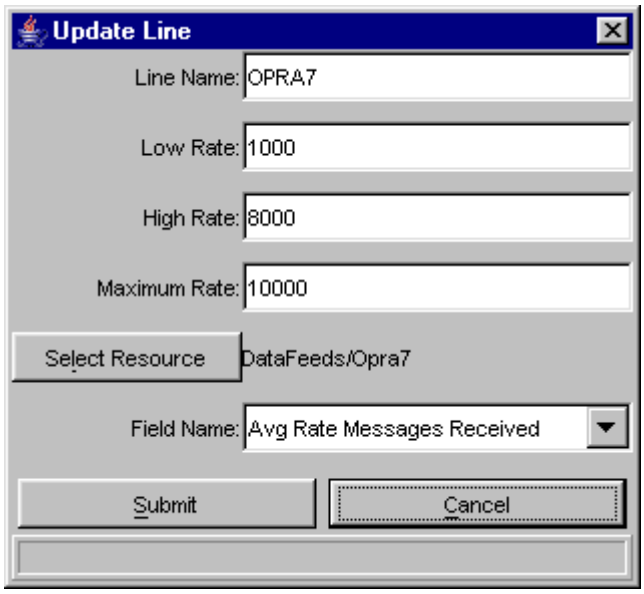


- Enter the line name in the **Line Name** text box.
- Type in the **Low Rate**, **High Rate** and **Maximum Rate** you wish to monitor.
- Click **Select Resource** to choose the XTP component. The **Select a Resource** window displays.

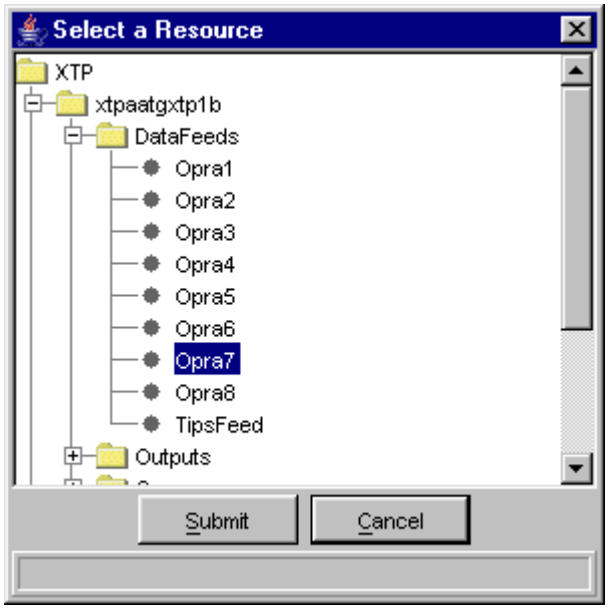
- Make your resource selection and click **Submit**. The resource displays in the creation window. Click **Cancel** to exit the window without making a selection.
- Select the **Field Name** from the drop down list.
- Click **Submit**. Click **Confirm**. The new component displays in the details table as well as the **Visible Line** list box. If you decide to retain the default values instead of the new values, click **Restore Defaults**. The original values will display in the details table.
- Once you click the **OK** button in the Bar Graph tab, the new entry will display on the XTP icons.
- Click **Cancel** to exit the **Create New Line** window without submitting a new component.

➢ Update an Existing Component

The System Health Monitor allows you to update existing components for XTP processes. Select the component from the details table and click **Update Line**. The **Update Line** window will display.



- Update the **Line Name** and rate fields as desired.
- If required, click **Select Resource** to update the component resource. The **Select a Resource** window displays.

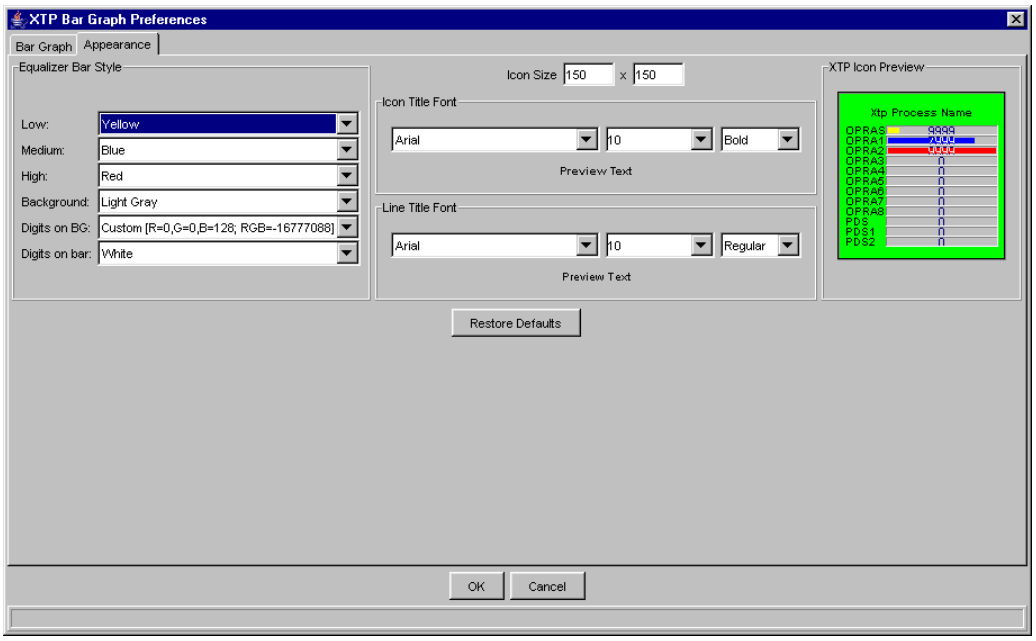


- Make your resource selection and click **Submit**. The resource displays in the update window. Click **Cancel** to exit the **Select a Resource** window without making a selection.
- Update the **Field Name** from the drop down list.
- Click **Submit**. Click **Confirm**. The XTP component displays with updated information in the details table. If you decide to retain the default values instead of the new values, click **Restore Defaults**. The original values will display in the details table.

