AlarmWorX64 Viewer
Getting Started

APPLICATION NOTE

August 2014

Description: Guide to configuring an AlarmWorX64 Viewer.

Introduction

AlarmWorX64 manages the alarm and event information of your SCADA application, both for real time and historical alarms and events. In particular, the ICONICS AlarmWorX64 Server generates different types of alarms when configured correctly in the AlarmWorX64 Workbench provider. Once you have configured your server, you should be able to view your alarms using the AlarmWorX64 Viewer.

This application note will walk you through all the necessary steps to configure the AlarmWorX64 Viewer to view alarms you have configured in the ICONICS AlarmWorX64 Server or alarms you have logged in the ICONICS AlarmWorX64 Logger.

> **NOTE:** See the help files for more information on the AlarmWorX64 Server and Logger.

AlarmWorX64 Viewer in Workbench

The AlarmWorX64 Viewer can be launched from inside Workbench using the AlarmWorX64 provider. In the Workbench's Project Explorer, click on the AlarmWorX64 provider to bring up the AlarmWorX64 tree.

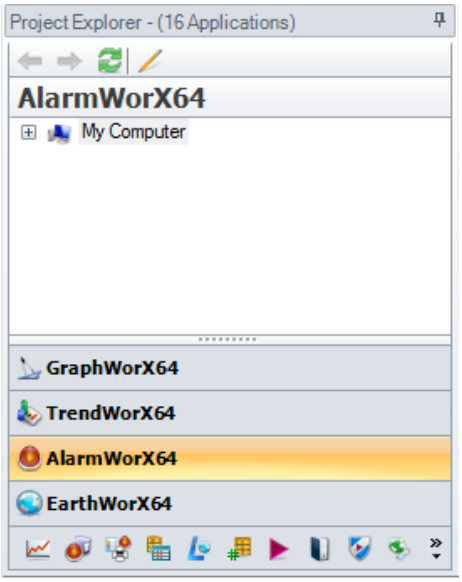


Figure 1 - AlarmWorX64 Provider tree

To create a new AlarmWorX64 Viewer, click on the "New alarms" button in the ribbon, or right-click on My Computer in the tree and select "New Alarms".

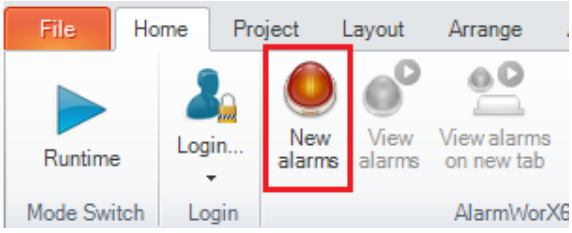


Figure 2 - New Alarms button in the ribbon

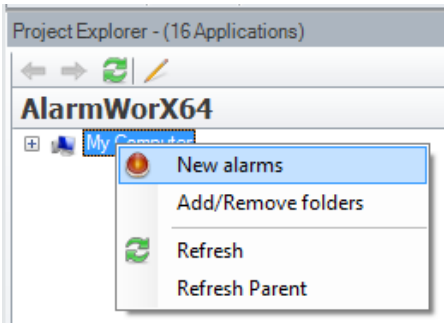


Figure 3 - New Alarms in right-click menu

AlarmWorX64 Viewer in GraphWorX64

The AlarmWorX64 Viewer can also be embedded inside of a GraphWorX64 display. In GraphWorX64, go to the Controls ribbon and click on the AlarmWorX64 Viewer button, then click and drag in your display to create an AlarmWorX64 Viewer control.

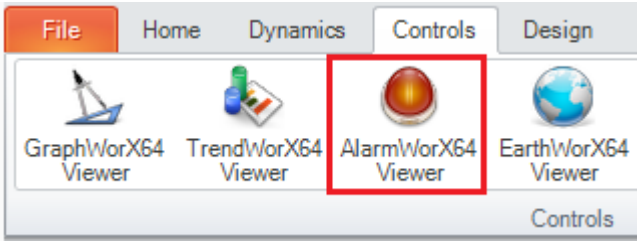


Figure 4 - AlarmWorX64 Viewer in the Controls ribbon

The rest of this application note assumes you are working with an AlarmWorX64 Viewer from inside of a GraphWorX64 display, but the steps will be very similar if you are working inside of Workbench instead.

