



# Proficiency CIMPPLICITY 11.1

Trend Charts



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# Chapter 1. Trend Control Configuration

## *About Trends*

CIMPLICITY provides you with extensive capabilities to trend data that is in several different formats.

You can trend:

- Runtime values
- Data from a CIMPLICITY Database Logger
- Data from a .csv file
- Data from a reference file that was created during runtime and can be recalled and displayed. This reference trend can be displayed and compared with other comparable data.
- Arrays
- Historian Lines

CIMPLICITY provides even more capability by letting you display a combination of runtime values and logged data in the same trend chart.

You, or a user, can:

- Display trends with:
  - Multiple Y-axes so a user can display different parameter types in the same chart
  - Data from different time periods so a user can compare different production periods in the same chart.
  - Different time duration so that a user can compare production periods of differing length in the same chart.
  - Auto update enabled so that the most recently logged data is automatically retrieved from disk while the trend is displayed.
  - Zoom and pan through logged data to locate data of particular interest.
  - Compare static values with a slider that updates a legend with actual values.
  - Display long time periods in compressed format where the plotted data is the average, minimum, maximum, first, or last element from a sample.

## *Trend Chart Display*

### *Trend Chart Display*

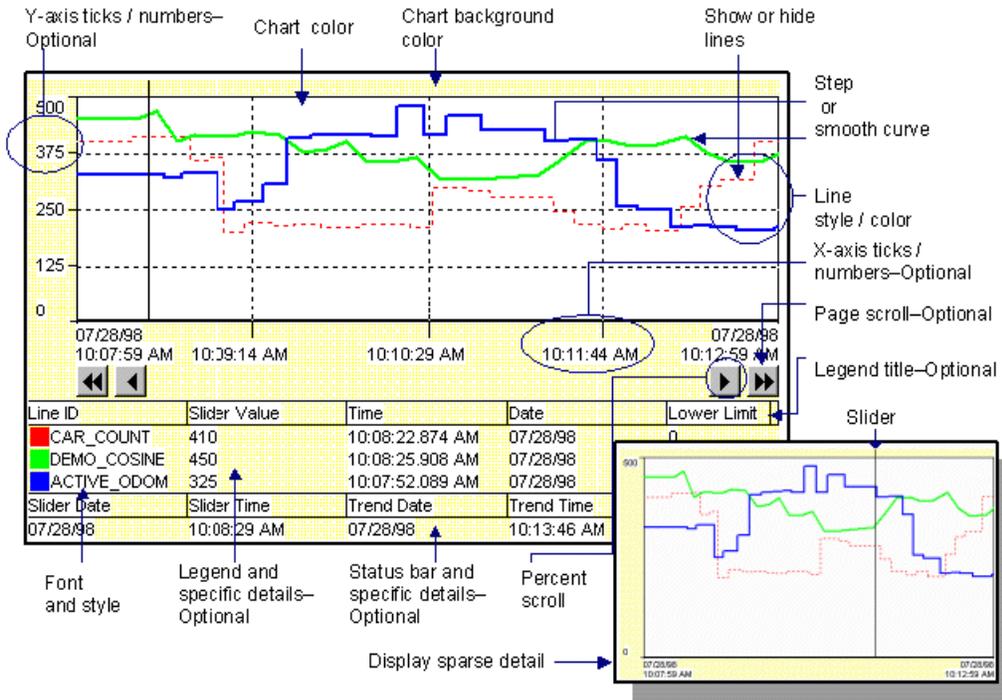
You have considerable control over what your trend control chart displays and its appearance.

For information, you can:

- Create a trend chart that displays:
- Only the trend lines you choose to display
- Minimum detail so a user can quickly view static values from a data source, based on time
- All the details a user needs to fully analyze any of the trend lines
- Allow a runtime user, for the one runtime session, specify what
- Lines should display
- Details should display

For display, you can choose the colors; line types and fonts that you think will work best. You can also let a runtime user make changes during their runtime session.

Trend Chart Configuration Options



*Trend Features to Display or Hide*

You can choose to display or hide:

Display feature	Choose to Display or Hide
Ticks and numbers	For the Y-axis

<b>Display feature</b>	<b>Choose to Display or Hide</b>
	For the X-axis
Grid	Gridlines
Lines	Each line
Legend	Entire legend
Legend features	Specific features:
	Title
	Line ID
	Y value at slider
	Engineering units
	Time at slider
	Date at slider
	Y-axis limits
	Current point value
	Array status
	Autoupdate status
Status bar	Entire status bar
Status bar features	Specific features:
	Status line
	Current date
	Current time
	Status title
	Slider date
	Slider time

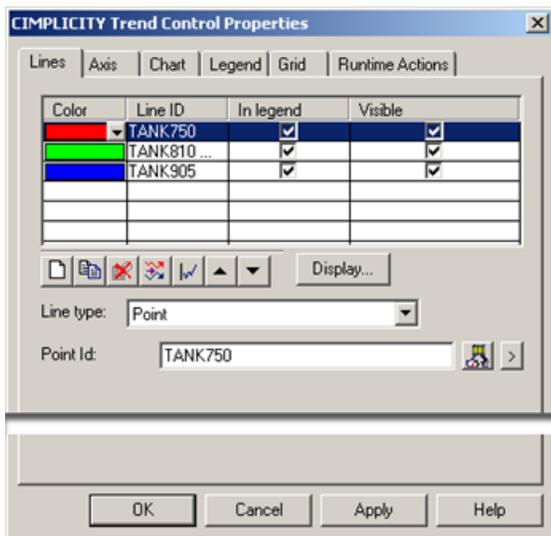
### *Trend Display Features*

You can also specify how the chart's many display features will appear.

<b>Display feature</b>	<b>Other Configuration Options</b>
<a href="#">Chart area (page 71)</a>	Choose the color

Display feature	Other Configuration Options
<a href="#">Chart background (page 71)</a>	Choose the color
<a href="#">Grid (page 84)</a>	The number of horizontal and /or vertical lines
<a href="#">Lines (page 49)</a>	Specify style and color.
<a href="#">Percent scroll buttons (page 75)</a>	Specify the percent a line will scroll (forward / backward) when the buttons are pressed
<a href="#">Page scroll buttons (page 71)</a>	Specify to display or hide them
<a href="#">Fonts (page 10)</a>	Choose font, style and size

You configure this powerful feature in CimEdit and display it in CimView. Because it is a CIMPLICITY ActiveX control, it has an easy to use CIMPLICITY Trend Control Properties dialog box. On six straightforward tabs, you can customize the trend chart exactly to your specifications.



## *Color and Font Choices on a Trend Chart*

### Color and Font Choices on a Trend Chart

You can specify color or font characteristics in several parts of a Trend Chart.

The palettes and font dialog box are the same that are used in CimEdit.

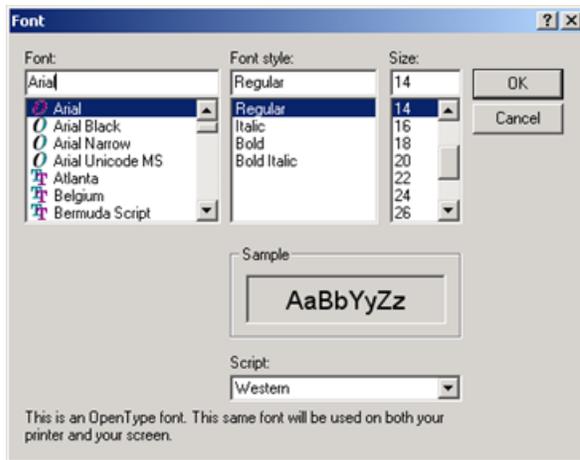
- Available color palettes.
- Font dialog box.

## Font Dialog Box

1. Choose one of the following:

- Click the Font button  on the Axis tab or
- Click Font on the Legend tab.

The Font dialog box opens.



2. Select the font. If you use TrueType fonts, users can resize a screen in CimView and still have the text be displayed in proportion to the rest of the objects on the screen.
3. Select the font style and size.

## *Runtime Action Options*

### *Runtime Actions Options*

During runtime if you, the trend chart designer allow it, a user can [change \(page 11\)](#) the amount of detail being viewed and even change the way it is displayed.

**!** **Important:** If using trending on viewer computers, the times on the viewers must be synchronized with the servers. It is your responsibility to ensure that the computer times are synchronized. There are a variety of commercial products available to maintain time synchronization between computers. If you choose to automatically synchronize your clocks do so at any time other than midnight."

In addition, a runtime user can easily:

- Magnify (Zoom into) a specific area of the trend chart.
- Analyze data at a selected point in time.
- Scroll to data not currently on the chart.

## *Change Chart Properties during Runtime*

1. Double click the trend chart. The [CIMPLICITY Trend Control Properties \(page 20\)](#) dialog box appears.
2. Select the tab that contains the property's configuration specifications.
3. Change the property's configuration.
4. Apply the change by doing one of the following:
  - Move to a different tab in the dialog box. The changes made on the previous tab take effect.
  - Click Apply. Changes on the current tab take effect.
  - Click OK. All changes take effect and the CIMPLICITY Trend Control Properties dialog box closes.

 **Note:** The changes you make remain in effect only while the trend chart is being displayed. If you close the CimView window displaying the trend, then reopen it, the trend reverts to the original properties configured for it in CimEdit.

## *Zoom into a Specific Area*

1. Place the mouse cursor in the chart area at one corner of the area you wish to examine in more detail.
2. Hold down the left mouse key and slide the mouse cursor diagonally, making a rectangle enclosing the area you wish to examine.
3. Lift the mouse button.

The chart will be redrawn to display the area you selected in a scale that fits the chart area.

 **Note:** While you are zoomed in, the auto update and run-time timers are ignored. The zoomed portion of the screen remains unchanged until you zoom out again, at which point new values are drawn and the timers are used again.

**To return to your normal chart display:**

4. Place the mouse cursor in the chart area.
5. Hold down the left mouse key and slide the mouse out of the trend control area.
6. Lift the mouse button

The chart redraws in normal mode.

## *Analyze Data at a Selected Point in Time*

A slider is a vertical line that extends over the chart area. Every trend control chart has one. If the chart legend displays the Y values, dates, and times, they will be updated as the slider moves across the chart.

Do one of the following.

### **Method 1. Move the slider**

Point to the slider (the cursor changes to  when you are in position) and drag the slider to location you want.

### **Method 2. Attach the chart slider to the most recent update data:**

Drag the slider off the right edge of the chart.

The slider will then attach to the most recently plotted data and move as new values are plotted.

### **Method 3. Turn off the most recent update mode**

Do one of the following:

- Drag the slider to a new position.
- Zoom into an area.
- Display the CIMPLICITY Trend Control dialog box.

## *Scroll Lines Forward and Backward*

### **Scroll Lines Forward and Backward**

Trending provides four scroll buttons, two forward and two backward, to make it easy for the user to view past trending information and to return to current trending.

**To scroll one page:**

Use the   buttons to scroll backward or forward one page on the chart.

To scroll a percent of the visible chart:

Use the   buttons to move the line back or forward a specified percent.

The percent is specified by the trend control designer in the CIMPLICITY Trend Control Properties dialog box. (in the **Scroll Percentage** field in the Advanced dialog box on the Chart property tab).

The type of data line you are scrolling determines how much information you see when you scroll. Scrolling also behaves differently for non-array and array data.

- Non-array data scrolling.
- Array data scrolling.

**Non-array Data Scrolling**

The type of data line you are scrolling determines how much information you see when you scroll. Scrolling also behaves differently for non-array and array data.

<b>Line Scrolled</b>	<b>You will see</b>
Point data from the current time:	
Back to the past	Only runtime data that has been accumulated up to one chart page worth of data. You can continue scrolling but no data is displayed where it is not available.
Into the future	No data because it has not been received yet.
Logged point data:	
Back to the past	Runtime data that has been accumulated up to one chart page worth of data. Whenever runtime data is not available, logged data is displayed, if available.
Into the future	No data because it has not been received yet.
Logged or CSV data:	
Back to the past	Data if it is available from the database or the CSV file.
Into the future	Only logged data if it is available for that future time span

**Array Data Scrolling**

1. Full arrays are shown with the first array element drawn at the left edge of the chart.
2. The elements of the array are equally spaced across the length of the chart.
3. If an array line:
  - a. Is in its own X-axis, the:
    - Axis labels displayed are the element indexes rather than based on the time span.
    - Time of the array values can be seen on the legend.
  - a. Shares it's X-axis with another line, the axis labels displayed are based on the time span.
4. The space between the last element and the end of the chart is equal to the space between the first two elements.

The type of array line you are scrolling determines how much information you see when you scroll. Scrolling also behaves differently for non-array and array data.

<b>Array Line Scrolled</b>	<b>You will see</b>
Point arrays (from the current time):	
Current	Available array values that are closest to the new X-axis end time.
Back to the past	No values will be displayed in a point line if the scroll is for the entire duration of the chart.
Into the future	No data because it has not been received yet.
Logged point arrays:	
Current	Available array values that are closest to the new X-axis end time, giving preference to runtime data.
Back to the past	Array (logged) values if they are available in the database if the scroll is for the entire duration of the chart,
Into the future	No data because it has not been received yet.
Logged array data:	
Current	Available array values that are closest to the new X-axis end time.
Back to the past	Array values if they are in the database.
Into the future	Only logged data if it is available for that future time span.

## *Configure a Trend Chart*

### *Configure a Trend Chart*

Trend Control charts that you configure in CimEdit are viewed during runtime in CimView.

Steps to configure the Trend control are as follows.

<a href="#">Step 1 (page 15)</a>	Place a Trend Control on a CimEdit screen.
<a href="#">Step 2 (page 17)</a>	Resize a Trend chart.
<a href="#">Step 3 (page 19)</a>	Open the CIMPLICITY Trend Chart Properties dialog box.
<a href="#">Step 4 (page 21)</a>	Add a Trend line.
<a href="#">Step 5 (page 49)</a>	Specify line display features.
<a href="#">Step 6 (page 59)</a>	Configure chart axes.
<a href="#">Step 7 (page 71)</a>	Configure chart properties.
<a href="#">Step 8 (page 78)</a>	Configure Legend properties.
<a href="#">Step 9 (page 84)</a>	Configure grid properties.
<a href="#">Step 10 (page 87)</a>	Configure runtime actions.

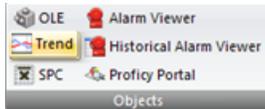
### *Step 1. Place a Trend Control on a CimEdit Screen*

Do any of the following to place a Trend control on a CimEdit screen.

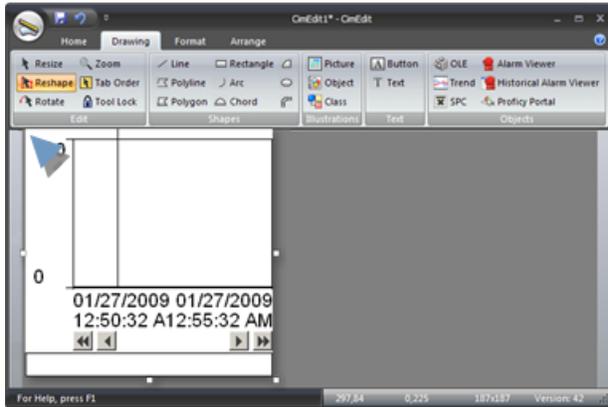
- Trend Control button
- OLE button.

Trend Control button

Click Trend on the in the Drawing>Objects group on the CimEdit Ribbon bar.

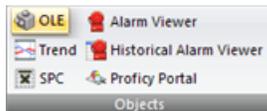


Result: A Trend control is placed on the CimEdit screen. The top left corner is located at the top left corner of the screen.



OLE button

1. Click OLE on the in the Drawing>Objects group on the CimEdit Ribbon bar.

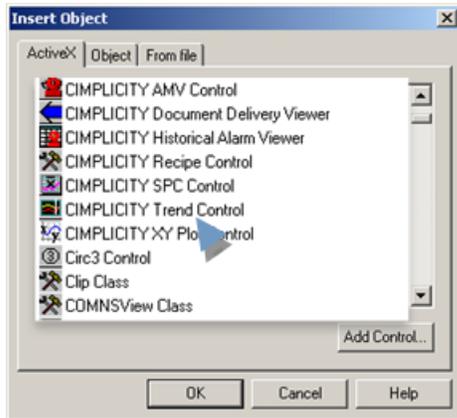


An ActiveX Placement cursor displays on the CimEdit screen.

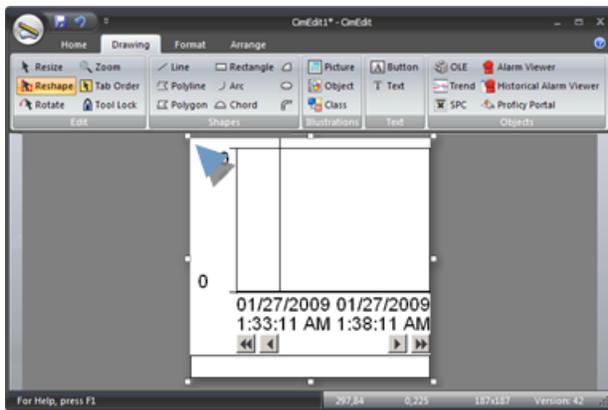
2. Place the ActiveX Placement cursor where you want the top left corner of the control to be located.

The Insert Object dialog box opens.

3. Double-click the CIMPLICITY Trend Control.



The Trend control is placed on the CimEdit screen in the location you selected.



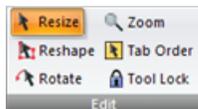
## Step 2. Resize a new Trend Chart Control

Do one of the following

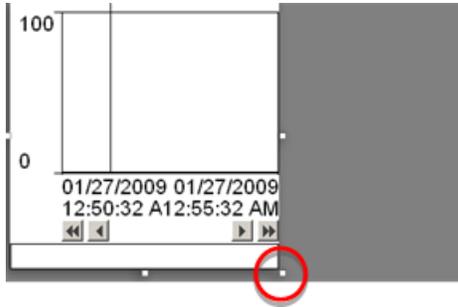
- Quickly resize the Trend Control.
- Precise dimensions for the Trend Control.

Quickly Resize the Trend Control

1. Click Resize in the Drawing>Edit group on the CimEdit Ribbon bar.

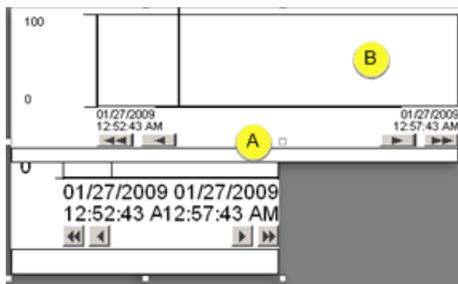


2. Click one of the object's handles and move it to enlarge or reduce the Trend control size.



3. Hold the mouse button down while you move the handle.

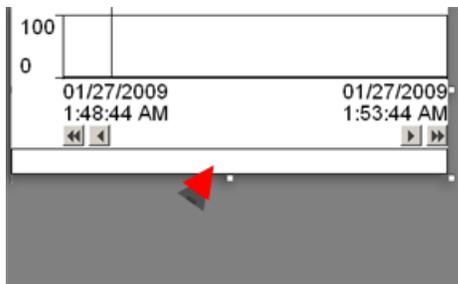
**Note:** The screen displays the following.



A	The original size displays within the original handles during the re-sizing process.
B	The Trend's new size display follows the cursor.

4. Release the mouse button.

**Result:** The Trend control displays in the new size.

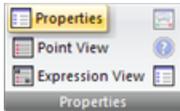


Precise dimensions for the Trend control

5. Select the Trend control.

6. Do one of the following.

- Click Properties in the Home>Properties group on the CimEdit Ribbon bar.

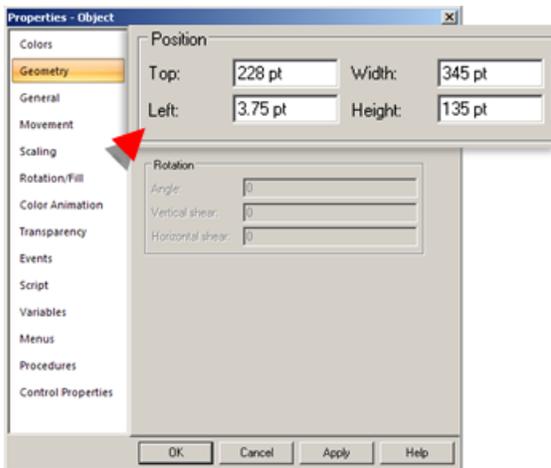


- Click the right-mouse button on the Trend control; select Properties on the Popup menu.

The CimEdit Properties - Object dialog box opens when you use either method.

7. Select **Geometry**.

8. Enter the following.



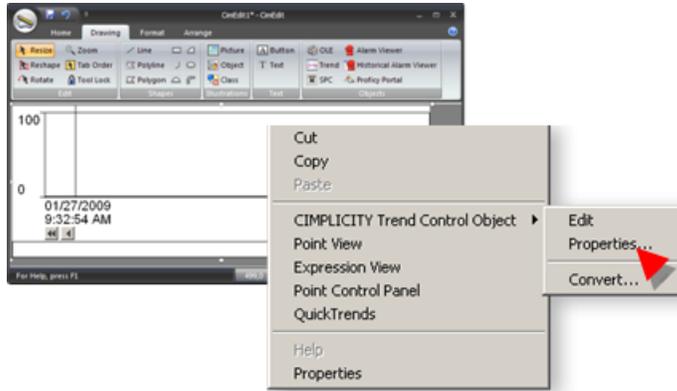
Field	Description
Top	Number of points starting from the bottom of the screen where the Trend Control top is located.
Width	Width of the object in points.
Left	Number of points starting from the left of the screen where the left side of the Trend Control is located.
Height	Height of the object in points.

**i Tip:** Click the right mouse button in any area of the Trend control to display a Popup menu that is related to that area.

### *Step 3. Open the CIMPLICITY Trend Chart Properties Dialog Box*

Step 3. Open the CIMPLICITY Trend Chart Properties Dialog Box

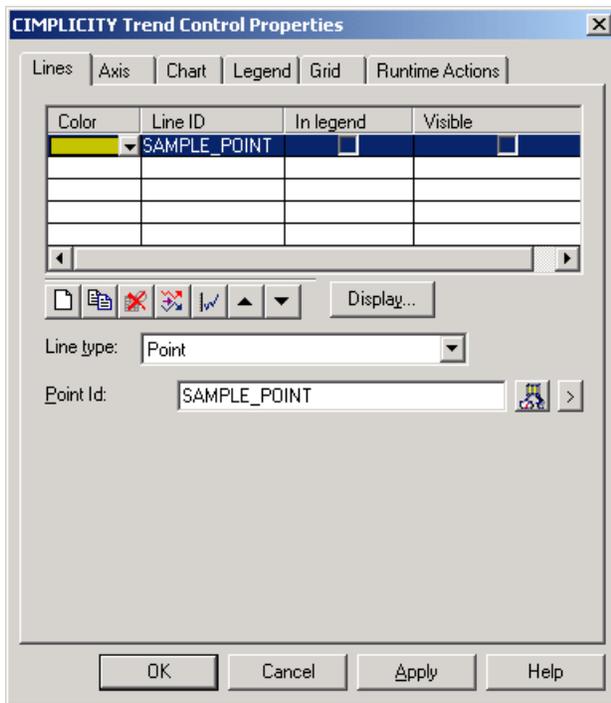
1. Right-click the Trend chart
2. Select CIMPLICITY Trend Control Object>Properties on the Popup and extended Popup menus.



The CIMPLICITY Trend Control Properties dialog box opens.

### The CIMPLICITY Trend Chart Properties Dialog Box

After you insert a Trend control on your CimEdit screen, you can configure its properties using the CIMPLICITY Trend Chart Properties dialog box.



Properties include:

Properties	Description
Line	Displays the associated point or expression data.
Axis	Defines the X and Y axes on the Trend.

Properties	Description
Chart	Defines the chart characteristics of the Trend.
Legend	Defines the chart legend for the Trend.
Grid	Defines the grid display for the Trend.
Runtime Actions	Configure what runtime actions can be performed when viewing the chart.

## Step 4. Add a Trend Line

### Step 4. Add a Trend Line

**!** **Important:** If one or more Trend point lines are configured to plot historical data from the SQL Server, Viewers must have the same SQL Native Client driver installed that is being used on the CIMPLICITY Server for the Trend Control to plot the line or lines.

When you configure lines in a Trend chart, you can:

<a href="#">Option 4.1 (page 21)</a>	Quickly configure a point's trend line by using Quick Lines.
<a href="#">Option 4.2 (page 22)</a>	Create a New Trend Chart Line (overview of detailed method).

### Option 4.1. Using Quick Lines to Create a Trend Chart Line

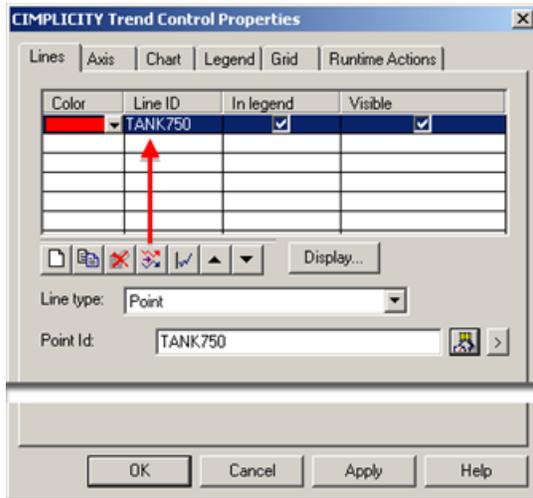
1. Open the CIMPLICITY Trend Chart Properties dialog box.
2. Select the Lines tab.
3. Click the Quick Line button  on the Lines tab toolbar.

The Select a Point browser opens.

4. Select a Point ID.

Result:

- The Line ID:
- is listed in the Line ID column with an associated color.
- Will display on the Trend legend.
- The line will be visible.



5. (Optional) Click Display to open the Line Display dialog box and change the line display style.

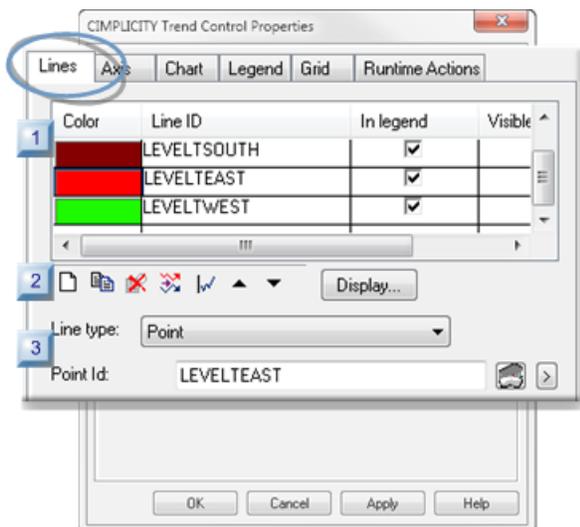
6. Either:

- Continue creating quick lines until you have all the lines that you need.
- Configure some lines with the detailed method.

#### Option 4.2. Create a New Trend Chart Line (Overview of Detailed Method)

##### *Option 4.2. Create a New Trend Chart Line (Overview of Detailed Method)*

The Line tab provides several tools to add a new line to the Trend Chart.



rect 5, 68, 33, 96 [\(page 23\)](#)

rect 7, 156, 33, 187 [\(page 23\)](#)

rect 6, 197, 33, 226 [\(page 24\)](#)

<a href="#">1 (page 23)</a>	Created lines list.
<a href="#">2 (page 23)</a>	Lines tab toolbar.
<a href="#">3 (page 24)</a>	Line type configuration.

1	Created lines list
---	--------------------

Lines that have been created for the Trend Control are listed in the Lines tab grid.

The following specifications can be made in the grid.

Feature	Description	
Color	Change the default color applied to the line. Click the Down Arrow button to the right of the selected line to open the Color palette.	
Line ID	ID that identifies the line during runtime. The Line ID is Read/Write.	
In legend	Checked	The line is listed in the legend (when the legend is visible).
	Clear	The line is not listed in the legend.
Visible	Checked	The line is visible on the control during runtime.
	Clear	The line is not visible on the control during runtime.

**Note:** The order of the lines in the list is the order of the lines in the legend.

2	Lines tab toolbar
---	-------------------

The following toolbar buttons are available on the Lines tab.



rect 209, 22, 234, 48 [Step 5. Specify Line Display Features \(page 49\)](#)

A	Creates a blank entry for a new line.
B	Copies the selected line configuration. You can then modify the entry. This is particularly useful if you want to display variations in an expression.
C	Deletes a selected line.
D	Creates a quick line.
E	Opens the Line - Axis Mapping dialog box.
F	Moves the line up in the list.

G	Moves the line down in the list.
<a href="#">H</a> ( <a href="#">page 49</a> )	Opens the Line Display dialog box.

3	Line type configuration
---	-------------------------

Trending currently supports the following data sources for trend lines:

<a href="#">Option 4.2.1</a> ( <a href="#">page 24</a> )	Points.
<a href="#">Option 4.2.2</a> ( <a href="#">page 26</a> )	Point expressions.
<a href="#">Option 4.2.3</a> ( <a href="#">page 28</a> )	Logged.
<a href="#">Option 4.2.4</a> ( <a href="#">page 29</a> )	Logged expressions.
<a href="#">Option 4.2.5</a> ( <a href="#">page 32</a> )	CSV files.
<a href="#">Option 4.2.6</a> ( <a href="#">page 34</a> )	Reference lines.
<a href="#">Option 4.2.7</a> ( <a href="#">page 39</a> )	Historian line types.

### *Option 4.2.1. Point Line*

Point lines display a combination of logged and runtime data.

The difference between this line type and the logged expression line is that CIMPLICITY automatically finds the data source for a point line. As a result, data can be quickly accessed wherever the project is running, with no manual data source configuration.

- How CIMPLICITY finds point data.
- Configure a point line.
- Configure array point trend lines
- Disable point line scrolling.

How CIMPLICITY finds point data

CIMPLICITY looks for and displays the first data it finds, in the following order:

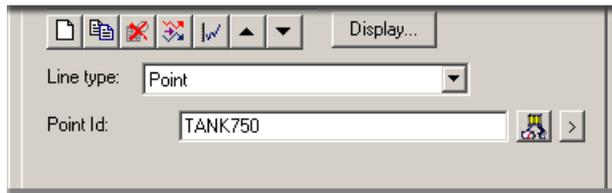
1. A CIMPLICITY data table.
2. The first data table in alphabetical order.
3. A CIMPLICITY group table.
4. The first group table in alphabetical order.

If the point is not being logged to either a data or group table, the trend line displays as current data becomes available.

 **Note:** Using a logged expression line is preferable if you want the data to come from a data source that you choose, rather than the source chosen by the above order.

### Configure a Point Line

Enter the following.



Option	Description
Line type	Point
Point ID	Single point ID. <b>Note:</b> You can also enter an ID for an array point or element.
	Opens the Select a Point browser.
	Opens a Popup menu to access point features.

### Configure array point trend lines

Array elements are numbered from zero (0) to one (1) less than the number of elements in the array.

#### Example

If ARRAY has ten elements, the individual elements are ARRAY[0] through ARRAY[9].

You may trend a single element of an array just as you can trend an ordinary line.

To trend a single element in an array:

5. Enter the array name.
6. Write the element's number in square brackets at the end of the array name.

For example, to look at the first element in ARRAY, enter ARRAY[0].

To trend an entire array at a single instant in time:

Enter the array name only.

The resulting display depends on the **Line Type** you have chosen.

Logged data	The whole array is drawn as it was at the axis end time.
Reference file	The time of the array is provided in the file.
Expression	The most recent data for the array is displayed.

Whenever the array data changes, the old line is erased and a new one, representing the new data, is drawn.

Arrays display, as follows:

7. Full arrays are shown with the first array element drawn at the left edge of the chart.
8. The elements of the array are equally spaced across the length of the chart.
9. The space between the last element and the end of the chart is equal to the space between the first two elements.

Disable point line scrolling

10. Select the Chart tab.
11. Click Advanced.
12. Clear the Allow runtime scrolling check box.

 **Note:** By default, point lines scroll.

#### *Option 4.2.2. Point Expression Line*

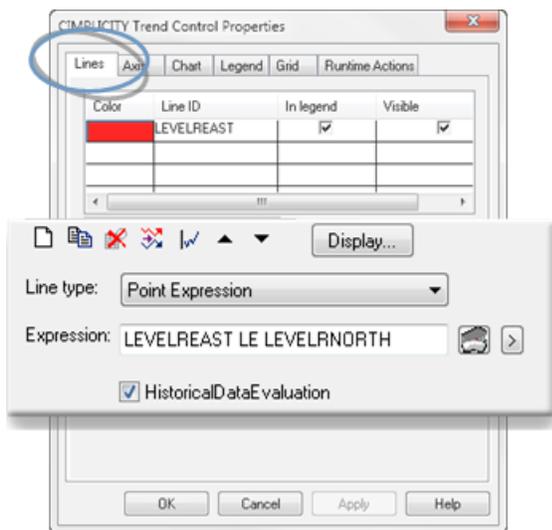
Point Expression lines display data reported by the CIMPLICITY Point manager. This type of trend is also called a current trend, because all the information comes from current data.

**Note:** In CIMPLICITY versions lower than v8.2, Point Expression lines were named Expression lines.

- Configure an Expression line.
- Qualified points and Expression lines
- Disable Expression line scrolling.

Configure a Point Expression line

Enter the following.



Option		Description
Line type		Point Expression
Expression		One or more point ID's and mathematical operators that can be evaluated.
		Opens the Edit Expression dialog box. <b>Note:</b> Operators that are not available for Point expressions are disabled.
		Opens a Popup menu to access point features.
HistoricalDataEvaluation		Affects points that are linked with Historian (that have a corresponding tag).
	Check	Alarm functions can no longer be used. Important: HistoricalDataEvaluation must be checked if the selected point is logged to an Historian server.
	Clear	Alarm functions can be used.

Qualified points and Expression lines

If you do not specify a project, the Base project is used.

If you change the Base project on the Chart tab of the CIMPLICITY Trend Control Properties dialog box and:

If a Point ID	Trending
Is fully qualified	Continues to draw the line using the same data source.
Is not fully qualified	Trending assumes the data is coming from the base project. If you change the base project, Trending attempts to find the point in the new base project.

This feature is useful if you have two or more projects with the same Point ID (for example, BLDG\_1 project and BLDG\_2 project) and you want to be able to switch between them.

### Disable Expression line scrolling

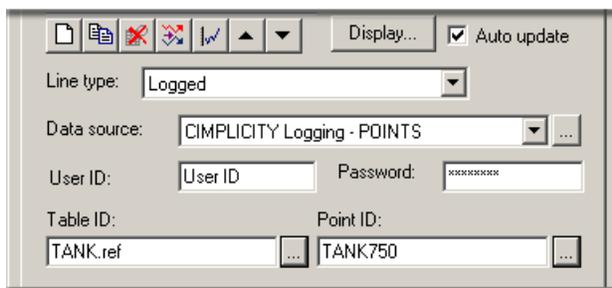
1. Select the Chart tab.
2. Click Advanced.
3. Clear the Allow runtime scrolling check box.

 **Note:** By default, expression lines scroll.

### *Option 4.2.3. Logged Line*

Logged lines display data from a CIMPLICITY Database Logger group table. This type of trend is also called an historical trend because all the information comes from logged data.

Enter the following.



Option	Description	
Line type	Logged	
Data source	ODBC data source.	
	Default	CIMPLICITY Logging - POINTS
		Opens the ODBC Data Source Administrator

Option	Description	
User ID	(Optional) User authorized to access the logged data	
Password	(Optional) Valid password for authorized user.	
		Opens a Select a Table/Column browser.
Table ID	Point logging table ID in the data source	
		Opens the Select a Table/Column browser for an authorized user.
Point ID	Point in the logging table.	
		Opens the Select a Table/Column browser for an authorized user.
Auto update	Check	Automatically update the line.
	Clear	Keep the same historical information as a reference.

 **Important:**

- The source for a Logged line is always a column in a group log table.
- A group log table has one column per point, one row for all points.
- Logging array points to Data log tables is currently not supported. As a result, trending array points from data log tables is not supported. Use group tables for array points.

 **Note:** Logged lines can always be scrolled. If you clear Auto update, the line will update when it is scrolled.

*Option 4.2.4. Logged Expression Line*

Lines using logged and runtime data first display a combination of logged and runtime data.

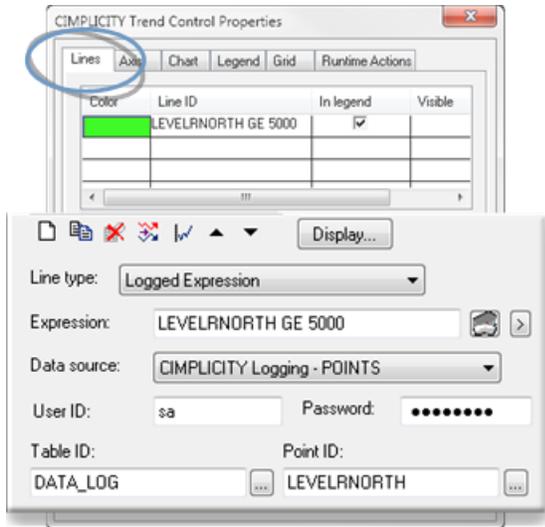
- Runtime data is reported by CIMPLICITY Point Management.
- Logged data comes from a CIMPLICITY Log table.
- Configure a Logged Expression line
- Logged Expression lines and scrolling configuration
- Qualified points and logged expression lines

 **Note:**

- Logging array points to Data log tables is currently not supported. As a result, trending array points from data log tables is not supported. Use group tables for array points.
- Expression evaluation is applied for runtime data only, not for logged data. Therefore, expression evaluation is not available for logged expression lines.

## Configure a logged expression line

Enter the following.



Option	Description	
Line type	Logged Expression	
Expression	One or more point ID's and mathematical operators that can be evaluated.	
		Opens an Edit Expression dialog box.
		<b>Note:</b> Operators that are not available for Trend line expressions are disabled.
		Displays Popup menu
Data source	ODBC data source.	
	Default	CIMPPLICITY Logging - POINTS
		Opens the ODBC Data Source Administrator
User ID	(Optional) User authorized to access the logged data	
Password	(Optional) Valid password for authorized user.	
		Opens a Select a Table/Column browser.
Table ID	Point logging table ID in the data source	
		Opens the Select a Table/Column browser for an authorized user.
Point ID	Point in the logging table.	
		Opens the Select a Table/Column browser for an authorized user.

Option	Description	
Auto update	Check	Automatically update the line.
	Clear	Keep the same historical information as a reference.

## Logged Expression lines and scrolling configuration

The behavior of the logged expression line type depends on how scrolling is configured on the Chart tab as follows:

Selection	Behavior
Allow runtime scrolling and:	
Jump to current value	The <b>Scroll Percentage</b> determines the amount of run-time data used. The rest of the data comes from the log table.
	Example
	Configure a chart to display a 2-hour time duration.
	Set the <b>Scroll Percentage</b> to 25.
	During the display the:
	First hour and a half (1 ½) comes from the log table
	Last ½ comes from run-time data.
	You cannot scroll logged expression lines when Allow runtime scrolling is not selected. In addition, the Trend will always draw in Jump Scroll mode.
All other options	The <b>Scroll Percentage</b> no longer determines the amount of runtime data used. The line displays up to one chart page worth of runtime data. The rest of the data comes from the log table.
	You can scroll logged expression lines when Allow runtime scrolling is selected.

## Qualified points and logged expression lines

If you do not specify a project, the Base project is used.

If you change the Base project on the Chart tab of the CIMPLICITY Trend Control Properties dialog box and:

If a Point ID	Trending
Is fully qualified	Continues to draw the line using the same data source.
Is not fully qualified	Trending assumes the data is coming from the base project. If you change the base project, Trending attempts to find the point in the new base project.

This feature is useful if you have two or more projects with the same Point ID (for example, BLDG\_1 project and BLDG\_2 project) and you want to be able to switch between them.

 **Note:** One of the sources for a Logged expression line is always a column in a group log table.

#### *Option 4.2.5. CSV File Line*

A CSV file is a text file in which the fields are separated by commas. Columns in this text file can have a common Time Stamp or a Time Stamp specific to each column.

- Configure the CSV File line.
- Guidelines for .csv file configuration.
- Common Time Stamp format for CSV File lines.
- Unique Time Stamp format for CSV File lines.

Configure the CSV File line

CSV File lines display data from a specific CSV file.



Option	Description	
Line type	CSV File	
File ID	Name of the .csv file that contains the data.	
		Opens a Select a File dialog box.
Column ID	Column ID in the .csv file, up to 64 characters long	
		Opens a Select a Table/Column browser.
Auto update	Check	Automatically update the line.
	Clear	Keep the same historical information as a reference.

 **Note:** CSV File lines can always be scrolled.

Guidelines for .csv file configuration

1. Create a separate directory for your .csv files.
2. Give a .csv file used by Trends one of two formats. Choose the format, as follows:

<b>Format</b>	<b>When</b>
Common Time Stamp	All data has a common time stamp
Unique Time Stamp	Each data column has a unique time stamp

- The time stamp column(s) should use the date and time format indicated in the International settings on your Control Panel. In the examples here, the format is mm/dd/yy hh:mm:ss.
- Name columns using:
  - Either case. Columns are not case sensitive.
  - Up to 64 characters.
- Enter up to 255 columns in a CSV file.
- Allow only the same data type within each column.

<b>Example of data type</b>	
If:	The data type of the column Float
Then:	All rows should have float values for that column.

- Give CSV files names that fit the 8.3 format. The ODBC Text driver cannot open a file with a filename greater than 12 characters.

#### Example

Largest1.csv	Can be a .CSV file name.
--------------	--------------------------

#### Common Time Stamp format for CSV File lines

If all data columns in the file share a common time stamp, the file can have the following format:

```
"Val1", "Val2", "_time", 10.75,1,9/19/95 8:32:00 10.83,2,9/19/95 8:33:00
```

The first line consists of the column names enclosed in double quotes, and separated by the International settings list separator (in this case, a comma). The column that designates the time stamp must be labeled `"_time"`. The rows following the column names are the rows of data.

- CSV lines can be always be scrolled.
- A CSV file is a text file in which the fields are separated by commas. Columns in this text file can have a common timestamp or a timestamp specific to each column.