- Once you click the **OK** button in the Bar Graph tab, the updated data will be monitored on the XTP icons.
- Click **Cancel** to exit the **Update Line** window without submitting changes.

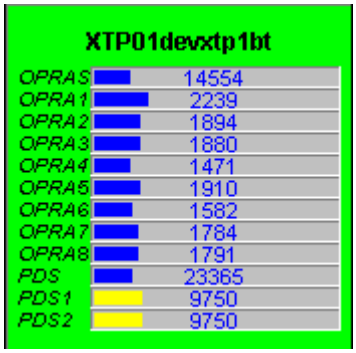
Appearance Tab

Click on the **Appearance** tab to customize the look of the XTP icons.



The **Equalizer Bar Style** section of the tab allows you to monitor the progress of the components in the XTP icons based on the message rate data in the details table of the **Bar Graph** tab. The progress bars can represent raw numbers, rates, input and output. You can select different color combinations of Low, Medium, High, Background, Digits on BG and Digits on bar. Click on the drop down lists to change the color of the progress bar for the XTP components. Click **OK**.

In the example below, the progress bar for the OPRA data feed lines as well as the PDS line appear in blue (Medium), meaning that the message rate is equal to or more than the Low Rate but less than the High Rate in the **Bar Graph** tab. The PDS1 and PDS2 data feed lines display in yellow (Low), meaning that the message rate is less than the Low Rate from the **Bar Graph** tab.



XTP icons can be customized by size and font. The **Icon Size** text box allows you to enter a new size for the icons. The **Icon Title Font** section of the window allows you to select the font type, size and style from the corresponding drop down lists. You can preview your changes in the **Preview Text** section below the drop down lists.

You can further customize the icons by setting a font type, size and style for the data feed lines. From the **Line Title Font** section of the window, choose your settings and preview the changes in the **Preview Text** section below the drop down lists.

If after making your changes, you decide to retain the original values, click **Restore Defaults**. The original values will display.

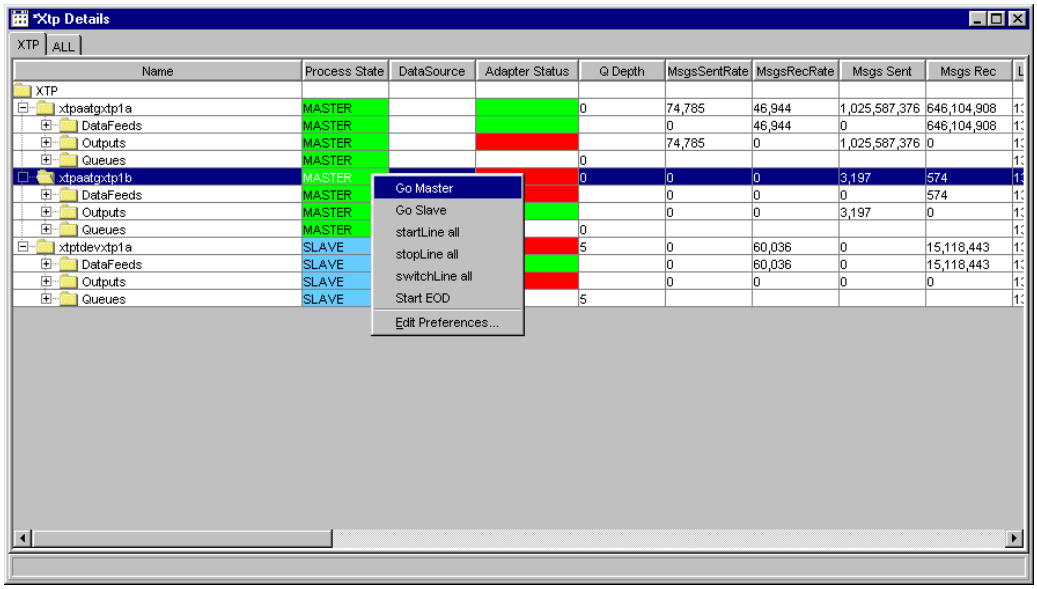
Click **OK** to submit your changes.

To exit the window without making any changes, click **Cancel**. The system will return to the XTP Gui Monitor window.