Viewing Real Time Alarms

Double-click on the AlarmWorX64 Viewer (or click on the Viewer, then click "Open" on the "AlarmWorX64 Configuration" tab if you are in Workbench) to bring up the "Configure your Control" dialog. Select the Grid item in the tree and go to the Source tab. It should look something like Figure 5.

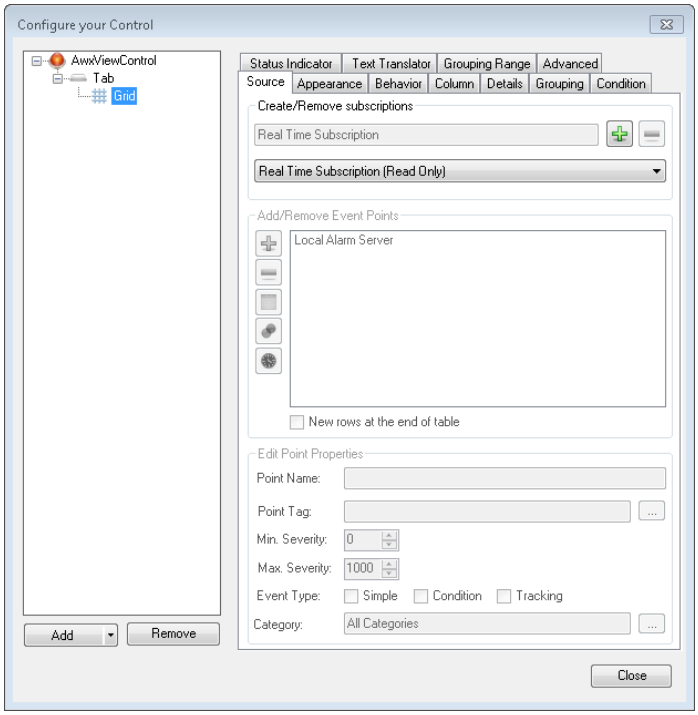
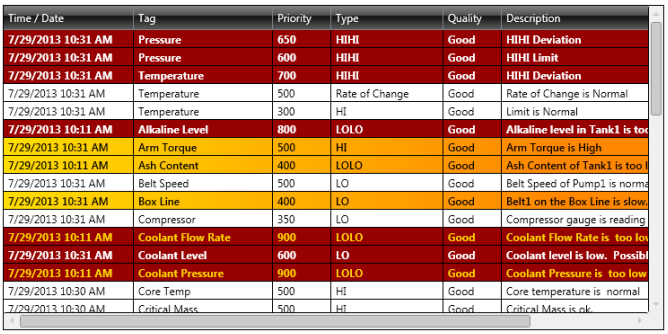


Figure 5 - Source tab

As you can see, the AlarmWorX64 Viewer is subscribed to the local alarm server by default. This means the AlarmWorX64 Viewer is functional out of the box. If you were to make no changes to a brand new AlarmWorX64 Viewer and go into runtime you would be able to see your current alarms from the local AlarmWorX64 Server.

You can choose from three default read-only subscriptions or create your own. The "Real Time Subscription (Read Only)" will show you real time local alarms, the "Event Subscription (Read Only)" will show you real time local events, and the "Historical Subscription (Read Only)" will show you locally logged historical alarms and events. For now, we will leave this with the default Real Time Subscription.

Without changing anything here, if you close the configuration dialog and go into Runtime you should see your current live alarms from your AlarmWorX64 Server.



Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 10:31 AM	Pressure	650	HIHI	Good	HIHI Deviation
7/29/2013 10:31 AM	Pressure	600	HIHI	Good	HIHI Limit
7/29/2013 10:31 AM	Temperature	700	HIHI	Good	HIHI Deviation
7/29/2013 10:31 AM	Temperature	500	Rate of Change	Good	Rate of Change is Normal
7/29/2013 10:31 AM	Temperature	300	HI	Good	Limit is Normal
7/29/2013 10:11 AM	Alkaline Level	800	LOLO	Good	Alkaline level in Tank1 is too
7/29/2013 10:31 AM	Arm Torque	500	HI	Good	Arm Torque is High
7/29/2013 10:11 AM	Ash Content	400	LOLO	Good	Ash Content of Tank1 is too l
7/29/2013 10:31 AM	Belt Speed	500	LO	Good	Belt Speed of Pump1 is norma
7/29/2013 10:31 AM	Box Line	400	LO	Good	Belt1 on the Box Line is slow.
7/29/2013 10:31 AM	Compressor	350	LO	Good	Compressor gauge is reading
7/29/2013 10:11 AM	Coolant Flow Rate	900	LOLO	Good	Coolant Flow Rate is too lo
7/29/2013 10:31 AM	Coolant Level	600	LO	Good	Coolant level is low. Possibl
7/29/2013 10:11 AM	Coolant Pressure	900	LOLO	Good	Coolant Pressure is too low
7/29/2013 10:30 AM	Core Temp	500	HI	Good	Core temperature is normal
7/29/2013 10:30 AM	Critical Mass	500	HI	Good	Critical Mass is ok.

Figure 6 - Live alarms

Viewing Historical Alarms

Go back into Configure Mode and double-click on the AlarmWorX64 Viewer again (or click "Open" on the "AlarmWorX64 Configuration" tab if you are in Workbench). Select the Grid item in the tree again, and go back to the Source tab. Select "Historical Subscription (Read Only)". This will subscribe the viewer to your local AlarmWorX64 Logger to show you your logged historical alarms. Go into runtime and you will see any alarms you have logged.

> **NOTE:** If you have not started the AlarmWorX64 Logger then you may not see any data here. See the help files for more information on how to configure and start the AlarmWorX64 Logger.

Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 10:37 AM	Pressure	600	HI	Good	High limit.
7/29/2013 10:37 AM	Temperature	500	Rate of Change	Good	Rate of Change Alarm
7/29/2013 10:37 AM	Pressure	650	HIHI	Good	Deviation is Normal
7/29/2013 10:37 AM	Humidity	700	HI	Good	Core humidity is high.
7/29/2013 10:37 AM	Box Line	400	LO	Good	Belt1 on the Box Line is operating properly.
7/29/2013 10:37 AM	Arm Torque	500	HI	Good	Arm Torque is High
7/29/2013 10:37 AM	Coolant Level	600	LO	Good	Coolant level is low. Possible leak?
7/29/2013 10:37 AM	Pressure	600	HIHI	Good	HIHI Limit
7/29/2013 10:37 AM	Temperature	700	HIHI	Good	HIHI Deviation
7/29/2013 10:37 AM	Pressure	650	HIHI	Good	HIHI Deviation
7/29/2013 10:37 AM	Humidity	400	LO	Good	Core humidity is normal.
7/29/2013 10:37 AM	Pressure	400	HI	Good	HI Limit
7/29/2013 10:37 AM	Pressure	400	HI	Good	HI Deviation
7/29/2013 10:37 AM	Level Gauge	300	LO	Good	Level gauge is normal.
7/29/2013 10:36 AM	Tank PSI	625	LOLO	Good	The PSI in Tank1 is normal.
7/29/2013 10:36 AM	Humidity	400	LO	Good	Core humidity is low.

Figure 7 - Historical Alarms

Grids, Charts, Lists, and Tabs

In the configuration tree you'll note that a default AlarmWorX64 Viewer has one Tab item and one Grid item. Grids, charts, lists, and tabs are ways to organize your AlarmWorX64 Viewer to show multiple sets of alarms at a time.

Grids

Right-click on the Tab item and select Add → Grid. This will add a new grid item to the existing tab. Right-click on the top grid, select Rename, and name it "RealTime". Right-click on the bottom grid, select Rename, and name it "Historical".

Click on the RealTime grid, go to the Source tab, and choose "Real Time Subscription (Read Only)" as the subscription. Repeat this for the Historical grid, but choose "Historical Subscription (Read Only)" as the subscription.

There are now more options to customize the Details of your Grids. Click on one of your grids, then on the Details tab. You can add new rows with details that can contain Global and Language aliases. To have your Grid scroll through all of your Details, check the "Enable Marquee Animation" box under the Timing section.