#### Unique Time Stamp format for CSV File lines

If each data column is associated with a unique time stamp, then the file has the following format:

```
"Val1", "Val1_time", "Val2", "Val2_time", 10.75,9/19/95 8:32:00,1,9/19/95
8:30:10 10.83,9/19/95 8:33:00,2,9/19/95 8:30:20
```

The first line consists of the column names enclosed in double quotes and separated by the International settings list separator (a comma in this example). The column name which designates the time stamp associated with a data column is "\_time" concatenated to the data column name (for example, "Val1\_time"). The rows following the column names are the rows of data.

#### Option 4.2.6. Reference Line

#### Option 4.2.6. Reference Line

Creating a line as a reference for other lines can be useful in many instances.

A reference line is a horizontal line that will be updated.

- Overview.
- Reference line configuration.
- Reference line Axes.
- Reference file configuration.
- Reference file rows.

### Reference Line overview

The reference line can be create from

- An expression
- A reference file that is created by the Trending module through the Runtime Actions tab in the CIMPLICITY Trend Control Properties dialog box.

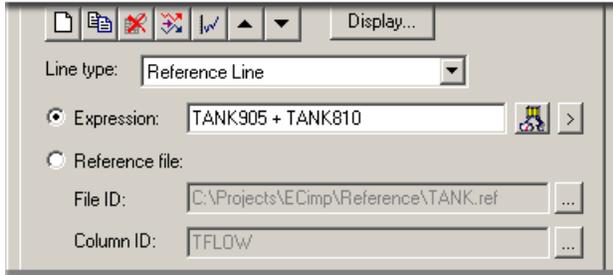
The lines are updated as follows.

<b>Value Source</b>	<b>How Trending Updates the Reference Line</b>
Expression	Trending takes the latest value of the expression and draws a horizontal line with the value. If the value of the expression changes, Trending updates the reference line.
Reference file	Retrieves values (from a reference file) that are exported into the reference file at runtime.

### Reference line configuration

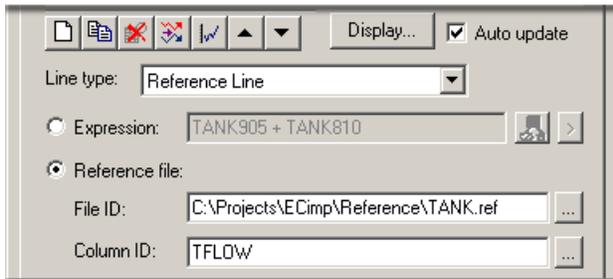
- Reference Line expression
- Reference Line reference file

### Reference Line expression



Option	Description
Line type	Reference Line
Expression	Enter one or more point ID's and mathematical operators that can be evaluated.
	Opens the Edit Expression window.
	Opens a Popup menu to access point and expression features.

### Reference Line Reference File



Option	Description
Line type	Reference Line
Reference file	Fill in the following.
File ID	Name of the reference file that contains the data
	Opens a Select a File dialog box.
Column ID	Column in the group log table.

Option	Description	
		Opens the Select a Table/Column browser.
Auto update	Check	Automatically update the line.
	Clear	Keep the same historical information as a reference.

## Reference Line Axes

Following is a description of reference line axes' behavior:

- Expression reference lines default to use the chart's X-axis and Y-axis.
- Reference file lines default to use their axes. They are named using the line ID with an `_X` and `_Y` suffix respectively. The axis configuration is based on the contents of the reference file. The X-axis defaults to no scroll.

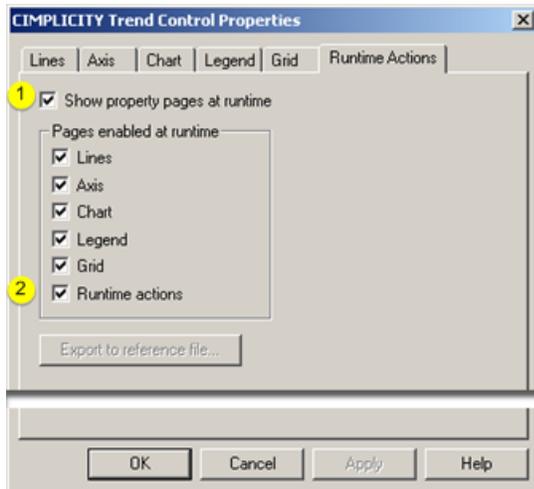
### Reference File Configuration

Although reference file configuration is very easy, it requires a few steps.

<a href="#">1</a> <i>(page 36)</i>	Enable runtime actions
<a href="#">2</a> <i>(page 37)</i>	Open the Save Reference File window.
<a href="#">3</a> <i>(page 38)</i>	Create a reference file.

## Enable runtime actions

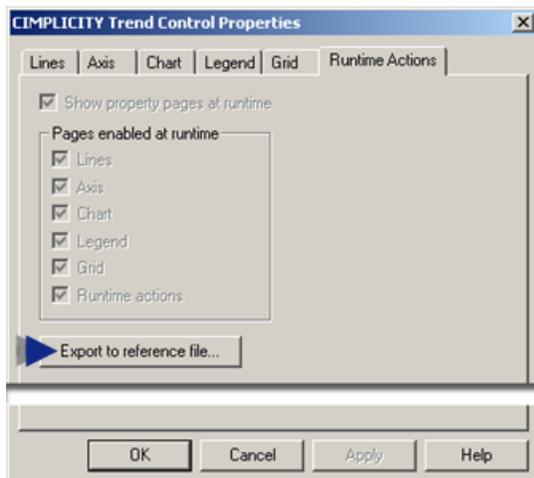
1. Open the CIMPLICITY Trend Control Properties dialog box in CimEdit.
2. Select the Runtime Actions tab.
3. Check the following.



1	Show property pages at runtime
2	Runtime actions

## Open the Save Reference File window

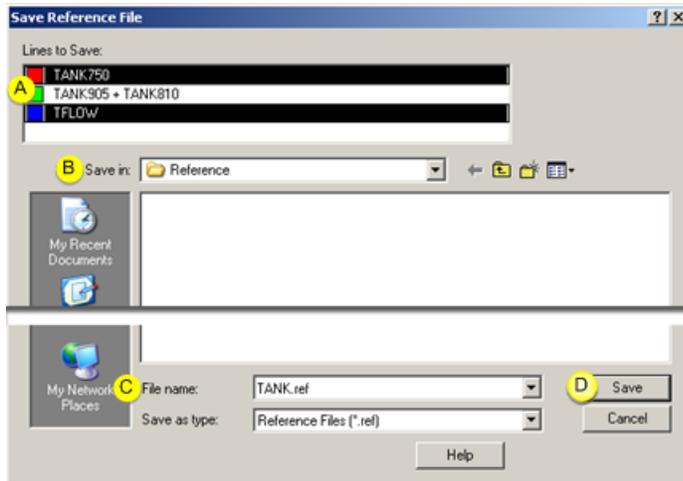
1. Double-click the Test Screen button  on the CimEdit toolbar. A Trend Control opens in a runtime (CimView) screen.
2. Double-click the screen. The CIMPLICITY Trend Control Properties dialog box opens.
3. Select the Runtime Actions tab.
4. Click Export to reference file.



Result: The Save Reference File window opens. Line ID's that have been created in the Trend Control Properties dialog box are listed in the Lines to Save box.

## Create a reference file

Do the following.



A	Click one or more lines to be referenced.
B	Find the folder in which the reference file will be located.
C	Name the reference file.
D	Click Save.

Result: All of the data currently visible on the trend for the selected lines will be written to the reference file.

**Note:** The ODBC Text driver cannot open a file with a filename greater than 12 characters. For best results, enter a name that fits the 8.3 format. That is, the file name should be eight characters or less, followed by a period and an extension of three characters or less (e.g. "largest1.txt").

### Reference File Rows

Contents in Reference file rows include:

Row	Contains
1	Column names in double quotes and separated by the International settings list separator (usually a comma).
	The column name that designates the time stamp associated with a data column is a concatenation of the data column name and <code>TIME</code> .
2	The minimum value and time for each line in the file.
3	The maximum value and time for each line in the file.
Remaining	The value and timestamp for each time the line's value changes over the time period.

```
"
Soap" , "Soap_TIME"
211 , "03-01-1996 18:19:34.000"
506 , "03-01-1996 18:24:34.000"
476 , "03-01-1996 18:18:54.230"
474 , "03-01-1996 18:19:16.570"
470 , "03-01-1996 18:19:17.770"
467 , "03-01-1996 18:19:19.040"
464 , "03-01-1996 18:19:20.480"
461 , "03-01-1996 18:19:31.220"
457 , "03-01-1996 18:19:32.460"
```

If you selected more than one line to save, the value and time information for each line is stored independently, as in the following example:

```
"Soap" , "Soap_TIME" , "Wax" , "Wax_TIME"
1 , "03-01-1996 19:29:34.000" , 1 , "03-01-1996 19:29:34.000"
575 , "03-01-1996 19:34:34.000" , 575 , "03-01-1996 19:34:34.000"
183 , "03-01-1996 19:29:01.840" , 476 , "03-01-1996 19:25:19.270"
179 , "03-01-1996 19:29:02.850" , 472 , "03-01-1996 19:25:20.280"
175 , "03-01-1996 19:29:03.850" , 468 , "03-01-1996 19:25:21.580"
172 , "03-01-1996 19:29:04.860" , 467 , "03-01-1996 19:25:22.590"
169 , "03-01-1996 19:29:14.890" , 466 , "03-01-1996 19:25:32.980"
165 , "03-01-1996 19:29:15.900" , 462 , "03-01-1996 19:25:34.000"
```

If the reference file is for an array point, the second line contains the first array element, the third line contains the last array elements, and the rest of the rows contain the rest of the array elements. All array elements have the same time value. For example:

```
"Step" , "Step_TIME"
100 , "03-01-1996 18:19:34.000"
105 , "03-01-1996 18:19:34.000"
101 , "03-01-1996 18:19:34.000"
102 , "03-01-1996 18:19:34.000"
103 , "03-01-1996 18:19:34.000"
104 , "03-01-1996 18:19:34.000"
```

#### Option 4.2.7. Historian Line Types

#### Option 4.2.7. Historian Line Types

Historian lines display a combination of logged data from a tag defined in the Historian Archive Database.

- A tag is a key for a specific historical data source. This record can store any type of static or runtime data collected by an Historian data collector, including CIMPLICITY point data.

Note: If a tag represents live data, check [Auto update \(page 46\)](#) to update the Historian line periodically to display newly collected data. Note that selecting this checkbox requires you to first assign an **Auto update interval** for this line on the Chart tab.

- A data collector is an Historian service that records tag data in a polled or unsolicited collection mode.

 **Note:** Trending through Historian is completely independent of the Historian OPC Interface . The Historian Collector provides a direct way for Historian to collect CIMPLICITY point data. However, any data stored in the Historian archive, including CIMPLICITY data logged through the OPC interface, can be displayed by the Trending control as an Historian line.

<a href="#">Step 4.2.7.1 (page 40)</a>	Install Software Required for Viewing Historian Lines
<a href="#">Step 4.2.7.2 (page 44)</a>	Configure CIMPLICITY projects.
<a href="#">Step 4.2.7.3 (page 45)</a>	Configure Historian.
<a href="#">Step 4.2.7.4 (page 46)</a>	Configure Historian line types.

#### *Step 4.2.7.1. Install Required Software for Viewing Historian Lines*

#### *Step 4.2.7.1. Install Required Software for Viewing Historian Lines*

Requirements for displaying Historian trend lines depend on the basic network configurations you are using. Options include:

<a href="#">Option 4.2.7.1.1 (page 41)</a>	Historian Server and CIMPLICITY Server installed on separate nodes.
	<ul style="list-style-type: none"> <li>• Historian Server node.</li> <li>• One or more CIMPLICITY Server nodes.</li> <li>• One or more CIMPLICITY Viewer-only nodes.</li> </ul>
<a href="#">Option 4.2.7.1.2 (page 42)</a>	Historian Server and CIMPLICITY Server installed on the same node.
	<ul style="list-style-type: none"> <li>• Historian Server/CIMPLICITY Server node.</li> <li>• One or more CIMPLICITY Viewer-only nodes.</li> </ul>

**Note:**

- More configurations than the basic configurations listed above are possible. However, the instructions outlined for the installation options listed above are comprehensive; apply them to your configuration by considering the roles that each node will play: Historian Server, CIMPLICITY (project) Server and/or CIMPLICITY (CimView) Viewer. Ensure that each node is installed with the software required for all the roles that node will play.
- A fourth role, Historian Collector Client, describes the node that collects data for the Historian Server. Any of the nodes in your network configuration can be an Historian Collector Client.

**About the Historian Collector**

The Historian Collector supports the collection of point data from running CIMPLICITY projects. Historian also supports collection of other non-CIMPLICITY data. Any type of data collected by Historian can be displayed as an Historian line in a CIMPLICITY Trend control.

**Note:**

- The Historian Collector that collects point data must run on the same node as the Historian project where those points are defined.
- A single installation of the Historian Collector will support collection from multiple projects running on that node. The Historian Collector spawns a new collector service for every project run with the Historian Collector project option checked.
- Historian can collect data from CIMPLICITY projects through the CIMPLICITY Historian OPC Interface .

*Option 4.2.7.1.1. Historian Server and CIMPLICITY Server Installed on Separate Nodes*

**Note:** Perform the following installation steps in the order presented below.

**On the Historian server node:**

1. Install **Historian** (version 2.0 or greater).
2. Run the Historian installation program and select the components to install, including Historian Server and Administrator. Do not install Historian Client tools, as these will be installed from the CIMPLICITY Service Pack in step 2B.
3. Install all required Historian SIMs (service packs).

**On the CIMPLICITY Server node:**

1. Install **CIMPLICITY Server**.
2. If necessary, reboot the CIMPLICITY server.

3. During the installation process you will be prompted to enter the name of the primary Historian server. Enter the name of the Historian server node; i.e. the name of the computer (step 1) as it appears when browsing your network neighborhood.
4. Install any required CIMPLICITY Service Packs.
5. If necessary, reboot the CIMPLICITY server.
6. Install the **Historian Collector** if you are collecting point data from projects running on this node.
7. After installed, check the Historian Collector option on the General tab of the CIMPLICITY Project Properties dialog box to configure your projects for data collection.

Contact your Historian sales representative for details about downloading the Historian Collector from the GE Intelligent Platforms Web site.

### **On any Viewer-only nodes:**

1. Install **CIMPLICITY Viewer**.
2. During the installation process you will be prompted to enter the name of the primary Historian server. Enter same name you entered above.
3. Reboot the Viewer node.
4. Install any required CIMPLICITY Service Packs.
5. Reboot the Viewer node.

 **Note:** Before you can run a CimView screen on the Viewer node, you must set up a Viewer connection to the Server node.

#### Option 4.2.7.1.2. Historian Server and CIMPLICITY Server Installed on Same Node

 **Note:** Perform the following installation steps in the order presented below.

### **On the server node install:**

1. **CIMPLICITY Server**.

If necessary, reboot the server.

1. Any required CIMPLICITY Service Packs.

**Note:** During the installation process you will be prompted to enter the name of the primary Historian server. Enter the name of the server node; i.e. the name of this computer as it appears when browsing your network neighborhood.

If necessary, reboot the server.

1. **Historian** (version 2.0 or greater).

**Note:** Run the Historian installation program. Manually select the Historian Server and Administrator components for installation (Historian Client Tools were already installed by setup 2).

1. All required Historian SIMs (service packs).
2. **Historian Collector** if you are collecting point data from projects running on this node.

**Notes:**

- Contact your Historian sales representative for details about downloading the Historian Collector from the GE Intelligent Platforms Web site.
- Check the Historian Collector option on the General tab of the CIMPLICITY Project Properties dialog box to configure your projects for data collection.

**On any Viewer-only nodes install:**

1. **CIMPLICITY Viewer.**

Reboot the Viewer node.

1. Any required CIMPLICITY Service Packs.

**Note:** During the installation process you will be prompted to enter the name of the primary Historian server. Enter the same name you entered in step 1.B. above.

Reboot the Viewer node.

 **Note:** Before you can run a CimView screen on the Viewer node, you must configure the Viewer to connect to the CIMPLICITY Server node.

*Option 4.2.7.1.3. Historian Server, CIMPLICITY Server and Viewer Installed on Same Node*

**On the server node:**

1. Install **CIMPLICITY Server**, and then restart the server.
2. Install any required CIMPLICITY Service Packs, and then restart the server.
3. Install **Historian**, and then restart the server. (Run the Historian installation program to select the components to install, including Historian Server and Administrator.)
4. Install all required Historian SIMs (service packs), and then restart the server.
5. Install **Historian Collector** if you are collecting point data from projects running on this node, and then restart the server.

 **Note:** Contact your Historian sales representative for details about downloading the Historian Collector from the GE Intelligent Platforms Web site.

 **Tip:** Check the Historian Collector option on the General tab of the CIMPLICITY Project Properties dialog box to configure your projects for data collection.

### Installation Troubleshooting

1. Open the Historian Administrator's Main screen.
2. Check the Alerts to determine if the number of licensed users has been exceeded.
3. Contact your Historian sales representative to arrange for additional licenses.

### Step 4.2.7.2. Configure CIMPLICITY Projects for Data Collection

Before configuring Historian to collect point data from a CIMPLICITY project, make sure to:

1. Install [required software \(page 40\)](#) on the CIMPLICITY Server node.
2. Check the Historian Collector option on the General tab of the Project Properties dialog box for any CIMPLICITY projects that you want to collect data from.
  - a. Open the CIMPLICITY Workbench. If the project is running, stop it.
  - b. From the Project menu, click Properties.
  - c. In the General tab, ensure the Historian Collector checkbox is enabled.

**Note:** Selecting the Historian Collector option is not required for all projects that CimView screens connect to, only those projects that are sources of point data collected by Historian.

3. Run the projects you want to collect data from. A collector on the CIMPLICITY Server node will start automatically when a project configured for collection is run, and stop when that project stops.

#### **Note:**

- The collector for a particular CIMPLICITY project has the same name as the project. When the collector is listed in Historian Administrator, the collector name has the characters "\_CIM" appended.
- Each project you run on a network must have a unique name. Among other things, this ensures that the requirement that each data collector have a unique name is satisfied.
- The collector starts and stops automatically when the associated project is started and stopped. If the project is running, you can use the Process Control Utility to stop the collector without stopping the project.
- If you open Historian Administrator (Main screen) on the Historian server node, new collectors and their status are listed there the first time you run the respective project. You can configure the collector from the Collectors Maintenance screen. The Historian Collector running on the CIMPLICITY Server is listed as the project name, with a suffix of "\_CIM" appended. For example, the collector for a project named MyProject will appear as MyProject\_CIM.

- You can optionally configure the Historian Collector to write its output status (collection rate, status, and heartbeat) to CIMPLICITY points. These points must be pre-configured in the project you are collecting from. See "Configuration of CIMPLICITY Data Collector-specific Fields" in the Historian Electronic Books for specifications regarding appropriate data types for these points and the interpretation of their values.

#### *Step 4.2.7.3. Configure Historian for Trending*

#### *Step 4.2.7.3. Configure Historian for Trending*

Before configuring an Historian Line, configure Historian:

1. Make sure all [required software \(page 40\)](#) has been installed on the Historian Server node.
2. Configure a data collector to run on the Historian Collector Client node if one has not already been configured. Historian has many options for collecting data of various kinds, including CIMPLICITY live point data.

**Note:** To collect CIMPLICITY point data, projects must be [configured for data collection \(page 44\)](#).

- a. Run Historian Administrator on the Historian server. The data collectors currently defined, and their respective status, will appear listed on the Main screen.

If you have configured CIMPLICITY projects with the Historian Collector option:

The collector for those projects will be listed as the project name, with a suffix of "\_CIM" appended. For example, the collector for a project named MyProject will appear as MyProject\_CIM. CIMPLICITY points will appear in the browse dialog for the collector associated with the project. See CIMPLICITY Data Collector section in the Historian Electronic Books for information about configuring Historian to collect CIMPLICITY data.

3. Configure the collector and add tags. See the Historian Electronic Books for details.
4. (Optional) You can also configure the Historian Collector to write its output status (collection rate, status, and heartbeat) to CIMPLICITY points.

**Important:** These points must be pre-configured, in the project you are collecting from, as the appropriate data types. See "Configuration of CIMPLICITY Data Collector-specific Fields" in the Historian Electronic Books for specifications regarding these points and the interpretation of their values.

You can now [configure an Historian Line \(page 39\)](#) for added tags in a Trending control on a CimView screen.

#### *About Historian Tag Data Types*

Configure Historian Data Source data types appropriately. See the Historian Electronic Books for more information about configuring data types for various data sources.

If configuring Historian for CIMPLICITY point data, configure tags as follows:

**!** **Important:** Configuring the wrong data type can cause truncation or unreported data.

If CIMPLICITY Point Data Type is:	Configure the Historian Tag Data Type as:
SINT INT USINT BOOL	Single Integer
DINT UINT	Double Integer
REAL UDINT	Double Float
STRING STRING_20 STRING_8 STRING_80	Variable String

Not Supported:

- 3D\_BCD (devices only)
- 4D\_BCD (devices only)
- BYTE

**☰ Note:** The Historian Collector does not collect the PTM\_STRUCTURE, PTM\_ALARM LIM, PTM\_BITSTRING, or PTM\_OCTETSTRING point types, and cannot collect array data.

The following topics provide more information on the various types of point data:

- Analog Point Data Types for Virtual Points.
- Text Point Data Types for Virtual Points.
- Analog Point Data Types for Devices.
- Boolean Point Data Types for Devices.
- Text Point Data Types for Devices.

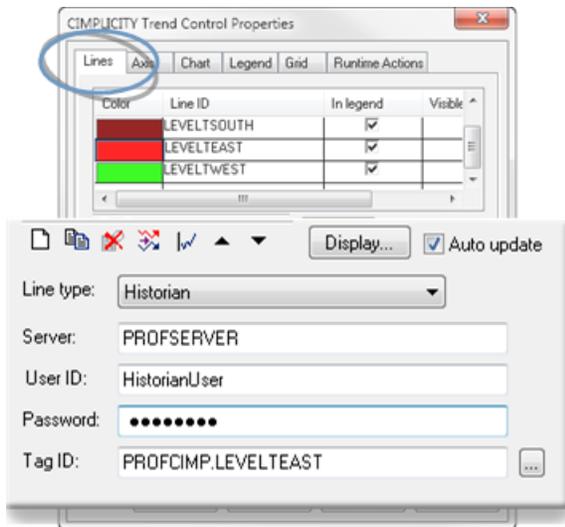
#### *Step 4.2.7.4. Configure Historian Line Types*

#### *Step 4.2.7.4. Configure Historian Line Types*

<a href="#">Option 4.2.7.4.1 (page 46)</a>	Historian line configuration.
<a href="#">Option 4.2.7.4.2 (page 48)</a>	Historian Expression line configuration.

#### *Option 4.2.7.4.1. Historian Line Configuration*

A Historian line retrieves data from a selected Historian connect for a single Historian tag.

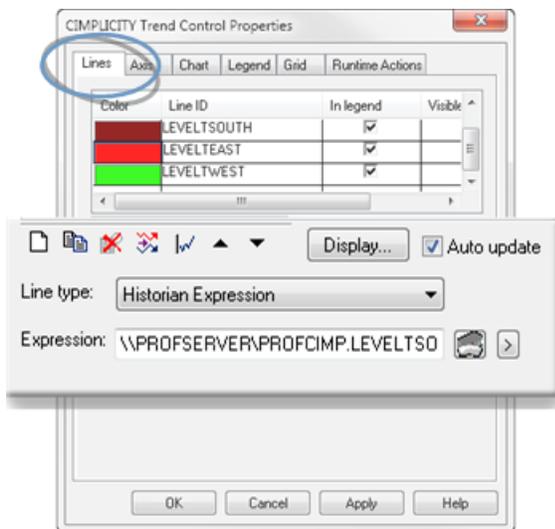


Option	Description	
Line type	Historian	
Display	<p>Click to open the <a href="#">Line Display dialog box (page 54)</a>. <b>Notes</b></p> <ul style="list-style-type: none"> <li>The Line Display dialog lets you configure the display characteristics of the trending line as well as the compression (sample rate) and <a href="#">sampling mode options (page 54)</a> such as Average, Trend, Standard Deviation, etc.</li> <li>CIMPLICITY will synchronize or overwrite certain tag properties on the Historian server with values assigned to the corresponding CIMPLICITY point properties.</li> </ul> <p>Example Fort a point logged to Historian, a description of the tag in Historian that is different from the point's description in CIMPLICITY will be overwritten by the CIMPLICITY point description.</p>	
Auto update	(If the selected Tag ID represents live data) Do one of the following.	
	Check	Updates the Historian line periodically to display newly collected data . <b>Note:</b> This requires you to first assign an <b>Auto update interval</b> for the selected line on the Chart tab.
	Clear	Keeps the same historical information displayed as a reference.
Server	Network name for the node (computer) running Historian Server.	
User ID	User name that Historian Administrator will accept. <b>Note:</b> To use your currently configured Windows login ID and password, leave the <b>User ID</b> and <b>Password</b> fields blank.	
Password	Password configured for the User ID entered above.	
Tag ID	Historian tag name. The format of the <b>Tag ID</b> is defined in the Project Properties dialog box. Example: One tag format PROFCIMP.LEVELTEAST Where	
	PROFCIMP	is the project name
	LEVELTEAST	is the CIMPLICITY point ID.

Option	Description
	Browse for an Historian tag, as follows. <ol style="list-style-type: none"> <li>1. Click the Browse button next to the <b>Tag ID</b> field.</li> </ol> A Select a tag browser opens. <ol style="list-style-type: none"> <li>1. Select the Historian connection that will provide the data.</li> <li>2. Browse for and select the appropriate Historian tag.</li> </ol>
	<p> <b>Note:</b> If the tag represents a CIMPLICITY point and the &lt;Data Collector Name&gt; portion of the tag name that displays in Historian is appended with the characters "_CIMP." do not include these characters in the &lt;Data Collector Name&gt; that you enter in the Trend Control Properties <b>Tag ID</b> field.</p>

#### *Option 4.2.7.4.2. Historian Expression Line Configuration*

A Historian expression line retrieves data from a selected Historian connect for an expression that includes one or more Historian tags.



Option	Description		
Line type	Historian Expression		
Display	Click to open the <a href="#">Line Display dialog box (page 54)</a> . <b>Note:</b> The Line Display dialog lets you configure the display characteristics of the trending line as well as the compression (sample rate) and <a href="#">sampling mode options (page 54)</a> such as Average, Trend, Standard Deviation, etc.		
Auto update	(If the selected Tag ID represents live data) Do one of the following.		
	<table border="1"> <tr> <td data-bbox="336 1778 418 1845">Check</td> <td data-bbox="418 1778 1425 1845">Updates the Historian expression line periodically to display newly collected data . <b>Note:</b> This requires you to first assign an <b>Auto update interval</b> for the selected line on the Chart tab.</td> </tr> </table>	Check	Updates the Historian expression line periodically to display newly collected data . <b>Note:</b> This requires you to first assign an <b>Auto update interval</b> for the selected line on the Chart tab.
Check	Updates the Historian expression line periodically to display newly collected data . <b>Note:</b> This requires you to first assign an <b>Auto update interval</b> for the selected line on the Chart tab.		

Option	Description	
	Clear	Keeps the same historical information displayed as a reference.
Expression	An expression that includes one or more Historian tag ID's preceded by the Historian collector name. \ \<Data Collector Name>\<Tag Name>	
	<Data Collector Name>	Server that is connected to Historian. Example \\PROFCIMP.LEVELTSOUTH Where \\ indicates the local Historian server, which would be entered as \\<local server> if the abbreviation was not used. ProfCIMP.LEVELTSOUTH is an Historian tag that will be included in the expression.
	<Tag Name>	Format defined in the Project Properties dialog box.
	<p>Use the Expression Editor to create an Historian expression, as follows.</p> <ol style="list-style-type: none"> <li>1. Click the Edit Expression button  next to the <b>Expression</b> field.</li> </ol> <p>An Edit Expression dialog box opens.</p> <p> <b>Note:</b> Operators that are not available for Historian expressions are disabled.</p> <ol style="list-style-type: none"> <li>1. Use the Expression Editor tools and operators that are available for Historian expressions to create an expression.</li> </ol>	
	<p> <b>Note:</b> If the tag that represents a CIMPLICITY point and the &lt;Data Collector Name&gt; portion of the tag name that displays in Historian is appended with the characters "_CIMP." do not include these characters in the &lt;Data Collector Name&gt; that you enter in the Trend Control Properties <b>Tag ID</b> field.</p>	

## Step 5. Specify Line Display Features

### Step 5. Specify Line Display Features

When you configure the line display, you can choose:

<a href="#">Option 5.1 (page 49)</a>	Trend line display style.
<a href="#">Option 5.2 (page 50)</a>	Data compression or sample type.

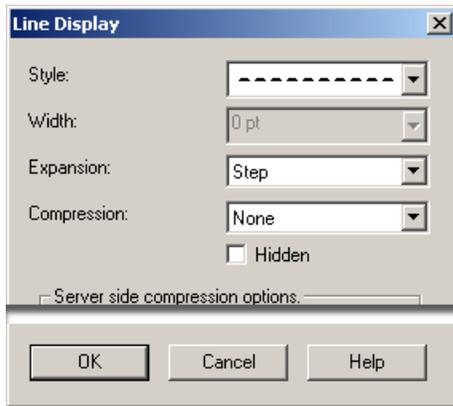
#### Option 5.1. Trend Line Display Style

1. Select a line in the **Lines** grid.
2. Click Display.

The Line Display dialog box opens.

The top half of the dialog box provides fields to select the line display.

3. Configure the line as follows.



Field	Description	
Style	Select Solid or one of a variety of dot/dash lines in the drop-down list.	
Width	(Available when a solid line is selected) Line width in points.	
Expansion	How the points should be connected. The choices are	
	Step	(Recommended for runtime display) Connects data points with a stepped line
	Smooth	Connects data points with a straight line. The legend will always display the last actual value to the left of the cursor. That is, the value in the legend does not reflect the line interpolation.
Hidden	Checked	The selected line does not display during runtime.
	Clear	The line selected displays during runtime.

## Option 5.2. Trend Line Compression or Sampling

### Option 5.2. Trend Line Compression or Sampling

Trending can display every value within the axis time limits for the line type (e.g. expression or logged line) or you can choose to compress the data and display representative values.

- Trend line compression options.
- Data compression interval start time.

### **Trend line compression options**

How Trending handles your compression or sampling choice depends, in part, on whether you select:

<a href="#">Option 5.2.1 (page 51)</a>	A line that does not have historical data.
<a href="#">Option 5.2.2 (page 52)</a>	A line that has historical data.
<a href="#">Option 5.2.3 (page 54)</a>	An Historian line.

## Data compression interval start time

The data compression time interval begin time is based on the X-axis pre-set start date and time.

Example

Your X-axis start time is set to begin at 10:15AM (5-25-02)

You have specified 5 minutes as the length of each interval.

The first interval:

Start time=10:15AM (5-25-02)

The second interval:

Start time = 10:20AM (5-25-02)

### Option 5.2.1. Compression for Lines that do not have Historical Data

If you select a compression type for a line type that is not a logged line, Trending:

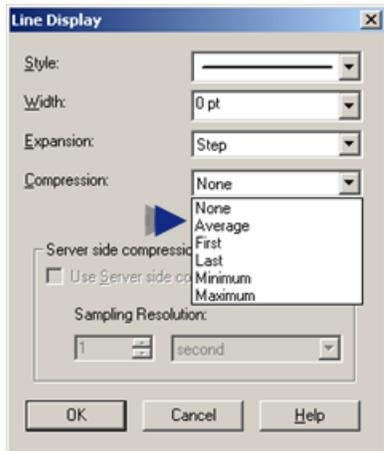
- Automatically determines the group size that the data point represents..
- Applies the selected compression method (for example, average) to that group.
- Plots all the data points in the group as a single data point as follows:

### Select compression for a line type that does not have historical data:

1. (If the Line Display dialog box is not open) Open the Line Display dialog box.
  - a. Select a line in the **Lines** grid.
  - b. Click Display....

The Line Display dialog box opens.

2. Select a compression type in the **Compression** field to display one of the following plotted values.



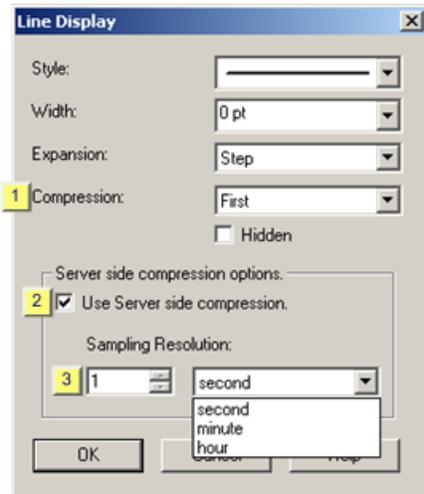
Compression Type	Plotted Value
None	Multiple data points along a vertical line.
Average	The average of the values within the automatically determined group size.
First	First value in the group
Last	Last value in the group
Minimum	Minimum value in the group
Maximum	Maximum value in the group

 **Note:** Server side compression is only available for lines with historical data.

#### *Option 5.2.2. Compression for Lines that have Historical Data*

If you select compression for a logged line type you have the option to reduce overhead by collecting only the representative data from the Database Logger. This is done because the Database Logger, instead of Trending, determines the value from your criteria and sends only the representative values to Trending.

Server side compression options are as follows.



rect 0, 103, 261, 137 ([page 53](#))

rect 12, 172, 261, 206 ([page 54](#))

rect 12, 204, 261, 291 ([page 54](#))

<a href="#">1</a> ( <a href="#">page 53</a> )	Compression
<a href="#">2</a> ( <a href="#">page 54</a> )	User Server side compression
<a href="#">3</a> ( <a href="#">page 54</a> )	Sampling Resolution

1	Compression
---	-------------

The Server side compression options are enabled when a compression type is selected.

**Note:** If None is selected the Server side compression options are disabled.

Compression types are:

Compression Type	Plotted Value and Time stamp
None	Multiple data points along a vertical line.
Average	Average of the values within the specified sampling time.
	Trending displays the time stamp for the first logged value in the group.
First	First logged value in the group.
	Trending displays the time stamp for when that value was logged.
Last	Last logged value in the group.

Compression Type	Plotted Value and Time stamp
	Trending displays the time stamp for when that value was logged.
Minimum	Minimum logged value in the group.
	Trending displays the time stamp for the minimum value in the group. If there is more than one minimum value in the group, Trending displays the time stamp for when the first minimum value was logged. Example Database Logger logged a value of 5,000 three times during the specified time frame. 5,000 is the minimum value in the sample. Trending displays the time stamp for the first 5,000 that the Database Logger logged.
Maximum	Maximum logged value in the group.
	Trending displays the time stamp for the maximum value in the group. If there is more than one maximum value in the group, Trending displays the time stamp for the when the first maximum value was logged. Example Database Logger logged a value of 30,000 three times during the specified time frame. 30,000 is the maximum value in the sample. Trending displays the time stamp for the first 30,000 that the Database Logger logged.

How the Database Logger and Trending handle your compression choice depends on your specifications for Server side compression.

2	Use Server side compression
---	-----------------------------

Options are:

Check	The sampling resolution for compression is enabled.
Clear	Trending compression behaves the same for the logged line type as it does for lines that are not the logged type.

3	Sampling Resolution
---	---------------------

Specify the length of the time interval the Database Logger should use to collect data from which it calculates a representative value, with its accompanying time stamp.

Enter the **number** and **time type** the Database Logger should use, e.g. 10 minutes.

Result: Database Logger sends values and related time stamps for Trending to display based on your compression type selection and the amount of time you specify that the Database Logger should use for each data group.

#### Option 5.2.3. Retrieval Mode and Sample Interval for Historian Lines

If you select an Historian line type, you have different sampling options available for viewing raw data collected by Historian.

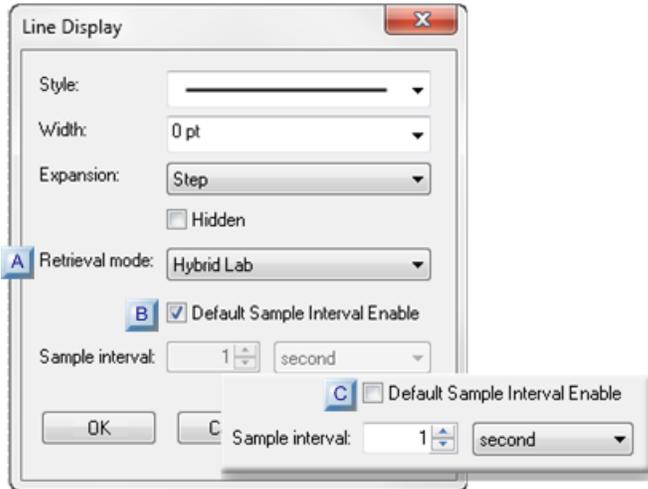
#### **Select a sampling option for Historian lines:**

1. (If the Line Display dialog box is not open) Open the Line Display dialog box.

- a. Select an Historian line in the **Lines** grid.
- b. Click Display....

The Line Display dialog box opens.

## 2. Select a **Retrieval mode** and **Sample interval**.



rect -1, 149, 20, 176 [\(page 55\)](#)

rect 72, 182, 103, 210 [\(page 58\)](#)

rect 200, 232, 228, 259 [\(page 58\)](#)

<a href="#">A</a> <a href="#">(page 55)</a>	Retrieval mode
<a href="#">B</a> <a href="#">(page 58)</a>	Default Sample Interval Enable
<a href="#">C</a> <a href="#">(page 58)</a>	Sample interval

A	Retrieval mode	
	Following are retrieval mode options.	
	Raw	Raw Standard Deviation
	Minimum	Standard Deviation
	Maximum	Count
	Lab	Raw Total
	Raw Average	Total
	Average	Hybrid Lab
	Trend	Hybrid Trend

	Interpolated	Hybrid Interpolated
--	--------------	---------------------

**Note:** The **Sample Interval** fields are enabled, unless you choose the Raw retrieval mode.

Sample Mode	Plotted Value	
None		
	Definition	Multiple data points along a vertical line.
	Comment	-
Raw Average		
	Definition	Arithmetic average of the good data quality raw points in the interval.
	Comment	This is useful only when a sufficient number of raw samples are collected.
Minimum		
	Definition	Minimum value in the interval
	Comment	The value may be a raw value or an interpolated value. The minimum must be a good data quality sample
Maximum		
	Definition	Maximum value in the sample interval
	Comment	The value may be a raw or an interpolated value. The maximum must be a good data quality sample.
Lab		
	Definition	Actual collected raw values.
	Comment	Interval timestamps are the same as in interpolated sampling; it is the values that can be different. Since lab sampling will return real collected values, it is more accurate when a sufficient number of raw samples are stored. Use <a href="#">interpolated (page 57)</a> sampling for highly compressed data. <b>Note:</b> Lab sampling was designed to match the way FIX32 and iFIX classic Historian (HTA/HTC) returned data.
Average		
	Definition	Average of the raw samples
	Comment	There is special logic for time weighting and for computing the value at the start of the interval. <b>Note:</b> This is useful for computing an average on compressed data.
Trend		
	Definition	Raw minimum and raw maximum value for each specified interval
	Comment	Use to maximize performance when retrieving data points for plotting. <b>Important:</b> A start time, end time, and an interval or number of samples must be specified. Trend sampling always returns an even number of samples, rounded up when necessary. If for instance, you request one sample in a specified time interval, Trending returns two samples. The graphical output from a request for seen samples is the same as the output for eight samples.

Sample Mode	Plotted Value	
Interpolated		
	Definition	Evenly space interpolated values based on the sampling interval configured for the Trend line..
	Comment	<p>Compression requires interpolation. Even if you are not using compression, you can use interpolation if you want samples spaced on intervals other than the collection rate. If you only want actual collected values to be returned, use <a href="#">Lab (page 56)</a> sampling. Typically, you use interpolated queries when data is not collected on a set time schedule, or if you want to see the results returned in an interval that is less than the collection rate. For example, these instances show when you can use interpolated mode to make evenly spaced out values:</p> <ul style="list-style-type: none"> <li>• An Historian tag is collected as unsolicited. In this case, we really do not know what the time interval is between collected values.</li> <li>• The Historian deadband and/or archive compression for a tag results in non-evenly spaced collection intervals.</li> <li>• An Historian tag is collected once per 8-hour shift, but you want to see it displayed in 1 hour intervals with a linear slope between points.</li> </ul>
Raw Standard Deviation		
	Definition	Arithmetic standard deviation of raw values for each calculation interval.
	Comment	-
Standard Deviation		
	Definition	Time-weighted standard deviation for each calculation interval.
	Comment	This is useful for computing a standard deviation on compressed data.
Count		
	Definition	Number of raw samples in the interval.
	Comment	This only addresses the count and not values or qualities of the samples. Count is useful for analyzing the distribution of the raw data samples.
Raw Total		
	Definition	Arithmetic sum of raw values for each interval.
	Comment	Use this mode to compute an accurate total when a sufficient number of raw samples are collected
Total		
	Definition	Time-weighted total for each calculation interval.
	Comment	The collected value must be a rate. This calculation mode determines a count from the collected rate.
Hybrid Lab		
	Definition	Hybrid of the <a href="#">Lab (page 56)</a> sample mode that returns the following based on the number of stored samples relative to requests for stored samples.
	Number of Raw vs. Interpolated	Returns

Sample Mode	Plotted Value		
		Fewer stored samples than requested.	Raw values.
		Stored samples equal to requests.	Raw values.
		More stored samples than requested.	Interpolated values.
Hybrid Trend			
	Definition	Hybrid of the <a href="#">(page 56) Trend (page 56)</a> sample mode that returns the following based on the number of stored samples relative to requests for stored samples.	
		Number of Raw vs. Interpolated	Returns
		Fewer stored samples than requested.	Raw values.
		Stored samples equal to requests.	Raw values.
		More stored samples than requested.	Interpolated values.
Hybrid Interpolated			
	Definition	Hybrid of the <a href="#">(page 56) Interpolated (page 57)</a> sample mode that returns the following based on the number of stored samples relative to requests for stored samples.	
		Number of Raw vs. Interpolated	Returns
		Fewer stored samples than requested.	Raw values.
		Stored samples equal to requests.	Raw values.
		More stored samples than requested.	Interpolated values.