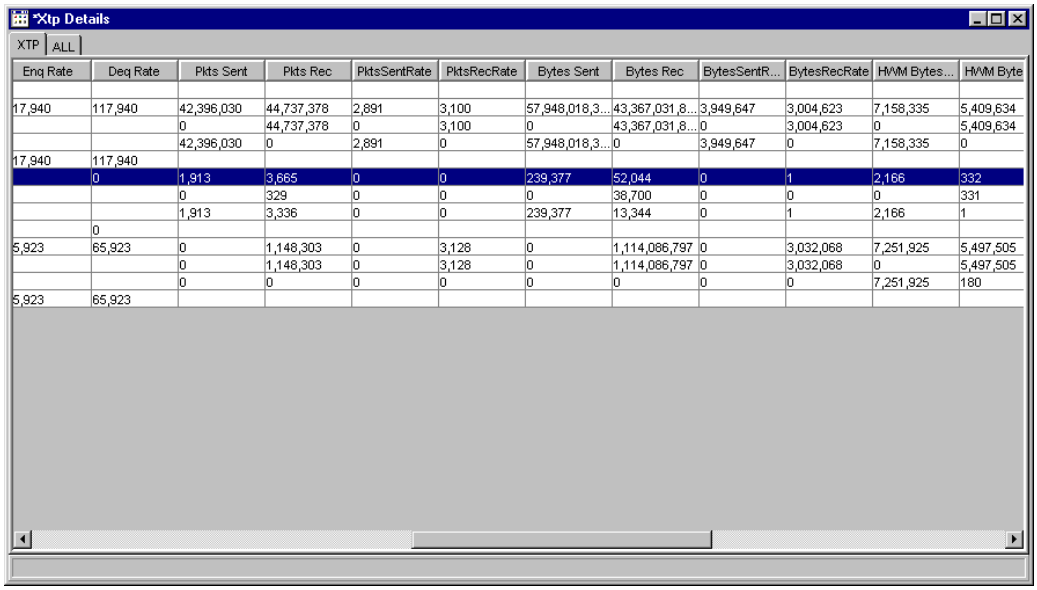
XTP Process Details

If you wish to display the details of a process, double-click on the icon for the process. For example, double-click on the icon for process **xtpenvwdevxtp1a**. The **XTP Details** window displays with tabs labeled **XTP** and **ALL** and defaults to the xtpenvwdevxtp1a process in the **XTP** tab.

Expand the xtpenvwdevxtp1a process node to reveal Queue and Network instrumentors. The Queue and Network tabs in the System Health Monitor window display the same data.



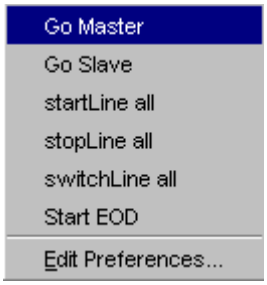
Use the scroll bar to view additional data fields.



From this window, you can view queue data, adapter status, message rates and bytes sent through the system.

↳ **Note:** Adapter Status, Bytes Received, Messages Received and Packets Received columns update every n (10) seconds.

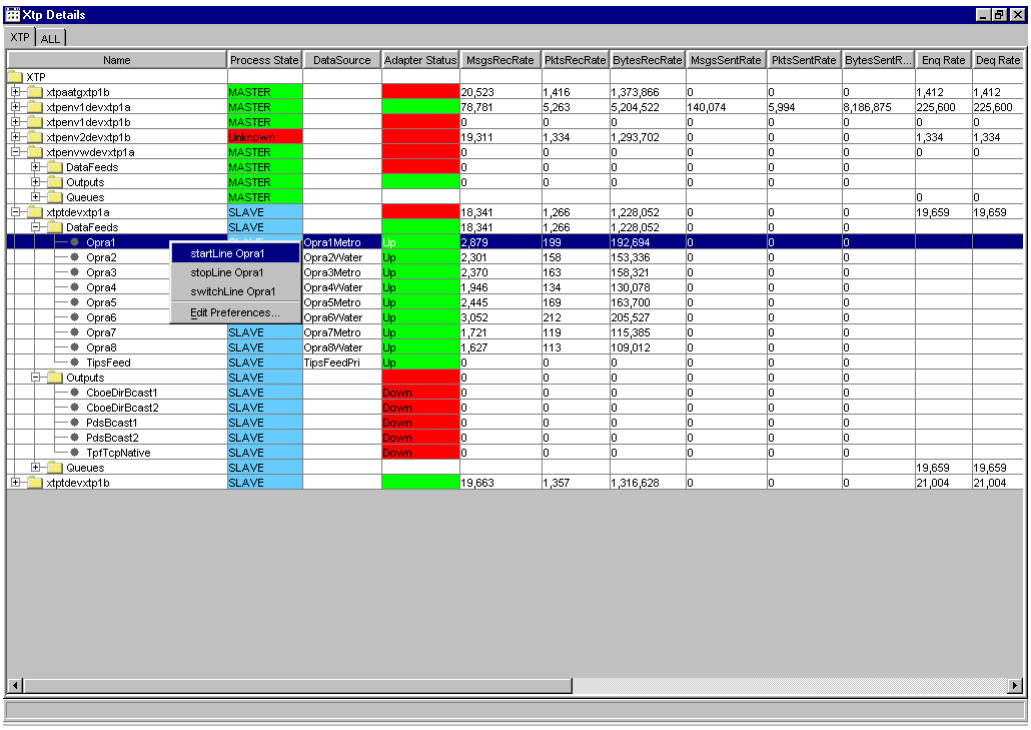
From the XTP Details window, you have the ability to change the state of an XTP process. Right-mouse click on any process node. The following menu will display.



Refer to the *Change Process Status* section above for instructions on how to change the status of XTP processes.

Start, Stop and Switch Network Instrumentators

From the XTP tab, you have the ability to start, stop and switch network instrumentators, such as data feed and output lines.



- To start a data feed line:
  - Right-mouse click on the data feed row.
  - Select the **startLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the line will display as "Up" with a green background and the **Pkts Rec** (Packets Received) column will start updating.

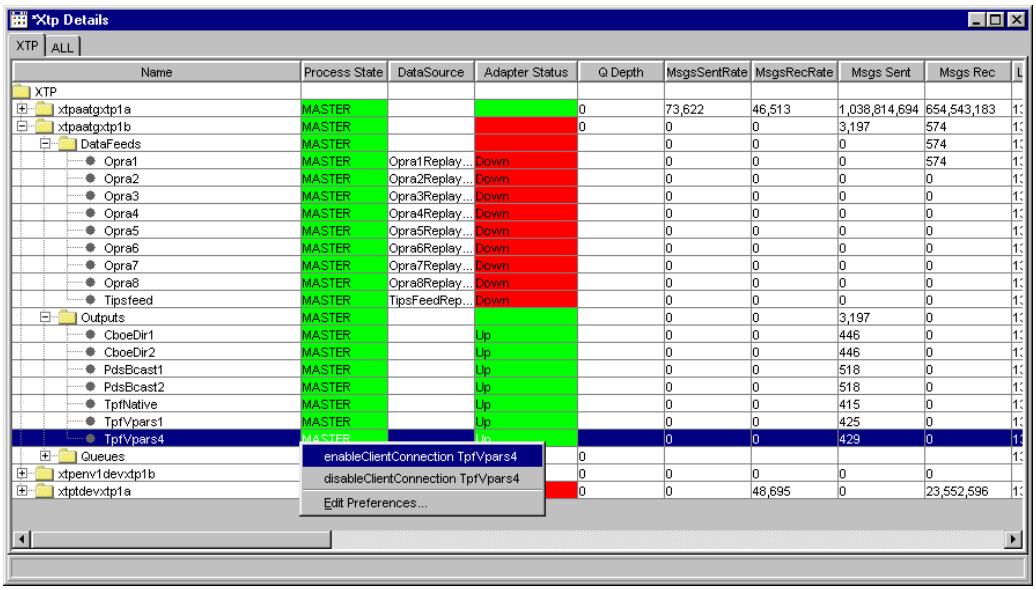
- To stop a data feed line:
  - Right-mouse click on the data feed row.