Click Close and go into Runtime mode. You should now have two sections in your AlarmWorX64 Viewer. The top section is showing real time alarms and the bottom section is showing historical alarms. To show your Details, click on a Grid, then the Details button in the Ribbon.

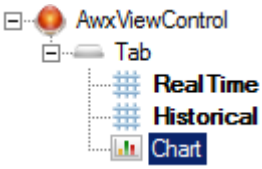
Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 9:53 AM	Coolant Level	100	LO	Good	Coolant level is low. Possible leak?
7/29/2013 8:47 AM	/+Pressure+/	250	HIHI	Good	Belt Speed of Pump1 is normal
7/29/2013 10:22 AM	Belt Speed	50	LOLO	Good	The PSI in Tank1 is normal.
7/29/2013 10:15 AM	Tank PSI	800	LOLO	Good	Level gauge is normal.
7/29/2013 7:31 AM	Level Gauge	750	LOLO	Good	Compressor gauge is reading normal
7/29/2013 10:38 AM	Compressor	700	LO	Good	Core humidity is normal.
7/29/2013 9:39 AM	Humidity	850	LOLO	Good	Belt1 on the Box Line is slow.

Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 10:02 AM	Coolant Level	100	LO	Good	Coolant level is low. Possible leak?
7/29/2013 10:43 AM	/+Pressure+/	250	HIHI	Good	Belt Speed of Pump1 is normal
7/29/2013 9:02 AM	Belt Speed	50	LOLO	Good	The PSI in Tank1 is normal.
7/29/2013 8:34 AM	Tank PSI	800	LOLO	Good	Level gauge is normal.
7/29/2013 9:37 AM	Level Gauge	750	LOLO	Good	Compressor gauge is reading normal
7/29/2013 9:33 AM	Compressor	700	LO	Good	Core humidity is normal.
7/29/2013 10:23 AM	Humidity	850	LOLO	Good	Belt1 on the Box Line is slow.

Figure 8 - Two grids, real time and historical

Charts

Charts are a more graphical way of presenting and analyzing your alarm data. They allow you to see your alarms as bar graphs or pie charts.

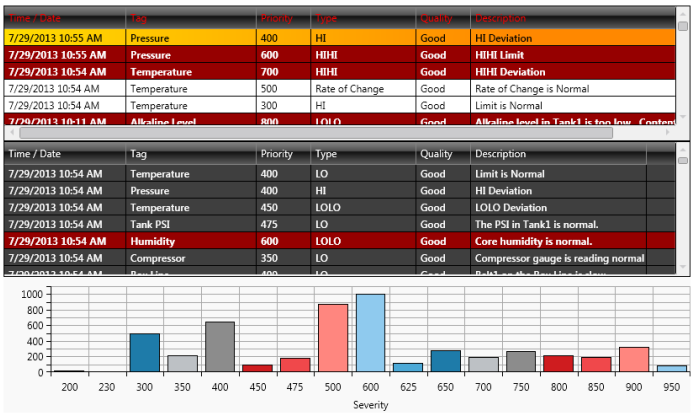


Go back into configure mode and enter the "Configure your Control" dialog. Right-click on the tab again and select "Add → Chart". Select the new chart, go to the Source tab, and pick "Historical Subscription (Read Only)" as the subscription.

NOTE: If you do not have any historical alarms you can pick "Real Time Subscription (Read Only)" as the subscription instead.

Go to the Axis tab. Pick "Severity" for "Field Analyzed". Feel free to customize other settings in the chart, including settings on separate tabs.

Click Close and go into Runtime mode. Your AlarmWorX64 Viewer should now be split into three sections, two grids and a chart.



Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 10:55 AM	Pressure	400	HI	Good	HI Deviation
7/29/2013 10:55 AM	Pressure	600	HIHI	Good	HIHI Limit
7/29/2013 10:54 AM	Temperature	700	HIHI	Good	HIHI Deviation
7/29/2013 10:54 AM	Temperature	500	Rate of Change	Good	Rate of Change is Normal
7/29/2013 10:54 AM	Temperature	300	HI	Good	Limit is Normal

Time / Date	Tag	Priority	Type	Quality	Description
7/29/2013 10:54 AM	Temperature	400	LO	Good	Limit is Normal
7/29/2013 10:54 AM	Pressure	400	HI	Good	HI Deviation
7/29/2013 10:54 AM	Temperature	450	LOLO	Good	LOLO Deviation
7/29/2013 10:54 AM	Tank PSI	475	LO	Good	The PSI in Tank1 is normal.
7/29/2013 10:54 AM	Humidity	600	LOLO	Good	Core humidity is normal.
7/29/2013 10:54 AM	Compressor	350	LO	Good	Compressor gauge is reading normal

Figure 9 - Two grids and a chart

There are also runtime capabilities for charts. The "Enable Cursor" button allows you to zoom in and out on a chart, and the "Enable Drill Down" button allows you to drill down to a finer level of detail. For example, in your severity chart if you click "Enable Drill Down" and then double click on one of the columns, the chart will show all of the alarms with that severity level. Double click the chart again and it will return to showing the original severity chart. Both buttons are located on the Ribbon, as shown in Figure 10.

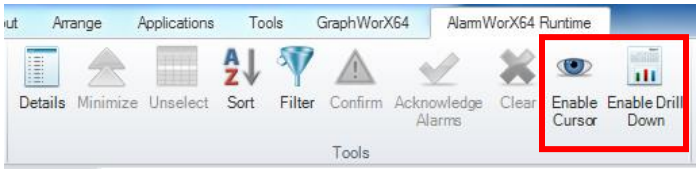
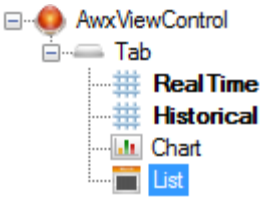


Figure 10 - New buttons in the Ribbon

To show or hide the legend for a chart during Runtime, simply click the chart, and then click the Details button in the Ribbon.

Lists



Lists are a new and simple way to present your alarm data. Go back into configure mode and enter the "Configure your Control" dialog. Right-click on the tab again and select "Add → List". Select the new list, go to the Source tab, and pick "Real Time Subscription (Read Only)" as the subscription.

Click Close and go into Runtime mode. Your AlarmWorX64 Viewer should now be split into four sections: two grids, a chart, and a list.

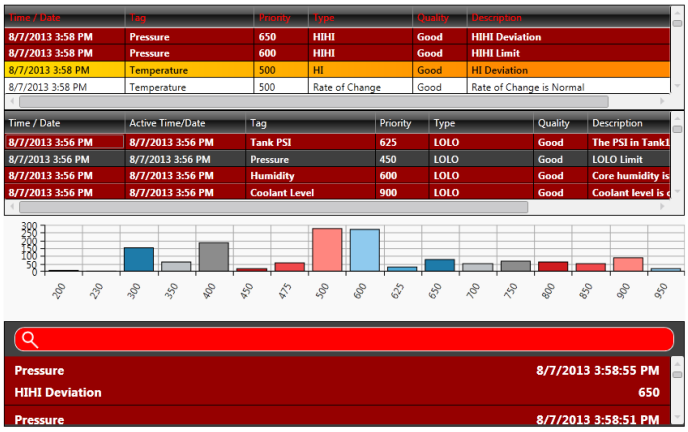
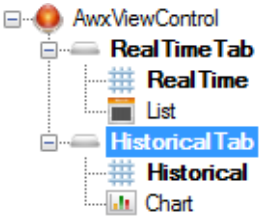


Figure 11 - Two grids, a chart, and a list

Lists are mobile friendly and contain three main areas: a search area at the top, and headers and details areas for each alarm in the list. If you type something into the search area and press the "Enter" key, the list will display only the alarms containing your search (for example, "MMX", without quotes). If you click on the header for an alarm, it will expand to show the details area.

Tabs

The AlarmWorX64 Viewer is getting a little crowded. To help present a large amount of data in a small space you can add more tabs to your viewer. Every viewer has one tab by default, but the tabs are not visible unless there is more than one tab.