B	Default Sample Interval Enable
---	--------------------------------

A Default Sample Interval Enable checkbox has been added to the Trend control's Line Display dialog box.

When Default Sample Interval Enable is checked, retrieving 1000 samples for an Historian line is now maintained even when some portion of the trend chart is zoomed and the X-axis span is changed dynamically.

C	Sample Interval
---	-----------------

 **Note:** **Sample Interval** is enabled when Default Sample Interval Enable is clear.

Define a time period for the **Sample interval**. The **Sample interval** is the time interval over which the selected **Retrieval mode** calculates or combines data to obtain a single data point for an Historian line.

3. Enter a value that represents the number of time units.

4. Select a time unit.

Example

Enter a value of 5 and select a time unit of second to retrieve a value from Historian every five seconds.

Historian sends values for Trending to display based on the **Retrieval mode** and the amount of time you specify for the **Sampling interval**.

**Notes:**

- If Auto update is checked for this line, changing the chart's **Auto update interval** sets the time between data updates for that line. This interval does not change the shape of the line or the number of data points represented.
- The time interval between successive chart redraws is set by the **Runtime refresh rate**. This interval only affects the rate at which the entire chart is refreshed for new data.

**!** **Important:** You should configure a **Sample interval** that will limit the number of data points displayed on any given Historian line to approximately 1000.

Example:

If you have the X-axis configured to show two days of data (**Duration** is 02:00:00) at a **Sample interval** of one second (00:00:01), you will have 172,800 point to plot. However, the server limit is approximately 5,000 data points. So for a chart has a duration of two days, a reasonable **Sample interval** would be two minutes (00:02:00) or higher, i.e. 1,440 data points to plot across the chart.

- Methods to configure X-axis Timing.
- Option 7.1. Configure Basic Chart Properties

## *Step 6. Configure Axes*

### Step 6. Configure Axes

Your trend chart has to have at least on X-axis and one Y-axis. At times, you may want to configure more that can be used instead of either default axis.

<a href="#">Option 6.1 (page 60)</a>	Configure the X-axis.
<a href="#">Option 6.2 (page 65)</a>	Configure the Y-axis.

<a href="#">Option 6.3 (page 69)</a>	Create a new axis.
<a href="#">Option 6.4 (page 70)</a>	Map axes to a line.

## Option 6.1. Configure the X-axis

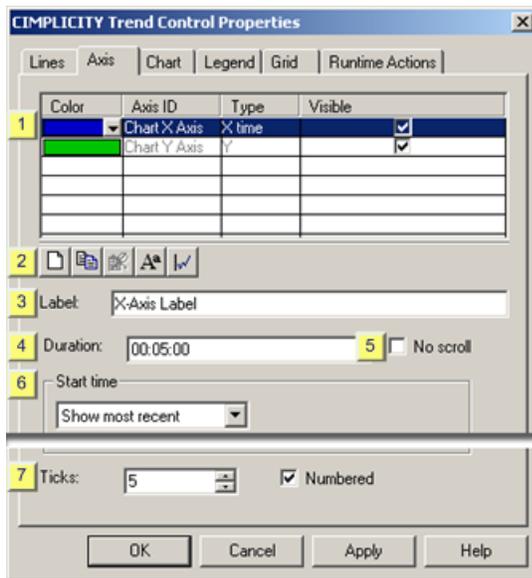
### *Option 6.1. Configure the X-axis*

<a href="#">Option 6.1.1 (page 60)</a>	Axis tab in the Trend Control Properties dialog box..
<a href="#">Option 6.1.2 (page 64)</a>	X Axis Time dialog box.

#### *Option 6.1.1. Axis Tab in the Trend Control Properties Dialog Box*

Select an X-axis on the Axis tab in the CIMPLICITY Trend Control Properties dialog box.

X-axis options are as follows.



rect 4, 51, 313, 144 [\(page 62\)](#)

rect -5, 143, 168, 172 [\(page 62\)](#)

rect -5, 170, 323, 199 [\(page 62\)](#)

rect -7, 197, 210, 229 [\(page 62\)](#)

rect 213, 198, 317, 230 [\(page 63\)](#)

rect -7, 227, 302, 266 [\(page 63\)](#)

rect -2, 276, 307, 315 [\(page 64\)](#)

<a href="#">1</a> <a href="#">(page 62)</a>	Axis list
<a href="#">2</a> <a href="#">(page 62)</a>	Axis tab toolbar
<a href="#">3</a> <a href="#">(page 62)</a>	Label
<a href="#">4</a> <a href="#">(page 62)</a>	Duration
<a href="#">5</a> <a href="#">(page 63)</a>	No scroll
<a href="#">6</a> <a href="#">(page 63)</a>	Start time
<a href="#">7</a> <a href="#">(page 64)</a>	Ticks/Numbered

1	Axis list
---	-----------

Axes that have been created for the Trend Control are listed in the Axis tab grid.

The following specifications can be made in the grid.

Feature	Description	
Color	Change the default color applied to the line. Click the Down Arrow button to the right of the selected line to open the Color palette.	
Axis ID	ID that identifies the axis during runtime. The Axis ID is Read Only.	
Type	Line type is either X time or Y.	
Visible	Checked	The axis is visible on the control during runtime.
	Clear	The axis is not visible on the control during runtime.

2	Axis tab toolbar
---	------------------

The following toolbar buttons are available on the Lines tab.



A	Opens a New Axis dialog box.
B	<ul style="list-style-type: none"> <li>• Copies the selected line configuration.</li> <li>• Opens a New Axis dialog box.</li> </ul> <p>Enter a name for the new axis. The new axis has the same configuration as the copied axis; the configuration can be modified.</p>
C	Deletes a selected axis. <b>Note:</b> The Chart X Axis and Chart Y Axis cannot be deleted.
D	Opens the Font dialog box.
E	Opens the Line-Axis Mapping dialog box.

3	Label
---	-------

Axis title.

4	Duration
---	----------

Duration of time the X-axis represents.

The format is ddd:hh:mm:ss where:

Letters	Represent
ddd	day number: 0–365

Letters	Represent
hh	Hours: 0–59
mm	minutes: 0–59
ss	seconds: 0–59

5	No scroll
---	-----------

When checked users cannot scroll the X-axis during runtime.

6	Start time
---	------------

Start time options include:

Show most recent

Option/Field	Description
No other entry is required	This is the same as selecting Now minus 0 days and Now minus time with a time that is equal to the duration.

Start date

Option/Field	Description
Start date	An absolute date in mm/dd/yy format.
Time	Select either:
Start time	Absolute time in hh:mm:ss format
Now minus time	Number that specifies the number of hours, minutes and seconds before the current time. The number is specified in hh:mm:ss format. For example, enter 1:30:05 for a starting time 1 hour 30 minutes and 5 seconds earlier than when the trend is first displayed.

Now minus days

Option/Field	Description
Now minus days	This is the same as selecting Now minus 0 days and Now minus time with a time that is equal to the duration
Time	Select either:
Start time	Absolute time in hh:mm:ss format

Option/ Field	Description	
	Now minus time	Number that specifies the number of hours, minutes and seconds before the current time. The number is specified in hh:mm:ss format. For example, enter 1:30:05 for a starting time 1 hour 30 minutes and 5 seconds earlier than when the trend is first displayed.

**! Important:**

- Trending compensates for abbreviated entries, e.g., The date 11/05/00 becomes 11/05/2000; a duration entry of 5 becomes 00:00:05.
- If you configure rapid trend retrieval (data compression), Trending uses the start time based on these specifications as the trend interval start time. If you specify a static time, the start time is based on the time you start the Trend chart.

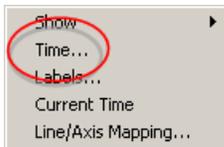
7	Ticks/Numbered
---	----------------

Specify the following.

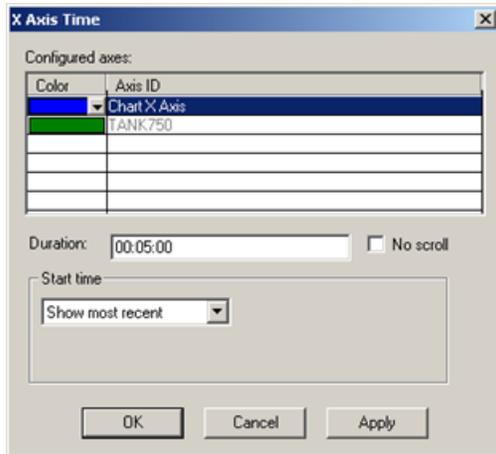
Option	Description	
Ticks	Number of ticks that the X-axis should display.	
	Minimum	0
	Maximum	99
Numbered	Check	The tick marks will be labeled.
	Clear	The tick marks will display with no labels.

*Option 6.1.2. X Axis Time Dialog Box*

1. Right-click the X-axis on the CimEdit Trend control.
2. Select Time on the Popup menu.



An X Axis Time dialog box opens.



3. Configure the available X-axis options the same way you would configure them on the Axis tab in the Trend Control Properties dialog box.
4. Click Apply to apply your changes.

**Note:** If you configure rapid trend retrieval (data compression), Trending uses the start time based on these specifications as the trend interval start time. If you specify a static time, the start time is based on the time you start the Trend chart.

## Option 6.2. Configure the Y-axis

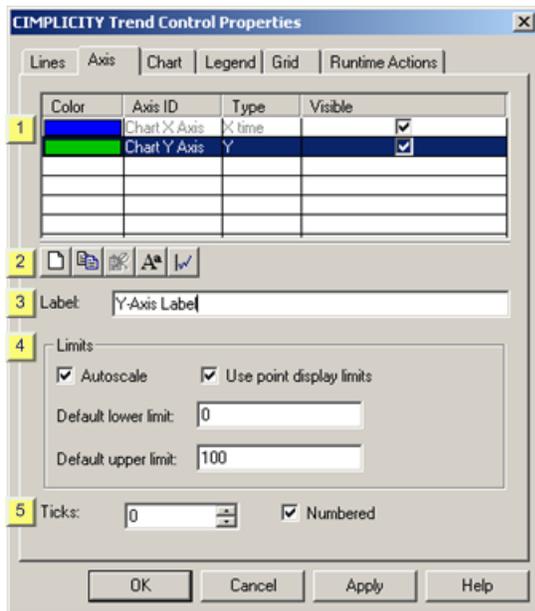
### *Option 6.2. Configure the Y-axis*

<a href="#">Option 6.2.1 (page 65)</a>	Axis tab in the Trend Control Properties dialog box.
<a href="#">Option 6.2.2 (page 69)</a>	Y-axis Limits Dialog Box

#### *Option 6.2.1. Axis Tab in the Trend Control Properties Dialog Box*

Select a Y-axis on the Axis tab in the CIMPLICITY Trend Control Properties dialog box.

Y-axis options are as follows.



rect -5, 52, 318, 140 [\(page 66\)](#)

rect -5, 148, 192, 175 [\(page 67\)](#)

rect -4, 173, 325, 200 [\(page 67\)](#)

rect 3, 198, 325, 306 [\(page 67\)](#)

rect 3, 304, 325, 348 [\(page 68\)](#)

<a href="#">1</a> <a href="#">(page 66)</a>	Axis list
<a href="#">2</a> <a href="#">(page 67)</a>	Axis tab toolbar
<a href="#">3</a> <a href="#">(page 67)</a>	Label
<a href="#">4</a> <a href="#">(page 67)</a>	Limits
<a href="#">5</a> <a href="#">(page 68)</a>	Ticks/Numbered

1	Axis list
---	-----------

Axes that have been created for the Trend Control are listed in the Axis tab grid.

The following specifications can be made in the grid.

Feature	Description	
Color	Change the default color applied to the line. Click the Down Arrow button to the right of the selected line to open the Color palette.	
Axis ID	ID that identifies the axis during runtime. The Axis ID is Read Only.	
Type	Line type is either X time or Y.	
Visible	Checked	The axis is visible on the control during runtime.
	Clear	The axis is not visible on the control during runtime.

2	Axis tab toolbar
---	------------------

The following toolbar buttons are available on the Lines tab.



A	Opens a New Axis dialog box.
B	<ul style="list-style-type: none"> <li>• Copies the selected line configuration.</li> <li>• Opens a New Axis dialog box.</li> </ul> <p>Enter a name for the new axis. The new axis has the same configuration as the copied axis; the configuration can be modified.</p>
C	Deletes a selected axis. <b>Note:</b> The Chart X Axis and Chart Y Axis cannot be deleted.
D	Opens the Font dialog box.
E	Opens the Line-Axis Mapping dialog box.

3	Label
---	-------

Axis title.

4	Limits
---	--------

Limits options include the following.

Option	Description	
Autoscale	Checked	Trending automatically changes the Y-axis limits each time a value goes above or below the existing limit.
	Clear	Y-axis uses the same scale even if a value goes above or below the existing limit.
Use point display limits	Checked	Trending use the point's limits specified in the Configuration–Point dialog box. If Trending can't find limits in the Configuration–Point dialog box, it will use the values you enter in the <b>Default lower limit</b> and <b>Default upper limit</b> fields.
	Clear	Point limits are not used.
Limits	Limits can be specified as follows.	

Option	Description	
	Default lower limit	If there are no point limits, the Y-axis changes each time a value goes above the default lower limit.
	Default upper limit	If there are no point limits, the Y-axis changes each time a value goes above the default upper limit.

Autoscale functions as follows:

1. The highest and lowest values are found from all lines associated with the axis.
2. The decimal base is calculated for both highest and lowest values.

Examples

The decimal base of 150 is 100.

The decimal base of 7654 is 1000.

3. The high limit is the number closest to the highest number on the high side, using the calculated decimal base from the highest value as multiple.

The low limit is the number closest to the highest number on the low side, using the calculated decimal base from the lowest value as a multiple.

Example

Given 478 and 7891 as the lowest and highest values found, the calculated low and high limit for the axis is 400 and 8000. This is because 400 is the closest value to 478 on the low side that uses a multiple of 100 and because 8000 is the closest value to 7891 on the high side that uses a multiple of 1000.

 **guide:** Guidelines for the order of priority if you select all the limit options

Trending:

4. Increments the upper or lower limit each time a value goes above or below the existing limit.
5. Uses the limits specified in the Points – Configuration dialog box.
6. Uses the limits specified in the **Default lower limit** and **Default upper limit** fields.

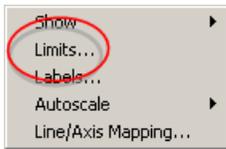
5	Ticks/Numbered
---	----------------

Specify the following.

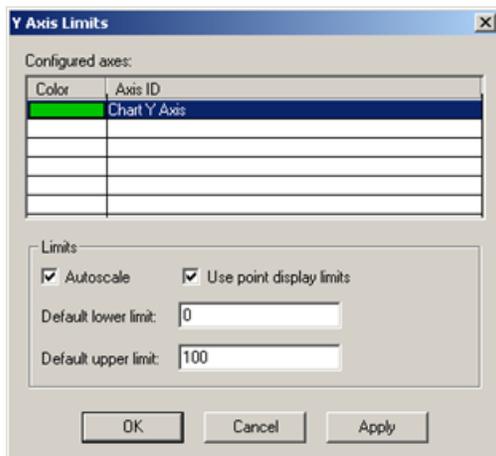
Option	Description	
Ticks	Number of ticks that the X-axis should display.	
	Minimum	0
	Maximum	99
Numbered	Check	The tick marks will be labeled.
	Clear	The tick marks will display with no labels.

### *Option 6.2.2. Y-axis Limits Dialog Box*

1. Right-click the Y-axis on the CimEdit Trend control.
2. Select Limits on the Popup menu.



A Y Axis Limits dialog box opens.



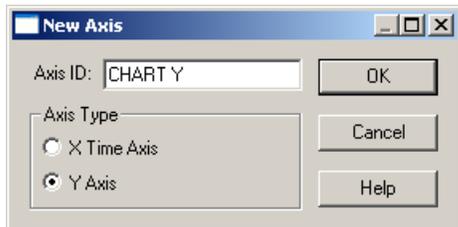
3. Configure the available Y-axis options the same way you would configure them on the Axis tab in the Trend Control Properties dialog box.
4. Click Apply to apply your changes.

### Option 6.3. Create a New Axis

1. Click the New button on the Axis tab.

The New Axis dialog box opens.

2. Enter a name for the new axis in the **Axis ID** field.
3. Check either X Time Axis or Y Axis to specify the axis type.



4. Click OK.

#### Option 6.4. Map Axes to a Line

1. Do one of the following:

Method 1. Properties dialog box

Click the Line Axis Mapping button .

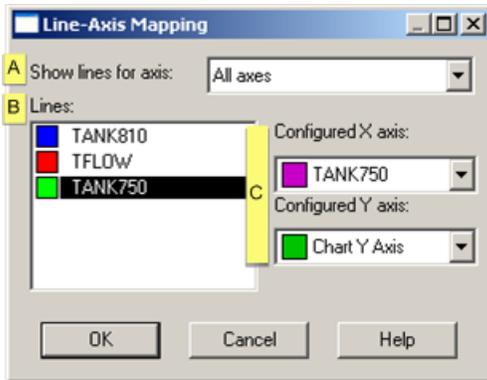
Method 2. Popup menus

- a. Right-click either the Y-axis or X-axis.
- b. Select Line/Axis Mapping on the Popup menu.



The Line-Axis Mapping dialog box opens when you use either method.

2. Map Lines to axes as follows.



	Option	Description
A	Show lines for axis	Select one: <ul style="list-style-type: none"> <li>• A single axis</li> <li>• All axes.</li> </ul> Lines that are mapped to the selected axis are listed in the <b>Lines</b> box.
B	Lines	Select the line to map.
C	Configured...axis	Select an X and Y-axis that should be associated with the selected line.

- a.  **Note:** Y Chart Axis and X Chart Axis are the default axes.

## Step 7. Configure Chart Properties

### Step 7. Configure Chart Properties

There are several details about the chart itself. Details range from the chart's color to how many pixels away a cursor can be from the slider and still grab it.

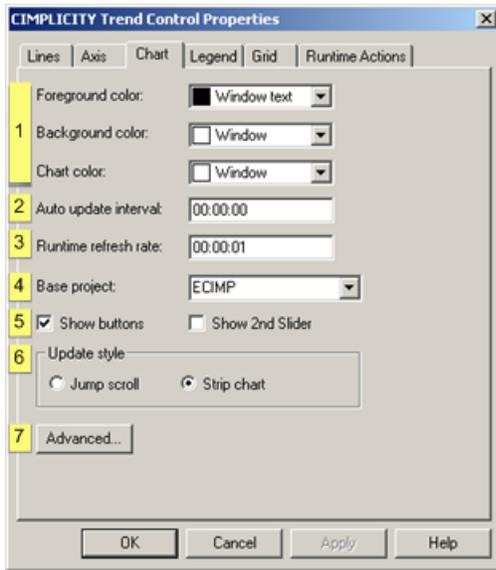
These details are configured on the Chart tab of the CIMPLICITY Trend Control Properties dialog box and Advanced tab that is accessed through the Chart tab

<a href="#">Option 7.1 (page 71)</a>	Configure Basic Chart Properties.
<a href="#">Option 7.2 (page 75)</a>	Configure Advanced Chart Properties.

### Option 7.1. Configure Basic Chart Properties

Select the Chart tab in the CIMPLICITY Trend Control Properties dialog box.

Chart options are as follows.

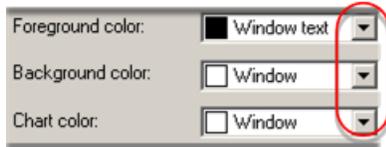


- rect 0, 253, 161, 286 ([page 75](#))
- rect -3, 210, 228, 251 ([page 74](#))
- rect -1, 187, 230, 210 ([page 74](#))
- rect -2, 165, 229, 188 ([page 73](#))
- rect -1, 139, 230, 162 ([page 73](#))
- rect -3, 117, 228, 140 ([page 73](#))
- rect -2, 46, 229, 119 ([page 72](#))

<a href="#">1</a> <a href="#">(page 72)</a>	Chart colors
<a href="#">2</a> <a href="#">(page 73)</a>	Auto-update interval
<a href="#">3</a> <a href="#">(page 73)</a>	Runtime refresh rate
<a href="#">4</a> <a href="#">(page 73)</a>	Base project
<a href="#">5</a> <a href="#">(page 74)</a>	Show buttons/Show 2nd Slider
<a href="#">6</a> <a href="#">(page 74)</a>	Update style
<a href="#">7</a> <a href="#">(page 75)</a>	Advanced

1	Chart colors
---	--------------

Click each color field's **Palette** button to configure the chart's colors:



Field	Selects color for the
Foreground color	Slider, legend and chart X and Y-axes
	Default Color: CimEdit ambient Fore color.
Background color	Area surrounding the trend chart
	Default Color: CimEdit ambient Back color.
Chart color	Solid color for the trend chart area
	Default Color: CimEdit ambient Back color.

2	Auto update interval
---	----------------------

The time between one new data update and the next.

The format is **hh:mm:ss**.

Example

10 equals ten seconds; 1:00 equals one minute.

 **Note:** Auto update will only occur for lines that have Auto Update selected on the Line tab of the CIMPLICITY Trend Control Properties dialog box.

3	Runtime refresh rate
---	----------------------

The time between one time that the chart redraws itself and the next.

The format is **hh:mm:ss**.

4	Base project
---	--------------

The CIMPLICITY project to be used for any unqualified Point IDs.

The default is provided by CimView, but can be changed at runtime.

- Trending goes step-by-step, in the following order of priority, to find the project that contains the unqualified points.
- The step that proves positive is the one Trending uses to determine the project name.

- Each step applies to both Server and Viewer, unless otherwise noted:

Priority	Project is used to fully qualify any Unqualified Point IDs when
A	In CimView, an <b>Open screen</b> or <b>Overlay screen</b> action specifies a project. When a user opens the screen that contains the Trend chart using one of these actions, the project specified in the action is used.
B	A command line is used to open the CimView screen that contains the Trend chart and the <b>/project</b> option is used, that project is used.
C	The screen that contains the Trend chart is in a project directory, that project is used.
D	The project name in the Trend chart property page is not blank, that project is used.
E	You are on a Server and a single project is currently running, that project is used.
F	You are on a Server and multiple projects are running, the project that was started first is used. However, you can modify this behavior using the PROJECT_ID global parameter.
G	You are on a Viewer, and none of the above conditions are positive, unqualified Point IDs are unavailable.

5	Show buttons/Show 2nd Slider
---	------------------------------

(Optional) Check to display the following during runtime.

Checkbox	Displays
Show buttons	Scroll buttons.
Show 2nd slider	A second slider. <b>Note:</b> You can choose to display second slider values in the Legend and /or Status bar during runtime. You enable the options on the <a href="#">Legend (page 78)</a> tab in the CIMPLICITY Trend Control Properties dialog box.

6	Update Style
---	--------------

Check one of the following to choose an update style

Radio button	Description
Jump Scroll	The line: <ul style="list-style-type: none"> <li>• Starts at the left of the chart</li> <li>• Updates across the chart area.</li> <li>• Is automatically scrolled by the scroll percentage, specified in the Advanced dialog box, when the right edge is reached</li> <li>• Continues to update from left to right.</li> </ul>
Strip Chart	The line:

Radio button	Description
	<ul style="list-style-type: none"> <li>• Updates at the right edge of the chart</li> <li>• Scrolls each time an update is received</li> </ul>

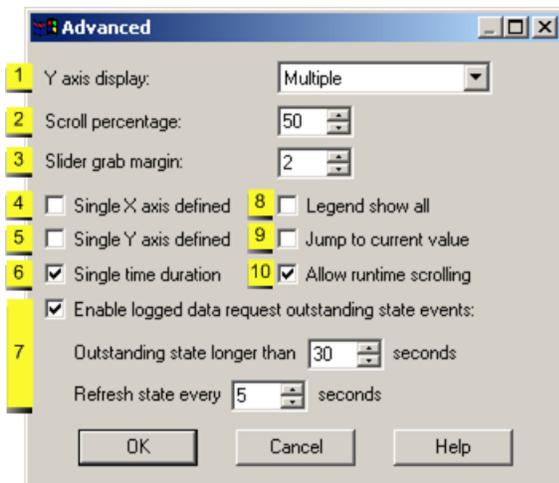
7	Advanced
---	----------

(Optional) click to open the Advanced dialog box.

## Option 7.2. Configure Advanced Chart Properties

The Y-axis display, scroll percentage, slider grab margin and other miscellaneous chart features can be specified in the Chart tab's Advanced dialog box. Click Advanced on the Chart tab in the CIMPLICITY Trend Control Properties dialog box.

The Advanced dialog box opens. Options are as follows.



rect 0, 32, 322, 54 ([page 75](#))

rect 0, 61, 241, 83 ([page 76](#))

rect 0, 87, 239, 109 ([page 76](#))

rect -3, 112, 150, 134 ([page 76](#))

rect -2, 133, 151, 155 ([page 76](#))

rect -4, 156, 149, 178 ([page 77](#))

rect -3, 181, 309, 263 ([page 77](#))

rect 151, 113, 304, 135 ([page 77](#))

rect 151, 135, 304, 157 ([page 77](#))

rect 150, 154, 303, 176 ([page 77](#))

1	Y axis display
---	----------------

Y-axis to display in the **Y-axis display** field.

Choices are:

Multiple (Default)	Display all the currently configured Y-axes that are not hidden
Single	Display the chart Y-axis only
Percent Configured	Display a single Y-axis going from 0 to 100 percent. All the lines are displayed on a scale of 0 to 100 percent of their ranges as configured on the Axis property page.

2	Scroll percentage
---	-------------------

Percent that defines the:

- Time duration that the chart data will Scroll backward or forward when the ◀ or ▶ button is pressed during runtime.
- Length of the jump when the drawing reaches the right edge of the chart if you set the **Update style** to Jump scroll in the basic Chart tab.

Example of button scroll

A chart displays a 2-hour time duration

Enter 25 in this field.

The chart will scroll backward or forward by a half-hour (25% of two (2) hours) when the scroll button is pressed.

3	Slider grab margin
---	--------------------

The number of pixels from the slider that a mouse cursor can move and still grab the slider.

The entry can be a number from 0 - 10.

4	Single X-axis defined
---	-----------------------

Checked	The chart displays with a single X-axis referred to as the Chart X axis. All lines will use the Chart X Axis.
Clear	The chart can display with more than one X-axis.

**Note:** For Line charts that represent time, this option is mutually exclusive with the Single Time Duration option. Therefore, if you select this option, the Single time duration check box will be unavailable.

5	Single Y-axis defined
---	-----------------------

Checked	The chart displays with a single Y-axis referred to as the Chart Y axis. All lines will use the Chart Y-axis.
---------	---------------------------------------------------------------------------------------------------------------

Clear	The chart can display with more than one Y-axis.
-------	--------------------------------------------------

**Note:** If you select this option, the **Y-axis display** will be disabled.

6	Single time duration
---	----------------------

Checked	All of the lines in the chart use a single time duration.
Clear	The lines in the chart can use different time durations.

The time duration is the Chart X Axis duration, for example, you can view the data for all lines for a span of two hours, regardless of start time.

**Note:** For Line charts that represent time, this option is mutually exclusive with the Single X-axis option.

7	Enable logged data to request outstanding state events
---	--------------------------------------------------------

1. Check to enable a wait state event.
2. Specify the following.

Field	Description
Outstanding state longer than N seconds	Wait time, in seconds, at which a request for logged data is considered outstanding.
Refresh state every N seconds	Interval, in seconds, at which the Trend control checks if it has any logged requests that have been outstanding for more than the <b>Threshold</b> .

8	Legend show all
---	-----------------

Checked	Displays the legend information for all visible and hidden lines on the chart.
Clear	Displays information for only the visible lines on the chart.

**Note:** Use the Legend tab to define the legend elements.

9	Jump to current value
---	-----------------------

Checked	The trend display automatically jumps back to the current time at the next runtime or auto update timer interval, whenever a user scrolls the chart.
Clear	Must scroll manually to return to the current time. If one of the objects on the CimView screen has a <code>JumpToCurrentTime</code> method configured for the chart, you can use that method to scroll forward to the current time.

Jump to current value combined with Allow Runtime Scrolling affects logged expression behavior.

10	Allow runtime scrolling
----	-------------------------

Checked	<p>Enables scrolling of runtime lines.</p> <ul style="list-style-type: none"> <li>• Points</li> <li>• Expressions</li> <li>• Logged expressions</li> </ul> <p><b>Note:</b> If a line shares an axis with a line type that has been blocked from scrolling, the line will not scroll.</p>
Clear	Prevents line scrolling.

Allow runtime scrolling, combined with **JumpToCurrentTime**, affects logged expression behavior.

## *Step 8. Configure Legend Properties*

### Step 8. Configure Legend Properties

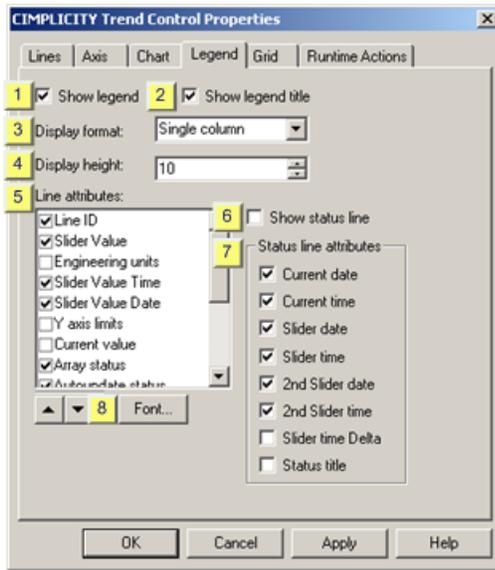
The Legend properties define the legend information for the lines on the chart.

<a href="#">Option 8.1 (page 78)</a>	Legend tab in the Trend control Properties dialog box.
<a href="#">Option 8.2 (page 81)</a>	Legend selections on Popup menus.

#### Option 8.1 Legend Tab in the Trend Control Properties Dialog Box

Select the Legend tab in the CIMPLICITY Trend Control Properties dialog box.

Legend options are as follows.



rect 1, 44, 94, 68 ([page 80](#))

rect 94, 44, 211, 68 ([page 80](#))

rect 0, 70, 211, 94 ([page 80](#))

rect 0, 92, 211, 116 ([page 80](#))

rect -1, 117, 131, 235 ([page 81](#))

rect 134, 121, 253, 143 ([page 81](#))

rect 135, 146, 254, 299 ([page 81](#))

rect 45, 237, 119, 266 ([page 81](#))

<a href="#">1</a> ( <a href="#">page 80</a> )	Show legend
<a href="#">2</a> ( <a href="#">page 80</a> )	Show legend title
<a href="#">3</a> ( <a href="#">page 80</a> )	Display format
<a href="#">4</a> ( <a href="#">page 80</a> )	Display height
<a href="#">5</a> ( <a href="#">page 81</a> )	Line attributes
<a href="#">6</a> ( <a href="#">page 81</a> )	Show status line
<a href="#">7</a> ( <a href="#">page 81</a> )	Status line attributes

8 <a href="#">(page 81)</a>	Font
--------------------------------	------

1	Show legend
---	-------------

Show legend options are:

Check	Display the legend on the chart.
Clear	Do not display the legend on the chart.

 **Note:** If you clear the check box, you have completed configuration of this tab.

2	Show legend title
---	-------------------

Check to display a title line for the legend.

3	Display format
---	----------------

Select one of the following.

Single column	All lines will display in a single column.
Double column	If you have two or more lines half of the lines will display in one column in the Legend; the other half will appear in the second column. For an odd number of lines the first column will display the extra line.

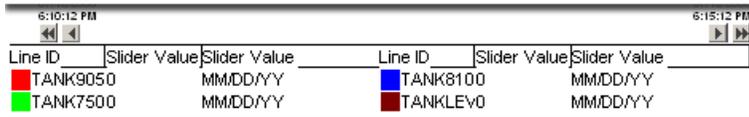
### Examples

#### Single column



Line ID	Slider Value	Slider Value
TANK9050	MM/DD/YY	
TANK7500	MM/DD/YY	
TANK8100	MM/DD/YY	
TANKLEV0	MM/DD/YY	

#### Double column



Line ID	Slider Value	Slider Value	Line ID	Slider Value	Slider Value
TANK9050	MM/DD/YY		TANK8100	MM/DD/YY	
TANK7500	MM/DD/YY		TANKLEV0	MM/DD/YY	

4	Display height
---	----------------

The number of legend lines to display.

This number refers to the number of line ID's that will be displayed (with line attributes).

If you have more lines than can be displayed in the legend area, you can use the vertical scroll bar to the right of the legend area to display the additional information.

5	Line attributes
---	-----------------

Check the items that will display for each line on the chart.

 **Note:** Use the Up Arrow and Down Arrow buttons to create the order in which you want the items displayed.

6	Show status line
---	------------------

Check to display the status line.

7	Status line attributes
---	------------------------

Check the attributes to display on the status line.

8	Font
---	------

Click to open the Font dialog box, to select the font, font style, size and script for the legend and status bar.

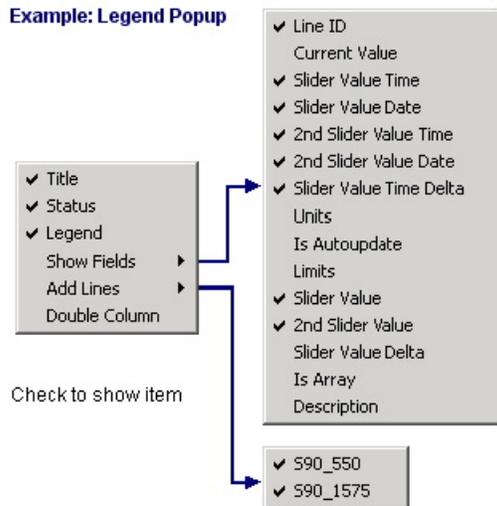
 **Note:** The Point Description option is available for Point lines or Expression lines where the expression is only a Point ID. It enables an operator to view the point's description that was entered in the Point Properties dialog box. You enable the 2nd Slider option on the [Chart \(page 71\)](#) tab in the CIMPLICITY Trend Control Chart Properties dialog box.

## Option 8.2. Legend Selections on Popup Menus

- Popup menu in the Legend area
- Popup menu in a Status line

### Popup Menu in the Legend area

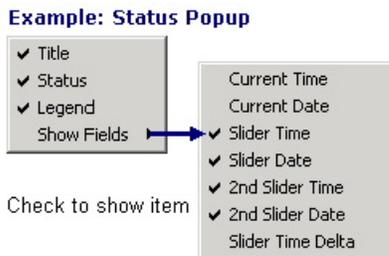
1. Place the cursor over the legend area.
2. Click the right mouse button. A popup menu appears.



3. Check Legend to display the legend.
4. Select Show Fields. An extended menu appears.
5. Check any fields you want to display in the Legend.
6. Select Add Lines. An extended menu appears.
7. Select the lines you want to display in the Legend.
8. Check Status to display the status bar.

Popup Menu in a Status line

9. Place the cursor over the Status area.
10. Click the right mouse button. A popup menu appears.



11. Check Status to display the status line.
12. Select Show Fields. An extended menu appears.
13. Check the fields you want to display in the Status line.
14. Check Legend to display the legend.

 **Note:** The Point Description option is available for Point lines or Expression lines where the expression is only a Point ID. It enables an operator to view the point's description that was entered in the Point Properties dialog box. You enable the 2nd Slider option on the [Chart \(page 71\)](#) tab in the CIMPLICITY Trend Control Chart Properties dialog box.

## About Trend Chart Sliders

You can choose to display one or [two sliders \(page 71\)](#) on the Trend Control chart.

When you select two sliders you can:

- View the point value at the selected position for each slider as well as the time the value was recorded (Slider Value Time (and Date)) in the Legend and Status lines.

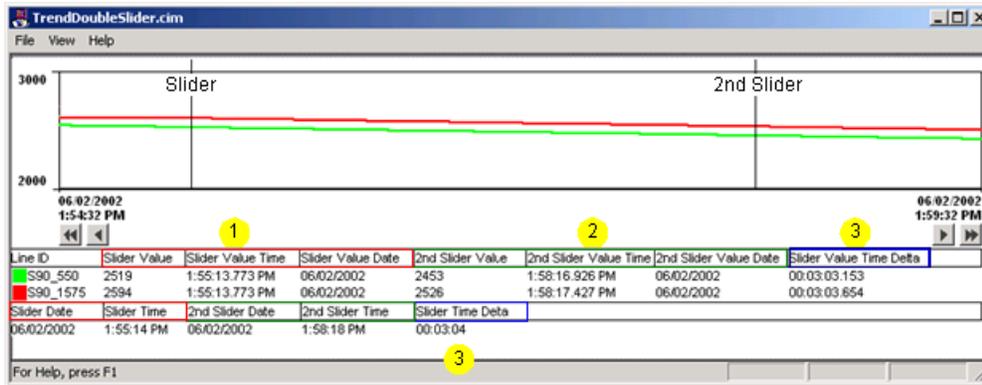
This enables you to precisely select where you want to compare two values.

- View the time period (Slider Value Time Delta) between the two Slider Value Times, which Trending calculates for you.

Time values are shown as follows:

In the <a href="#">legend (page 78)</a> for each line	Slider Value Time	Are time stamp values for the last time the point changed to the value at the slider (Thus they are called Slider Value Time, or 2nd Slider Value Time).
	Slider Value Time Delta	Is an absolute time difference of these time values for the particular point.
In the <a href="#">status line (page 78)</a>	Slider Time	Are actual slider positions on the time axis (the X-axis).
	Slider Time Delta	Is the absolute value of the difference between the two slider times.

 **Note:** When you open the Trend chart in CimView Slider 1 is always on top of Slider 2. You can move either slider to the right or left.



- 1 Value Time recorded at Slider.
  - 2 Value Time recorded at 2nd Slider.
  - 3 Value/Slider Time Delta between the two Slider Value Times.
- 2 - 1 = 3 Note: The slider positions can be changed. Slider Time Delta will always be positive

**Note:** You don't need to keep track of which slider is slider1 and which slider is slider2. The time and value differences are always with respect to positive time flow. And if you are trying to position a slider at a particular time just look for the **Slider time** that is changing when you are dragging whatever slider you happen to have.

## Step 9. Configure Grid Properties

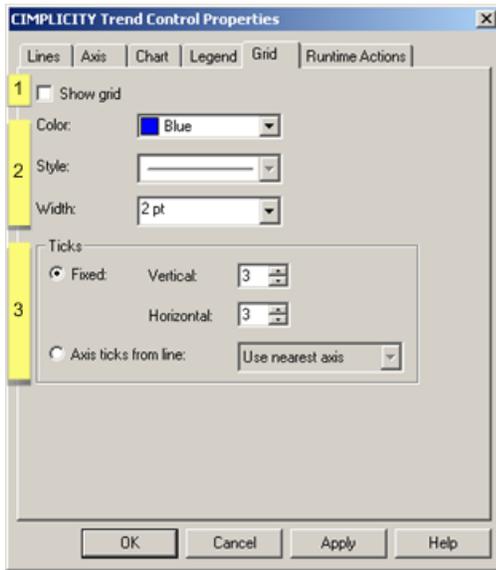
### Step 9. Configure Grid Properties

<a href="#">Option 9.1 (page 84)</a>	Grid tab in the Trend Control properties dialog box.
<a href="#">Option 9.2 (page 86)</a>	Grid selections on Popup menus.

#### Option 9.1. Grid Tab in the Trend Control Properties Dialog Box

Select the Grid tab in the CIMPLICITY Trend Control Properties dialog box.

Grid options are as follows.



rect 3, 147, 290, 236 ([page 86](#))

rect 2, 65, 289, 147 ([page 85](#))

rect 0, 41, 287, 67 ([page 85](#))

<a href="#">1</a> ( <a href="#">page 85</a> )	Show grid
<a href="#">2</a> ( <a href="#">page 85</a> )	Color/style/width
<a href="#">3</a> ( <a href="#">page 86</a> )	Ticks

1	Show grid
---	-----------

Show grid options are:

Check	Display the grid on the chart.
Clear	Do not display the grid on the chart.

 **Note:** If you clear the check box, you have completed configuration of this tab.

2	Color/Style/Width
---	-------------------

Grid lines' color, style and width options are

Field	Description
Color	Click Color field's <b>Palette</b> button to configure the chart's colors:

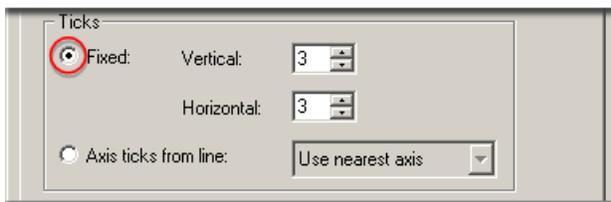
Field	Description
Style	Select Solid or one of a variety of dot/dash lines in the drop-down list.
Width	(Available when a solid line is selected) Grid line width in points.

3	Ticks
---	-------

The Grid tab has two alternatives for specifying the number of grid lines to display.

Fixed

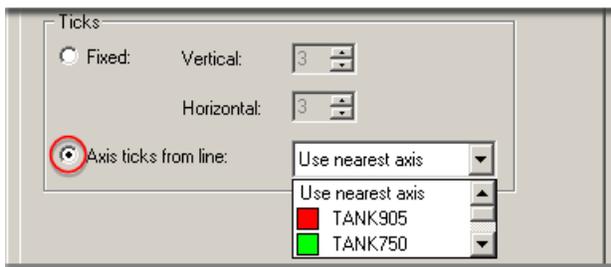
A fixed number of horizontal and vertical grid lines to display



Axis ticks from line

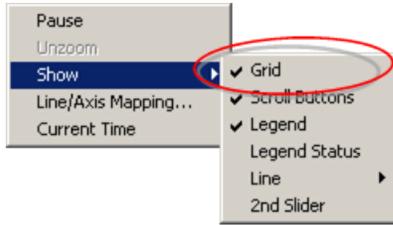
Select an axis whose ticks will determine the grid lines.

**Note:** If you select Use nearest axis, the first axis with tick marks is used to determine the grid lines.



## Option 9.2. Grid Selections on Popup Menus

1. Place the cursor anywhere in the chart area.
2. Click the right mouse button.
3. Select Show/Hide. An extended menu displays.
4. Select Grid.