- Select the **stopLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the line will display as "Down" with a red background and the **Pkts Rec** (Packets Received) column will stop updating.

➢ To switch a data feed line from backup to primary or from primary to backup:

- Right-mouse click on the data feed row.
- Select the **switchLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The datafeed lines for the process will display with the data source name in the **Data Source** column of the XTP Details window and the **User Data** column of the System Health Monitor **Network** tab.

The XTP output lines can be started or stopped through the XTP details window.



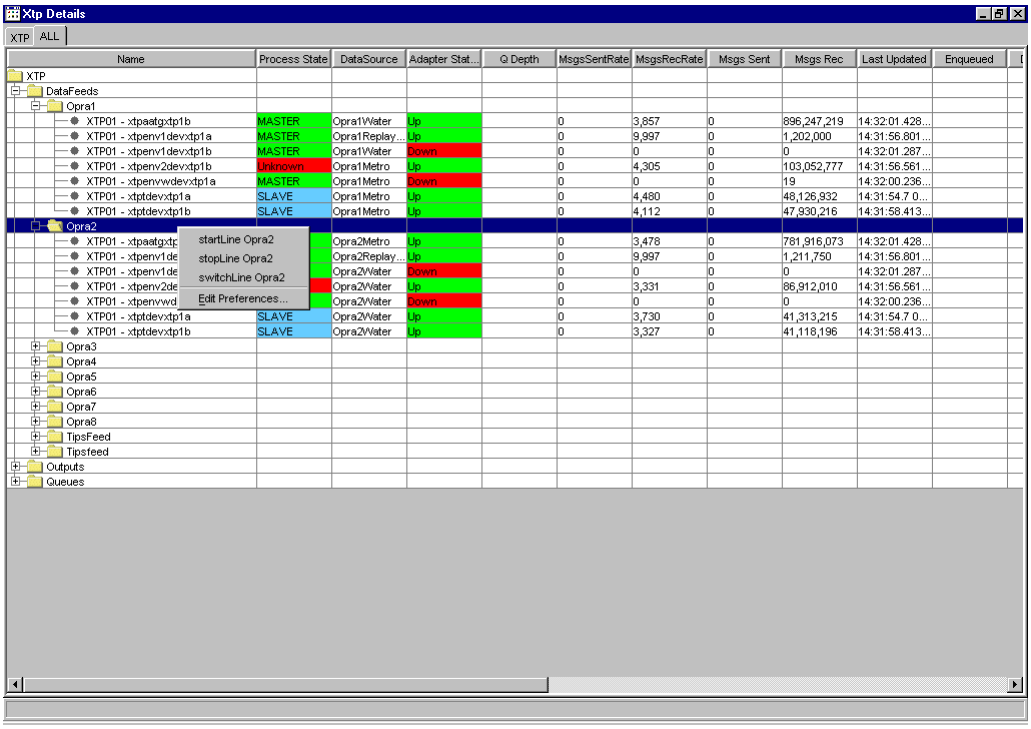
➢ To start an output instrumentator:

- Right-mouse click on the instrumentator row.
- Select the **enableClientConnection** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the line will display as "Up" with a green background and the **Pkts Sent** (Packets Sent) column will start updating.

➢ To stop an output instrumentator:

- Right-mouse click on the instrumentator row.
- Select the **disableClientConnection** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the line will display as "Down" with a red background and the **Pkts Sent** (Packets Sent) column will stop updating.

The **ALL** tab in the XTP Details window arranges the XTP processes by their DataFeeds, Outputs and Queues.



Expand the **DataFeeds** node to display the input lines. You can reveal the processes that belong to the data feed line by further expanding the node.

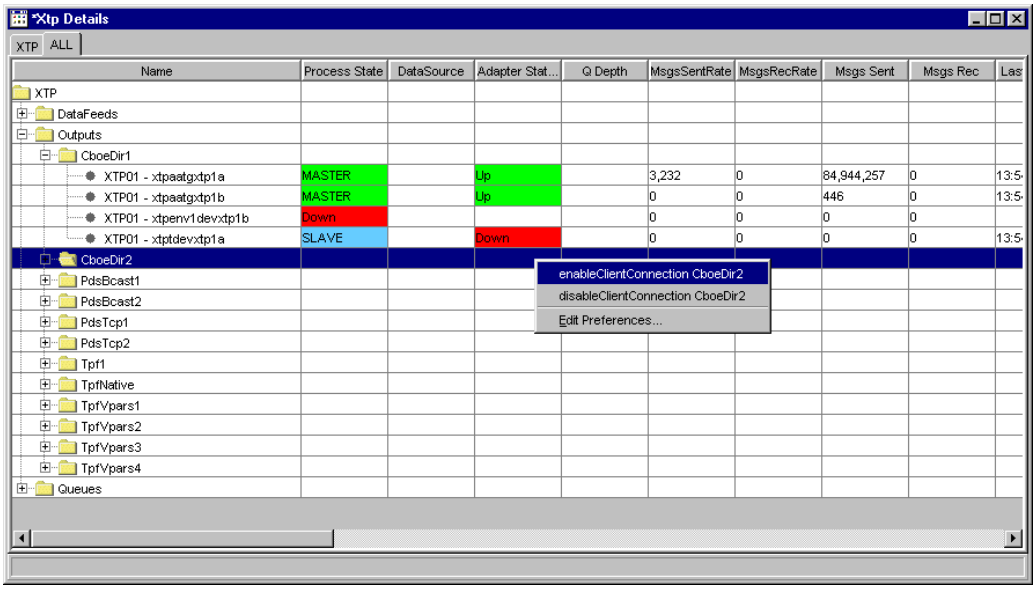
From the **ALL** tab, you can start, stop and switch the data feed lines for all the XTP processes from one command.