Go back to configure mode and enter the "Configure your Control" dialog. Right-click on the AwxViewControl at the top of the tree and select Add → Tab. Right-click on the top tab (the original tab), select Rename, and name it "RealTimeTab". Right-click on the bottom tab (the new one), select Rename, and name it "HistoricalTab".

Click and drag the Historical grid from the RealTimeTab to the HistoricalTab. Drag the Chart to the Historical Tab as well. The HistoricalTab already had one grid in it when we created it (named "Grid"). Right-click on that grid and select Remove to delete it.

Select the RealTimeTab. In the "Title" section, type "Real Time Alarms" into the "Text" field. Select the HistoricalTab and type "Historical Alarms" into the "Text" field. Feel free to change the other properties of your tabs.

Hit the Close button and go into runtime. Now you should have two tabs, one for historical alarms and one for real time alarms. The historical tab has both a grid and a chart. You can click between these tabs to easily switch between your real time and historical alarms.

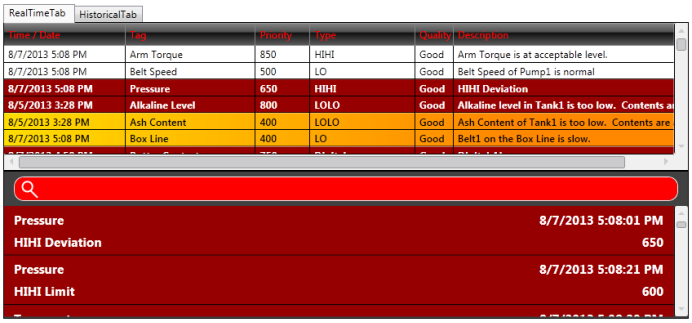


Figure 12 - Two tabs

Customizing Columns

The AlarmWorX64 Viewer comes preconfigured with a set of useful columns, but it is possible to reorder or edit those columns or choose different columns to display.

Column Visibility

Go into configure mode and bring up the configuration dialog, select the RealTime grid, and go to the Column tab. You'll see a set of columns in green and gray. The columns in green are currently visible, and the columns in gray are not visible.

Select the 'NewState' item. In the Column Properties section at the bottom, check the "Visible" box, set the Index to be 1, and then click the green checkmark button to apply the changes. The 'NewState' item will turn green and jump to the top of the list, just below the Time/Date item.

Click Close and go into runtime. You should now see a new column for the 'NewState' property of your alarms.

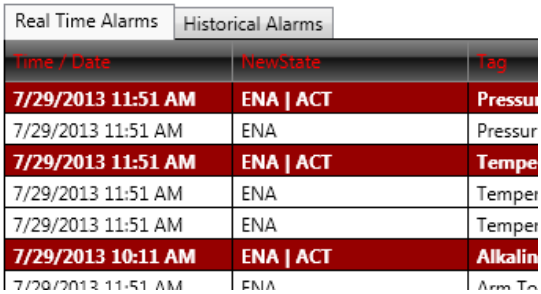


Figure 13 - NewState column

You can also edit field properties in Grids and Lists so that columns in Grids and fields in Lists have Trim Text or Wrap Text enabled. For Grids, go to the Column tab, and for lists, go to the Details tab. The Trim Text and Wrap Text options are in the Column Properties section at the bottom of these tabs.

Virtual Fields

With Virtual Fields, it is now possible to create your own fields to be shown in the AlarmWorX64 Viewer. Virtual Fields can be added to Grids, Charts, or Lists.

In order to use Virtual Fields, you need to add a New Subscription to the Grid, Chart, or List you would like to use. Go to the Source tab, and click the +"Add new Subscription" button in the Create/Remove subscriptions section. Follow the instructions for creating a subscription. After you have created your subscription, click the "Edit Fields" button in the Add/Remove Event Points section, as shown in Figure 14.