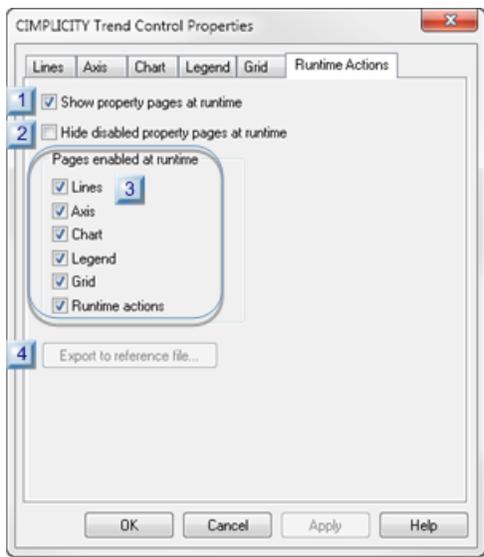
The grid that you configured on the Grid tab displays.

## Step 10. Configure Runtime Actions

Whether or not an operator can access one or more of the tabs or even open the CIMPLICITY Trend Control Properties dialog box during runtime is under your control.

Select the Runtime Actions tab in the CIMPLICITY Trend Control Properties dialog box.

Runtime Actions options are as follows.



rect 0, 205, 23, 228 ([page 88](#))

rect 66, 101, 89, 124 ([page 88](#))

rect -3, 68, 20, 91 ([page 88](#))

rect -3, 45, 20, 68 ([page 88](#))

1 ( <a href="#">page 88</a> )	Show property pages at runtime.
2 ( <a href="#">page 88</a> )	Hide disabled property pages at runtime.

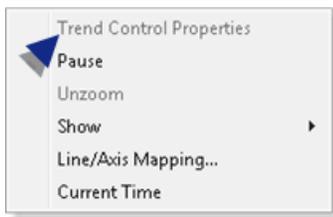
<a href="#">3</a> <a href="#">(page 88)</a>	Pages enabled at runtime.
<a href="#">4</a> <a href="#">(page 88)</a>	Export reference file.

1	Show property pages at runtime
---	--------------------------------

Show property pages at runtime options are:

Check	Allow operators to open the CIMPLICITY Trend Control Properties dialog box during runtime.
Clear	Do not allow operators to open the CIMPLICITY Trend Control Properties dialog box during runtime.

 **Note:** If you clear the check box, you have completed configuration of this tab; a runtime Popup menu item, Trend Control Properties, will be disabled; the CIMPLICITY Trend Control Properties dialog box will not open.



2	Hide disabled property pages at runtime
---	-----------------------------------------

If Show property pages at runtime is checked, check or clear Hide disabled property pages at runtime to do the following.

Check	Hides the selected tabs (pages) that are not enabled for runtime.
Clear	Displays read-only tab that are not enabled for runtime.

3	Pages enabled at runtime
---	--------------------------

The Runtime Actions tab has a checkbox for each tab in the CIMPLICITY Trend Control properties dialog box.

Options for each checkbox are:

Check	The tab is Read/Write during runtime.
Clear	The tab is Read Only during runtime.

4	Export reference file
---	-----------------------

The Export reference file button is enabled during runtime if Runtime actions is checked in the Pages enabled at runtime box.

**!** **Important:** If you are using a reference file, you need to enable at least the Runtime Actions tab so the operator can export data to the reference file.

## *Trend Methods*

### *Trend Methods*

Because the trend chart is an object in CimEdit, you can specify events that trigger actions.

Trending offers you a list of methods to use for an Invoke method action that can be triggered by an event.

A method is a function that operates on a Trend control in CimView.

You can customize one or all of these methods so they will change or enable/disable an aspect of the trend chart when their associated event occurs.

<a href="#">Axis (X) (page 89)</a>	<a href="#">Axis (Y) (page 89)</a>	<a href="#">Axis (Y or X) (page 90)</a>	<a href="#">Legend (page 90)</a>	<a href="#">Line (page 90)</a>	<a href="#">Visual Aids (page 90)</a>	<a href="#">Wait States (page 90)</a>	<a href="#">Other (page 91)</a>
----------------------------------------	----------------------------------------	---------------------------------------------	--------------------------------------	------------------------------------	-------------------------------------------	-------------------------------------------	-------------------------------------

<b>Axis (X)</b>	
JumpToCurrentTime	Set the chart time to the current time.
PauseUpdates	Pause or resume updates
ScrollLines	Scroll the chart by the given percentage
SetXDuration	Change the X-axis duration.
SetXStartTime	Change the Chart X-axis for one or all lines.

<b>Axis (Y)</b>	
SetAxisLabel	Display a label for a selected Y-axis.
SetLineYAxis	Change the Y-axis settings.
SetYAxisVisible	Change the visibility of one or all Y axes.
SetLineUseChartY	Toggle the use of the Chart Y-axis for a line.

<b>Axis (Y or X)</b>	
SetAxisTicks	Display ticks and tick labels on either an X or Y-axis.

<b>Legend</b>	
SetLegendState	Make the legend visible/invisible

<b>Line</b>	
AddDynPointLine	Add a point line.
AddExpressionLine	Add an expression line.
AddHistorianExpressionLine	Add a line with values that are calculated by an Historian tag expression.
AddHistorianLine	Add a line from Historian.
AddHistorianLineVerify	Report if the point (tag) values are not being logged to Historian.
AddLoggedLine	Add a logged line.
AddLoggedExpressionLine	Add a logged expression line.
AddLoggedPointLine	Add a specified logged point line.
AddPointLine	Add a specified point line.
DeleteTrendLine	Delete a line.
SetLineAutoupdate	Change the auto-update status of one or all non-runtime lines.
SetLineCompression	Set the compression specifications for a particular Line ID.
SetLineDisplay	Set the color, compression and expansion of a given line.
SetLineVisible	Toggle the line visibility in both the chart and legend for one or all lines.
WriteReferenceFile	Write a reference file for specified lines.

<b>Visual Aids</b>	
ResetZoom	Reset zoom in the Trend Control to 100%.
SetGridState	Change the grid visibility for the Trend Control.

<b>Wait States</b>	
EnableOutstandingLoggedRequestStateEvents	Enables the firing of logged data wait state events in the Trend control.
DisableOutstandingLoggedRequestStateEvents	Disables or turns off the firing of logged data request wait state events in the Trend control.
<b>EnteringOutstandingLoggedRequestState Event</b>	Trend control has determined that it has logged data requests that have been outstanding (waiting) for longer than the number of seconds determined by the threshold.

<b>Wait States</b>	
LeavingOutstandingLoggedRequestState Event	Trend control has determined that it no longer has any logged data requests that are outstanding.

<b>Other</b>	
AboutBox	Display the <b>Help About</b> dialog box for the CIMPLICITY Trend Control.
ForceRedraw	Redraws the chart to display the current values.
LaunchProperties	Open a Trend Control Properties dialog box during runtime.
LoadTrend	Loads an external file into the Trend control.
SaveTrend	Save the Trend to an external file.
SetCimplicityProject	Set the CIMPLICITY project for the Trend Control.

## *Configure Methods*

### Configure Methods

To configure a method:

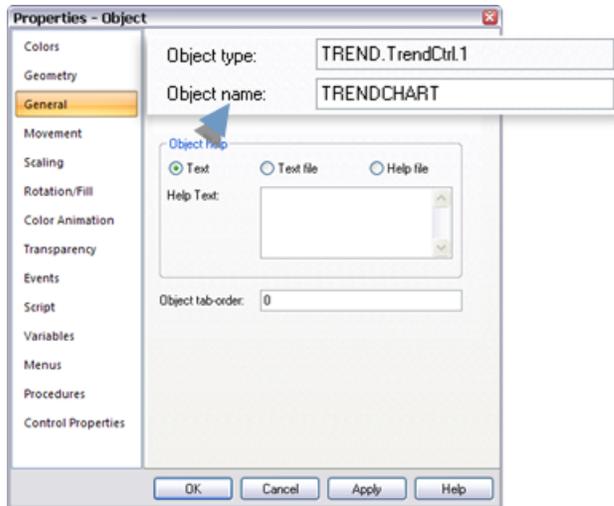
<a href="#">Step 1 (page 91)</a>	Name a Trend Control.
<a href="#">Step 2 (page 92)</a>	Create an Invoke Method action.

#### Step 1. Name a Trend Control

1. Right-click the Trend control.
2. Select Properties on the Popup menu.

The object's Properties dialog box opens.

3. Select **General**.
4. Enter a name for the Trend control in the **Object name** field.



5. Click one of the following.

OK	Saves the changes; closes the Properties dialog box.
Apply	Applies the name without closing the Properties dialog box.

The control can be selected when you create an Invoke Method action.

## Step 2. Create an Invoke Method Action

1. Point ID that refers to a text point
2. Constant string enclosed in double quotes
3. **If/Then/Else** condition where:  
**If** is **A** (from either 1 or 2 on the list) **Then** is **B** (a text expression) **Else** is **C** (a text expression) A short hand **If/Then/Else** is **A?B:C**

## *Line Display Methods*

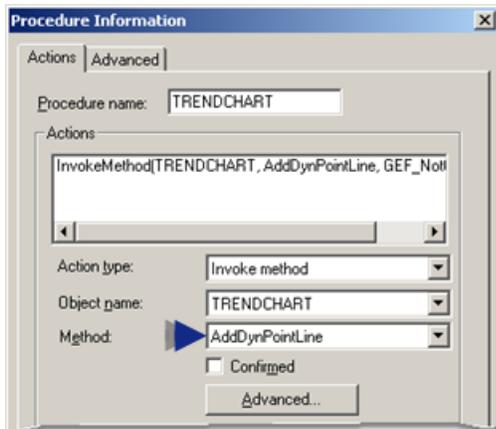
### Line Display Methods

You can cause any kind of line to be added to a trend chart when the Invoke Method action is triggered by an event, in addition to changing its display characteristics and even making it visible or invisible.

### AddDynPointLine Method

AddDynPointLine is a method for a Trend Invoke method action.

- Purpose: AddDynPointLine
- Advanced Configuration: AddDynPointLine



Purpose: AddDynPointLine

To easily add a point's available logged and ongoing current data to the runtime Trend Control without having to specify the data source. The line addition occurs when the method is triggered by an event or through a script.

Lines using automatically found logged and runtime data display a combination of runtime and logged data. Runtime data is reported by CIMPLICITY Point Management. Logged data comes from a CIMPLICITY Log table, which CIMPLICITY finds when the method is triggered.

The order in which CIMPLICITY looks for logged data is as follows:

1. A CIMPLICITY data table.
2. The first data table in alphabetical order.
3. A CIMPLICITY group table.
4. The first group table in alphabetical order.

If the point is not being logged to either a data or group table, the trend line displays as current data becomes available.

The behavior of the logged point line type depends on the Allow Runtime Scrolling property.

Advanced Configuration: AddDynPointLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddDynPointLine method

Configuration is as follows.

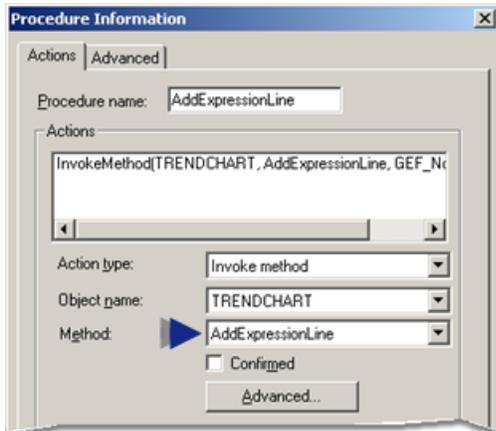
Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	"FLAVOR A LEVEL"
PointID	String	No	<input type="checkbox"/>	"PROCESS_FLAVOR_A_LEVEL"

Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The line was successfully added to the trend.
		0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.	
	PointID	String that Trending will evaluate to find the ODBC data source in which CIMPLICITY will find the table and Point ID data for the line display.	

## AddExpressionLine Method

AddExpressionLine is a method for a Trend Invoke method action.

- Purpose: AddExpressionLine
- Advanced Configuration: AddExpressionLine



### Purpose: AddExpressionLine

To add a specified expression line to the runtime Trend Control when Invoke Method is triggered by an event.

Lines using runtime data display data reported by the CIMPLICITY Point Manger.

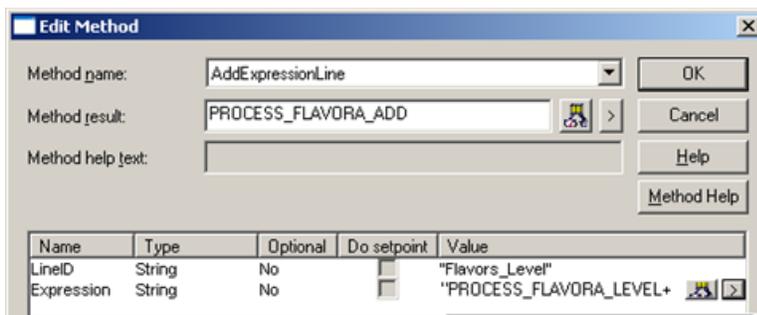
The line cannot be scrolled as all information comes from current data. This type of line is also called a current trend.

### Advanced Configuration: AddExpressionLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddExpressionLine method

Configuration is as follows.



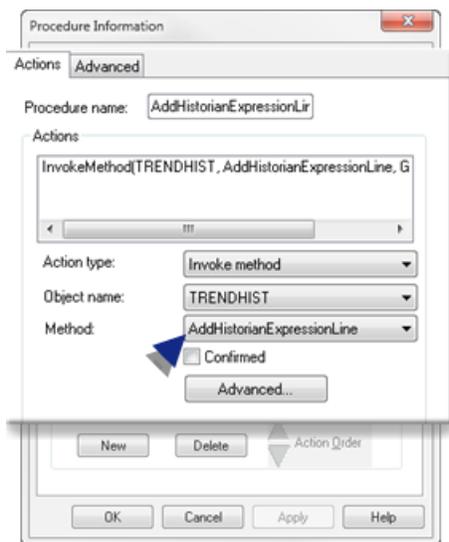
Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.

Field	Description	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.	
		Value      Method Result
		1            The line was successfully added to the trend.
		0            The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.
	Expression	String that evaluates to an expression, which is one or more Point IDs and mathematical operators that can be evaluated. Trending creates the trend based on the identified values.

## AddHistorianExpressionLine Method

AddHistorianExpressionLine is a method for a Trend Invoke method action.

- Purpose: AddHistorianExpressionLine
- Advanced Configuration: AddHistorianExpressionLine



## Purpose: AddHistorianExpressionLine

To use expressions when plotting historical data from one or more Historian databases to the runtime Trend Control when `Invoke Method` is triggered by an event.

Historian expression lines display expressions that include a combination of runtime and archived data. Both types of data are reported by Historian. The behavior of the Historian line type depends on the **Allow Runtime Scrolling** property

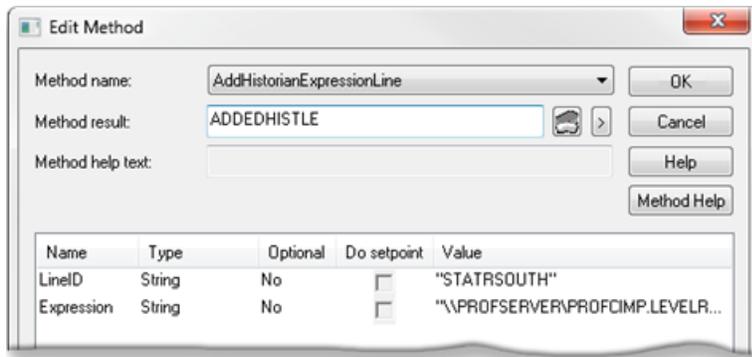
Important: Expression functions related to alarms (e.g. ANA, NACK) are not supported when evaluating historical data.

### Advanced Configuration: AddHistorianExpressionLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddHistorianExpressionLine method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.	
	Value	Method Result
	1	The line was successfully added to the trend.
	0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will display in the Legend to identify the added line.

Field	Description		
Expression	String That evaluates to an expression, which is one or more tags from either single or multiple Historian servers. Syntax for Historian tags that are included in the expression is. \ \<Data Collector Name>\<Tag Name> Where		
	<Data Collector Name>	Server that is connected to Historian.	
	<Tag Name>	Format is defined in the Project Properties dialog box.	

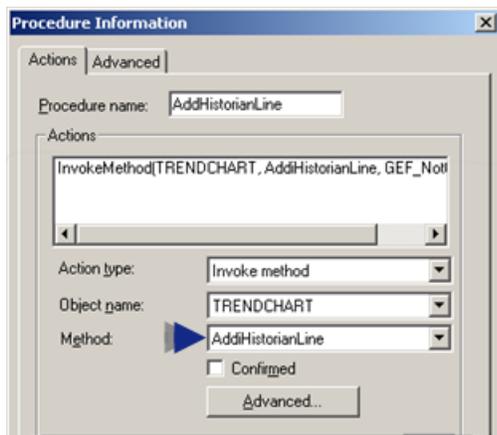
### Note:

- The source for an Historian line can be a tag collected by any Historian Collector.
- If the values are not being logged to Historian, a line will not display; however, the point ID will display in the legend with empty values (\*\*\*)

## AddHistorianLine Method

AddHistorianLine is a method for a Trend Invoke method action.

- Purpose: AddHistorianLine
- Advanced Configuration: AddHistorianLine



## Purpose: AddHistorianLine

To add an Historian line to the runtime Trend Control when Invoke Method is triggered by an event.

Historian lines display a combination of runtime and archived data. Both types of data are reported by Historian. The behavior of the Historian line type depends on the **Allow Runtime Scrolling** property

## Advanced Configuration: AddHistorianLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddHistorianLine method

Configuration is as follows.

Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	"FLAVORA LEVELS"
TagID	String	No	<input type="checkbox"/>	"PROCESS_FLAVORA_LEVEL"
Server	String	No	<input type="checkbox"/>	"SERVER1"
User	String	No	<input type="checkbox"/>	"ADMINISTRATOR"
Password	String	No	<input type="checkbox"/>	"PASSWORD"

Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.	
	Value	Method Result
	1	The line was successfully added to the trend.
	0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.
	TagID	String that provides the name for the Historian Tag ID.
	Server	String that provides a name for the <b>Historian</b> Server.
	User	String that provides a user log in name that is recognized by the <b>Historian</b> Server.
	Password	String that provides a password for the specified user that is recognized by the <b>Historian</b> Server .

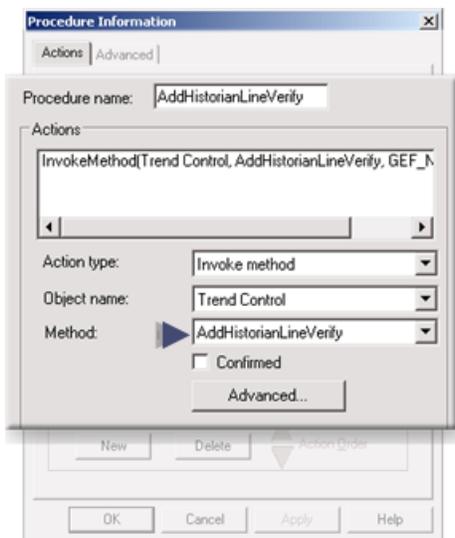
 **Note:**

- The source for an iHistorian line can be a tag collected by any Historian Collector.
- If the values are not being logged to Historian, a line will not display; however, the point ID will display in the legend with empty values (\*\*\*)).

## AddHistorianLineVerify Method

AddHistorianLineVerify is a method for a Trend Invoke method action.

- Purpose: AddHistorianLineVerify
- Advanced Configuration: AddHistorianLineVerify



### **Purpose: AddHistorianLineVerify**

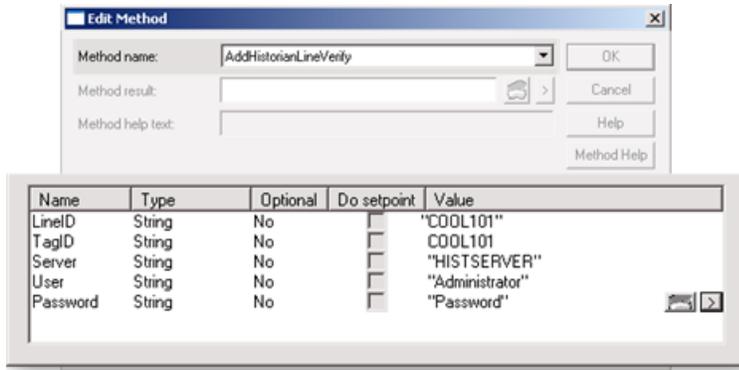
To display a message box if the tag values are not being logged to Historian.

### **Advanced Configuration: AddHistorianLineVerify**

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddHistorianLineVerify method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.
	TagID	Either of the following. <ul style="list-style-type: none"> <li>• A CIMPLICITY point ID</li> <li>• String that provides the name for the Historian Tag ID.</li> </ul>
	Server	String that identifies the Historian server.
	User	Valid Historian server user name.
	Password	Valid password for the entered user name.

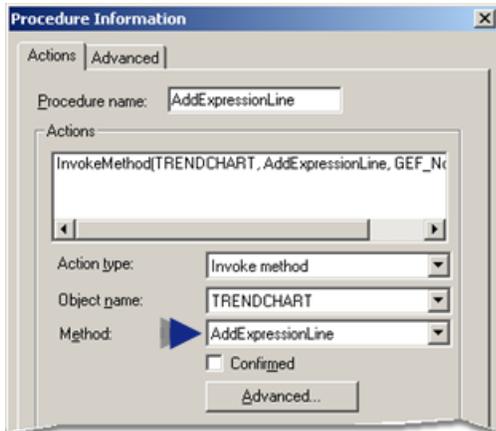
#### Note:

- If the selected point is not logging values to Historian, its ID will not display in the Legend.
- The user name and password must be valid to enable to have a message box display if there is a connection problem with Historian.

### AddLoggedExpressionLine Method

AddLoggedExpressionLine is a method for a Trend Invoke method action.

- Purpose: AddLoggedExpressionLine
- Advanced Configuration: AddLoggedExpressionLine



### Purpose: AddLoggedExpressionLine

To add a specified logged expression line to the runtime Trend Control when Invoke Method is triggered by an event.

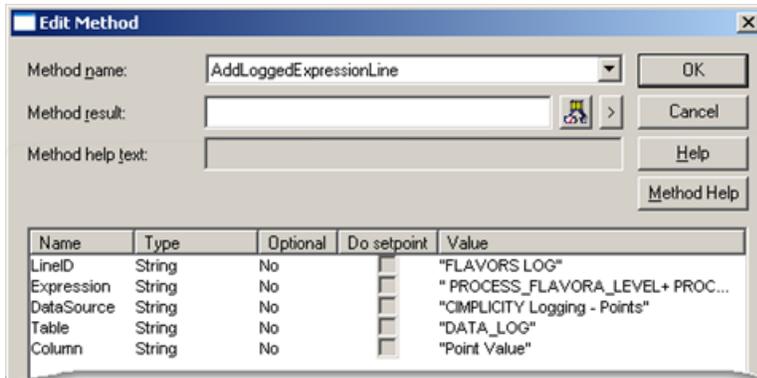
Lines using logged and runtime data display a combination of runtime and logged data. Runtime data is reported by CIMPLICITY Point Management. Logged data comes from a CIMPLICITY Log table. The behavior of the logged point line type depends on the Allow Runtime Scrolling property

### Advanced Configuration: AddLoggedExpressionLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddLoggedExpressionLine method

Configuration is as follows.



Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.

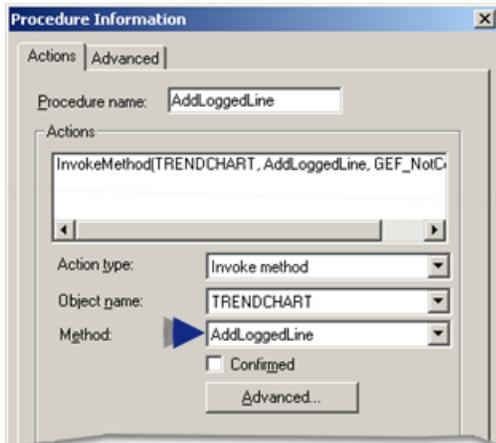
Field	Description		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The line was successfully added to the trend.
		0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.	
	Expression	String that evaluates to an expression, which is one or more Point IDs and mathematical operators that can be evaluated. Trending creates the trend based on the identified values.	
	DataSource	<b>ODBC data source</b> in which CIMPLICITY will find the table and column for the line display. If a User ID and password are required, enter them on this line. Including "DSN=" is optional. In either case, the UID= and PWD= must appear after the DSN. Example Either of the following is correct: <b>"CIMPLICITY Point Logging;UID=Administrator;PWD=98403"</b> <b>"DSN=CIMPLICITY Point Logging;UID=Administrator;PWD=98403"</b>	
	Table	Table in the Database Logger where the line data will be found.	
	Column	Column in the Database Logger table that contains the line's data.	

 **Note:** The source for a Logged line can be a point from any point logging table.

## AddLoggedLine Method

AddLoggedLine is a method for a Trend Invoke method action.

- Purpose: AddLoggedLine
- Advanced Configuration: AddLoggedLine



### Purpose: AddLoggedLine

To add a specified logged line to the runtime Trend Control when Invoke Method is triggered by an event.

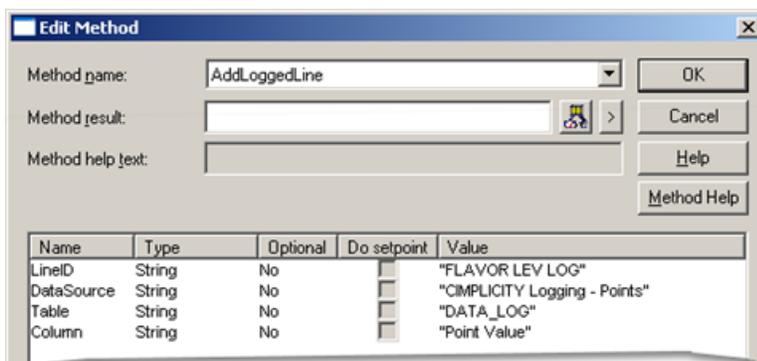
Lines using Logged data display data from a CIMPLICITY Database Logger group or data table. This type of trend is also called a historical trend because all the information comes from logged data.

### Advanced Configuration: AddLoggedLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddLoggedLine method

Configuration is as follows.



Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.

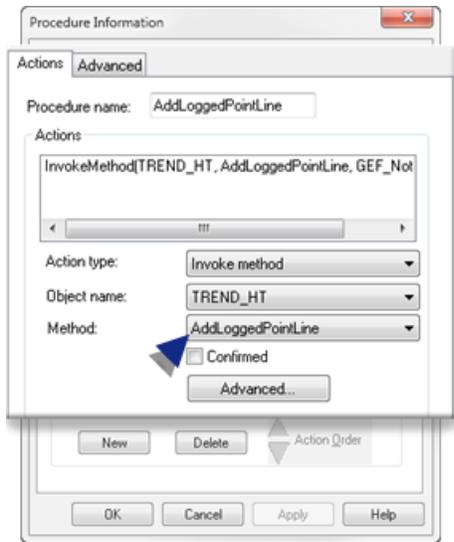
Field	Description		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The line was successfully added to the trend.
		0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.	
	DataSource	<b>ODBC data source</b> in which CIMPLICITY will find the table and column for the line display. If a User ID and password are required, enter them on this line. Including "DSN=" is optional. In either case, the UID= and PWD= must appear after the DSN. Example Either of the following is correct: " <b>CIMPLICITY Point Logging;UID=Administrator;PWD=98403</b> " " <b>DSN=CIMPLICITY Point Logging;UID=Administrator;PWD=98403</b> "	
	Table	Table in the Database Logger where the line data will be found.	
	Column	Column in the Database Logger table that contains the line's data.	

 **Note:** The source for a Logged line is data from any point logging table.

### AddLoggedPointLine Method

AddLoggedPointLine is a method for a Trend Invoke method action.

- Purpose: AddLoggedPointLine
- Advanced Configuration: AddLoggedPointLine



### Purpose: AddLoggedPoinLine

To add a specified logged point line to the runtime Trend Control when Invoke Method is triggered by an event.

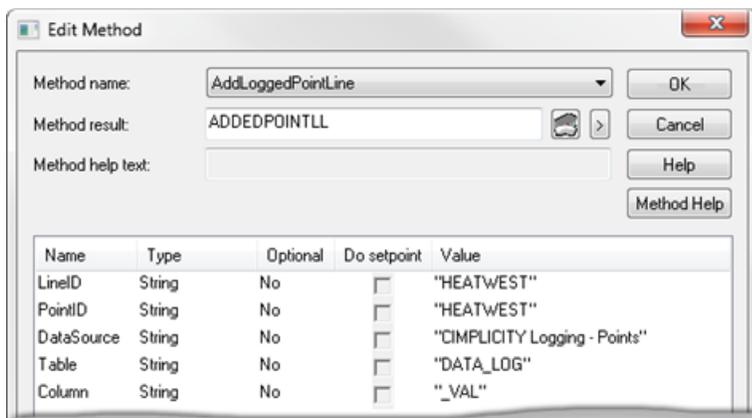
Lines using Logged data display data from a CIMPLICITY Database Logger group or data table. This type of trend is also called a historical trend because all the information comes from logged data.

### Advanced Configuration: AddLoggedPointLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddLoggedPointLine method

Configuration is as follows.



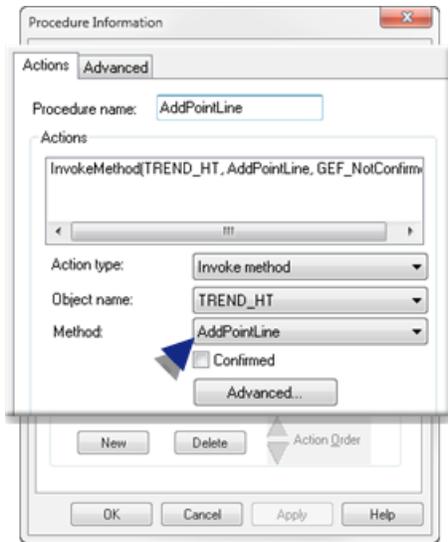
Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The line was successfully added to the trend.
		0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.	
	PointID	Logged point whose values will display on the Trend chart.	
	DataSource	<b>ODBC data source</b> in which CIMPLICITY will find the table and column for the line display. If a User ID and password are required, enter them on this line. Including "DSN=" is optional. In either case, the UID= and PWD= must appear after the DSN. Example Either of the following is correct: " <b>CIMPLICITY Point Logging;UID=Administrator;PWD=98403</b> " " <b>DSN=CIMPLICITY Point Logging;UID=Administrator;PWD=98403</b> "	
	Table	Table in the Database Logger where the line data will be found.	
	Column	Column in the Database Logger table that contains the line's data.	

 **Note:** The source for a Logged line is data from any point logging table.

## AddPointLine Method

AddPointLine is a method for a Trend Invoke method action.

- Purpose: AddPointLine
- Advanced Configuration: AddPointLine



### Purpose: AddPoinLine

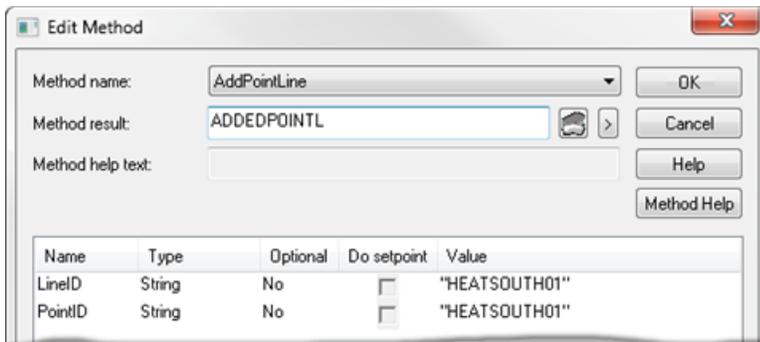
To add a specified point line to the runtime Trend Control when Invoke Method is triggered by an event.

### Advanced Configuration: AddPointLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the AddPointLine method

Configuration is as follows.



Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.
	Class      Boolean

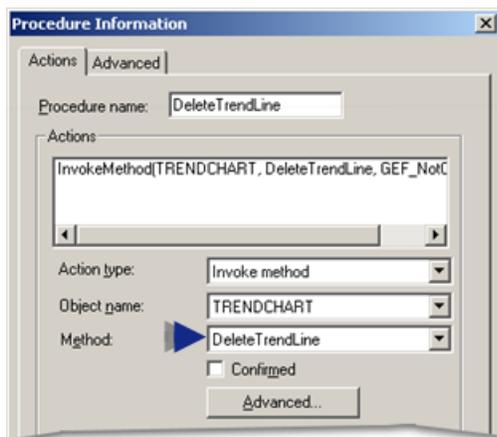
Field	Description		
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The line was successfully added to the trend.
		0	The line was not added to the trend.
Parameters	LineID	String that provides a name for the Line ID. The name will appear in the Legend to identify the added line.	
	PointID	Point whose current values will display on the Trend chart.	

 **Note:** The source for a Logged line is data from any point logging table.

## DeleteTrendLine Method

DeleteTrendLine is a method for a Trend Invoke method action.

- Purpose: DeleteTrendLine
- Advanced Configuration: DeleteTrendLine



## Purpose: DeleteTrendLine

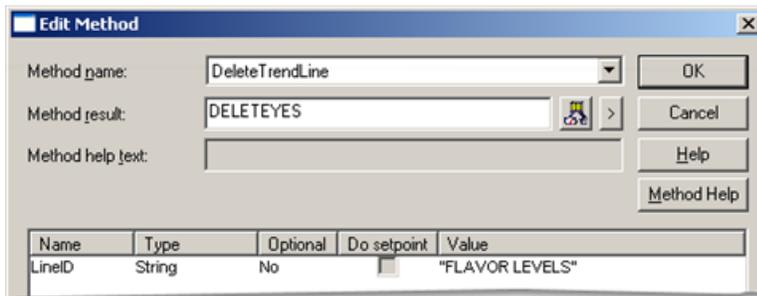
To delete a specified point line from the runtime Trend Control when **Invoke Method** is triggered by an event.

## Advanced Configuration: DeleteTrendLine

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the DeleteTrendLine method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
Parameters	LineID	String that evaluates to an existing Line ID. Trending will delete the specified line when the method is invoked.

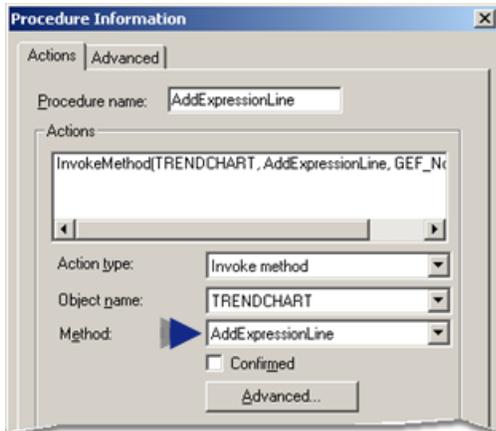
Result: When a user invokes the method, the Method result displays one of the following:

- The number of lines deleted from the chart
- A dialog box with an appropriate error message, if an existing line cannot be deleted
- Zero, if the line does not exist on the chart

## SetLineAutoupdate

SetLineAutoupdate is a method for a Trend Invoke method action.

- Purpose: SetLineAutoupdate
- Advanced Configuration: SetLineAutoupdate



## Purpose: SetLineAutoupdate

To change the auto update status of one or all non-point lines on the Trend Control.

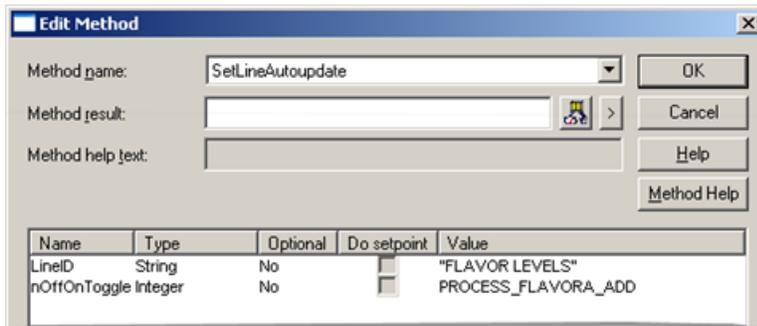
 **Note:** This method has no effect on Point or Logged Point lines.

## Advanced Configuration: SetLineAutoupdate

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineAutoupdate method

Configuration is as follows.



Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.
	Class Boolean
	Structure Type BOOL
	Allowed Device or global Point ID.

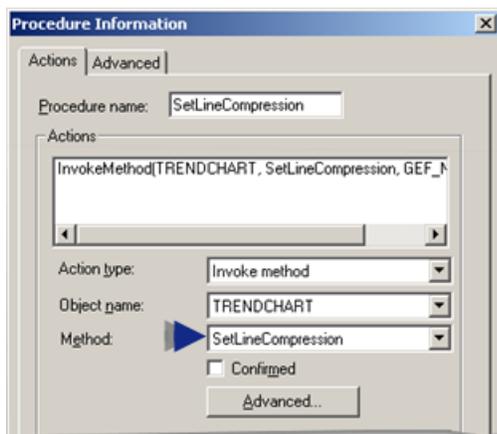
Field	Description			
Parameters	LineID	One of the following can identify what line or lines should be automatically updated.		
		""	All non-point lines on the chart	
		String for a Line ID	The line to auto-update.	
	nOffOnToggle	Expression or Point ID that evaluates to the numeric value:		
			Value	Trending will
			0	Turn off selected line(s) auto-update.
			1	Make selected line(s) start auto updating.
			2	Toggle the current state of the line(s).

Result: When a user invokes the method, the Method result display contains the count of the number of lines that were changed.

### SetLineCompression Method

SetLineCompression is a method for a Trend Invoke method action.

- Purpose: SetLineCompression
- Advanced Configuration: SetLineCompression
- Historian compression line additional values.



## Purpose: SetLineCompression

To set the compression specifications for a particular Line ID.

## Advanced Configuration: SetLineCompression

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineCompression method

Configuration is as follows.

Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	"FLAVOR_LEVELS"
Type	Integer	No	<input type="checkbox"/>	1
Resolution	Integer	No	<input type="checkbox"/>	3
Units	Integer	No	<input type="checkbox"/>	0

Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Boolean	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
Parameters	LineID	String that identifies the line ID whose display parameters you want to change.	
	Type	Expression or point ID that evaluates to one of the following numeric values:	
		Value	Trending will plot the:
		0	Not do any compression.
		1	Average of the values in the group.
		2	First data point in the group.
		3	Last data point in the group.
		4	Data point from the group with the minimum value.

Field	Description		
			5 Plot the data point from the group with the maximum value. If you are using compression, Trending automatically determines the group size.
			6 Average of the values in the group, using server side compression.
			7 First data point in the group, using server side compression.
			8 Last data point in the group, using server side compression.
			9 Data point from the group with the minimum value, using server side compression.
			10 Data point from the group with the maximum value, using server side compression.
The following values are available only for Historian lines.			
		<a href="#">11 (page 56)</a>	Lab value
		<a href="#">12 (page 56)</a>	Average value
		<a href="#">13 (page 56)</a>	Trend
		<a href="#">14 (page 57)</a>	Interpolated
		<a href="#">15 (page 57)</a>	Raw standard deviation
		<a href="#">16 (page 57)</a>	Standard deviation
		<a href="#">17 (page 57)</a>	Count
		<a href="#">18 (page 57)</a>	Total
		<a href="#">19 (page 57)</a>	Raw total value
	Resolution	Number of time units that should be used for each group of data. (For Historian lines only) the <b>Resolution</b> value does the following.	
		0	The <b>Default Sampling Interval</b> will be enabled for that line.

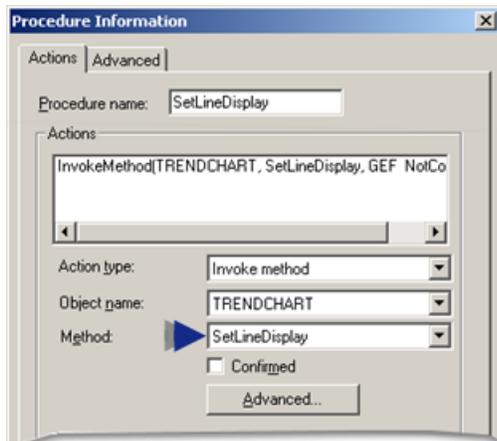
Field	Description		
		>0	(Greater than 0) Trending checks to see if the <a href="#">Default Sample Interval (page 58)</a> is enabled for the line; if the <b>Default Sample Interval</b> is enabled, Trending: <ul style="list-style-type: none"> <li>Disables the Default Sample Interval.</li> </ul> This enables <b>Sample Interval</b> . <ul style="list-style-type: none"> <li>Uses the value entered for the Resolution parameter as the number of time units.</li> </ul>
	Units	Unit of time to be used.	
		Enter	For
		0	Seconds
		1	Minutes
		2	Hours

## SetLineDisplay Method

### *SetLineDisplay Method*

SetLineDisplay is a method for a Trend Invoke method action.

- Purpose: SetLineDisplay
- Advanced Configuration: SetLineDisplay



### **Purpose: SetLineDisplay**

To set the color, compression and expansion, and display method for a particular Line ID.

## Advanced Configuration: SetLineDisplay

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineDisplay method

Configuration is as follows.

Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	"FLAVOR_LEVELS"
RGBColor	Long	No	<input type="checkbox"/>	"122985"
NoneAvgFir...	Integer	No	<input type="checkbox"/>	5
StepSmooth	Integer	No	<input type="checkbox"/>	PROCESS_FLAVORB_DISPENSE

Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The change was successfully made.
		0	The change was not made.
Parameters	LineID	String that identifies the line ID whose display parameters you want to change.	
	Type	An RGB Color value from either the Standard RGB Color Values Table or calculate your own.	
	NoneAvgFirstLastMinMax	Expression or point ID for that evaluates to one of the following numeric values:	
		Value	Trending will:
		0	Not do any compression.
		1	Plot the average of the values in the group.