- To start the data feed line for all the corresponding processes in a node:
  - Right-mouse click on the data feed row.
  - Select the **startLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the processes will display as "Up" with a green background and the **Pkts Rec** (Packets Received) column will start updating.

- To stop the data feed line for all the related processes in a node:
  - Right-mouse click on the data feed row.
  - Select the **stopLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the processes will display as "Down" with a red background and the **Pkts Rec** (Packets Received) column will stop updating.

- To switch the data feed line from backup to primary or from primary to backup for all the corresponding processes in a node:

- Right-mouse click on the data feed row.
- Select the **switchLine** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The datafeed line for the processes will display with the data source name in the **Data Source** column of the XTP Details window and the **User Data** column of the System Health Monitor **Network** tab.



Expand the **Outputs** node to reveal the output lines as well as its processes.

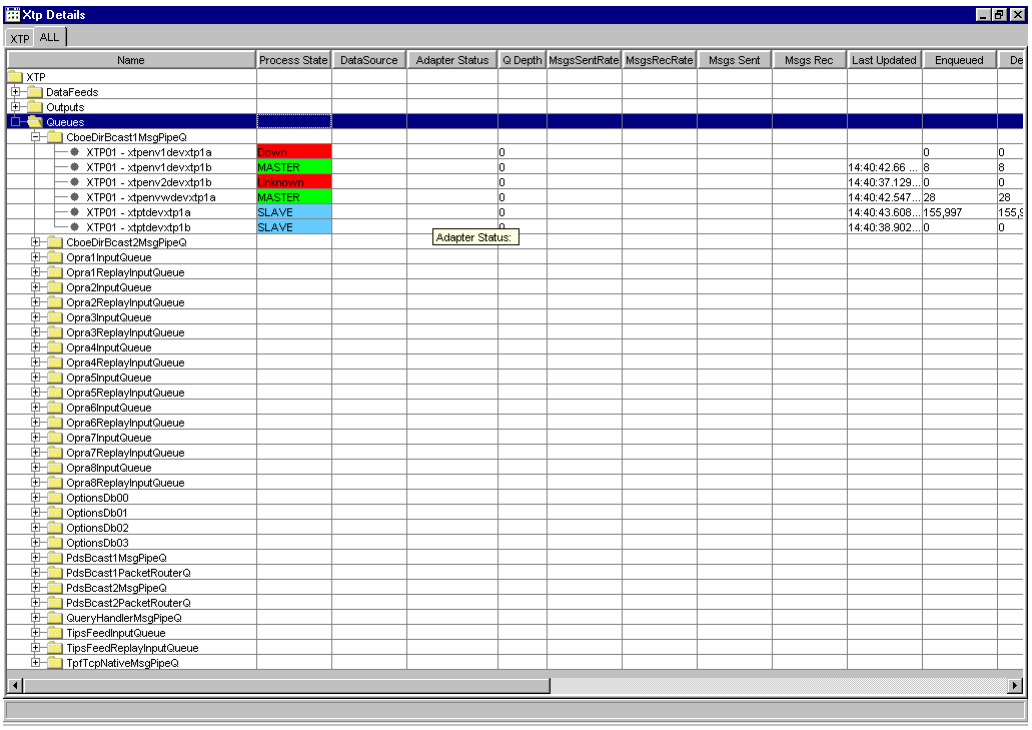
From the **ALL** tab, you can start and stop output lines for all the XTP processes from one command.

➢ To start the output instrumentator for all the associated processes in a node:

- Right-mouse click on the instrumentator row.
- Select the **enableClientConnection** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the processes will display as “Up” with a green background and the **Pkts Sent** (Packets Sent) column will start updating.

➢ To stop the output instrumentator for all the corresponding processes in a node:

- Right-mouse click on the instrumentator row.
- Select the **disableClientConnection** command. The system will prompt you to verify you wish to send the command. Click **OK** to send the command. The Adapter Status cell for the processes will display as “Down” with a red background and the **Pkts Sent** (Packets Sent) column will stop updating.



Expand the **Queues** node to view the data feed and output queue data for each XTP process.

Sort and Rearrange Columns

You can sort any column on the XTP GUI Monitor windows at any time by clicking on the column heading. The column changes to reflect the sorted data.

To rearrange the display of the columns, place your cursor on the column heading, then using your mouse, click on the column and drag it to the desired position.

Edit Preferences

The XTP Details windows can be customized by selecting or deselecting specific columns to display. To filter columns, right mouse click on a data row. Select **Edit Preferences**. The Edit Column Preferences window will display.

- Select or deselect columns for viewing and modify column arrangement as desired.
- To save your changes, click **Ok**.
- If you wish to retain the default settings, click **Cancel**.

For detailed information, refer to the Edit Column Preferences section, page 171.

Save Window Preferences

If you want to save your changes and automatically open the window with your preferences, be sure to save the configuration on the Open Tasks toolbar.

To save window preferences:

- Right mouse click on the corresponding window task button.
- Select **Save Configuration**. The Save Configuration window will display.
- Enter the Configuration Name for the window.