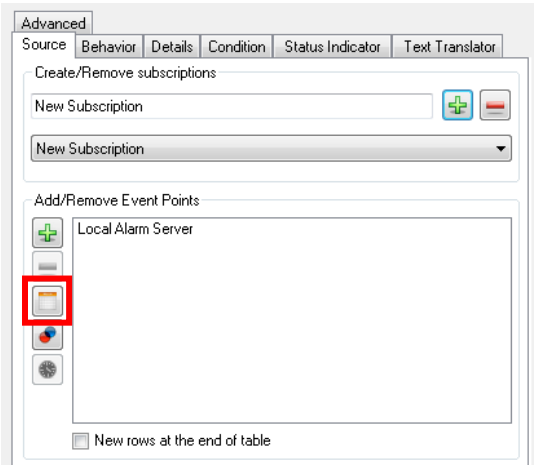


Figure 14 - Edit Fields button

The "Add/Remove fields from the subscription" dialog box opens. Click on the Virtual Fields tab and customize two Virtual Fields. The expression for a Virtual Field can contain text, values from any standard column, and global and language aliases. Make sure to choose an appropriate "Field Type" for each Virtual Field. Two example Virtual Fields are shown in Figure 15.

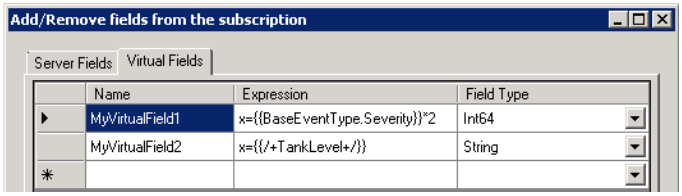


Figure 15 - Example Virtual Fields

After you have finished customizing your Virtual Fields, click OK. Close the Configure your Control dialog and go into Runtime. Your Virtual Fields should appear as shown in Figure 16.

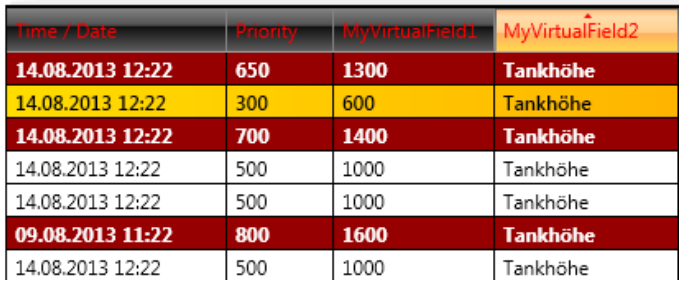


Figure 16 - Virtual Fields in Runtime

Filters

You can use filters to reduce the number of alarms visible in your viewer at a time. You can also configure a group of filters for your operators to pick from during runtime.

Go into configure mode and bring up the configuration dialog, select the RealTime grid, and go to the Behavior tab. Hit the "..." button near "Configure default client side filter(s)", and then the green plus button in the "Select a filter from the list" dialog. This will bring up the "Configure Alarm Filter" dialog. Name this filter "HiHi" and check the "HiHi" box in the Sub Conditions section, then hit OK. This filter will only show HiHi alarms.

Click the green plus button again to add a second filter. Name this one "High Severity". Check the box for "Severity (Min/Max)" and type 800 into the first severity box. Click OK. This filter will only show alarms with a severity between 800 and 1000.

In the "Select a filter from the list" dialog, check the box by the "HiHi" filter and hit OK. Hit Close and go into runtime.

You should now see only your HiHi alarms on the Real Time Alarms tab. In Runtime mode, right-click somewhere on the viewer and select "Filters". Check "High Severity", uncheck "HiHi", and click OK. You should now see only alarms with a priority of 800 or higher.

It is also possible to combine filters during Runtime mode. If you select both filters, you should see alarms that are either HiHi or have a severity between 800 and 1000.

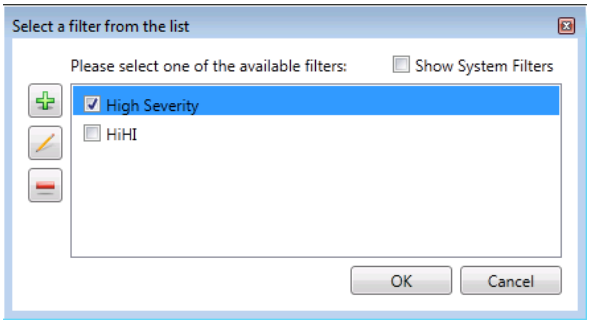


Figure 17 - Filter selection dialog