Field	Description		
		2	Plot the first data point in the group.
		3	Plot the last data point in the group.
		4	Plot the data point from the group with the smallest value.
		5	Plot the data point from the group with the largest value. If you are using compression, Trending automatically determines the group size.
		6	Plot the average of the values in the group, using server side compression.
		7	Plot the first data point in the group, using server side compression.
		8	Plot the last data point in the group, using server side compression.
		9	Plot the data point from the group with the smallest value, using server side compression.
		10	Plot the data point from the group with the largest value, using server side compression.
		<b>Note:</b> If you enter an option from 6 through 10, the <b>NoneAvgFirstLastMinMax</b> field performs the same as the <b>Type</b> field in <a href="#">SetLineCompression (page 112)</a> . Specify the time interval to collect the historical group size either in a SetLineCompression method or in the Trend control's Line Display dialog box.	
	StepSmooth	Expression or Point ID that evaluates to one of the following numeric values.	
		Value	Trending will
		0	Display the line in step mode.
		1	Display the line in smooth mode.

### RGB Color Values

You can change a line to one of as many colors as your video is set to display by entering an RGB Color value on the RGB Color row. You find the value for your entry by:

- Using an easy RGB Color value formula
- Consulting the Standard RGB Color Value Table.
- Each RGB color is:
  - Made up of a balance of red, green and blue luminosity values ranging from 0 to 255.

### Example

If you apply a luminosity value of:

- 0 to each of the basic RGB colors (red, green and blue), the color that you see will be Black.

- 255 to each of the basic RGB colors, the displayed color that you see will be White.

Single Value	Color Red	Green	Blue	Displayed Color
0	Black	Black	Black	Black
255	Red	Green	Blue	White

- Has a calculated value with the following formula:

RGB Color Value =

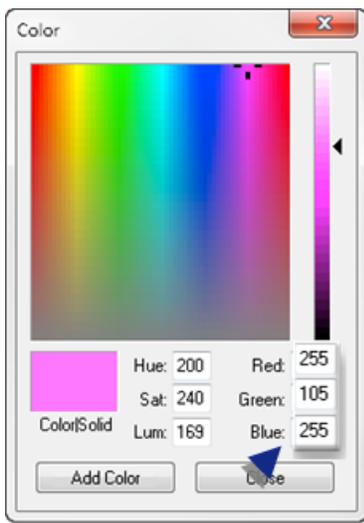
**255 (To represent Red; The selected number can be 0-255) +**

**(256 \* a Green luminosity number) +**

**(65536 \* a Blue luminosity number) +**

Example

**i Tip:** You can use the Custom Colors palette that you can open in CimEdit or through a Trend line's Color palette to learn the Red, Green, and Blue values for the color you want to use.



RGB Color	Value	Calculation
Red	255	+(255)
Green	105	+(105*256)
Blue	255	+(255*65536)
Color Value		=16711680

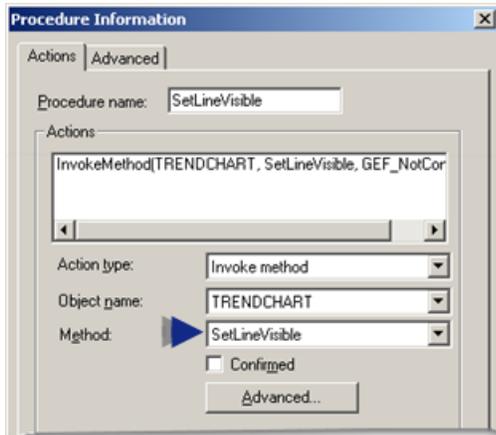
*Standard RGB Color Value Table*

<b>Color</b>	<b>Value</b>
White	16777215
Black	0
Gray	8421504
Silver	12632256
Red	255
Yellow	65535
Lime	65280
Aqua	16776960
Blue	16711680
Fuchsia	16711935
Maroon	128
Green	32768
Olive	32896
Navy	8388608
Purple	8388736
Teal	8421376

**SetLineVisible Method**

SetLineVisible is a method for a Trend Invoke method action.

- Purpose: SetLineVisible
- Advanced Configuration: SetLineVisible



## Purpose: SetLineVisible

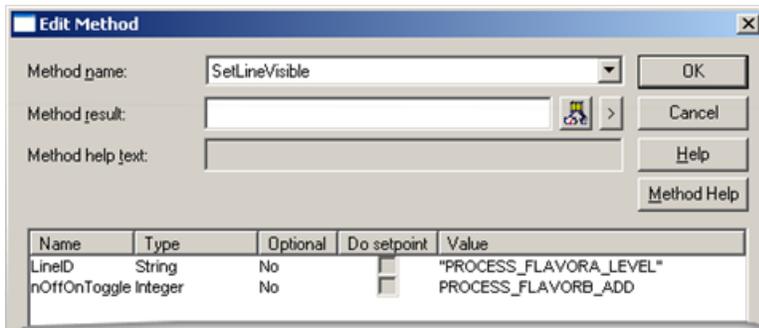
To change one or all lines on the Trend Control visible or invisible.

## Advanced Configuration: SetLineVisible

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineVisible method

Configuration is as follows.



Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Method result	(Optional) Setpoint that contains the status value.
	Class Boolean
	Structure Type BOOL
	Allowed Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.

Field	Description		
		Value	Method Result
		1	The line is visible.
		0	The line is invisible.
Parameters	LineID	Identify what line or lines should be automatically updated.	
		Value	Identifies
		""	All the lines.
		Existing Line ID	A single line.
	nOffOnToggle	Expression or Point ID that evaluates to the numeric value:	
		Value	Trending will
		0	Make selected line(s) invisible.
		1	Make selected line(s) visible.
		2	Toggle.

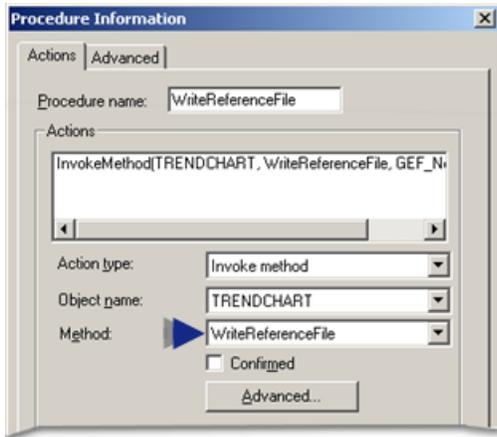
 **Note:** When the line is made invisible, it is removed from the chart. If you did not check the **Always visible** legend option, the line description is also removed from the legend.

Even though the line is removed from the display, the Trend Control still collects data and performs calculations for the line.

### WriteReferenceFile Method

WriteReferenceFile is a method for a Trend Invoke method action.

- Purpose: WriteReferenceFile
- Advanced Configuration: WriteReferenceFile



### Purpose: WriteReferenceFile

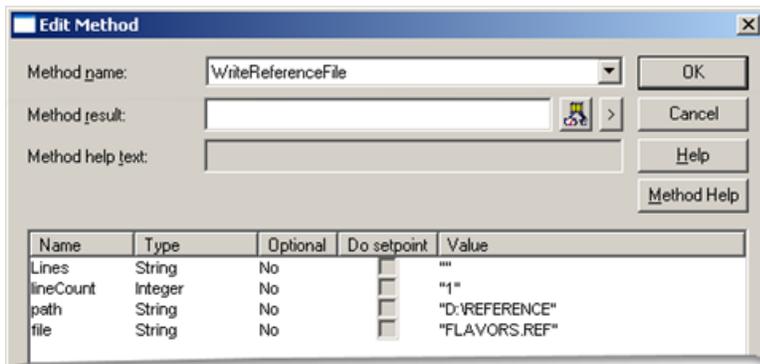
To write data for all lines on the chart to the reference file you designate.

### Advanced Configuration: WriteReferenceFile

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the WriteReferenceFile method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value. When you invoke the method, the Method result displays 0.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.

Field	Description			
Parameters	LineID	Null terminated string to identify what lines' values Trending should include in the Reference file when the method is invoked.		
		""	All the lines on the chart.	
		Comma separated list of line Ids	Specific lines to export.	
	lineCount	Number of lines specified for the Lines parameter.		
	Path	Where the reference file will be located. It is recommended that you put the reference file in its own directory.		
	File	Reference file name (8 character limit).		

## Legend Methods

### Legend Methods

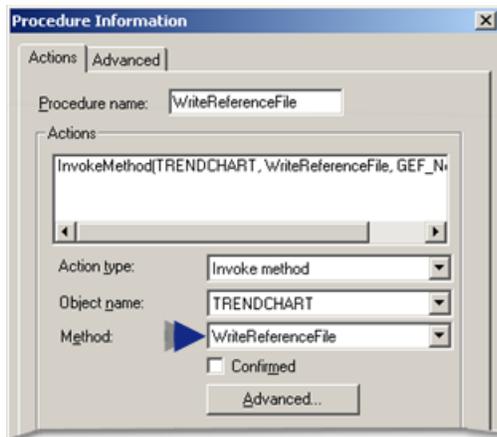
You can give a Trend user the ability to make the Legend visible or invisible with the SetLegendState method.

- SetLegendState

### SetLegendState Method

SetLegendState is a method for a Trend Invoke method action.

- Purpose: SetLegendState
- Advanced Configuration: SetLegendState



## Purpose: SetLegendState

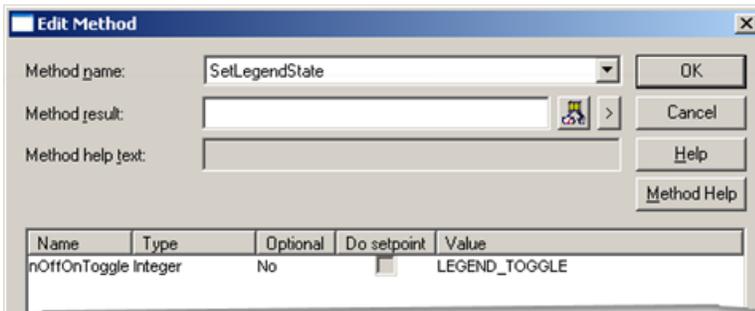
To change the visibility of the legend for the trend.

## Advanced Configuration: WriteReferenceFile

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLegendState method

Configuration is as follows.



Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result displays:		
		Value	Method Result
		1	Legend is visible.
		0	Legend is invisible.
Parameters	nOffOnToggle	Expression or Point ID that evaluates to one of the following numeric values.	
		Value	Trending will
		0	Hide the legend.
		1	Show the legend.
		2	Toggle the visibility of the legend.

## Axis Methods

### Axis Methods

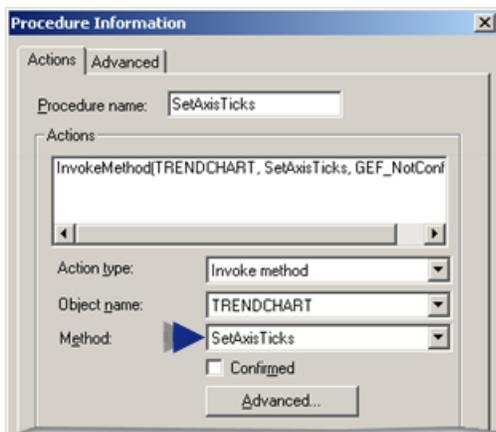
Trending provides you with:

- A **SetAxisTicks** method to display ticks and tick labels on either an X or Y-axis.
- Several X-axis (time related) methods.
- Several Y-axis methods.

### SetAxisTicks Method

SetAxisTicks is a method for a Trend Invoke method action.

- Purpose: SetAxisTicks
- Advanced Configuration: SetAxisTicks



### Purpose: SetAxisTicks

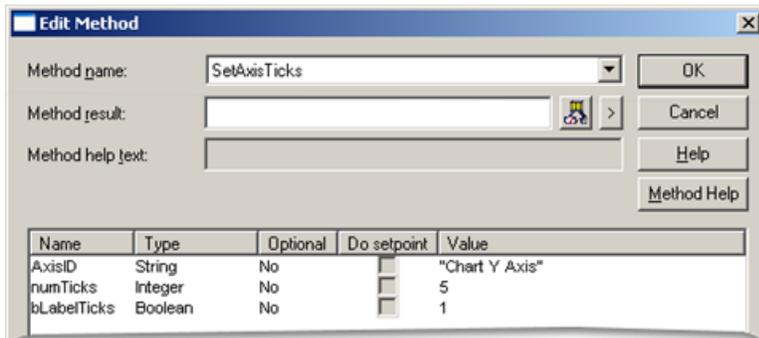
To display ticks or ticks and tick labels on either an X or Y-axis.

### Advanced Configuration: SetAxisTicks

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetAxisTicks method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
Parameters	AxisID	Name of the axis to identify to what axis Trending should display a label.
	numTicks	Number of ticks to display along the axis.
	bLabelTicks	Display content
	Value	Trending will display:
	0	Ticks only.
	1	Ticks and tick labels.

## *X-axis (Time Related) Methods*

### X-axis (Time Related) Methods

Trending offers you several methods to change how a runtime trend chart deals with time. The methods are

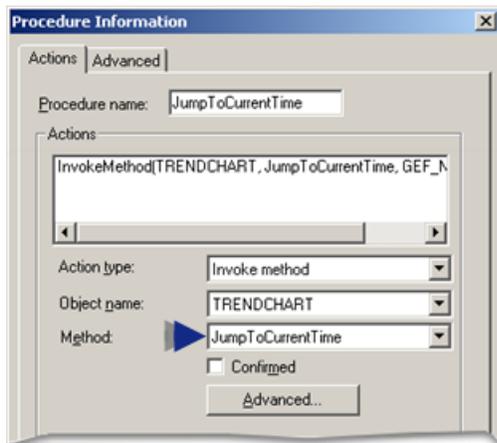
Invoke method Method	On the CimView Trend Chart, to
<b>JumpToCurrentTime</b>	Set the chart time to the current time.
<b>PauseUpdates</b>	Pause or resume updates
<b>ScrollLines</b>	Scroll the chart by the given percentage

<b>SetXDuration</b>	Change the X-axis duration.
<b>SetXStartTime</b>	Change the Chart X-axis for one or all lines.

## JumpToCurrentTime Method

JumpToCurrentTime is a method for a Trend Invoke method action.

- Purpose: JumpToCurrentTime
- Advanced Configuration: JumpToCurrentTime



### Purpose: JumpToCurrentTime

To move the axis of a specified line, and associated lines, so that the current time is within the visible time span on the trend. This lets you see the latest incoming values if the line has run-time information.

### Advanced Configuration: JumpToCurrentTime

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the JumpToCurrentTime method

Configuration is as follows.

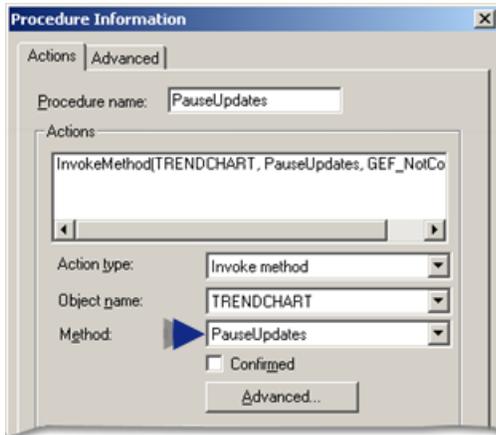
Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	"PROCESS_CORNSYRUP_LEVEL"

Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains the number of lines that jumped to the current time.	
Parameters	LineID	One of the following names what lines should jump to the current time.
	""	All X-axes with runtime and/or auto updating lines.
	Existing Line ID	X-axis associated with the line.

## PauseUpdates Method

PauseUpdates is a method for a Trend Invoke method action.

- Purpose: PauseUpdates
- Advanced Configuration: PauseUpdates



## Purpose: PauseUpdates

To pause or resume updates in the trend.

## Advanced Configuration: PauseUpdates

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the PauseUpdates method

Configuration is as follows.

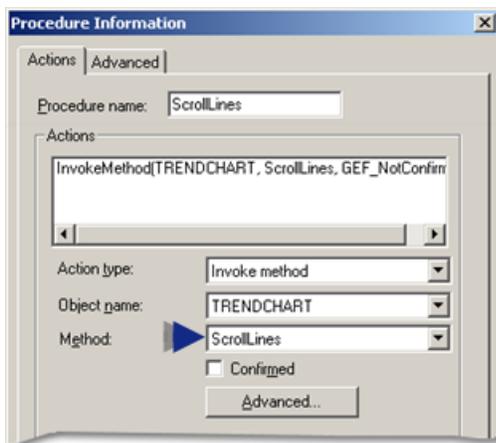
Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains 0. While the trend is paused, PAUSED displays in the upper left corner of the chart.		
Parameters	nNoYesToggle	Point ID or expression that evaluates to one of the following numeric values:	
		Value	Trending will:
		0	Resume the trend.
		1	Pause the trend.

Field	Description		
		2	Toggle the current pause state of the trend.

## ScrollLines Method

ScrollLines is a method for a Trend Invoke method action.

- Purpose: ScrollLines
- Advanced Configuration: ScrollLines



### Purpose: ScrollLines

To scroll all lines that can be scrolled on the chart by the indicated percentage.

### Advanced Configuration: ScrollLines

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the ScrollLines method

Configuration is as follows.

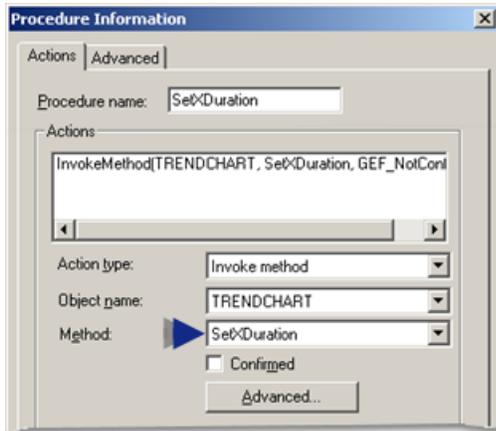
Name	Type	Optional	Do setpoint	Value
nLeftRight	Integer	No	<input type="checkbox"/>	SCROLL_LINE
nPercent	Integer	No	<input type="checkbox"/>	50

Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	Parameters are good and scroll performed.
		0	Parameters are bad.
Parameters	nLeftRight	Expression or Point ID that evaluates to one of the following numeric values:	
		Value	Trending will:
		0	Scroll left.
		1	Scroll right.
	nPercent	Value between 0 and 100. Evaluates to a percentage.	

## SetXDuration Method

SetXDuration is a method for a Trend Invoke method action.

- Purpose: SetXDuration
- Advanced Configuration: SetXDuration



## Purpose: SetXDuration

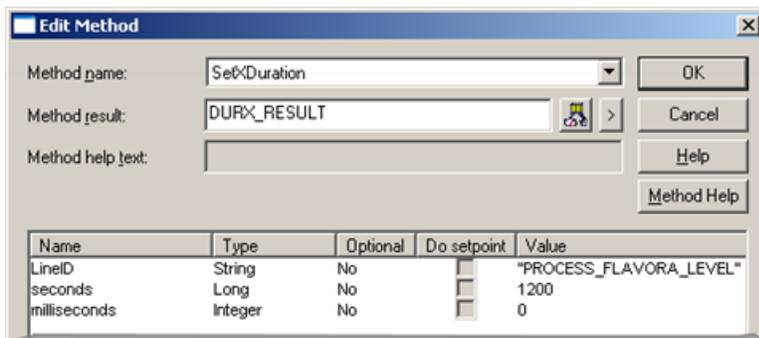
To change the X-axis duration settings for a single line or all lines on the chart that use the chart X-axis and scrolls lines to beginning of chart.

## Advanced Configuration: SetXDuration

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetXDuration method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.

Field	Description		
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The X-axis duration was successfully changed.
		0	The X-axis duration was not changed.
Parameters	LineID	One of the following names what lines should have the duration of the X-axis changed:	
		Value	Trending will
		""	Chart X-Axis.
		Existing Line ID	Axis that belongs to the line.
	seconds	Numbers of seconds. <b>Note:</b> Multiply minutes by 60; hours by 3600	
	milliseconds	Addition to seconds for the X-duration.	

## SetXStartTime Method

SetXStartTime is a method for a Trend Invoke method action.

- Purpose: SetXStartTime
- Advanced Configuration: SetXStartTime



### Purpose: SetXStartTime

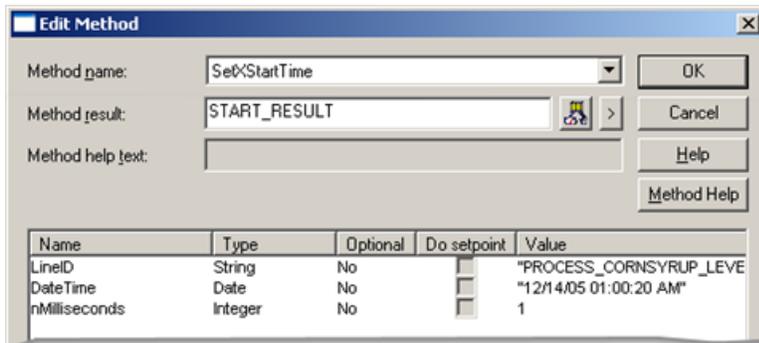
To specify a start time of the X-axis for the chart or indicated line and redraw the trend.

### Advanced Configuration: SetXStartTime

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetXStartTime method

Configuration is as follows.



Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.	

Field	Description		
		Value	Method Result
		1	The X-axis start time was successfully changed.
		0	The X-axis start time was not changed.
Parameters	LineID	One of the following names what lines should have the time start of the X-axis changed:	
		Value	Trending will
		""	Chart X-Axis.
		Existing Line ID	Axis that belongs to the line.
	DateTime	Following is the format for the <b>DateTime</b> string. "<day> <month> <year> <hh>:<mm>[:<ss>] <pp>"	
		For	Enter the:
		<day>	Number of the day of the month.
		<month>	Three-character abbreviation for the month.
		<year>	Two digits for the year.
		<hh>	Hour of the 12-hour clock.
		<mm>	Two digits for the minutes
		<ss>	(Optional) Two digits for the seconds
		<pp>	Either AM or PM.
		Example "02 Feb 1997 07:00 AM" "15 Mar 1997 3:45:15 PM"	
	milliseconds	Number from 0 through 999.	

## *Y-axis Methods*

### Y-axis Methods

Trending provides you with the following methods to let a Trend user change the y-axis during runtime:

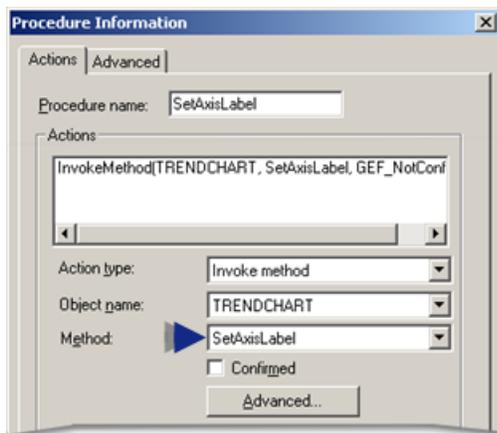
Invoke method Method	On the CimView Trend Chart
<b>SetLineYAxis</b>	Change the Y-axis settings.
<b>SetYAxisVisible</b>	Change the visibility of one or all Y axes

<b>SetLineUseChartY</b>	Toggle the use of the Chart Y-axis for a line.
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## SetAxisLabel Method

SetAxisLabel is a method for a Trend Invoke method action.

- Purpose: SetAxisLabel
- Advanced Configuration: SetAxisLabel



### Purpose: SetAxisLabel

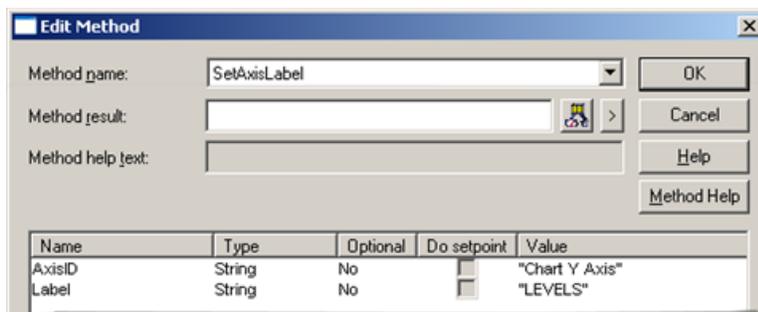
To display a label that describes the Y-axis.

### Advanced Configuration: SetAxisLabel

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetAxisLabel method

Configuration is as follows.

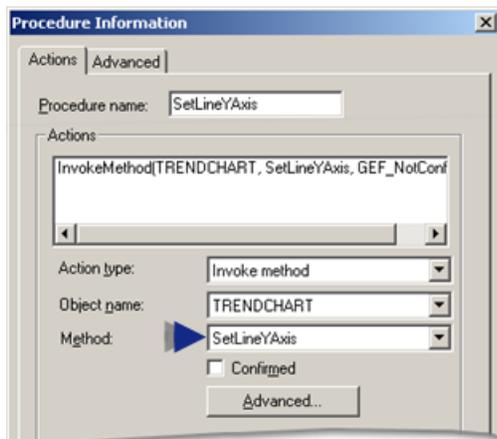


Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
Parameters	AxisID	Name of the axis to identify to what axis Trending should display a label.
	Label	Text that will display as the label, when the event occurs.

## SetLineYAxis Method

SetLineYAxis is a method for a Trend Invoke method action.

- Purpose: SetLineYAxis
- Advanced Configuration: SetLineYAxis



### Purpose: SetLineYAxis

To change the Y-axis settings for a single line or all lines that use the chart Y-axis.

### Advanced Configuration: SetLineYAxis

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineYAxis method

Configuration is as follows.

Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	""
Lower	Double	No	<input type="checkbox"/>	"50"
Upper	Double	No	<input type="checkbox"/>	"500"
Visible	Boolean	No	<input type="checkbox"/>	"VISIBLE"
Autoscale	Boolean	No	<input type="checkbox"/>	"1"

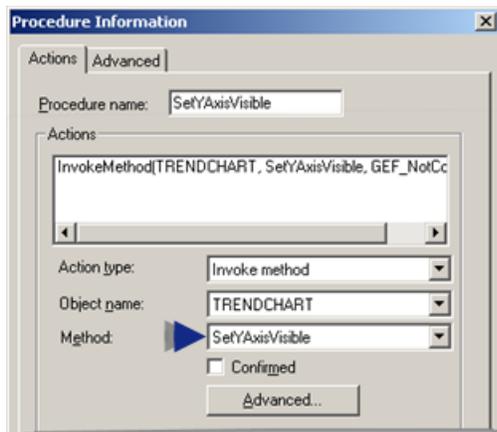
Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean
	Structure Type	BOOL
	Allowed	Device or global Point ID.
	When a user invokes the method, the method result contains one of the following values.	
	Value	Method Result
	1	The Y-axis has been set.
	0	The Y-axis was not set.
Parameters	LineID	Identify for what lines' Trending should change the Y-axis parameters.
	Value	Identifies
	""	The Chart Y Axis.
	Existing Line ID	The axis that belongs to the line.
	Lower	Minimum Y-axis value.
	Upper	Maximum Y-axis value.
	Visible	Expression or Point ID for that evaluates to one of the following numeric values.
	Value	Trending will
	0	Make the Y-axis invisible.
	1	Make the Y-axis visible.
	Autoscale	Expression or Point ID that evaluates to one of the following numeric values.

Field	Description		
		Value	Trending will
		0	No auto-scale.
		1	Perform auto scaling.

## SetYAxisVisible Method

SetYAxisVisible is a method for a Trend Invoke method action.

- Purpose: SetYAxisVisible
- Advanced Configuration: SetYAxisVisible



## Purpose: SetYAxisVisible

To change the visibility of one or all Y-axes on the Trend Control.

## Advanced Configuration: SetYAxisVisible

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetYAxisVisible method

Configuration is as follows.

Name	Type	Optional	Do setpoint	Value
LineID	String	No	<input type="checkbox"/>	*PROCESS_CORNSYRUP_LEVE
nOffOnToggle	Integer	No	<input type="checkbox"/>	VISIBLE

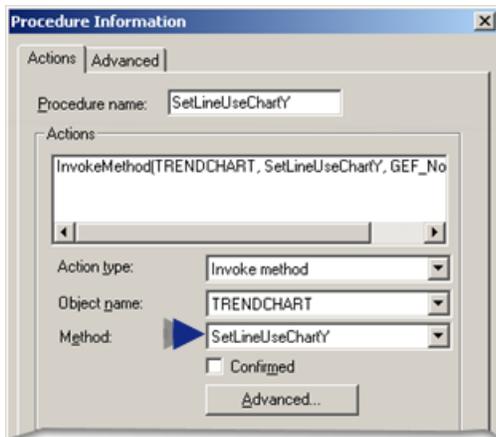
Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values.		
		Value	Method Result
		1	The Y-axis has been made visible.
		0	The Y-axis has been made invisible.
Parameters	LineID	Identify what line or lines should be automatically updated.	
		Value	Identifies
		""	The Chart Y Axis.
		Existing Line ID	The axis that belongs to the line.
	nOffOnToggle	Expression or Point ID that evaluates to the numeric value:	
		Value	Trending will
		0	Make the selected axis invisible.
		1	Make the selected axis visible.
		2	Toggle the current state of the axis.

**Note:** Make sure your trend has Y-axis display type of **Multiple** if you want more than one Y-axis visible at the same time.

## SetLineUseChartY Method

SetLineUseChartY is a method for a Trend Invoke method action.

- Purpose: SetLineUseChartY
- Advanced Configuration: SetLineUseChartY



### Purpose: SetLineUseChartY

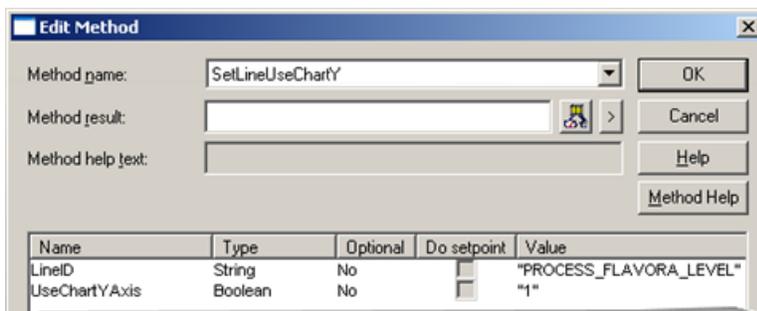
To change the line's Y-axis to either the **Chart Y Axis** or an axis whose ID is the line's ID plus a **\_Y** suffix.

### Advanced Configuration: SetLineUseChartY

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetLineUseChartY method

Configuration is as follows.



Field	Description			
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.			
Method result	(Optional) Setpoint that contains the status value.			
	Class	Boolean		
	Structure Type	BOOL		
	Allowed	Device or global Point ID.		
	When a user invokes the method, the method result contains one of the following values.			
		Value	Method Result	
		1	The method executed successfully.	
		0	The method failed.	
Parameters	LineID	String that evaluates to an existing Line ID.		
	UseChartYAxis	Line or lines whose Chart Y Axis is used/not used. Expression or Point ID that evaluates to the numeric value:		
		Value	Trending will	
		0	Not use the Chart Y-axis.	
		1	Use the Chart Y-axis.	
		Results depend on whether or not the line was using the Chart Y Axis.		
			Option	Description
			1	If the line was using the Chart Y Axis and UseChartYAxis is 0, Trending disables the Chart Y-axis and maintains the current settings.

Field	Description		
			<p data-bbox="797 279 813 300">2</p> <p data-bbox="1300 279 1458 684">If the line was not using the Chart Y Axis and UseChartYAxis is 1, the Chart Y Axis is enabled and the current chart axis settings are used.</p>

## *Visual Aid Methods*

### Visual Aid Methods

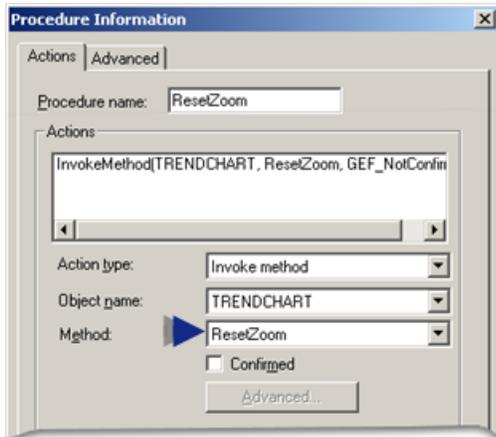
Trending provides you with the following methods to let a Trend user use visual aids when looking at the chart.

Invoke method Method	On the CimView Trend Chart, to:
	ResetZoom
	SetGridState

### ResetZoom Method

ResetZoom is a method for a Trend Invoke method action.

- Purpose: ResetZoom
- Advanced Configuration: ResetZoom



### **Purpose: ResetZoom**

To reset the zoom on a trend to 100%.

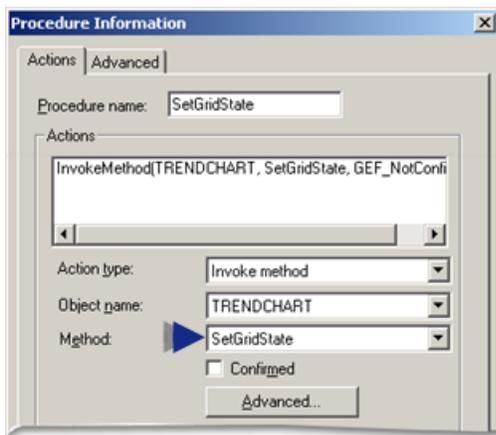
### **Advanced Configuration: ResetZoom**

Advanced configuration is not required for ResetZoom.

### **SetGridState Method**

SetGridState is a method for a Trend Invoke method action.

- Purpose: SetGridState
- Advanced Configuration: SetGridState



### **Purpose: SetGridState**

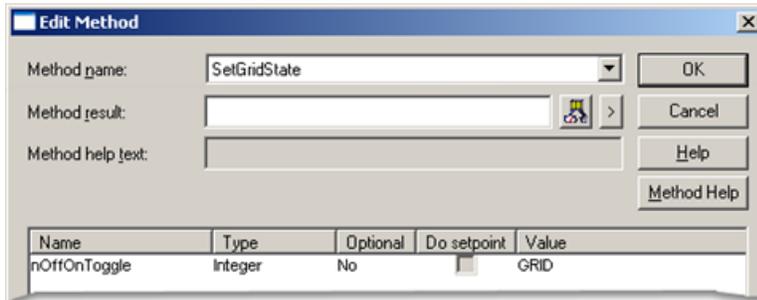
To change the grid visibility for the Trend Control.

## Advanced Configuration: SetGridState

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetGridState method

Configuration is as follows.



Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	(Optional) Setpoint that contains the status value.		
	Class	Boolean	
	Structure Type	BOOL	
	Allowed	Device or global Point ID.	
	When a user invokes the method, the method result contains one of the following values:		
		Value	Method Result
		1	Grid is visible.
		0	Grid is invisible.
Parameters	nOffOnToggle	Expression or Point ID that evaluates to one of the following numeric values.	
		Value	Trending will
		0	Hide the grid.
		1	Show the grid.
		2	Toggle the visibility of the grid.

## *Wait State Methods and Events*

### Wait State Methods and Events

Trend has an option to fire events that allow you to know if the Trend control is waiting for logged data from the database. One of the events is fired when the Trend enters a state where the Trend is waiting for logged data that is taking longer than a configurable threshold (in seconds). Once the data is received, another event is fired to let the screen know that the Trend has left the waiting state.

These events are particularly useful when retrieving data that takes a long time to retrieve. For example, the **CimView** screen can either disable buttons or have a flashing light that lets the user know that the Trend is working on getting the data.

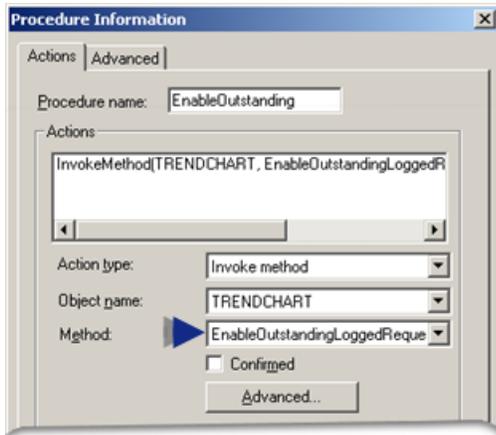
The following methods allow you to enable, disable, enter or leave the wait state events:

<b>Method</b>	<b>CimView Trend Chart</b>
<b>EnableOutstandingLoggedRequestStateEvents</b>	Enables the firing of logged data wait state events in the Trend control.
<b>DisableOutstandingLoggedRequestStateEvents</b>	Disables or turns off the firing of logged data request wait state events in the Trend control.
<b>EnteringOutstandingLoggedRequestState</b>	Fired when the Trend control has determined that it has logged data requests that have been outstanding (waiting) for longer than the specified number of seconds.
<b>LeavingOutstandingLoggedRequestState</b>	Fired when the Trend control has determined that it no longer has any logged data requests that are outstanding.

### EnableOutstandingLoggedRequestStateEvent Method

EnableOutstandingLoggedRequestStateEvent is a method for a Trend Invoke method action.

- Purpose: EnableOutstandingLoggedRequestStateEvent
- Advanced Configuration: EnableOutstandingLoggedRequestStateEvent



### Purpose: EnableOutstandingLoggedRequestStateEvent

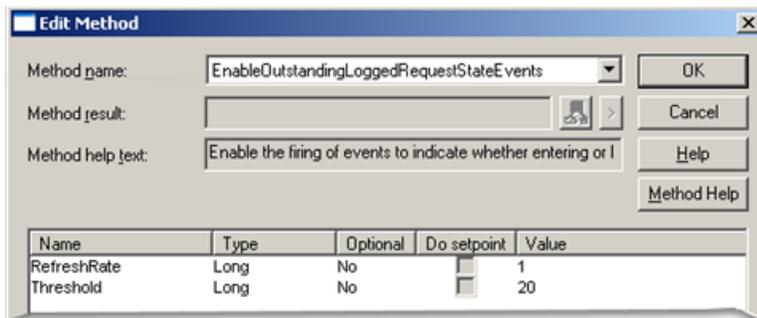
To enable the firing of logged data wait state events in the Trend control.

### Advanced Configuration: EnableOutstandingLoggedRequestStateEvent

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the EnableOutstandingLoggedRequestStateEvent method

Configuration is as follows.



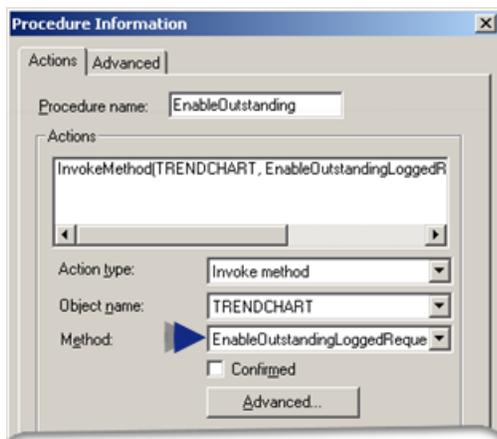
Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	Disabled	
Method help text	Included with method.	
Parameters	RefreshRate	Expression or Point ID that evaluates to a numeric value. This value is the interval, in seconds, at which the Trend control checks if it has any logged requests that have been outstanding for more than the <b>Threshold</b> .

Field	Description	
	Threshold	Expression or Point ID that evaluates to a numeric value. This value is the wait time, in seconds, at which a request is considered outstanding.

### DisableOutstandingLoggedRequestStateEvent Method

DisableOutstandingLoggedRequestStateEvent is a method for a Trend Invoke method action.

- Purpose: DisableOutstandingLoggedRequestStateEvent
- Advanced Configuration: DisableOutstandingLoggedRequestStateEvent



### Purpose: DisableOutstandingLoggedRequestStateEvent

To disable the firing of logged data wait state events in the Trend control.

### Advanced Configuration: DisableOutstandingLoggedRequestStateEvent

Advanced configuration is not required for DisableOutstandingLoggedRequestStateEvent.

Advanced configuration is not required.

### EnteringOutstandingLoggedRequestState Event

EnteringOutstandingLoggedRequestState is a method for a Trend Invoke method action.

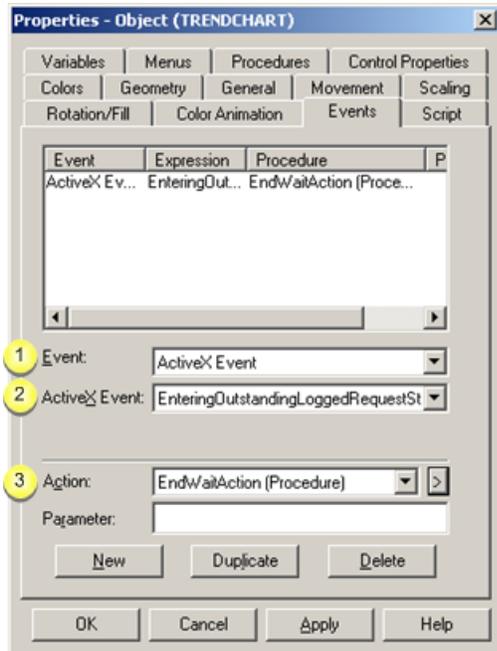
- Purpose: EnteringOutstandingLoggedRequestState
- Configuration: EnteringOutstandingLoggedRequestState

## Purpose: EnteringOutstandingLoggedRequestState

To be fired when the Trend control has determined that it has logged data requests that have been outstanding (waiting) for longer than the number of seconds determined by the threshold.

## Configuration: EnteringOutstandingLoggedRequestState

Do the following to create an **EnteringOutstandingLoggedRequestState** event.



1	Select ActiveX Event in the <b>Event</b> drop-down list.
2	Select EnteringOutstandingLoggedRequestState in the <b>ActiveX Event</b> drop-down list.
3	Create an <b>Action</b> for the event.
	The action can be either a script or a procedure in CimView.

## LeavingOutstandingLoggedRequestState Event

LeavingOutstandingLoggedRequestState is a method for a Trend Invoke method action.