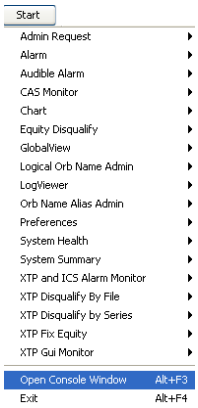
  ↳ **Note:** The XTP Details window can only be saved as a default template.
- Click **Submit**. Click **Confirm**. The saved window will appear when you open a new CAS Monitor window.
- If you decide you do not wish to save the new configuration, click **Cancel**.

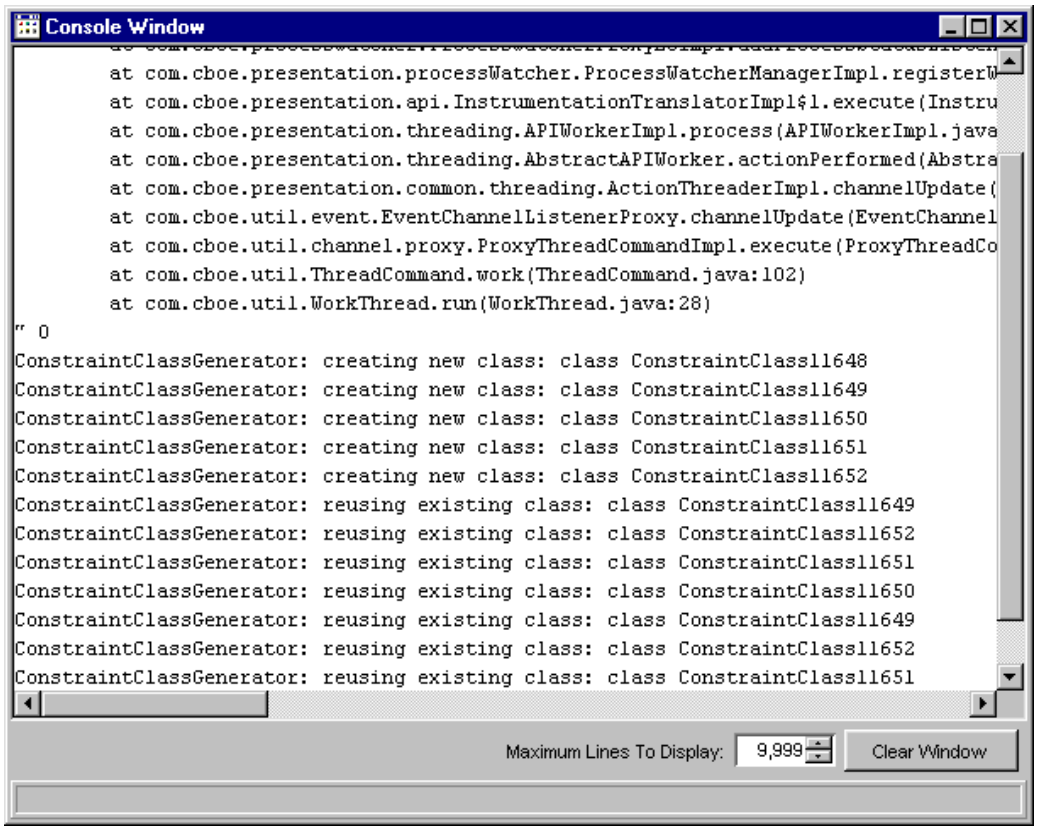
For detailed information, refer to the Save Configurations section, page 169.

Console Window

Open Console Window

The System Health Monitoring application allows you to view system messages that are generated by the functions you perform. To view the messages, select **Open Console Window** from the **Start** Menu or press **Alt F3** on your keyboard from anywhere on your screen. The Console Window will display.





The information in this window can be copied to any text editor on your PC. To copy text from this window,

- place your cursor on the line you which to copy and using your mouse highlight the text.
- press **Ctrl C** on your keyboard to copy the text.
- open your text editor (Word, Notepad, etc.) and place your cursor in the text entry area.
- press **Ctrl V** on your keyboard. The text is copied to your editor.

The window defaults to display 9,999 lines. You can change the maximum lines to display by entering a new quantity in place of the default value, or you can select a

higher/lower quantity by clicking the up/down arrows until the desired quantity is reached.

If you wish to clear the window of all its contents, click the **Clear Window** button.

Exit the System

Exit the System

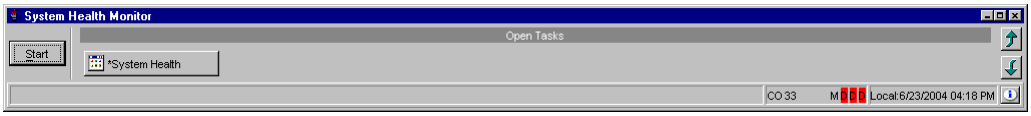
To exit the System Health Monitor, select **Exit** from the Start Menu. You will be prompted to verify that you wish to close all windows and exit. Click **Yes**. The application will be closed and you will be returned to your system desktop.

Section 2: Reference Guide

Task Toolbar

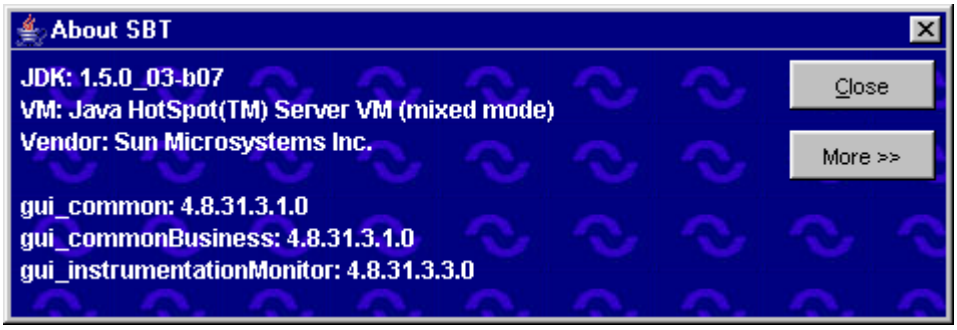
When you launch the System Health Monitor, the **Open Tasks** toolbar will display. From this window you can open tasks, save window settings and perform window controls.