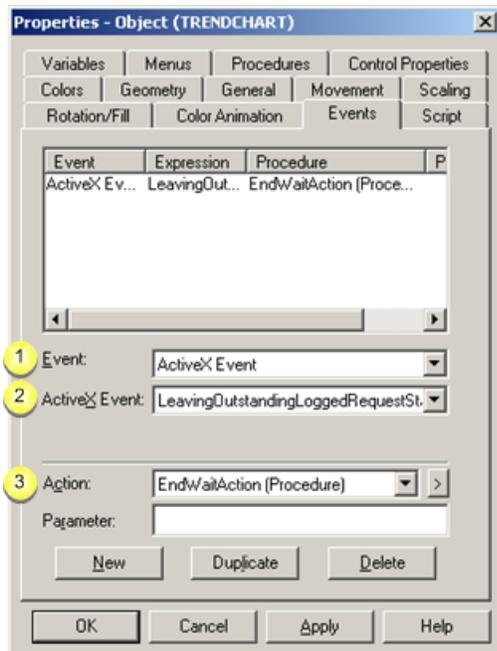
- Purpose: LeavingOutstandingLoggedRequestState
- Configuration: LeavingOutstandingLoggedRequestState

## Purpose: LeavingOutstandingLoggedRequestState

To be fired when the Trend control has determined that it no longer has any logged data requests that are outstanding.

## Configuration: LeavingOutstandingLoggedRequestState

Do the following to create an LeavingOutstandingLoggedRequestState event.



1	Select ActiveX Event in the <b>Event</b> drop-down list.
2	Select LeavingOutstandingLoggedRequestState in the <b>ActiveX Event</b> drop-down list.
3	Create an <b>Action</b> for the event.
	The action can be either a script or a procedure in CimView.

## Using Wait State Functionality Example

### *Using Wait State Functionality Example*

This example demonstrates how you can easily create a light that will flash to let you know when Trending has outstanding requests for data, requests that are outstanding for long enough to signal that there might be a problem.

### Wait State Example Parameters

You expect Trending to retrieve data every 5 seconds.

A normal range for Trending to wait is up to 10 seconds.

Requests that are outstanding for over 10 seconds may indicate that there is a problem.

Therefore, you want CimView to signal an operator if there are requests that are outstanding for over 10 seconds.

 **Note:** This example uses the following Expression lines, which are already configured for the chart.

<b>Line 1</b>	S90_350
<b>Line 2</b>	S90_500
<b>Line 3</b>	S90_900

Configuration steps include:

<a href="#">Step 1 (page 151)</a>	Create a screen level variable.
<a href="#">Step 2 (page 152)</a>	Activate Trending's wait state feature.
<a href="#">Step 3 (page 153)</a>	Configure an <b>EnteringOutstandingLoggedRequestState</b> event.
<a href="#">Step 4 (page 154)</a>	Configure a <b>LeavingOutstandingLoggedRequestState</b> event.
<a href="#">Step 5 (page 154)</a>	Configure an object to report Trending's request status.
<a href="#">Step 6 (page 156)</a>	Test the request configuration at runtime.

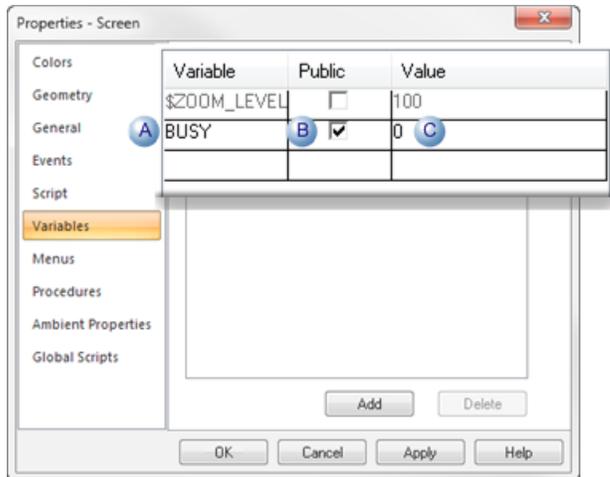
### Step 1. Create a Screen Level Variable

1. Right-click the screen; select Properties on the Popup menu.

The Properties – Screen dialog box opens.

2. Select Variables.

3. Do the following.



A	Enter BUSY in the <b>Variable</b> column.
B	Check Public.
C	Enter 0 in the <b>Value</b> column.

4. Click **OK**.

CimEdit creates a screen level variable that can be used by the Trend control and any other configured objects on the screen.

### Step 2. Activate Trending's Wait State Feature

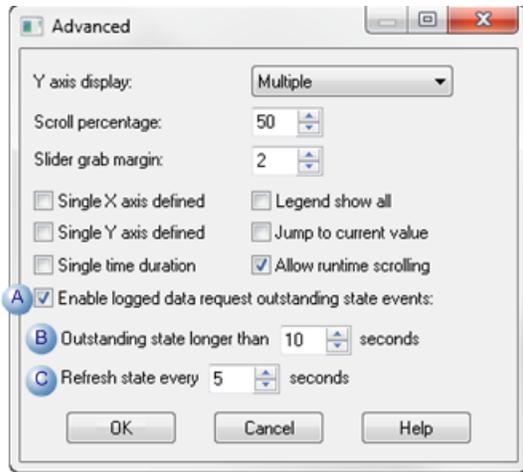
1. Open the CIMPLICITY Trend Control Properties dialog box, as follows.
  - a. Click the right mouse button on the trend chart.
  - b. Select CIMPLICITY Trend Control Object>Properties on the Popup menu.

2. Select the Chart tab.

3. Click Advanced.

The Advanced dialog box opens.

4. Configure Enable logged data request outstanding state events, as follows.



	Feature	Action
A	Enable logged data request outstanding state events	Check.
B	Outstanding state longer than N seconds	Enter 10.
		When the configuration is completed, Trending will notify the operator if there are any requests that are outstanding requests for longer than 10 seconds, which could be a possible problem.
C	Refresh state every N seconds	Enter 5.
		Trending will request data every 5 seconds.

 **Note:** The frequency with which Trending should receive data depends on how you configured other features in Proficy CIMPLICITY. Features include point and logging update criteria and the Runtime refresh rate specified on the Chart tab in the CIMPLICITY Trend Control Properties dialog box. These factors will affect what you enter in these fields for your own configuration.

5. Click **OK**.

The Chart tab reappears.

6. Click **OK**.

The CIMPLICITY Trend Control Properties dialog box closes with the Enable logged data request outstanding state events feature enabled.

*Step 3. Configure an EnteringOutstandingLoggedRequestState Event.*

1. Click the Popup Menu button to the right of the **Variable ID** field.
2. Select **BUSY**.

Step 4. Configure a LeavingOutstandingLoggedRequestState Event.

1. Add a **LeavingOutstandingLoggedRequestState** event to the Events tab in the Properties - Object dialog box.
  - a. Click **New**.

A new line displays in the Event list.

- a. Select **ActiveX Event** in the **Event** field.
  - b. Select **LeavingOutstandingLoggedRequestState** in the **ActiveX Event** field.
2. Configure the event's procedure.
  - a. Click the Popup Menu button to the right of the **Action** field.
  - b. Select New Procedure.

The Procedure Information dialog box opens.

- a. Configure the procedure as follows:
    - a. Enter Busy\_0 in the **Procedure name** field.
    - b. Select **variable assign** in the **Action type** field.
    - c. Click the Browse button to the right of the Variable ID field.
    - d. Select **BUSY** on the Popup menu.
    - e. Enter 0 in the **Variable value** field.
    - f. Click **OK**.

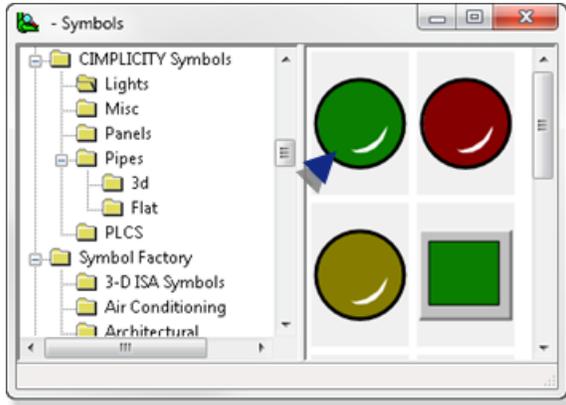
The Events tab displays the configured **LeavingOutstandingLoggedRequestState** event in the Events list.

Step 5. Configure an Object to Report Trending's Request Status.

1. Select a light in the Object Explorer.
  - a. Click Drawing> Illustrations>Object Explorer on the CimEdit Ribbon bar.

The Symbols Library opens.

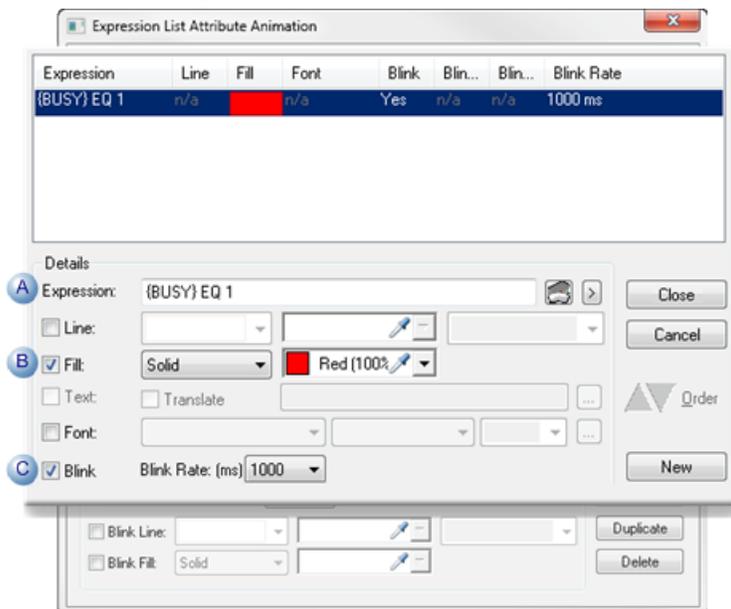
- a. Expand **CIMPLICITY Symbols** in the left pane.
  - b. Select the **Lights** folder.
  - c. Drag the green light (group) onto the CimEdit screen.



2. Select the green light.
3. Click Arrange>Group>Open Group on the CimEdit Ribbon bar.
4. Right-click the green object; select Properties on the Popup menu.
5. Select Color Animation.
6. Click **Edit**.

The Expression List Attribute Animation dialog box opens.

7. Do the following.



A	Expression field.	Enter {BUSY} EQ 1.
B	Fill checkbox.	Check Fill; select Solid/Red.

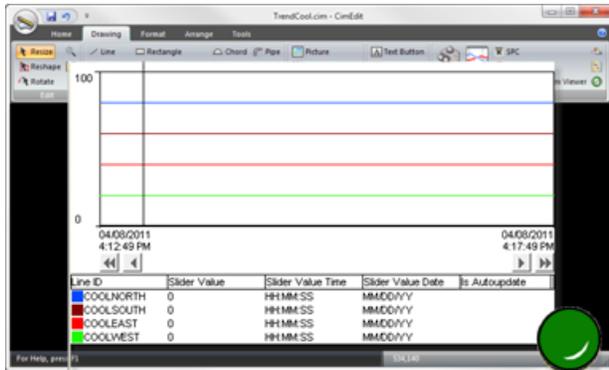


a. Click Close.

The Color Animation tab displays an expression count of 1.

8. Click **OK**.

The Properties - Group dialog box closes and the light is configured to blink red when Trending enters an outstanding wait state at runtime.

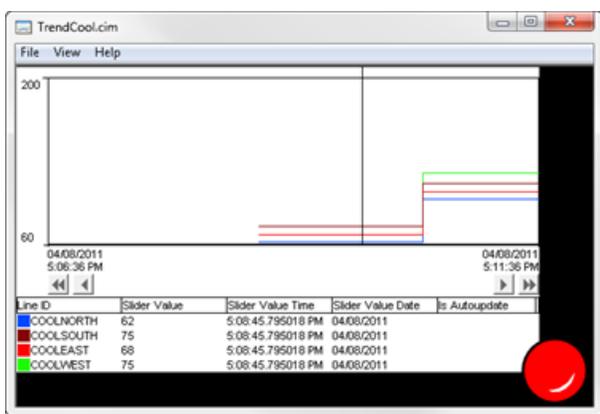


*Step 6. Test the Request Configuration at Runtime.*

Click the **Runtime** button on the CimEdit Ribbon bar.

Result: CimView appears. When there are:

- No **Outstanding state** (requests) **longer than N seconds** as specified on the Advanced tab of the CIMPLICITY Trend Control Properties dialog box, the light displays green.
- **Outstanding state** (requests) **longer than N seconds** as specified on the Advanced tab of the CIMPLICITY Trend Control Properties dialog box, the light blinks red.



## Other Trend Methods

### Other Trend Methods

Trending also provides you with methods to:

Invoke method Method	On the CimView Trend Chart, to:
<b>AboutBox</b>	Display the Help About dialog box for the CIMPLICITY Trend Control.
<b>ForceRedraw</b>	Redraws the chart to display the current values.
GetAutoapply	Returns the value of <code>SetAutoApply</code> .
LaunchProperties	Open a Trend Control Properties dialog box during runtime.
LoadTrend	Loads an external file into the Trend control.
SaveTrend	Save the Trend to an external file.
SetAutoApply	Stop/start implementation of adding lines and other visibility features.
<b>SetCimlicityProject</b>	Set the CIMPLICITY project for the Trend Control.

### AboutBox Method

AboutBox is a method for a Trend Invoke method action.

- Purpose: AboutBox
- Advanced Configuration: AboutBox



## **Purpose: AboutBox**

To display the Help About dialog box for the CIMPLICITY Trend control.

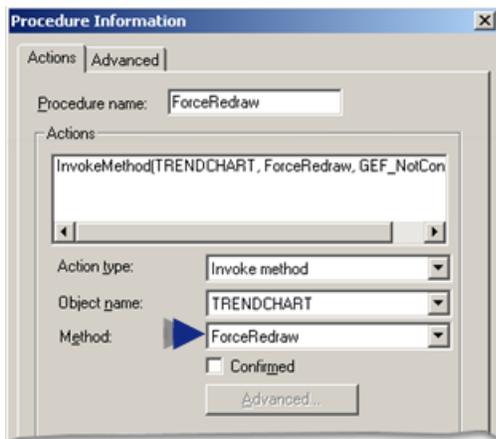
## **Advanced Configuration: ResetZoom**

Advanced configuration is not required for AboutBox.

### ForceRedraw Method

ForceRedraw is a method for a Trend Invoke method action.

- Purpose: ForceRedraw
- Advanced Configuration: ForceRedraw



## **Purpose: ForceRedraw**

To redraw the Trend chart to display the current values.

## **Advanced Configuration: ForceRedraw**

Advanced configuration is not required for ForceRedraw.

### GetAutoApply Method

GetAutoApply is a method for a Trend Invoke method action.

- Purpose: GetAutoApply
- Advanced Configuration: GetAutoApply



### Purpose: GetAutoApply

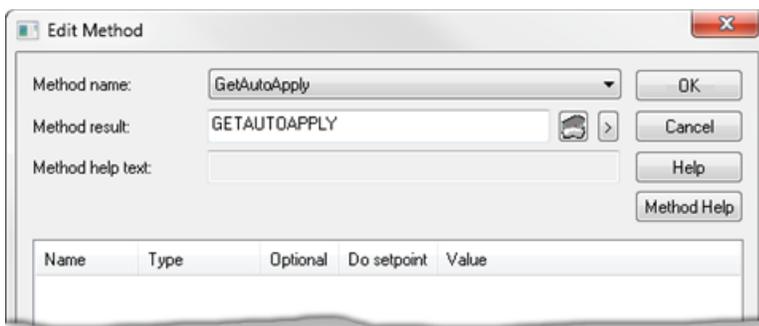
To return the value of `SetAutoApply`.

### Advanced Configuration: GetAutoApply

Click Advanced on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the `GetAutoApply` method

The only advanced configuration is as follows.



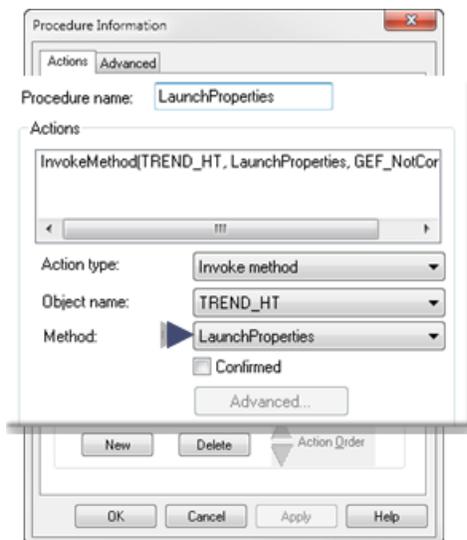
Field	Description	
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.	
Method result	(Optional) Setpoint that contains the status value.	
	Class	Boolean

Field	Description	
	Structure Type	BOOL
	Allowed	Device or global Point ID.
When a user invokes the method, the method result contains one of the following values.		
	Value	Method Result
	0	SetAutoApply ( <a href="#">page 163</a> ) is off.
	1	SetAutoApply is on.
	2	Toggle

## LaunchProperties Method

LaunchProperties is a method for a Trend Invoke method action.

- Purpose: LaunchProperties
- Advanced Configuration: LaunchProperties



## Purpose:LaunchProperties

Open a Trend Control Properties dialog box during runtime.

**!** **Important:** if the checkbox [Show property pages at runtime \(page 88\)](#) is clear, the Trend Control Properties dialog box will not open, even if `LaunchProperties` is triggered.

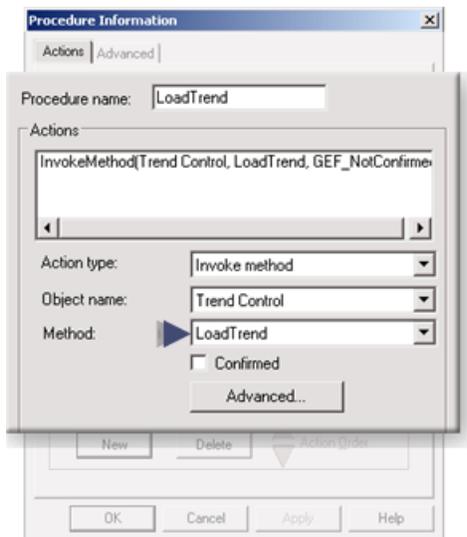
## Advanced Configuration

There is no advanced configuration for the `LaunchProperties` method.

### LoadTrend Method

LoadTrend is a method for a Trend Invoke method action.

- Purpose: LoadTrend
- Advanced Configuration: LoadTrend



### Purpose: LoadTrend

Load a Trend configuration from an external file while the Trend control is embedded in a CimView screen.

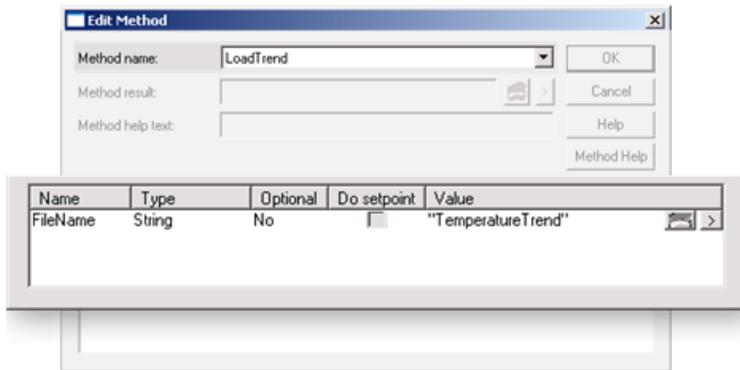
**Note:** Using LoadTrend, a Trend control can, at any time, load a configuration that was created by SaveTrend. The configuration can even be one that was saved from another CimView screen.

### Advanced Configuration: LoadTrend

Click Advanced on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the LoadTrend method

Configuration is as follows.

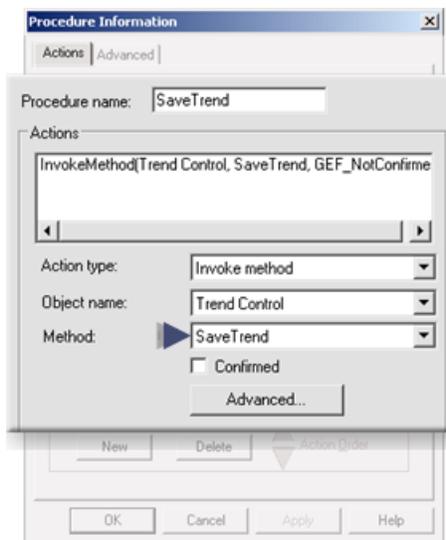


Field	Description
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.
Filename	Name of the external file that will be loaded in the Trend control.

## SaveTrend Method

SaveTrend is a method for a Trend Invoke method action.

- Purpose: SaveTrend
- Advanced Configuration: SaveTrend



## Purpose: SaveTrend

To enable a user to configure a Trend control during runtime and save its configuration to a binary (.tnd) file that is outside of the CimView screen.

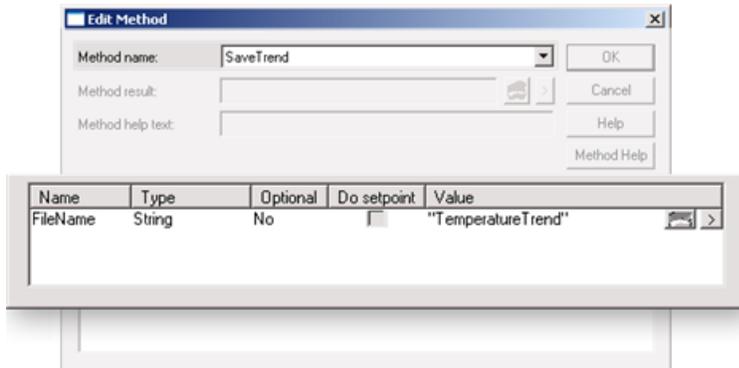
**Note:** All attributes of the trend can be modified, and persisted in the external file.

### Advanced Configuration: SaveTrend

Click Advanced on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SaveTrend method

Configuration is as follows.

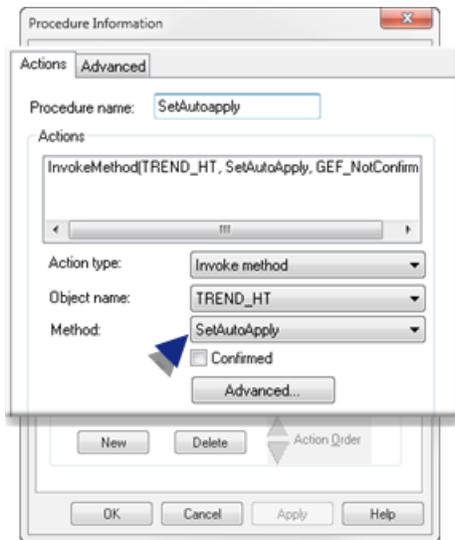


Field	Description
Filename	Filename trend will be saved as.

### SetAutoApply Method

SetAutoApply is a method for a Trend Invoke method action.

- Purpose: StAutoApply
- Advanced Configuration: SetAutoApply



Purpose: SetAutoApply

To stop/start implementation of:

- Adding lines on a Trend chart.
- Implementing separate line visibility property commands, e.g. changing line colors.

#### Note:

- This method is particularly important when several lines are being added and/or if their properties are changed. By stopping all activity and then restarting with a totally refreshed view, the Trend chart will avoid issues such as redrawing itself after each change.

Implementing `SetAutoApply` during is straightforward.

1. Set `SetAutoApply` to 0.

`SetAutoApply` is off.

2. Add lines and/or implement visibility property commands.

3. Set `SetAutoApply` to 1.

`SetAutoApply` is on.

The lines are added and other visibility property commands are implemented.

- `SetAutoApply` does not affect enabled [runtime actions \(page 87\)](#) in the Trend Control Properties dialog box.

### Advanced Configuration: SetAutoApply

Click Advanced on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the `SetAutoApply` method

Advanced configuration is as follows.

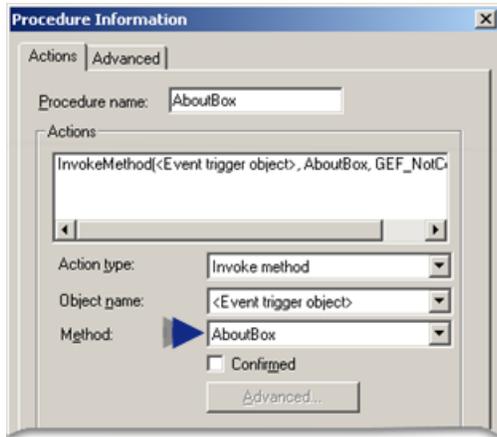
Stops implementation of separate line visibility property commands when on; visibility pending states take affect when `SetAutoApply` is set to 1 (True), refreshes all properties and allows visibility to resume.

Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list		
Parameters	bAutoApply	One of the following integers.	
		Value	Trending will:
		0	Stop adding lines and/or implementation of separate line visibility property commands.
		1	Enable adding lines and/or implementation of separate line visibility property commands.
		2	Toggle

### SetCimplicityProject Method

`SetCimplicityProject` is a method for a Trend Invoke method action.

- Purpose: `SetCimplicityProject`
- Advanced Configuration: `SetCimplicityProject`



## Purpose: SetCimplicityProject

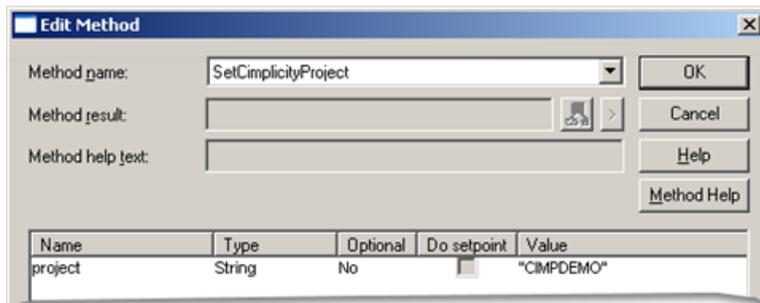
To set the CIMPLICITY project that will be used by the Trend Control when it displays data.

## Advanced Configuration: SetCimplicityProject

Click **Advanced** on the Action tab of the Procedure Information dialog box.

The Edit Method dialog box opens for the SetCimplicityProject method

Configuration is as follows.



Field	Description		
Method name	Name of the selected method. <b>Note:</b> Another method can be selected from the drop-down list.		
Method result	Disabled.		
Parameters	<table border="1"> <tr> <td>project</td> <td>Name of the project CIMPLICITY should use for the Trend Control.</td> </tr> </table>	project	Name of the project CIMPLICITY should use for the Trend Control.
project	Name of the project CIMPLICITY should use for the Trend Control.		

 **Note:** When you invoke this method, the selected project will be used for all point lines where the Point ID is not fully qualified.

SetTimeZone

SetTimeZone is a Trend Invoke method action.

#### Purpose

Sets the time zone to the trend control and displays the data based on the selected time zone.

#### Input

TimeZone Index enumeration published as part of Trend.ocx type library.

#### Return

Boolean: True or False

Index	Published Enumeration List Trend Type Library- TREND_TIME_ZONE_INFO
0	TREND_TZ_SYSTEM_DEFAULT
1	TREND_TZ_AFGHANISTAN_STANDARD_TIME
2	TREND_TZ_ALASKAN_STANDARD_TIME
3	TREND_TZ_ALEUTIAN_STANDARD_TIME
4	TREND_TZ_ALTAI_STANDARD_TIME
5	TREND_TZ_ARAB_STANDARD_TIME
6	TREND_TZ_ARABIAN_STANDARD_TIME
7	TREND_TZ_ARABIC_STANDARD_TIME
8	TREND_TZ_ARGENTINA_STANDARD_TIME
9	TREND_TZ_ASTRAKHAN_STANDARD_TIME
10	TREND_TZ_ATLANTIC_STANDARD_TIME
11	TREND_TZ_AUS_CENTRAL_STANDARD_TIME
12	TREND_TZ_AUS_CENTRAL_W_STANDARD_TIME
13	TREND_TZ_AUS_EASTERN_STANDARD_TIME
14	TREND_TZ_AZERBAIJAN_STANDARD_TIME
15	TREND_TZ_AZORES_STANDARD_TIME
16	TREND_TZ_BAHIA_STANDARD_TIME
17	TREND_TZ_BANGLADESH_STANDARD_TIME
18	TREND_TZ_BELARUS_STANDARD_TIME
19	TREND_TZ_BOUGAINVILLE_STANDARD_TIME
20	TREND_TZ_CANADA_CENTRAL_STANDARD_TIME
21	TREND_TZ_CAPE_VERDE_STANDARD_TIME

22	TREND_TZ_CAUCASUS_STANDARD_TIME
23	TREND_TZ_CEN_AUSTRALIA_STANDARD_TIME
24	TREND_TZ_CENTRAL_AMERICA_STANDARD_TIME
25	TREND_TZ_CENTRAL_ASIA_STANDARD_TIME
26	TREND_TZ_CENTRAL_BRAZILIAN_STANDARD_TIME
27	TREND_TZ_CENTRAL_EUROPE_STANDARD_TIME
28	TREND_TZ_CENTRAL_EUROPEAN_STANDARD_TIME
29	TREND_TZ_CENTRAL_PACIFIC_STANDARD_TIME
30	TREND_TZ_CENTRAL_STANDARD_TIME
31	TREND_TZ_CENTRAL_STANDARD_TIME_MEXICO
32	TREND_TZ_CHATHAM_ISLANDS_STANDARD_TIME
33	TREND_TZ_CHINA_STANDARD_TIME
34	TREND_TZ_CUBA_STANDARD_TIME
35	TREND_TZ_DATELINE_STANDARD_TIME
36	TREND_TZ_E_AFRICA_STANDARD_TIME
37	TREND_TZ_E_AUSTRALIA_STANDARD_TIME
38	TREND_TZ_E_EUROPE_STANDARD_TIME
39	TREND_TZ_E_SOUTH_AMERICA_STANDARD_TIME
40	TREND_TZ_EASTER_ISLAND_STANDARD_TIME
41	TREND_TZ_EASTERN_STANDARD_TIME
42	TREND_TZ_EASTERN_STANDARD_TIME_MEXICO
43	TREND_TZ_EGYPT_STANDARD_TIME
44	TREND_TZ_EKATERINBURG_STANDARD_TIME
45	TREND_TZ_FIJI_STANDARD_TIME
46	TREND_TZ_FLE_STANDARD_TIME
47	TREND_TZ_GEORGIAN_STANDARD_TIME
48	TREND_TZ_GMT_STANDARD_TIME
49	TREND_TZ_GREENLAND_STANDARD_TIME
50	TREND_TZ_GREENWICH_STANDARD_TIME
51	TREND_TZ_GTB_STANDARD_TIME
52	TREND_TZ_HAITI_STANDARD_TIME
53	TREND_TZ_HAWAIIAN_STANDARD_TIME

54	TREND_TZ_INDIA_STANDARD_TIME
55	TREND_TZ_IRAN_STANDARD_TIME
56	TREND_TZ_ISRAEL_STANDARD_TIME
57	TREND_TZ_JORDAN_STANDARD_TIME
58	TREND_TZ_KALININGRAD_STANDARD_TIME
59	TREND_TZ_KAMCHATKA_STANDARD_TIME
60	TREND_TZ_KOREA_STANDARD_TIME
61	TREND_TZ_LIBYA_STANDARD_TIME
62	TREND_TZ_LINE_ISLANDS_STANDARD_TIME
63	TREND_TZ_LORD_HOWE_STANDARD_TIME
64	TREND_TZ_MAGADAN_STANDARD_TIME
65	TREND_TZ_MAGALLANES_STANDARD_TIME
66	TREND_TZ_MARQUESAS_STANDARD_TIME
67	TREND_TZ_MAURITIUS_STANDARD_TIME
68	TREND_TZ_MID_ATLANTIC_STANDARD_TIME
69	TREND_TZ_MIDDLE_EAST_STANDARD_TIME
70	TREND_TZ_MONTEVIDEO_STANDARD_TIME
71	TREND_TZ_MOROCCO_STANDARD_TIME
72	TREND_TZ_MOUNTAIN_STANDARD_TIME
73	TREND_TZ_MOUNTAIN_STANDARD_TIME_MEXICO
74	TREND_TZ_MYANMAR_STANDARD_TIME
75	TREND_TZ_N_CENTRAL_ASIA_STANDARD_TIME
76	TREND_TZ_NAMIBIA_STANDARD_TIME
77	TREND_TZ_NEPAL_STANDARD_TIME
78	TREND_TZ_NEW_ZEALAND_STANDARD_TIME
79	TREND_TZ_NEWFOUNDLAND_STANDARD_TIME
80	TREND_TZ_NORFOLK_STANDARD_TIME
81	TREND_TZ_NORTH_ASIA_EAST_STANDARD_TIME
82	TREND_TZ_NORTH_ASIA_STANDARD_TIME
83	TREND_TZ_NORTH_KOREA_STANDARD_TIME
84	TREND_TZ_OMSK_STANDARD_TIME
85	TREND_TZ_PACIFIC_SA_STANDARD_TIME

86	TREND_TZ_PACIFIC_STANDARD_TIME
87	TREND_TZ_PACIFIC_STANDARD_TIME_MEXICO
88	TREND_TZ_PAKISTAN_STANDARD_TIME
89	TREND_TZ_PARAGUAY_STANDARD_TIME
90	TREND_TZ_ROMANCE_STANDARD_TIME
91	TREND_TZ_RUSSIA_TIME_ZONE_10
92	TREND_TZ_RUSSIA_TIME_ZONE_11
93	TREND_TZ_RUSSIA_TIME_ZONE_3
94	TREND_TZ_RUSSIAN_STANDARD_TIME
95	TREND_TZ_SA_EASTERN_STANDARD_TIME
96	TREND_TZ_SA_PACIFIC_STANDARD_TIME
97	TREND_TZ_SA_WESTERN_STANDARD_TIME
98	TREND_TZ_SAINTE_PIERRE_STANDARD_TIME
99	TREND_TZ_SAKHALIN_STANDARD_TIME
100	TREND_TZ_SAMOA_STANDARD_TIME
101	TREND_TZ_SARATOV_STANDARD_TIME
102	TREND_TZ_SE_ASIA_STANDARD_TIME
103	TREND_TZ_SINGAPORE_STANDARD_TIME
104	TREND_TZ_SOUTH_AFRICA_STANDARD_TIME
105	TREND_TZ_SRI_LANKA_STANDARD_TIME
106	TREND_TZ_SYRIA_STANDARD_TIME
107	TREND_TZ_TAIPEI_STANDARD_TIME
108	TREND_TZ_TASMANIA_STANDARD_TIME
109	TREND_TZ_TOCANTINS_STANDARD_TIME
110	TREND_TZ_TOKYO_STANDARD_TIME
111	TREND_TZ_TOMSK_STANDARD_TIME
112	TREND_TZ_TONGA_STANDARD_TIME
113	TREND_TZ_TRANSBAIKAL_STANDARD_TIME
114	TREND_TZ_TURKEY_STANDARD_TIME
115	TREND_TZ_TURKS_AND_CAICOS_STANDARD_TIME
116	TREND_TZ_ULANBAATAR_STANDARD_TIME
117	TREND_TZ_US_EASTERN_STANDARD_TIME

118	TREND_TZ_US_MOUNTAIN_STANDARD_TIME
119	TREND_TZ_UTC
120	TREND_TZ_UTC_PLUS_12
121	TREND_TZ_UTC_PLUS_13
122	TREND_TZ_UTC_MINUS_02
123	TREND_TZ_UTC_MINUS_08
124	TREND_TZ_UTC_MINUS_09
125	TREND_TZ_UTC_MINUS_11
126	TREND_TZ_VENEZUELA_STANDARD_TIME
127	TREND_TZ_VLADIVOSTOK_STANDARD_TIME
128	TREND_TZ_W_AUSTRALIA_STANDARD_TIME
129	TREND_TZ_W_CENTRAL_AFRICA_STANDARD_TIME
130	TREND_TZ_W_EUROPE_STANDARD_TIME
131	TREND_TZ_W_MONGOLIA_STANDARD_TIME
132	TREND_TZ_WEST_ASIA_STANDARD_TIME
133	TREND_TZ_WEST_BANK_STANDARD_TIME
134	TREND_TZ_WEST_PACIFIC_STANDARD_TIME
135	TREND_TZ_YAKUTSK_STANDARD_TIME

### Sample Code

```

Dim oTrend As TrendLib.ITrend
Dim bRet As Boolean

Set oTrend = CimGetScreen.Object.Objects.Item("Trend1").OLEObject
bRet = oTrend.SetTimeZone( TREND_TZ_INDIA_STANDARD_TIME )

Or
bRet = oTrend.SetTimeZone( 54 )

```

### Basic Script Methods

1. **SetTimeComponentsHR\_Ex** (param1, param2, param3, param4, param5, param6, param7, param8, param9, param10)

Purpose: Given components of the time based on time zone. Current time divided into time components of year, month, day, hour, minute, second, and nanosecond.

Param1	Double	Low value of input time
--------	--------	-------------------------

Param2	Double	High value of input time
Param3	Integer	Timecomponent
Param4	Integer	Timecomponent
Param5	Integer	Timecomponent
Param6	Integer	Timecomponent
Param7	Integer	Timecomponent
Param8	Integer	Timecomponent
Param9	Long	Nanosecond time component
Param10	Integer	TimeZoneIndex

a.

Where Time Zone Index can be either

Trend Lib TREND\_TIME\_ZONE\_INFO (If there is a CimView screen reference to the trend.ocx file)

or

an index number in the list below:

<b>Index</b>	<b>Enumeration</b>
0	COR_CIMP_SYSTEM_DEFAULT
1	COR_CIMP_AFGHANISTAN_STANDARD_TIME
2	COR_CIMP_ALASKAN_STANDARD_TIME
3	COR_CIMP_ALEUTIAN_STANDARD_TIME
4	COR_CIMP_ALTAI_STANDARD_TIME
5	COR_CIMP_ARAB_STANDARD_TIME
6	COR_CIMP_ARABIAN_STANDARD_TIME
7	COR_CIMP_ARABIC_STANDARD_TIME
8	COR_CIMP_ARGENTINA_STANDARD_TIME
9	COR_CIMP_ASTRAKHAN_STANDARD_TIME
10	COR_CIMP_ATLANTIC_STANDARD_TIME
11	COR_CIMP_AUS_CENTRAL_STANDARD_TIME
12	COR_CIMP_AUS_CENTRAL_W_STANDARD_TIME
13	COR_CIMP_AUS_EASTERN_STANDARD_TIME
14	COR_CIMP_AZERBAIJAN_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
15	COR_CIMP_AZORES_STANDARD_TIME
16	COR_CIMP_BAHIA_STANDARD_TIME
17	COR_CIMP_BANGLADESH_STANDARD_TIME
18	COR_CIMP_BELARUS_STANDARD_TIME
19	COR_CIMP_BOUGAINVILLE_STANDARD_TIME
20	COR_CIMP_CANADA_CENTRAL_STANDARD_TIME
21	COR_CIMP_CAPE_VERDE_STANDARD_TIME
22	COR_CIMP_CAUCASUS_STANDARD_TIME
23	COR_CIMP_CEN_AUSTRALIA_STANDARD_TIME
24	COR_CIMP_CENTRAL_AMERICA_STANDARD_TIME
25	COR_CIMP_CENTRAL_ASIA_STANDARD_TIME
26	COR_CIMP_CENTRAL_BRAZILIAN_STANDARD_TIME
27	COR_CIMP_CENTRAL_EUROPE_STANDARD_TIME
28	COR_CIMP_CENTRAL_EUROPEAN_STANDARD_TIME
29	COR_CIMP_CENTRAL_PACIFIC_STANDARD_TIME
30	COR_CIMP_CENTRAL_STANDARD_TIME
31	COR_CIMP_CENTRAL_STANDARD_TIME_MEXICO
32	COR_CIMP_CHATHAM_ISLANDS_STANDARD_TIME
33	COR_CIMP_CHINA_STANDARD_TIME
34	COR_CIMP_CUBA_STANDARD_TIME
35	COR_CIMP_DATELINE_STANDARD_TIME
36	COR_CIMP_E_AFRICA_STANDARD_TIME
37	COR_CIMP_E_AUSTRALIA_STANDARD_TIME
38	COR_CIMP_E_EUROPE_STANDARD_TIME
39	COR_CIMP_E_SOUTH_AMERICA_STANDARD_TIME
40	COR_CIMP_EASTER_ISLAND_STANDARD_TIME
41	COR_CIMP_EASTERN_STANDARD_TIME
42	COR_CIMP_EASTERN_STANDARD_TIME_MEXICO
43	COR_CIMP_EGYPT_STANDARD_TIME
44	COR_CIMP_EKATERINBURG_STANDARD_TIME
45	COR_CIMP_FIJI_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
46	COR_CIMP_FLE_STANDARD_TIME
47	COR_CIMP_GEORGIAN_STANDARD_TIME
48	COR_CIMP_GMT_STANDARD_TIME
49	COR_CIMP_GREENLAND_STANDARD_TIME
50	COR_CIMP_GREENWICH_STANDARD_TIME
51	COR_CIMP_GTB_STANDARD_TIME
52	COR_CIMP_HAITI_STANDARD_TIME
53	COR_CIMP_HAWAIIAN_STANDARD_TIME
54	COR_CIMP_INDIA_STANDARD_TIME
55	COR_CIMP_IRAN_STANDARD_TIME
56	COR_CIMP_ISRAEL_STANDARD_TIME
57	COR_CIMP_JORDAN_STANDARD_TIME
58	COR_CIMP_KALININGRAD_STANDARD_TIME
59	COR_CIMP_KAMCHATKA_STANDARD_TIME
60	COR_CIMP_KOREA_STANDARD_TIME
61	COR_CIMP_LIBYA_STANDARD_TIME
62	COR_CIMP_LINE_ISLANDS_STANDARD_TIME
63	COR_CIMP_LORD_HOWE_STANDARD_TIME
64	COR_CIMP_MAGADAN_STANDARD_TIME
65	COR_CIMP_MAGALLANES_STANDARD_TIME
66	COR_CIMP_MARQUESAS_STANDARD_TIME
67	COR_CIMP_MAURITIUS_STANDARD_TIME
68	COR_CIMP_MID_ATLANTIC_STANDARD_TIME
69	COR_CIMP_MIDDLE_EAST_STANDARD_TIME
70	COR_CIMP_MONTEVIDEO_STANDARD_TIME
71	COR_CIMP_MOROCCO_STANDARD_TIME
72	COR_CIMP_MOUNTAIN_STANDARD_TIME
73	COR_CIMP_MOUNTAIN_STANDARD_TIME_MEXICO
74	COR_CIMP_MYANMAR_STANDARD_TIME
75	COR_CIMP_N_CENTRAL_ASIA_STANDARD_TIME
76	COR_CIMP_NAMIBIA_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
77	COR_CIMP_NEPAL_STANDARD_TIME
78	COR_CIMP_NEW_ZEALAND_STANDARD_TIME
79	COR_CIMP_NEWFOUNDLAND_STANDARD_TIME
80	COR_CIMP_NORFOLK_STANDARD_TIME
81	COR_CIMP_NORTH_ASIA_EAST_STANDARD_TIME
82	COR_CIMP_NORTH_ASIA_STANDARD_TIME
83	COR_CIMP_NORTH_KOREA_STANDARD_TIME
84	COR_CIMP_OMSK_STANDARD_TIME
85	COR_CIMP_PACIFIC_SA_STANDARD_TIME
86	COR_CIMP_PACIFIC_STANDARD_TIME
87	COR_CIMP_PACIFIC_STANDARD_TIME_MEXICO
88	COR_CIMP_PAKISTAN_STANDARD_TIME
89	COR_CIMP_PARAGUAY_STANDARD_TIME
90	COR_CIMP_ROMANCE_STANDARD_TIME
91	COR_CIMP_RUSSIA_TIME_ZONE_10
92	COR_CIMP_RUSSIA_TIME_ZONE_11
93	COR_CIMP_RUSSIA_TIME_ZONE_3
94	COR_CIMP_RUSSIAN_STANDARD_TIME
95	COR_CIMP_SA_EASTERN_STANDARD_TIME
96	COR_CIMP_SA_PACIFIC_STANDARD_TIME
97	COR_CIMP_SA_WESTERN_STANDARD_TIME
98	COR_CIMP_SAINTE_PIERRE_STANDARD_TIME
99	COR_CIMP_SAKHALIN_STANDARD_TIME
100	COR_CIMP_SAMOA_STANDARD_TIME
101	COR_CIMP_SARATOV_STANDARD_TIME
102	COR_CIMP_SE_ASIA_STANDARD_TIME
103	COR_CIMP_SINGAPORE_STANDARD_TIME
104	COR_CIMP_SOUTH_AFRICA_STANDARD_TIME
105	COR_CIMP_SRI_LANKA_STANDARD_TIME
106	COR_CIMP_SYRIA_STANDARD_TIME
107	COR_CIMP_TAIPEI_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
108	COR_CIMP_TASMANIA_STANDARD_TIME
109	COR_CIMP_TOCANTINS_STANDARD_TIME
110	COR_CIMP_TOKYO_STANDARD_TIME
111	COR_CIMP_TOMSK_STANDARD_TIME
112	COR_CIMP_TONGA_STANDARD_TIME
113	COR_CIMP_TRANSBAIKAL_STANDARD_TIME
114	COR_CIMP_TURKEY_STANDARD_TIME
115	COR_CIMP_TURKS_AND_CAICOS_STANDARD_TIME
116	COR_CIMP_ULAAANBAATAR_STANDARD_TIME
117	COR_CIMP_US_EASTERN_STANDARD_TIME
118	COR_CIMP_US_MOUNTAIN_STANDARD_TIME
119	COR_CIMP_UTC
120	COR_CIMP_UTC_PLUS_12
121	COR_CIMP_UTC_PLUS_13
122	COR_CIMP_UTC_MINUS_02
123	COR_CIMP_UTC_MINUS_08
124	COR_CIMP_UTC_MINUS_09
125	COR_CIMP_UTC_MINUS_11
126	COR_CIMP_VENEZUELA_STANDARD_TIME
127	COR_CIMP_VLADIVOSTOK_STANDARD_TIME
128	COR_CIMP_W_AUSTRALIA_STANDARD_TIME
129	COR_CIMP_W_CENTRAL_AFRICA_STANDARD_TIME
130	COR_CIMP_W_EUROPE_STANDARD_TIME
131	COR_CIMP_W_MONGOLIA_STANDARD_TIME
132	COR_CIMP_WEST_ASIA_STANDARD_TIME
133	COR_CIMP_WEST_BANK_STANDARD_TIME
134	COR_CIMP_WEST_PACIFIC_STANDARD_TIME
135	COR_CIMP_YAKUTSK_STANDARD_TIME

### Sample Code

```
Dim yy As Integer
Dim mon As Integer
```

```

Dim dd As Integer
Dim hh As Integer
Dim min As Integer
Dim sec As Integer
Dim nano As Long
Dim qlow As Double
Dim qhigh As Double

```

## Legend

yy	=	2017
mon	=	10
dd	=	13
hh	=	15
min	=	00
sec	=	00
nano	=	00

Or

```
SetTimeFromComponentsHR_Ex qlow,qhigh,yy,mon,dd,hh,min,sec,nano,60
```

2. **SetTimecomponentHR()** (param1, param2, param3, param4, param5, param6, param7, param8, param9, param10)

Param1	Double	Low value of input time
Param2	Double	High value of input time
Param3	Integer	Timecomponent
Param4	Integer	Timecomponent
Param5	Integer	Timecomponent
Param6	Integer	Timecomponent
Param7	Integer	Timecomponent
Param8	Integer	Timecomponent
Param9	Long	Nanosecond time component
Param10	Integer	TimeZoneIndex

```
Sub OnMouseUp (x As Long, y As Long, flags As Long)
```

Declare Variables

```

Dim yy As Integer
Dim mm As Integer
Dim dd As Integer
Dim hh As Integer
Dim min As Integer
Dim sec As Integer
Dim nano As Long
Dim qlow As Double
Dim qhigh As Double

```

### Legend

yy	=	2011
mon	=	7
dd	=	13
hh		15
min	=	43
sec	=	10
nano	=	00

```

SetTimeFromComponentsHR qlow,qhigh,yy,mm,dd,hh,min,sec,nano
MsgBox qhigh
MsgBox qlow

```

### 3. GetLocalDateAdjustedToTimeZone

**Purpose:** Converts the local time to specified time zone.

Inputs:	Year	Integer
	Month	Integer
	Day	Integer
	Hour	Integer
	Minutes	Integer
	Seconds	Integer
	Milliseconds	Long
	TimeZoneIndex	Integer
Return:	Adjusted DateTime	Date

Where Time Zone Index can be either

Trend Lib TREND\_TIME\_ZONE\_INFO (If there is a CimView screen reference to the trend.ocx file)

or

an index number in the list below:

<b>Index</b>	<b>Enumeration</b>
0	COR_CIMP_SYSTEM_DEFAULT
1	COR_CIMP_AFGHANISTAN_STANDARD_TIME
2	COR_CIMP_ALASKAN_STANDARD_TIME
3	COR_CIMP_ALEUTIAN_STANDARD_TIME
4	COR_CIMP_ALTAI_STANDARD_TIME
5	COR_CIMP_ARAB_STANDARD_TIME
6	COR_CIMP_ARABIAN_STANDARD_TIME
7	COR_CIMP_ARABIC_STANDARD_TIME
8	COR_CIMP_ARGENTINA_STANDARD_TIME
9	COR_CIMP_ASTRAKHAN_STANDARD_TIME
10	COR_CIMP_ATLANTIC_STANDARD_TIME
11	COR_CIMP_AUS_CENTRAL_STANDARD_TIME
12	COR_CIMP_AUS_CENTRAL_W_STANDARD_TIME
13	COR_CIMP_AUS_EASTERN_STANDARD_TIME
14	COR_CIMP_AZERBAIJAN_STANDARD_TIME
15	COR_CIMP_AZORES_STANDARD_TIME
16	COR_CIMP_BAHIA_STANDARD_TIME
17	COR_CIMP_BANGLADESH_STANDARD_TIME
18	COR_CIMP_BELARUS_STANDARD_TIME
19	COR_CIMP_BOUGAINVILLE_STANDARD_TIME
20	COR_CIMP_CANADA_CENTRAL_STANDARD_TIME
21	COR_CIMP_CAPE_VERDE_STANDARD_TIME
22	COR_CIMP_CAUCASUS_STANDARD_TIME
23	COR_CIMP_CEN_AUSTRALIA_STANDARD_TIME
24	COR_CIMP_CENTRAL_AMERICA_STANDARD_TIME
25	COR_CIMP_CENTRAL_ASIA_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
26	COR_CIMP_CENTRAL_BRAZILIAN_STANDARD_TIME
27	COR_CIMP_CENTRAL_EUROPE_STANDARD_TIME
28	COR_CIMP_CENTRAL_EUROPEAN_STANDARD_TIME
29	COR_CIMP_CENTRAL_PACIFIC_STANDARD_TIME
30	COR_CIMP_CENTRAL_STANDARD_TIME
31	COR_CIMP_CENTRAL_STANDARD_TIME_MEXICO
32	COR_CIMP_CHATHAM_ISLANDS_STANDARD_TIME
33	COR_CIMP_CHINA_STANDARD_TIME
34	COR_CIMP_CUBA_STANDARD_TIME
35	COR_CIMP_DATELINE_STANDARD_TIME
36	COR_CIMP_E_AFRICA_STANDARD_TIME
37	COR_CIMP_E_AUSTRALIA_STANDARD_TIME
38	COR_CIMP_E_EUROPE_STANDARD_TIME
39	COR_CIMP_E_SOUTH_AMERICA_STANDARD_TIME
40	COR_CIMP_EASTER_ISLAND_STANDARD_TIME
41	COR_CIMP_EASTERN_STANDARD_TIME
42	COR_CIMP_EASTERN_STANDARD_TIME_MEXICO
43	COR_CIMP_EGYPT_STANDARD_TIME
44	COR_CIMP_EKATERINBURG_STANDARD_TIME
45	COR_CIMP_FIJI_STANDARD_TIME
46	COR_CIMP_FLE_STANDARD_TIME
47	COR_CIMP_GEORGIAN_STANDARD_TIME
48	COR_CIMP_GMT_STANDARD_TIME
49	COR_CIMP_GREENLAND_STANDARD_TIME
50	COR_CIMP_GREENWICH_STANDARD_TIME
51	COR_CIMP_GTB_STANDARD_TIME
52	COR_CIMP_HAITI_STANDARD_TIME
53	COR_CIMP_HAWAIIAN_STANDARD_TIME
54	COR_CIMP_INDIA_STANDARD_TIME
55	COR_CIMP_IRAN_STANDARD_TIME
56	COR_CIMP_ISRAEL_STANDARD_TIME

<b>Index</b>	<b>Enumeration</b>
57	COR_CIMP_JORDAN_STANDARD_TIME
58	COR_CIMP_KALININGRAD_STANDARD_TIME
59	COR_CIMP_KAMCHATKA_STANDARD_TIME
60	COR_CIMP_KOREA_STANDARD_TIME
61	COR_CIMP_LIBYA_STANDARD_TIME
62	COR_CIMP_LINE_ISLANDS_STANDARD_TIME
63	COR_CIMP_LORD_HOWE_STANDARD_TIME
64	COR_CIMP_MAGADAN_STANDARD_TIME
65	COR_CIMP_MAGALLANES_STANDARD_TIME
66	COR_CIMP_MARQUESAS_STANDARD_TIME
67	COR_CIMP_MAURITIUS_STANDARD_TIME
68	COR_CIMP_MID_ATLANTIC_STANDARD_TIME
69	COR_CIMP_MIDDLE_EAST_STANDARD_TIME
70	COR_CIMP_MONTEVIDEO_STANDARD_TIME
71	COR_CIMP_MOROCCO_STANDARD_TIME
72	COR_CIMP_MOUNTAIN_STANDARD_TIME
73	COR_CIMP_MOUNTAIN_STANDARD_TIME_MEXICO
74	COR_CIMP_MYANMAR_STANDARD_TIME
75	COR_CIMP_N_CENTRAL_ASIA_STANDARD_TIME
76	COR_CIMP_NAMIBIA_STANDARD_TIME
77	COR_CIMP_NEPAL_STANDARD_TIME
78	COR_CIMP_NEW_ZEALAND_STANDARD_TIME
79	COR_CIMP_NEWFOUNDLAND_STANDARD_TIME
80	COR_CIMP_NORFOLK_STANDARD_TIME
81	COR_CIMP_NORTH_ASIA_EAST_STANDARD_TIME
82	COR_CIMP_NORTH_ASIA_STANDARD_TIME
83	COR_CIMP_NORTH_KOREA_STANDARD_TIME
84	COR_CIMP_OMSK_STANDARD_TIME
85	COR_CIMP_PACIFIC_SA_STANDARD_TIME
86	COR_CIMP_PACIFIC_STANDARD_TIME
87	COR_CIMP_PACIFIC_STANDARD_TIME_MEXICO

<b>Index</b>	<b>Enumeration</b>
88	COR_CIMP_PAKISTAN_STANDARD_TIME
89	COR_CIMP_PARAGUAY_STANDARD_TIME
90	COR_CIMP_ROMANCE_STANDARD_TIME
91	COR_CIMP_RUSSIA_TIME_ZONE_10
92	COR_CIMP_RUSSIA_TIME_ZONE_11
93	COR_CIMP_RUSSIA_TIME_ZONE_3
94	COR_CIMP_RUSSIAN_STANDARD_TIME
95	COR_CIMP_SA_EASTERN_STANDARD_TIME
96	COR_CIMP_SA_PACIFIC_STANDARD_TIME
97	COR_CIMP_SA_WESTERN_STANDARD_TIME
98	COR_CIMP_SAINTE_PIERRE_STANDARD_TIME
99	COR_CIMP_SAKHALIN_STANDARD_TIME
100	COR_CIMP_SAMOA_STANDARD_TIME
101	COR_CIMP_SARATOV_STANDARD_TIME
102	COR_CIMP_SE_ASIA_STANDARD_TIME
103	COR_CIMP_SINGAPORE_STANDARD_TIME
104	COR_CIMP_SOUTH_AFRICA_STANDARD_TIME
105	COR_CIMP_SRI_LANKA_STANDARD_TIME
106	COR_CIMP_SYRIA_STANDARD_TIME
107	COR_CIMP_TAIPEI_STANDARD_TIME
108	COR_CIMP_TASMANIA_STANDARD_TIME
109	COR_CIMP_TOCANTINS_STANDARD_TIME
110	COR_CIMP_TOKYO_STANDARD_TIME
111	COR_CIMP_TOMSK_STANDARD_TIME
112	COR_CIMP_TONGA_STANDARD_TIME
113	COR_CIMP_TRANSBAIKAL_STANDARD_TIME
114	COR_CIMP_TURKEY_STANDARD_TIME
115	COR_CIMP_TURKS_AND_CAICOS_STANDARD_TIME
116	COR_CIMP_ULANBAATAR_STANDARD_TIME
117	COR_CIMP_US_EASTERN_STANDARD_TIME
118	COR_CIMP_US_MOUNTAIN_STANDARD_TIME

Index	Enumeration
119	COR_CIMP.UTC
120	COR_CIMP.UTC_PLUS_12
121	COR_CIMP.UTC_PLUS_13
122	COR_CIMP.UTC_MINUS_02
123	COR_CIMP.UTC_MINUS_08
124	COR_CIMP.UTC_MINUS_09
125	COR_CIMP.UTC_MINUS_11
126	COR_CIMP.VENEZUELA_STANDARD_TIME
127	COR_CIMP.VLADIVOSTOK_STANDARD_TIME
128	COR_CIMP.W_AUSTRALIA_STANDARD_TIME
129	COR_CIMP.W_CENTRAL_AFRICA_STANDARD_TIME
130	COR_CIMP.W_EUROPE_STANDARD_TIME
131	COR_CIMP.W_MONGOLIA_STANDARD_TIME
132	COR_CIMP.WEST_ASIA_STANDARD_TIME
133	COR_CIMP.WEST_BANK_STANDARD_TIME
134	COR_CIMP.WEST_PACIFIC_STANDARD_TIME
135	COR_CIMP.YAKUTSK_STANDARD_TIME

### Sample code

```
Dim yy      As Integer
Dim mon     As Integer
Dim dd      As Integer
Dim hh      As Integer
Dim min     As Integer
Dim sec     As Integer
Dim nano    As Long
Dim adjDate As Date
```

```
local time 2017 Oct 13 3 PM
```

### Legend

yy	=	2017
mon	=	10
dd	=	13

hh	=	15
min	=	00
sec	=	00
nano	=	00

### Conversion to Korean Time

```
adjDate =  
  GetLocalDateAdjustedToTimeZone(yy,mon,dd, hh,min,sec,nano,TREND_TZ_KOREA_STANDARD_TIM
```

### Or

```
adjDate = GetLocalDateAdjustedToTimeZone(yy,mon,dd, hh,min,sec,nano,60)
```

```
MsgBox format$(adjDate, "m/d/yyyy:hh:n:ss")
```

### Return

```
2017 Oct 14 4 AM
```

# Chapter 2. Quick Trends

## *About Quick Trends*

CIMPLICITY provides you with the ability to instantly review a selected point's trend through the Workbench and CimView.

You do this by starting a trend chart for a selected point by selecting Quick Trend on the point's popup menu. When the trend chart opens the chart begins to trend the point's values.

You can manipulate the chart by:

- Using the same CIMPLICITY Trend Control Properties dialog box as you use in CimEdit.
- Creating quick changes to the display by using Quick Trends' several Popup menus.
- Adding more trend lines for other data sources.

You can even save your configured chart for future reference.

## *Start Quick Trends*

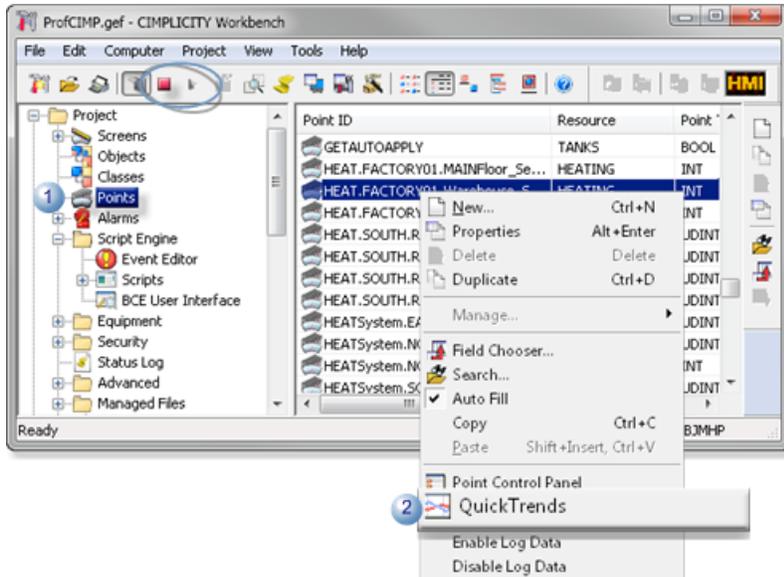
 **Important:** Make sure the project is running.

You can open Quick Trends in the following applications.

- Workbench
- CimEdit/CimView
- Point Control Panel

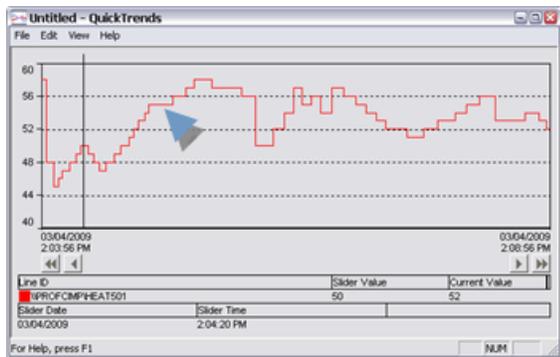
Example

Open Quick Trends in the Workbench as follows.



1	Select Project>Points in the Workbench left pane.
2	Right-click a point in the Workbench right pane.
3	Select Quick Trends on the Popup menu.

Result: A Quick Trend chart opens for the selected point.



## Configure a Quick Trend Chart

Quick Trends offers you the same CIMPLICITY Trend Control Properties dialog box that you use in CimEdit.

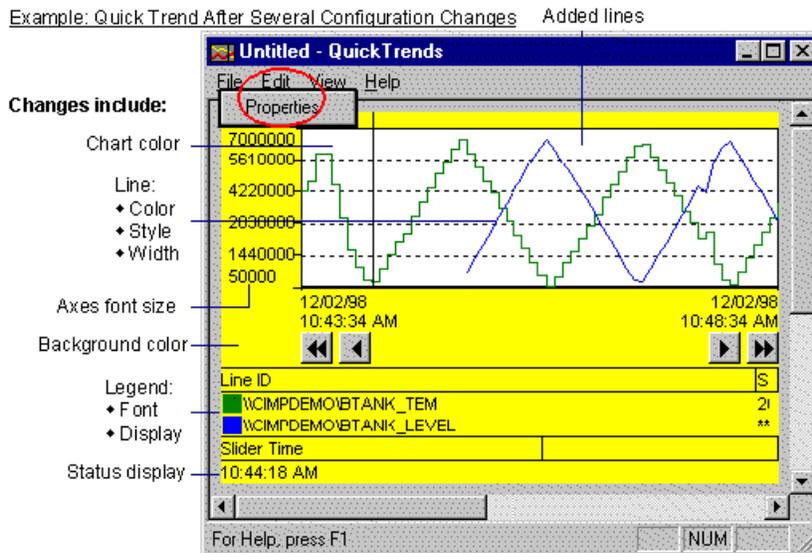
Click Edit>Properties on the Quick Trends menu bar.

Result: The CIMPLICITY Trend Control Properties dialog box opens.

You can configure the Quick Trend chart the same as a Trend chart.

(Optional) Save the file, as follows:

- a. Click File on the trend chart's menu bar.
- b. Select Save. The Save File dialog box open.
- c. Select its directory.
- d. Name the trend.



 **Note:** The most recent four trends that are saved, appear on the File drop down menu.

## *Use Popup Menus to Make Quick Changes*

1. Place the cursor over the area you want to modify, including:
  - Chart
  - Legend
  - Status bar
  - X-axis
  - Y-axis
2. Click the right-mouse button.

A Popup menu, with items that relate to the area you selected, opens.

# Chapter 3. XY Plot Configuration

## *About XY Plots*

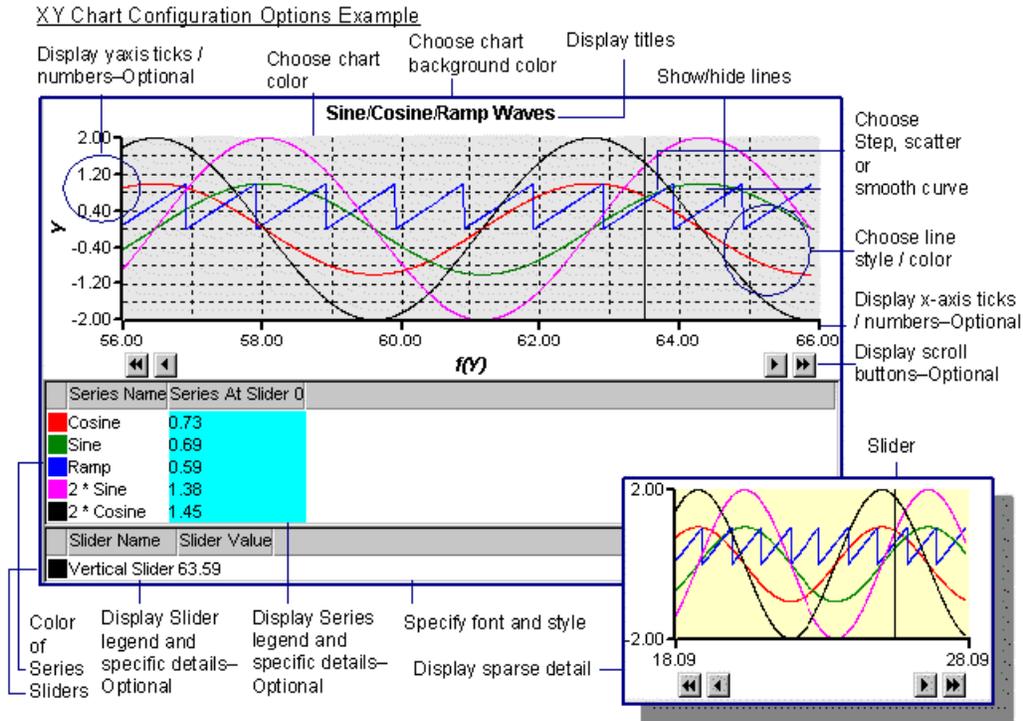
XY Plots provide you with the ability to visually represent values in relation to each other. For example, you can plot real data vs. calculated data, or elements such as pressure vs. temperature.

XY Plots provides you with:

An extensive XY Plot object model with which you can script XY Plots that are as easy or as complex as you need.
A CIMPLICITY XY Control Properties dialog box to make detailed chart design selections.
A SmartObject XY Control with which you can quickly create an effective XY Plot.

You have considerable control over what an XY Plot displays and its appearance using any of the tools that XY Plot provides.

- You can create an XY Plot that displays:
  - One or several XY series
  - One or more X,Y axes
  - Minimum detail so a user can view quickly view the pattern of static values
  - All the details a user needs to fully analyze any of the XY series
  - Allow a runtime user, for the one runtime session, specify what should display.
  - For display, you can choose the colors, line types and fonts that you think will work best.



## Overview of Available Features for XY Plots

You can choose to display or hide:

Display feature	Choose to Display or Hide
Ticks and numbers	For the Y-axis For the X-axis
Grid	Gridlines
Lines	Each line
Legends	Entire legend Series legend Slider legend
Legend features	Specific features: Title Series' value at the slider Series' value at an index Slider's value
Axes One or more X or Y	axes

You can also specify how the chart's many display features will appear.

Display feature	Other Configuration Options
Colors	Change for several chart elements.
Series	Display the associated point or expression data.
Axes	Add or remove.

Display feature	Other Configuration Options
Sliders	Add or remove.
Fonts	Change the style and size.

You configure this powerful feature in CimEdit and display it in CimView. The XY Plot is an ActiveX control that you can configure as follows.

1. Insert the control into a CimEdit screen.

XY provides an XY toolbar button that you simply click.

2. Configure the chart's design.

A CIMPLICITY Plot Control dialog box provides a long list of design choices.

3. Specify runtime data criteria.

XY comes with XY properties and methods that you can use in scripts to manipulate runtime. You can also design the chart by using scripts in addition to, or instead of, the CIMPLICITY Plot Control dialog box.

If you want to begin with a chart that is pre-configured, you can take advantage of the XY Plot [SmartObject \(page 248\)](#) .

## *Design an XY Plot*

### *Design an XY Plot*

XY Charts that you configure in CimEdit are viewed during runtime in CimView. Because the XY Plot control is a CIMPLICITY ActiveX control, you can place it on any CimEdit screen by simply clicking the **XY Plot** button on the CimEdit toolbar.

You can specify the design criteria for the XY Plot using either or both of the following XY tools:

- |                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Insert an XY plot control on a CimEdit screen.</li> <li>• Plot XY data.</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------|

You will discover that two types of attributes are common to several of the chart parts. You can use the same methods to configure them in all instances. They are.

- Colors.
- Fonts.

Chart design includes specifying the attributes for the:

- Plot foreground, background and chart colors.
- Axes.
- Series.
- Sliders.
- Grid.
- Legend
- Title

### *Insert an XY Plot Control on a CimEdit Screen*

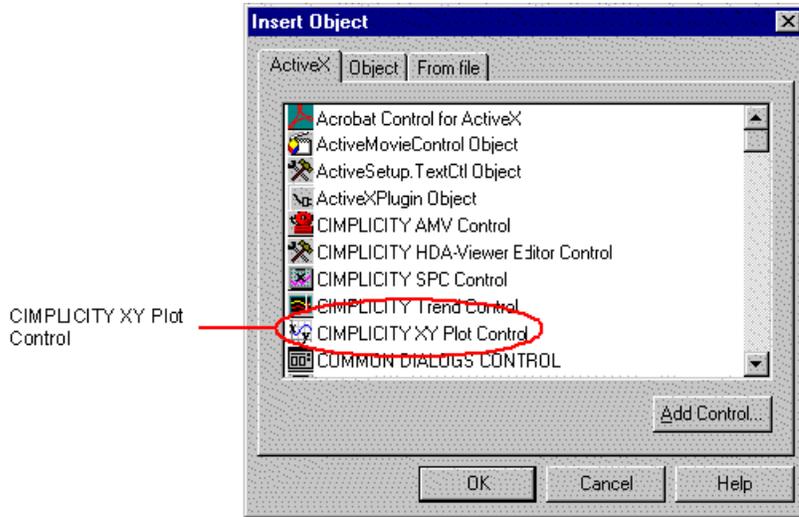
1. Click the **OLE** button  on the CimEdit Tools toolbar.
2. Place the ActiveX Placement cursor where you want the top left corner of the control to be located. You can move the control any time you want.



3. Click the left mouse button.

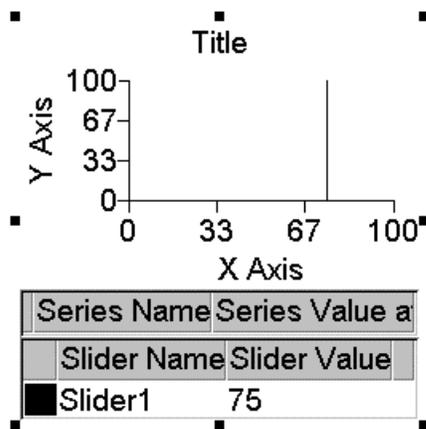
The Insert Object dialog box opens.

4. Select the ActiveX tab.
5. Select **CIMPLICITY XY Plot control**.



6. Click **OK**. A new XY Plot control is placed at the position you selected in your CimEdit screen.

The XY Plot control looks like this initially:

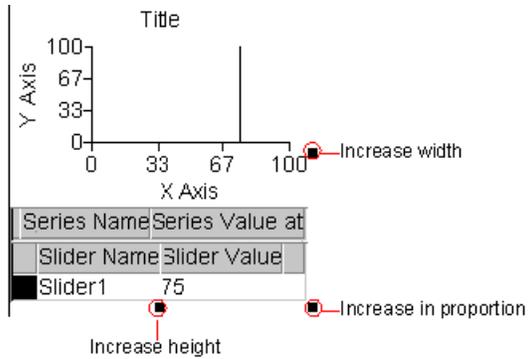


### *Resize a new XY Plot Control*

1. Choose one of the following methods.

Method 1. Quick

Grab one of the object's handles and move it.



### Method 2. Precision

- Select Edit on the menu bar.
- Select Properties.

### Method 3. Precision

Click the **Properties** button  on the Format toolbar.

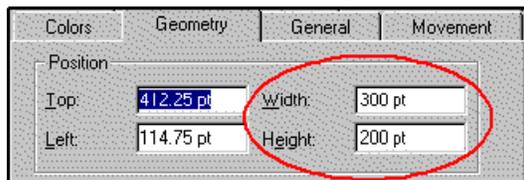
### Method 4. Precision

- Hold down the right mouse button.
- Select Properties from the drop-down menu.

The Properties – Object dialog box displays when you use Methods 2-4.

Continue (after choosing from Methods 2-4)

- Select the Geometry tab.
- Enter the width and / or height for the XY Plot in the **Width** field and **Height** field.



## *Open the CIMPLICITY XY Plot Properties Dialog Box*

Choose one of the following methods.

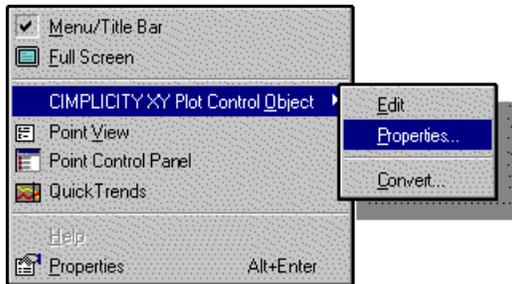
### Method 1

- Select the XY Plot control.

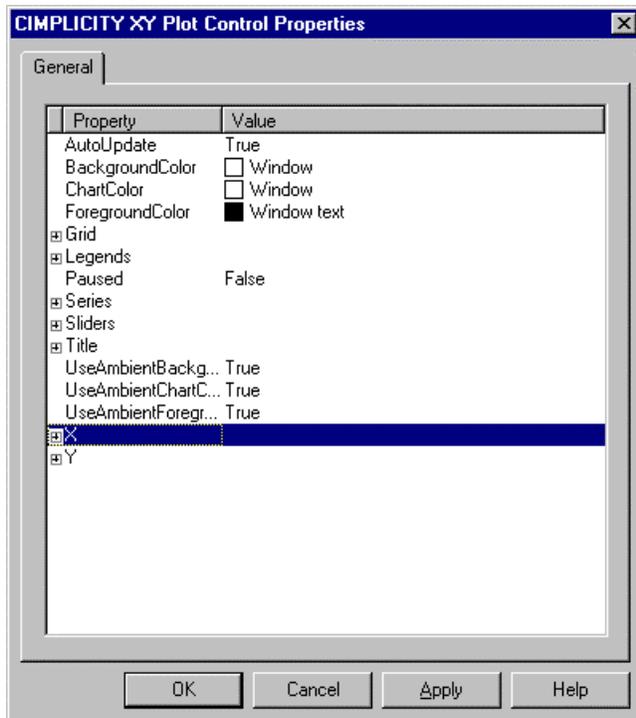
2. Click Edit on the menu bar.
3. Select CIMPLICITY XY Plot control Object.
4. Select Properties from the cascading menu.

#### Method 2

5. Select the XY control.
6. Hold down the right mouse button.
7. Select CIMPLICITY XY Plot Control Object from the drop-down menu.
8. Select Properties from the cascading menu.



The XY Plot Properties dialog box opens when you use any method.



## *Color and Font Choices for an XY Plot Control*

### Color and Font Choices for an XY Plot Control

You can specify color or font characteristics in several parts of an XY Chart.

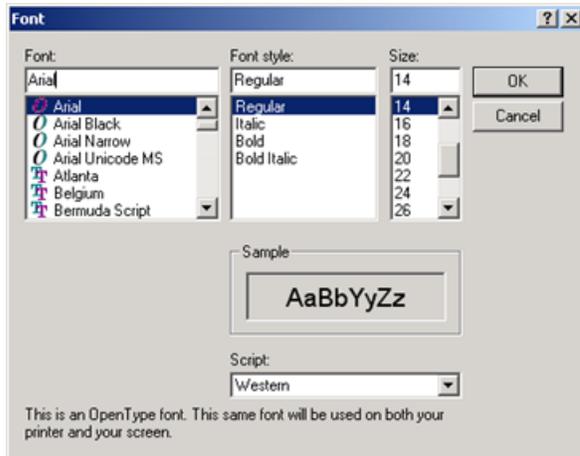
The palettes and font dialog box are the same that are used in CimEdit.

- Available color palettes.
- Font dialog box.
- XY Plot design overview.

### Font Dialog Box

1. Click the **Font** button  on any Font line.

The Font dialog box opens.



2. Select the Font. If you use True Type fonts, users can resize a screen in CimView and still have the text display in proportion to the rest of the objects on the screen.
3. Select the font's:
  - Style
  - Size
  - Script
4. Check the **Strikeout** and/or **Underline** check boxes to display the font with those effects.

 **Note:** The font color is the foreground color. The color in the Font dialog box, therefore does not apply to the XY Plot fonts.

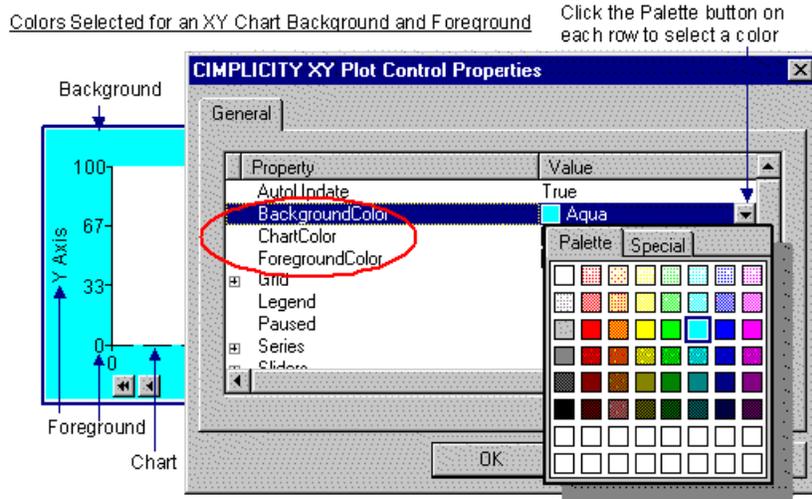
## *XY Plot Foreground, Background and Chart Colors*

### XY Plot Foreground, Background and Chart Colors

For an XY Plot background, chart and foreground colors, you can:

- Select XY colors individually.
- Select Ambient Colors for the XY Plot

### Select XY Colors Individually



 **todo:** To specify an XY Plot control background, chart and foreground colors:

1. Open the CIMPLICITY XY Plot control Properties dialog box.
2. Click the **down arrow** ▾ on any or all of the following rows.

**BackgroundColor**

**ChartColor**

**ForegroundColor**

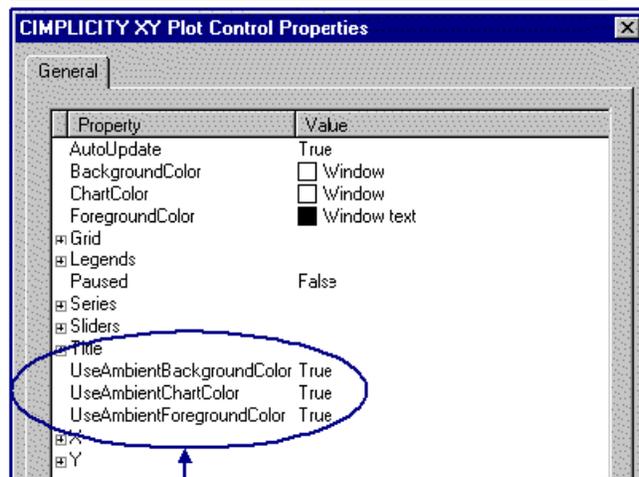
The CIMPLICITY palette opens.

3. Select the color you want.

The XY Plot control provides properties that enable you to use CimEdit ambient colors as the XY Plot background, chart and foreground colors. The default, for these properties, is TRUE. When you specify a color XY automatically changes using the ambient to FALSE.

Select Ambient Colors for the XY Plot

Ambient Colors Selected for an XY Chart Background and Foreground



Automatically changes to False when a color other than the ambient is specified. Resetting to True restores the ambient.

 **todo:** To use the CimEdit ambient colors for the XY Plot background, chart and foreground colors:

1. Open the CIMPLICITY XY Plot Control Properties dialog box.
2. Specify the value as TRUE for any of the following properties. (The default is TRUE.)

**UseAmbientBackgroundColor**

**UseAmbientChartColor**

**UseAmbientForegroundColor**

## *XY Plot Axes Properties*

### XY Plot Axes Properties

XY Plots provides you with several options for configuring one or more X-axes and Y-axes.

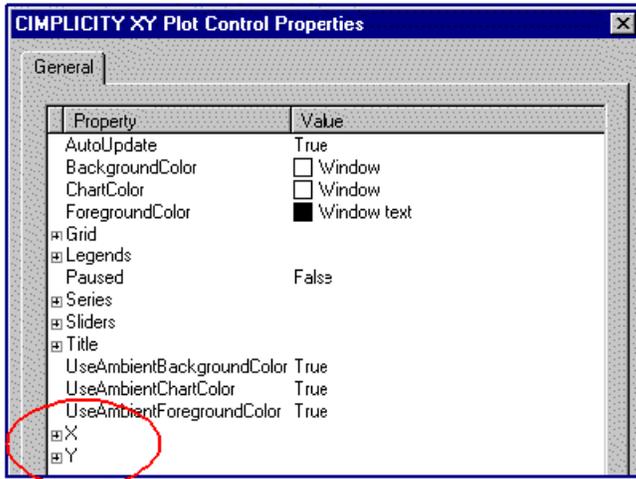
Review how to:

- Find the XY Plot axes properties.
- Design XY plot axes.

## Find Axes Properties

1. Open the XY Plot Control Properties dialog box.
2. Select either X or Y.

CIMPLICITY XY Plot Control Properties Dialog Box: Series



## Design XY Plot Axes

### Design XY Plot Axes

Following are eight quick steps to customize every property on an X or Y-axis:

Step 1	Expand the tree under X or Y.
Step 2	Expand a selected X or Y-axis.
Step 3	Configure an X or Y-axis data flow.
Step 4	Define the X or Y-axis format.
Step 5	Design an X or Y-axis pen.
Step 6	Configure the X or Y-axis ticks.
Step 7	Configure the X or Y-axis limits.
Step 8	Add X or Y-axes.
Step 9	Prioritize X or Y-axes.
Step 10	Remove X or Y-axes.

Step 1. Expand the tree under X or Y

Do one of the following to expand the tree under X or Y:

#### Method 1

Click the  to the left of either the X or Y.

#### Method 2

1. Click the right mouse button.
2. Select Expand on the popup menu



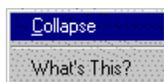
#### Method 3

3. Double click X or Y.
4. When you use any method, the tree expands to display:

Count (Read only)	The number of X or Y-axes that have been configured for the chart.
Item	The properties appear in a tree under Item.

5. Use any of the methods you used for X or Y to expand Item. (Choose Expand from the popup menu list, if you choose that method.)

 **Note:** Follow any of the three methods when the tree is expanded to collapse the tree. Select Collapse from the popup menu.



### Step 2. Expand a Selected X or Y Axis

1. Select a number, e.g. 0, under the X or Y-axis Item.
2. Use any of the three methods described in Step 1 to expand the axis tree and to expand properties in the tree that have a  to their left. (Choose Expand from the popup menu list, if you choose that method.)

### Step 3. Configure an X or Y-axis Data Flow

Select Orientation under X–Item or Y–Item to specify the location of the axis on an XY Plot.