Note: The toolbar remains active during the trading session.



About System Health Monitor

To display system information about The System Health Monitor application, click  . The **About** window will display.



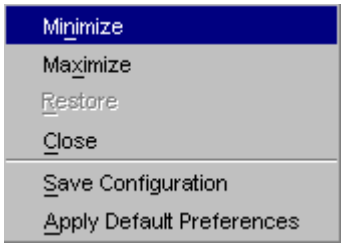
To view specific configuration information, click **More**. Detailed system information will display.

To exit the window, click **Close**.

Open Tasks

Initially, the Open Tasks toolbar will be empty. For each window you create, a task button will appear on the toolbar. From the task button, you can resize or change the configuration name of each window.

To resize the window or to change the default configuration name, click on the window task button. The active window will display. Right mouse click on the task button for the corresponding window. The resize and configuration menu will display.



- **Resize**
  To resize a window:

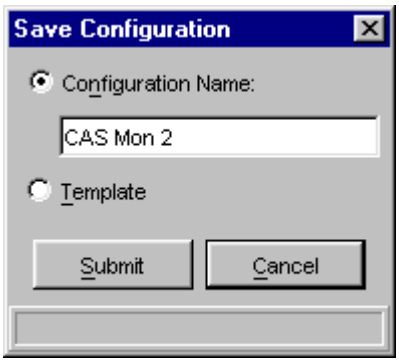
- Highlight the resize choice or
- Hold down the [Alt] key and press the character of the underlined letter in the command.

➢ **Save Configurations**

The system allows you to retain window configurations.

To save the configuration of a window:

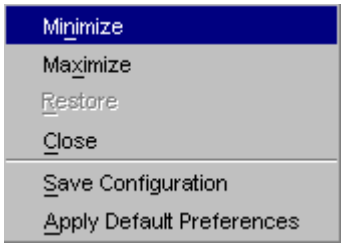
- Right mouse click on the window's task button and select **Save Configuration**. The Save Configuration window will display.



- Select the **Configuration Name** radio button. The text box displays in editable format.
- Enter the configuration name for the window. In the example above, the CAS Monitor window name will be changed to "CAS Mon 2".
- To submit your configuration without setting a template, click **Submit**. Click **Confirm**. The system will save the configuration for the window and the task button will display with the new name.
- To set this configuration to be the default configuration for all windows, select the **Template** radio button. Click **Submit**. Click **Confirm**.
- If you decide not to change the default configuration, click **Cancel** instead of **Submit**.

➢ **Apply Default Preferences**

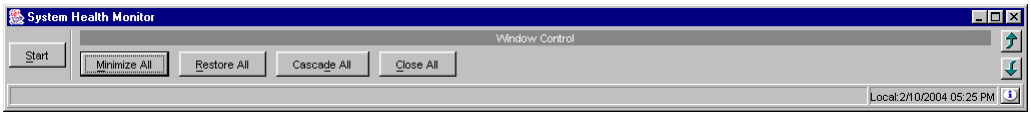
The System Health Monitor application allows you to apply a default preference template to a window that has been already created.



For example, if you previously saved the configuration of a CAS Monitor window, right mouse click on the new CAS Monitor window task button and select **Apply Default Preferences**. The CAS Monitor window settings will be changed to the default preferences for all CAS Monitor windows.

Window Control

The system allows you to organize your windows. From the Open Tasks toolbar, click the  button. The Window Control toolbar will display.



You have the ability to minimize, restore, cascade or close all of your active windows.

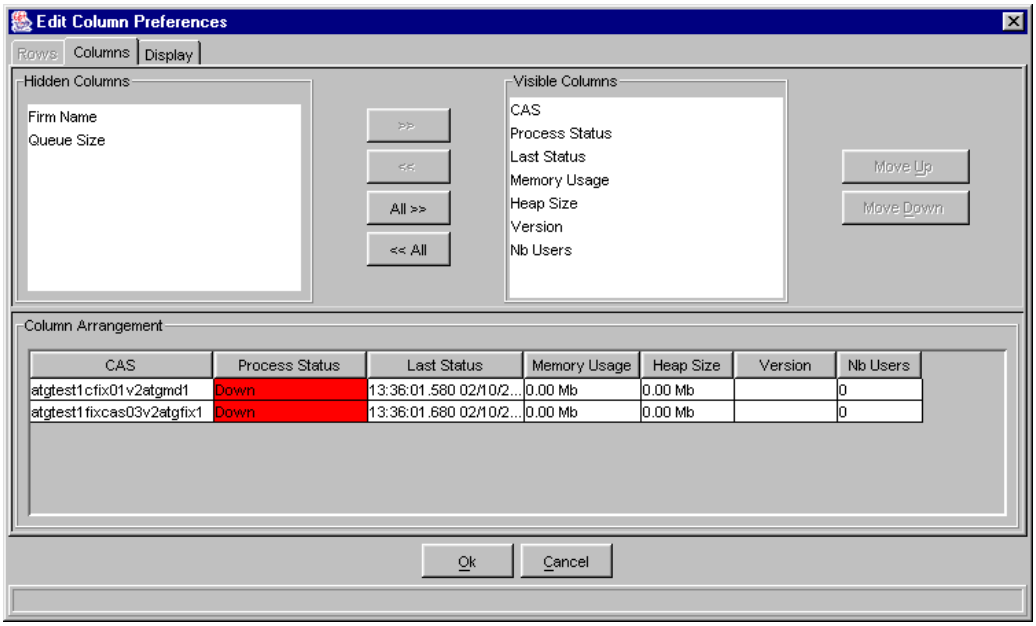
- To minimize all your windows, click **Minimize All** or hold down the [Alt] key and press "M" on your keyboard.
- To restore all your windows, click **Restore All** or hold down the [Alt] key and press "R" on your keyboard.
- To cascade all your windows, click **Cascade All** or hold down the [Alt] key and press "D" on your keyboard.
- To close all your windows, click **Close All** or hold down the [Alt] key and press "C" on your keyboard.

Customizing System Health Monitor Windows

Edit Column Preferences

Several System Health Monitor windows that exhibit data in column format can be customized to display specific information. For example, to modify the CAS Monitoring window, right mouse click on any data row. Select **Edit Preferences**.

The Edit Column Preferences window will display. From this window, you can rearrange column positions and select or deselect columns for viewing.



If there is a data column you do not wish to view:

- Select the column name in the Visible Columns list box. To select a continuous range of columns, hold down the shift key and highlight the column names. Hold down the ctrl key to select individual, non-continuous, column names.
- Click **<<** to move the column name to the Hidden Columns list box.
- Click **Ok** to update the column arrangement.
- If you decide to retain the default layout, click **Cancel**.

To hide all columns:

- Click **<<All** to move all the column names in the Visible Columns to the Hidden Columns list box.
- Click **Ok** to update the column arrangement.

- If you decide to retain the default layout, click **Cancel** instead of Ok.

↳ **Note:** If you hide all columns, you will subsequently have to make some columns visible before the update will take effect.

To display a hidden column:

- Select the column name(s) from the Hidden Columns list box.
- Click **>>** to move the selected column name(s) to the Visible Columns list box.
- Click **Ok** to update the column arrangement.
- If you decide to retain the default layout, click **Cancel** instead of Ok.

To display all hidden columns:

- Click **All>>** to move the column names to the Visible Columns list box.
- Click **Ok** to update the column arrangement.
- If you decide to retain the default layout, click **Cancel** instead of Ok.

You may prefer to view data columns in a different order than the default display.

To move a column:

- Highlight the column name from the Visible Columns list box.
- Click **Move Up** or **Move Down** until you reach the new column location.
- Click **Ok** to update the column arrangement.
- If you decide to retain the default layout, click **Cancel**.

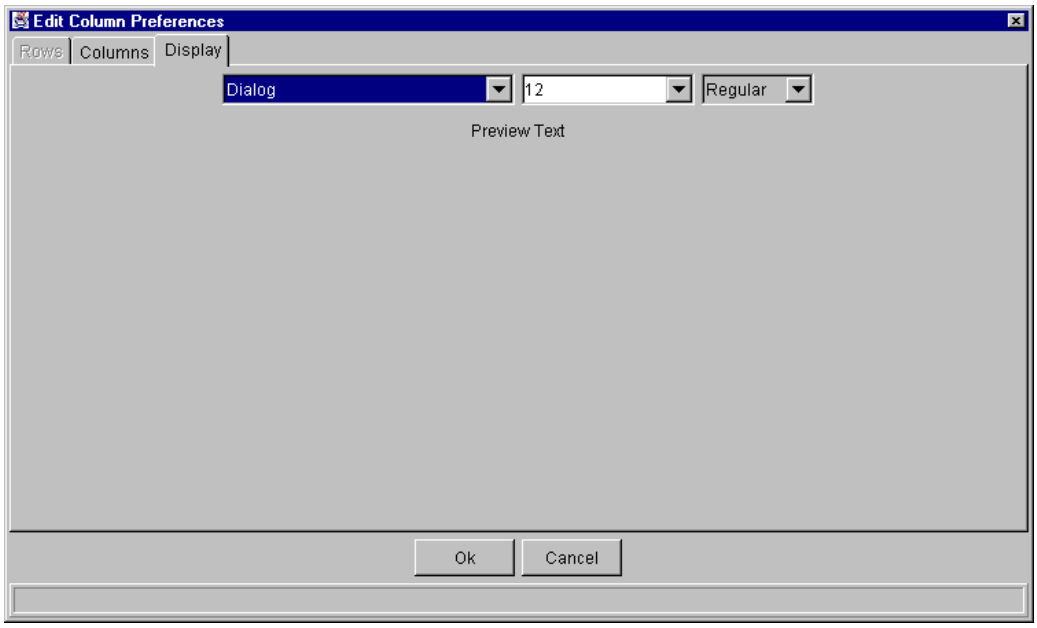
From the Column Arrangement section of the window, the columns can be resized to make viewing information easier for you.

To resize a column:

- Place the mouse on the right edge of the column header (where the column titles are displayed) until it becomes a two-sided arrow.
- Hold the left mouse button down and move it to the desired size.
- Click **Ok** to save the new column size.
- If you decide to retain the default column size, click **Cancel** instead of Ok.

Display

In addition to customizing column settings, the System Health Monitor allows you to adjust the text on your windows. From the Edit Column Preferences window, select the **Display** tab.



Select the font type, font size and font style from the drop down lists. Your selection will display in the **Preview Text** section of the window.

- Click **Ok** to set the new text style.
- If you wish to retain the default text settings, click **Cancel**.

Sizing Windows

The System Health Monitor windows are sizable. That is, they can be resized on the screen to make viewing information easier for you.

Place the mouse on any edge of the window until it becomes a two-sided arrow. Hold the left mouse button down and move it to the desired size.

Resizing a window on the corner will expand or contract it in both directions (i.e. up and down and side-to-side). Resizing it on the side or top/bottom will expand or contract the window only in that one direction.

Windows can also be resized using the center glyph in the upper right corner of the window.

Click the left button (_) to minimize the window. Click the right button (✕) to close the window. The center button is used for sizing.

If ☐ is displayed, clicking it will increase the window size to a full-screen display.
If 🗗 is displayed, clicking it will return the window to its default size.