Orientation	Orients the axis on a chart toward the:
apOrientationBottom	Lower part. (X-axis only)
apOrientationLeft	Left side. (Y-axis only)
apOrientationRight	Right side. (Y-axis only)
apOrientationTop	Upper side. (X-axis only)

2. Select the **Direction** in which data will flow.

Direction	Specifies the flow or direction to be:
apDirectionForward	Standard (Upward for a Y-axis, rightward for an X-axis)
apDirectionBackward	Alternate (Downward for a Y-axis, leftward for an X-axis)

#### Step 4. Define the X or Y-axis Format

1. Expand **Format**.

2. Choose the **Type** of format in which the data will be reported.

Type	Does the following:
apNumberInteger	Displays a number as an integer. If the actual number is fractional, it will be rounded.
apNumberFixed	Displays a fixed real number with a specified number of decimal places.
apNumberScientific	Displays a number in scientific notation with a specified number of decimal places. The default is 6 if precision is not specified.
apNumberCompact	Defines an automatic way to use either apNumberFixed or apNumberScientific formats based on the size of the value. Precision information indicates the exponent to start displaying in scientific format.
apNumberAbsoluteTime	Interprets a number as the number of seconds since 00:00 GMT on January 1, 1970.
apNumberAbsoluteTimeEx	Interprets a date and time from the value of the 8-byte floating-point number. Days are represented by whole number increments starting with 30 December 1899 GMT. Hour values are expressed as the absolute value of the fractional part of the number starting at midnight with a value of 0. This is equivalent to the Date type in CimView scripting or Visual Basic.
apNumberstaticTime	Interprets a number as an elapsed time value in seconds.
apNumberCustom	Uses a format string in the standard C language format notation to display a number.

3. Make additional entries, when they apply, to more precisely define the selected **Type**.

- a. For **apNumberAbsoluteTime** , select the item, Absolute Time. Specify the time format string. Choose your specific entries from the following list. The letters must be in uppercase or lowercase as shown (for example, "ss", not "SS"). Characters in the format string that are enclosed in single quotation marks will appear in the same location and unchanged in the output string.

Entry	Displays
d	Day of month as digits with no leading zero for single-digit days.
dd	Day of month as digits with leading zero for single-digit days.
ddd	Day of week as a three-letter abbreviation.
dddd	Day of week as its full name.
M	Month as digits with no leading zero for single-digit months.
MM	Month as digits with leading zero for single-digit months.
MMM	Month as a three-letter abbreviation.
MMMM	Month as its full name.
y	Year as last two digits, but with no leading zero for years less than 10.
yy	Year as last two digits, but with leading zero for years less than 10.
yyyy	Year represented by full four digits.
h	Hours with no leading zero for single-digit hours (12-hour clock).
hh	Hours with leading zero for single-digit hours (12-hour clock).
H	Hours with no leading zero for single-digit hours (24-hour clock).
HH	Hours with leading zero for single-digit hours (24-hour clock).
m	Minutes with no leading zero for single-digit minutes.
mm	Minutes with leading zero for single-digit minutes.
s	Seconds with no leading zero for single-digit seconds.
ss	Seconds with leading zero for single-digit seconds.
t	One character time marker string, such as A or P.
tt	Multicharacter time marker string, such as AM or PM.

### Example

To display 01/01/1999 12:05:00 AM

Use the format string: **MM/dd/yyyy hh:mm:ss tt** .

- a. For **apNumberAbsoluteTimeEx** , the format argument consists of one or more of the following format codes. The formatting codes are preceded by a percent sign **%**. Characters that do not begin with **%** are displayed unchanged.

<b>Format Code</b>	<b>Description</b>
%a	Abbreviated weekday name
%A	Full weekday name
%b	Abbreviated month name
%B	Full month name
%c	Date and time representation appropriate for locale
%d	Day of month as decimal number (01 - 31)
%H	Hour in 24-hour format (00 - 23)
%I	Hour in 12-hour format (01 - 12)
%j	Day of year as decimal number (001 - 366)
%m	Month as decimal number (01 - 12)
%M	Minute as decimal number (00 - 59)
%p	Current locale's A.M./P.M. indicator for 12-hour clock
%S	Second as decimal number (00 - 59)
%U	Week of year as decimal number, with Sunday as first day of week (00 - 53)
%w	Weekday as decimal number (0 - 6; Sunday is 0)
%W	Week of year as decimal number, with Monday as first day of week (00 - 53)
%x	Date representation for current locale
%X	Time representation for current locale
%y	Year without century, as decimal number (00 - 99)
%Y	Year with century, as decimal number
%z, %Z	Time-zone name or abbreviation; no characters if time zone is unknown
%%	Percent sign

The # flag may prefix any formatting code. In that case, the meaning of the format code is changed as follows:

<b>Format Code</b>	<b>Description</b>
%#a, %#A, %#b, %#B, %#p, %#X, %#z, %#Z, %#% #	
	Flag is ignored. (Format code above)
%#c	Long date and time representation, appropriate for current locale. For example: "Tuesday, March 14, 1995, 12:41:29".

Format Code	Description
%#x	Long date representation, appropriate to current locale. For example: "Tuesday, March 14, 1995".
%#d, %#H, %#I, %#j, %#m, %#M, %#S, %#U, %#w, %#W, %#y, #Y	
	Remove leading zeros (if any). (Format code above)

- For **apNumberCustom**, select the item Custom. Use a format string in the standard C language format notation to display a number.
- For **apNumberScientific** or **apNumbercompact**, select Precision if you need to change it from the default of 6.
- For **apNumberstaticTime**, select staticTime. Choose one entry :

Entry	Displays static time as:
apTimeDDHHMMSS	Day:hours:minutes:seconds
apTimeHHMMSS	Hours:minutes:seconds.
apTimeHHTenths	Hours and tenths
apTimeMMSS	Minutes:seconds.
apTimeMMTenths	Minutes and tenths

#### Step 5. Design an X or Y-axis Pen

- Select Pen under X-Item or Y-Item.
- Click the  to expand the tree.
- Select a Color for the axis.
  - Click the **down arrow**  to the right of the displayed color.
  - Select a color from the palette that appears.
- Choose the line's Style .

Style	Displays
apPenDash	— — — —
apPenDashDot	- - - - -
apPenDashDotDot	.....
apPenDot	.....
apPenNull	

Style	Displays
apPenSolid (Default)	

5. Specify the line Width.

A value of 1 is equivalent to 1/100th of a millimeter. This equivalence applies in CimView only when the screen is at 100% zoom.

The value of this property defaults to 0, which corresponds to a 1-pixel width regardless of the graphical device (e.g. display versus a printer).

Step 6. Configure the X or Y-axis Ticks

1. Select Ticks under the X-Item or Y-Item.

2. Click the  to expand the tree.

3. Specify if AutoCount should be:

TRUE	The label count is automatically calculated.
FALSE (Default)	The label count is manually specified.

4. Select Count to specify how many ticks should appear. The default is 2.

5. Configure the Font for the label.

a. Select Font in the tree under Ticks.

b. Either

a. Click the **down arrow**  and configure the font in the Font dialog box that appears. The font you configure will be used.

b. Set UseAmbientFont to TRUE. The ambient font for the CimEdit screen will be used. The default is TRUE.

Step 7. Configure the X or Y-axis Limits

1. Select the Mode under X-Item or Y-Item in which the axis limits will perform during runtime.

Mode	Defines an axis where the:
apAxisAutoscaled	Low and high limits change to fit all the data values of all the series that use the axis. The increment used on the high limit is based on the decimal base of the largest series data value. The decrement used on the low limit is based on the decimal base of the smallest series data value. If the largest data value increments between 1 and 9, the high limit increments in single digits because the decimal base is 1. When the value reaches 10, the limit increments in double digits, 10, 20, 30, etc. When the value reaches 100, the limit increments in triple digits, 100, 200, 300, etc. The same principle works for the low limit.

Mode	Defines an axis where the:
apAxisFixed	Low and high limits are fixed. They do not change regardless of the values of all the series that use the axis. This means that only those data values that fall between the fixed limits are displayed.
apAxisScrolled	High limit is set to the maximum data value of all the series plus the scroll percent of the original axis width. The low limit is set to the high limit minus the original axis width. The original axis width is the initial high limit minus the initial low limit. This mode is very useful for incremental flow data.

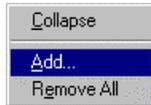
2. Specify the High and Low Limits. During runtime, the limits will display in response to the mode you specified. The defaults are:

High	100
Low	0

3. If apAxisScrolled is selected, configure the **Backward** and **Forward** scroll buttons.
- Click the  to the left of BackwardScroll under X-Item or Y-Item.
  - Specify whether or not to display the **Full Backward Scroll** button  when the X-axis is in the Forward direction.
    - Click the  to the left of Full.
    - Set Visible to TRUE to display the button, False to hide the button.
  - Specify whether or not to display the **Partial Backward Scroll** button  when the X-axis is in the Forward direction.
    - Click the  to the left of Partial.
    - Set Visible to TRUE to display the button, False to hide the button.
  - Specify whether or not to display the **Full Forward Scroll** button,  when the X-axis is in the Forward direction.
    - Click the  to the left of Full.
    - Set Visible to TRUE to display the button, False to hide the button.
  - Specify whether or not to display the **Partial Forward Scroll** button  when the X-axis is in the Forward direction.
    - Click the  to the left of Partial.
    - Set Visible to TRUE to display the button, False to hide the button.

### *Step 8. Add X or Y-axes*

- Select Item under X or Y.
- Click the right mouse button.
- Select Add from the popup menu.



The Add Method Arguments dialog box opens.

4. Enter a name for the axis in the Value column.

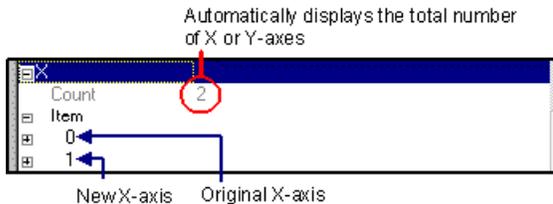


5. Click **OK**.

A next number up from the number of existing X or Y-axes appears under Item.

### Example

You had one X-axis. You add a second. The first X-axis appears in the list under Item as 0. The second will be listed as 1.



6. Expand the new axis and configure it using the same steps you used for the previous axis.

**!** **Important:** When you select Add, XY immediately adds an axis. It does not wait for you to click the **Apply** button.

### *Step 9. Prioritize X or Y-axes*

1. Specify the Order of priority in which the axis will be addressed by the XY Plot. The default is the lowest priority.

### Example

The XY Plot has three axes. You add a fourth.

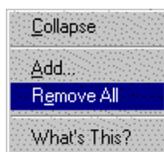
The fourth axis' default order will be 3 (0, 1, 2, 3).

2. Enter a Name for the axis.
3. Configure a Title for the axis.
  - a. Configure the Font for the Title.
    - a. Select Font in the tree under Title.
    - b. Either
      - Click the **Font button**  and configure the font in the Font dialog box. The font you configure will be used.
      - Set UseAmbientFont to TRUE. The ambient font for the CimEdit screen will be used.
    - a. Specify the title content.
4. Select Value.
5. Enter the text that you want to display. The default is X Axis under the X and Y Axis under the Y.
6. Select TRUE for Visible in the tree under Title to display the title. The default is TRUE.
7. Select TRUE for Visible (in the path under X-Item or Y-Item) to display the axis. The default is True.

### Step 10. Remove X or Y-axes

Remove all X or Y-axes

1. Select Item.
2. Click the right mouse button.
3. Select Remove All.



Remove a selected axis

4. Select the axis number that you want to remove.
5. Click the right mouse button.
6. Select Remove.



**⚠ CAUTION:** When you select Remove All or Remove, XY Plot immediately makes the removal. It does not wait for you to click the **Apply** button. Therefore, select those two options very carefully. (If you saved the CimEdit screen before you accidentally remove an item, close the CIMPLICITY XY Plot Control Properties dialog box and the CimEdit screen without saving it. The screen will re-open with the last saved features, including the features you removed.)

## *XY Plot Series Properties*

### XY Plot Series Properties

The focus of the XY Plot is a series.

A series consists of one or more values based on an X or Y specification. For example, a series can report the pressure verses temperature for a turbine engine. The values display by means of a marker and/or a line.

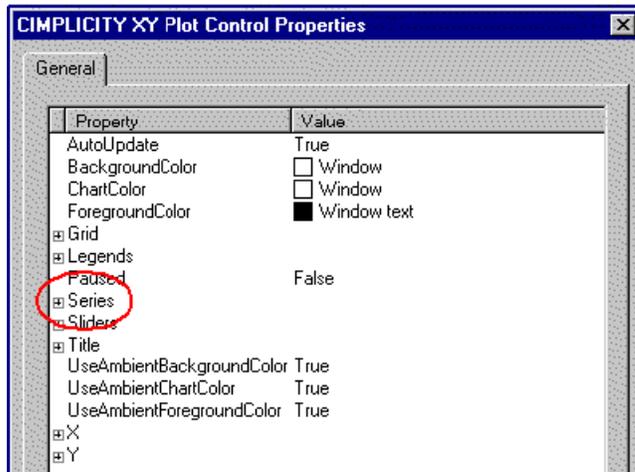
Review how to:

- Find the XY Plot series properties.
- Design an XY Plot series.

### Find the Series Properties

1. Open the XY Plot Control Properties dialog box.
2. Select Series.

CIMPLICITY XY Plot Control Properties Dialog Box: Series



## Design a Series

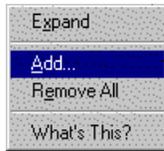
### *Design a Series*

Following are some quick steps to customize every property for a series.

Step 1	Add additional series.
Step 2	Identify a series.
Step 3	(Optional) Remove series.
Step 4	Expand the tree under series.
Step 5	Expand a selected series.
Step 6	Select the type of series.
Step 7	Configure a fill (brush) for a series.
Step 8	Configure the markers.
Step 9	Configure the line (pen).
Step 10	Configure the X and Y-axes for the series.
Step 11	Specify if a series' values should be in the legend.
Step 12	(Optional) Enter X and Y values for the series.

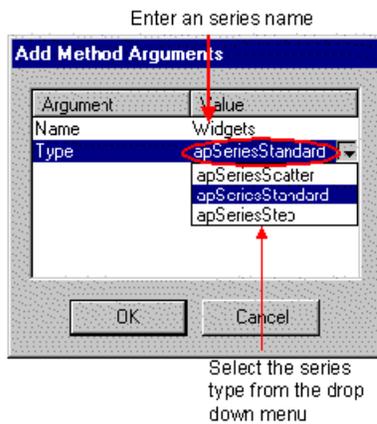
### *Step 1. Add Additional Series*

1. Select Item under Series.
2. Click the right mouse button.
3. Select Add from the popup menu.



The Add Methods dialog box opens.

4. Enter a name for the series in the Value column.
5. Select a Series Type. The default is apSeriesStandard.

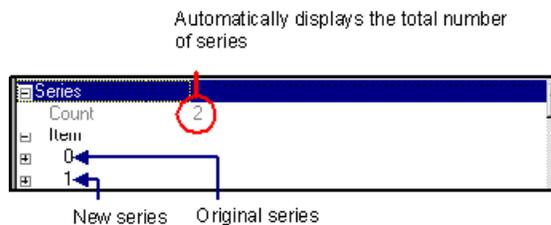


6. Click **OK**.

A next number up from the number of existing series appears under Item.

Example

You had one Series. You add a second. The first series appears in the list under Item as 0. The second will be listed as 1.



7. Expand the new series and configure it using the same steps you used for the previous series.

### Step 2. Identify a Series

1. Select True for InLegend to have the series should appear in the legend. The default is True.
2. Enter a Name for the series.

3. Select True for Visible (in the tree under the Series–Item) to display the series. The default is True.

### Step 3. Remove Series

Remove all series

1. Select Item.
2. Click the right mouse button.
3. Select Remove All.



Remove a selected series

4. Select the axis number that you want to remove.
5. Click the right mouse button.
6. Select Remove.



**⚠ CAUTION:** When you select Remove All or Remove, XY Plot control immediately makes the removal. It does not wait for you to click the **Apply** button. Therefore, select those two options very carefully.

### Step 4. Expand the Tree Under Series

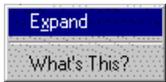
1. Do one of the following to begin expanding the list under Series:

Method 1

Click the  to the left of Series.

Method 2

- a. Click the right mouse button.
- b. Click the Expand popup menu



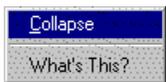
### Method 3

- a. Double click **Series**.
- b. The tree expands to display:

Count (Read only)	The number of series that have been configured for the chart.
Item	The properties appear in a tree under Item.

2. Use any of the methods you used for Series to expand Item. (Choose Expand from the popup menu list, if you choose that method.)

 **Note:** Follow any of the three methods when the tree is expanded to collapse the tree. The popup menu displays as Collapse



### Step 5. Expand a Selected Series

1. Select a number, e.g. 0, under the Series Item.
2. Use any of the three methods described in Step 1 to expand the axis tree and to expand properties in the tree that have a  to their left. (Choose Expand from the popup menu list, if you choose that method.)

### Step 6. Select the Type of Series

Choose one of the following Types under Series–Item.

Type	Defines
apSeriesScatter	A series that has no lines
apSeriesStandard (Default)	A standard series, which is a line between two data values (connects the dots).
apSeriesStep	An X-based step that flows horizontally, then vertically from one data value to the next.

### Step 7. Configure a Fill for a Series

1. Select Brush under Series–Item.
2. Select a color for the marker's fill.

3. Click the **down arrow** ▼ to the right of the displayed color.
4. Select a color from the palette that appears.
5. Select the brush Type.

Type	Fills the series with a:
apBrushSolid	Solid color
apBrushHatch	Hatch (pattern)

6. Select a HatchStyle for the brush if you selected apBrushHatch as the type.

apHatchBackwardDiagonal	
apHatchCross	
apHatchDiagonalCross	
apHatchForwardDiagonal	
apHatchHorizontal	
apHatchVertical	

### *Step 8. Configure the Markers for a Series*

1. Select Marker under Series–Item.
2. Select the Type of marker.

Type	Displays a:
apMarkerCircle	Circle
apMarkerSquare	Square
apMarkerTriangle	Triangle

3. Select True for Visible (in the tree under Markers) to make the markers for the series visible.
4. Specify the marker's Width.

A value of 1 is equivalent to 1/100th of a millimeter. This equivalence applies in CimView only when the screen is at 100% zoom.

The value of this property defaults to 250.

### Step 9. Configure the Line for a Series

1. Select Pen under Series–Item.
2. Select a Color for the series line.
3. Click the down arrow ▼ to the right of the displayed Color.
4. Select a color from the palette that appears.
5. Select the series' line (pen) Style .

Style	Displays
apPenDash	— — — —
apPenDashDot	- - - - -
apPenDashDotDot	.....
apPenSolid (Default)	—————

6. Select line Width for the series line.

A value of 1 is equivalent to 1/100th of a millimeter. This equivalence applies in CimView only when the screen is at 100% zoom.

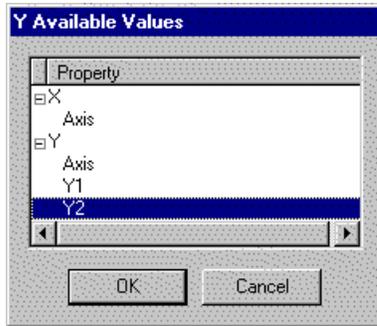
The value of this property defaults to 0, which corresponds to a 1-pixel width regardless of the graphical device (e.g display versus a printer).

### Step 10. Configure the X and Y-axis for a Series

1. Right click X or Y under Series–Item if you want an X or Y-axis to associate a specific axis with the series.
2. Select Set from the popup menu.



The X or Y Available Values dialog box opens.



3. Select the axis that you want to associate from the list of available axes.

#### *Step 11. Specify if Series Values Appear in the Legend*

1. Expand a selected series under Series–Item.
2. Set **InLegend** to True to display the series' values in the Series Legend; False to omit the series from the legend.

**Note:** You specify the type of value to display under Legends in the CIMPLICITY XY Plot Control Properties dialog box.

#### *Step 12. Enter X and Y Values for a Series*

1. Expand Data under Series–Item.
2. Enter, in the **Count** field, the number of X,Y points (represented by markers) that you want to display.
3. Expand X.
4. Expand Item.

The number you entered in the **Data–Count** field, displays in the **X-Count** field. The list of X numbers (coordinates), for which you can enter values totals the Count value.

5. Enter a value for each X coordinate.
6. Repeat the process for Y.

#### **Example**

Series (Manual) Data Entry Example

1 The number of X, Y coordinates (Count) is 5.

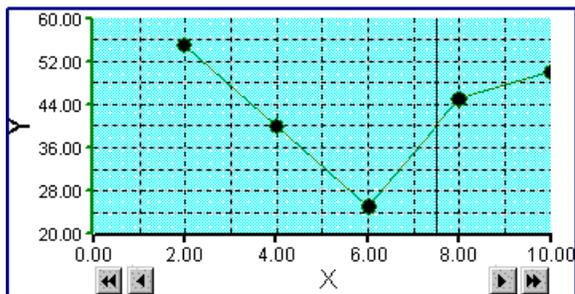
☰	Data
	Count 5

2 X and Y values are entered for each coordinate

X		Y	
☰	Count 5	☰	Count 5
☰	Item		Item
	0 2		0 55
	1 4		1 40
	2 6		2 25
	3 8		3 45
	4 10		4 50

Y column  
X column

3 The XY Chart displays the entered values.



## *XY Plot Slider Properties*

### XY Plot Slider Properties

You can use a slider to:

- Select data on the chart for which you want values.
- Move data backward and display data that might no longer be on the chart.
- Move data forward.

Review how to:

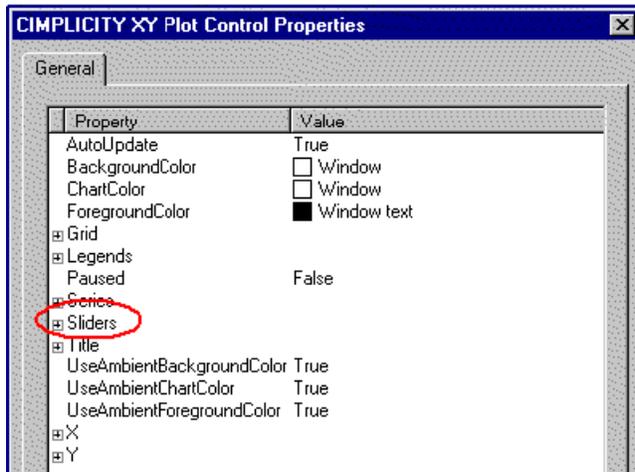
- Find the XY Plot sliders properties.
- Design an XY Plot slider.

### Find the Sliders Properties

Open the XY Plot Control Properties dialog box.

Select Sliders.

CIMPLICITY XY Plot Control Properties Dialog Box: Sliders



## Design a Slider

### *Design a Slider*

Following are nine quick steps to customize every property for a slider.

Step 1	Expand the tree under sliders.
Step 2	Expand a selected slider.
Step 3	Select the Type of slider.
Step 4	Configure a slider line.
Step 5	Specify the slider's initial position and its visibility.
Step 6	Display a slider's values in the legend.
Step 7	(Optional) Add additional sliders.
Step 8	Prioritize a slider.
Step 9	(Optional) Remove sliders.

### *Step 1. Expand the Tree Under Sliders*

1. Do one of the following to expand the tree under X or Y:

#### Method 1

Click the  to the left of Sliders.

#### Method 2

- a. Click the right mouse button.
- b. Click the Expand popup menu.



### Method 3

Double click X or Y.

When you use any method, the tree expands to display:

Count (Read only)	The number of sliders that have been configured for the chart.
Item	The properties appear in a tree under Item.

2. Use any of the methods you used for Sliders to expand Item. (Choose Expand from the popup menu list, if you choose that method.)

### Step 2. Expand a Selected Slider

1. Select a number, e.g. 0, under the Series Item.
2. Use any of the three methods described in Step 1 to expand the axis tree and to expand properties in the tree that have a  to their left. (Choose Expand from the popup menu list, if you choose that method.)

### Step 3. Select the Type of Slider

Under Slider–Item, select either:

Type	Displays the:
apSliderVertical (Default)	Interesected Y data value shows. This is because a vertical slider moves across the X-axis. Therefore, for each X data value that the slider is at, you have a Y data value on the series data vector. If there is more than one interesected Y data value, the data value that is displayed is the first interesected data value found from the end to the beginning of the data vector.
apSliderHorizontal	Interesected X data value shows. This is because a horizontal slider moves across the Y axis. Therefore, for each Y data value that the slider is at, you have an X data value on the series data vector. If there is more than one interesected X data value, the data value that is displayed is the first interesected data value found from the end to the beginning of the data vector.

### Step 4. Configure a slider line

1. Select Pen under Slider–Item.
2. Select a Color for the series line.

3. Click the **down arrow** ▼ to the right of the displayed Color.
4. Select a color from the palette that appears.
5. Select the slider's line (pen) Style.

Style	Displays
apPenDash	— — — —
apPenDashDot	- - - - -
apPenDashDotDot	.....
apPenSolid (Default)	—————

6. Select line Width for the slider line.

A value of 1 is equivalent to 1/100th of a millimeter. This equivalence applies in CimView only when the screen is at 100% zoom.

The value of this property defaults to 0, which corresponds to a 1-pixel width regardless of the graphical device (e.g display versus a printer).

#### *Step 5. Specify a Slider's Initial Position And Visibility*

1. Specify the slider's Position as a percent (0 to 100). This is the position the slider will be at whenever the XY Plot is opened.

The designated percent indicates the position from left to right for a vertical slider; bottom to top, for a horizontal slider.

2. Select True for Visible (in the tree under the Sliders–Item) to display the slider. The default is True.

#### *Step 6. Display a Slider's Values in the Legend*

1. Expand a selected slider under Slider–Item.
2. Leave the **InLegend** default of True to display the slider's values in the Slider Legend; set it to False to omit the slider from the legend.

**Note:** You specify the type of value to display under Legends in the CIMPLICITY XY Plot Control Properties box.

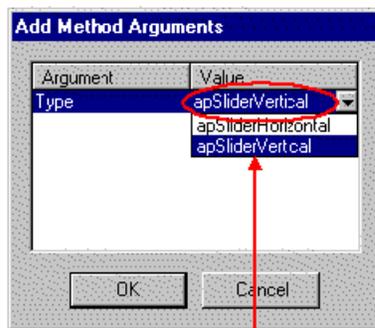
*Step 7. Add Additional Sliders*

1. Select Item under Sliders.
2. Click the right mouse button.
3. Select Add from the popup menu.



The Add Methods dialog box opens.

4. Enter a name for the series in the Value column.
5. Select a Slider Type. The default is apSliderVertical.



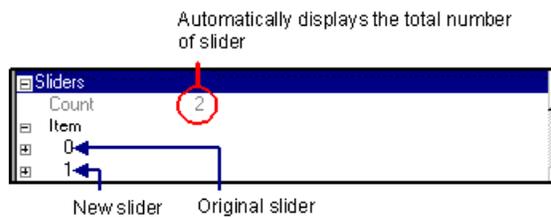
Select the slider type from the drop down menu

6. Click **OK**.

A next number up from the number of existing series appears under Item.

**Example**

You had one slider. You add a second. The first slider appears in the list under Item as 0. The second will be listed as 1.



7. Expand the new slider and configure it using the same steps you used for the previous slider.

### Step 8. Prioritize a Slider

1. Specify the Order of priority in which the slider will be addressed by the XY Plot. The default is the lowest priority.

#### **Example**

The XY Plot has three sliders. You add a fourth.

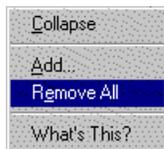
The fourth sliders' default order will be 3 (0, 1, 2, 3).

2. Enter a Name for the slider.
3. Leave Visible as True to display the slider; select False to hide it.

### Step 9. Remove Sliders

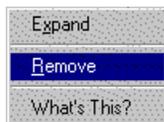
Remove all X or Y-axes

1. Select Item.
2. Click the right mouse button.
3. Select Remove All.



Remove a selected slider

4. Select the slider number that you want to remove.
5. Click the right mouse button.
6. Select Remove.



**⚠ CAUTION:** When you select Remove All or Remove, XY Plot immediately makes the removal. It does not wait for you to click the **Apply** button. Therefore, select those two options very carefully.

## *XY Plot Grid Properties*

### XY Plot Grid Properties

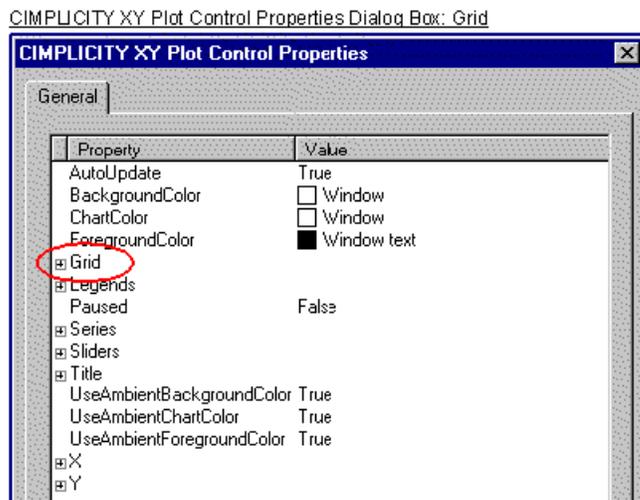
If your chart will be enhanced by displaying a grid, you can easily select to display one, in addition to specifying its style and density.

Review how to:

- Find the XY Plot grid properties.
- Design an XY Plot grid.

### Find the Grid Properties

1. Open the XY Plot Control Properties dialog box.
2. Select Grid.



### Design the Grid

#### *Design the Grid*

Following are four quick steps to customize every property on a grid:

Step 1	Expand the tree under grid.
Step 2	Design a grid pen.
Step 3	Specify the grid density.
Step 4	Specify the grid's visibility.

### *Step 1. Expand the Tree Under Grid*

Do one of the following to expand the tree under Grid:

#### Method 1

Click the  to the left of Grid.

#### Method 2

1. Click the right mouse button.
2. Click the Expand popup menu.

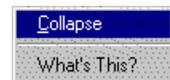


#### Method 3

Double click Grid.

The tree expands to display the grid's property options.

 **Note:** Follow any of the three methods when the tree is expanded to collapse the tree. The popup menu displays as Collapse.



### *Step 2. Design a Grid Pen*

1. Select Pen under Grid.
2. Click the  to expand the tree.
3. Select a Color for the axis.
  - a. Click the **down arrow**  to the right of the displayed color.

b. Select a color from the palette that appears.

4. Choose the line's Style.

Style	Displays
apPenDash	— — — —
apPenDashDot	- - - - -
apPenDashDotDot	.....
apPenDot (default)	.....
apPenSolid	—————

5. Specify the line **Width**.

A value of 1 is equivalent to 1/100th of a millimeter. This equivalence applies in CimView only when the screen is at 100% zoom.

The value of this property defaults to 0, which corresponds to a 1-pixel width regardless of the graphical device (e.g display versus a printer).

### *Step 3. Specify a Grid's Density*

1. Specify the number of horizontal gridlines.
  - a. Select HorizontalCount under Grid.
  - b. Enter the number of horizontal lines that will display.
2. Specify the number of vertical gridlines.
  - a. Select VerticalCount under Grid.
  - b. Enter the number of vertical lines that will display.

### *Step 4. Specify a Grid's Visibility*

Select True for Visible (in the tree under Grid) to display the grid. The default is False.

## *XY Plot Legend Properties*

### XY Plot Legend Properties

You can display legends for the XY Plot Series and Sliders. XY Plots offers you options for the types of values to display as well as configuration options.

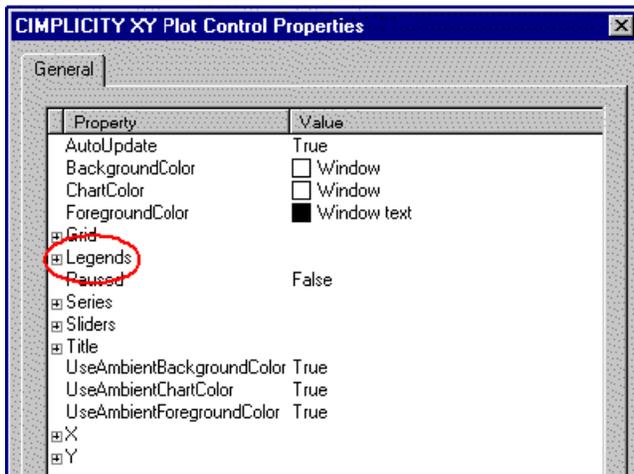
Review how to:

- Find the XY Plot legend properties.
- Design an XY Plot legend.

### Find the Legend Properties

1. Open the XY Plot Control Properties dialog box.
2. Scroll down to Legends.

CIMPLICITY XY Plot Control Properties Dialog Box: Legend



### Designing the XY Plot Legends

#### Design the XY Plot Legends

Following are quick steps to customize every property for Series and Slider Legends.

Step 1	Expand the tree under Legends..
Step 2	Make the legends visible.
Step 3	Specify the legends' location.
Step 4	Design the Series legend.
Step 5	Design the Slider legend.

#### Step 1. Expand the Tree Under Legends

Do one of the following to expand the tree under Legends:

##### Method 1

Click the  to the left of Legends.

#### Method 2

1. Click the right mouse button.
2. Click the Expand popup menu



#### Method 3

Double click Legends.

The tree expands to display the title's property options.

 **Note:** Follow any of the three methods when the tree is expanded to collapse the tree. The popup menu displays as **Collapse**.



#### *Step 2. Make the Legends Visible*

1. Select Visible under Legends.
2. Select True.
3. Click **Apply**.

#### *Step 3. Specify the Legends' Location*

1. Select **Orientation** under Legends.
2. Select one of the following to place the legend static to the chart.

<b>Locaton</b>	<b>Location static to the chart</b>
apOrientationBottom (default)	Bottom
apOrientation Left	Left
apOrientationRight	Right
apOrientationTop	Top

*Step 4. Design the Series Legend*

1. Expand **Series** under Legends.
2. Specify if the series header should be visible.
  - a. Select **HeaderVisible** under Legends–Series.
  - b. Select True to make it visible, False to hide it.
3. Configure the font to display in the series header.
  - a. Select **Font** under Legends–Series.
  - b. Either:
    - Click the **Font** button  on the Legend–Series Font row and open the Font dialog box to configure the font, or
    - Set **UseAmbientFont** under legends–Series to TRUE.
3. Select a fill for the header's background.
  - a. Select **Brush** under Legends–Series.
  - b. Select a color for the header background.
    - Click the **down arrow**  to the right of the displayed color.
    - Select a color from the palette that appears.
  - a. Select the brush **Type**.

Type	Fills the series legend with a:
apBrushSolid	Solid color
apBrushHatch	Hatch (pattern)

- a. Select a HatchStyle for the brush if you selected apBrushHatch as the type.

apHatchBackwardDiagonal	
apHatchCross	
apHatchDiagonalCross	
apHatchForwardDiagonal	
apHatchHorizontal	
apHatchVertical	

4. Configure the Series legend's columns for the XY Plot's series.
  - a. Expand **Columns** under **Legends–Series**.

The number of columns currently in the header appears (grayed out) in the **Count** row. You can add additional columns or delete existing ones.

- a. Expand **Item**.

Each number that appears represents a column in the order that it displays, from left to right, e.g. 0 represents the column that is furthest left.

- a. Set **Visible** to True to make the column visible; False to hide it.
- b. Specify the type of series' value that appears in the legend column. The options are:

Option	Shows the
apLegendColor	Series color
apLegendSeriesName	Series name
apLegendSeriesValueAtSlider	Data value that is intersected by a particular slider
apLegendSeriesValueAtIndex	Data value at a particular index in a series data vector

- a. Make specifications when **apLegendSeriesValueAtIndex** is selected.
  - a. Select True for **ShowX** to display the series' X values; False to display the series Y values.
  - b. Enter an **Index** value that contains the index to the series data value that you want to display.

### Example

If you enter 0 in the **Index** row, the column will display the first data value (X or Y, depending on the value of **ShowX**).

- a. Enter text that displays as the column header in the **Header** row. The text normally describes the type of value the column is reporting.
  - b. Specify the column width.
    - Set **AutoWidth** to TRUE to make the column width expand or contract to accommodate the width of its values, or
    - Set **AutoWidth** to FALSE and enter a value in the **Width** row.
  - a. Enter a number in the **Order** row that defines the order in which the column should appear in the legend, from left to right. For example, 0 is the first column at the left of the legend; 1 is to Column 0's right.
  - b. Select a fill for a selected column.
    - a. Expand Brush under **Column–Item** <number>.
    - b. Click the Palette button on the Color row to select a color.
  - a. (Optional) Add additional columns.
    - a. Select Item under Legends–Series.
    - b. Click the right mouse button.
    - c. Select Add from the popup menu.
5. Format the Series Legend's rows for the XY Plot series.
- a. Expand **Row** under Legends–Series.

The number of rows currently in the Series Legend appears (grayed out) in the **Count** row.

- a. Enter the maximum number of Series Legend rows that can be visible during runtime in the **VisibleCount** row.

*Step 5. Design the Slider Legend*

1. Expand **Slider** under Legends.
2. Specify if the slider's header should be visible.
3. Select **HeaderVisible** under Legends–Slider.
4. Select True to make it visible, False to hide it.
5. Configure the font to display in the series header.
  - a. Select **Font** under Legends–Slider.
  - b. Either:
    - a. Click the **Font** button  on the Legend–Slider Font row and open the Font dialog box to configure the font, or
    - b. Set **UseAmbientFont** under Legends–Slider to True.
6. Select a fill for the header's background.
  - a. Select **Brush** under Legends–Slider.
  - b. Select a color for the header background.
    - a. Click the **down arrow**  to the right of the displayed color.
    - b. Select a color from the palette that appears.
    - c. Select the brush **Type**.

Type	Fills the series with a:
apBrushSolid	Solid color
apBrushHatch	Hatch (pattern)

- a. Select a HatchStyle for the brush if you selected apBrushHatch as the type.

apHatchBackwardDiagonal	
apHatchCross	
apHatchDiagonalCross	
apHatchForwardDiagonal	
apHatchHorizontal	



7. Configure the legend's columns for the XY Plot's slider.
  - a. Expand **Columns** under **Legends–Slider**.

The number of columns currently in the header appears (grayed out) in the **Count** row. You can add additional columns or delete existing ones.

- a. Expand **Item**.

Each number that appears represents a column in the order that it displays, from left to right, e.g. 0 represents the column that is furthest left.

- a. Set **Visible** to True to make the column visible; False to hide it.
- b. Specify the type of slider's value that appears in the legend. The options are:

Option	Shows the
<b>apLegendName</b>	Slider name
<b>apLegendSliderValue</b>	Value of a slider static to an axis

- a. Make specifications when **apLegendSliderValue** is selected.

Enter an **Index** value that specifies the axis you want to use. The index is the position of the axis in the X or Y-axis collection. For a vertical slider the axis must be an X-axis; for a horizontal slider, a Y-axis.

- a. Enter text that displays as the column header in the **Header** row. The text normally describes the type of value the column is reporting.
- b. Specify the column width.
  - a. Set **AutoWidth** to True to make the column width expand or contract to accommodate the width of its values, or
  - b. Set **AutoWidth** to False and enter a value in the **Width** row.

A value of 1 is equivalent to 1/100th of a millimeter (when a CimView screen is at 100% zoom).

- a. Enter a number in the **Order** row that defines the order in which the column should appear in the legend, from left to right. For example, 0 is the first column at the left of the legend; 1 is to Column 0's right.
- b. (Optional) Add additional columns.
  - a. Select **Item** under **Legends–Slider**.
  - b. Click the right mouse button.
  - c. Select **Add** from the popup menu.
    - a. Select a fill for a selected column.
      - a. Expand **Brush** under **Column–Item** <number>.
      - b. Click the **Palette** button on the **Color** row to select a color.

8. Format the Slider Legend's rows for the XY Plot series.

- a. Expand **Row** under Legends–Slider.

The number of rows currently in the Slider Legend appears (grayed out) in the **Count** row.

- a. Enter the maximum number of Slider Legend rows that can be visible during runtime in the **VisibleCount** row.

## *XY Plot Title Properties*

### XY Plot Title Properties

In addition to creating chart titles directly on the CimEdit screen, you can specify a title that will appear directly on the XY Plot.

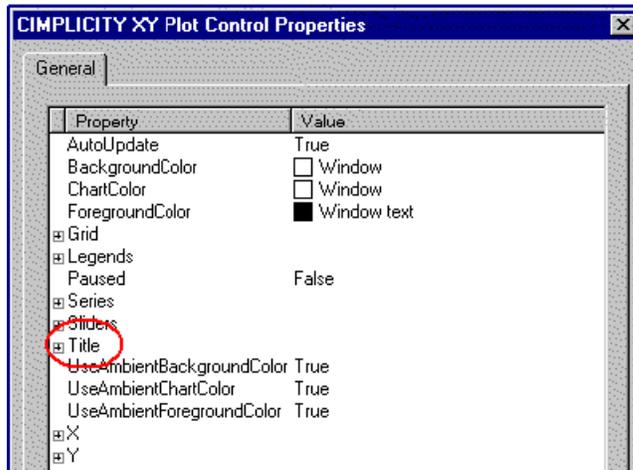
Review how to:

- Find the XY Plot title properties.
- Design an XY Plot title.

### Find the XY Plot Title Properties

1. Open the XY Plot Control Properties dialog box.
2. Select Title.

CIMPLICITY XY Plot Control Properties Dialog Box: Title



### Design an XY Plot Title

#### *Design an XY Plot Title*

Following are three quick steps to customize an XY Plot title.

Step 1	Expand the tree under an XY title.
Step 2	Specify an XY title.
Step 3	Configure the Font for the title.
Step 4	Make the title visible.

### Step 1. Expand the Tree Under an XY Title

Do one of the following to expand the tree under Title:

#### Method 1

Click the  to the left of Title.

#### Method 2

1. Click the right mouse button.
2. Click the Expand popup menu

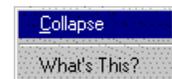


#### Method 3

Double click Title.

The tree expands to display the title's property options.

 **Note:** Follow any of the three methods when the tree is expanded to collapse the tree. The popup menu displays as Collapse



### Step 2. Specify an XY Title

1. Select **Value** under **Title**.
2. Type the title on the Value row.

### Step 3. Configure the Font for an XY title

1. Select **Font** in the tree under **Title**.

## 2. Either

- a. Click the **Font button**  and configure the font in the Font dialog box. The font you configure will be used.
- b. Set **UseAmbientFont** to True. The ambient font for the CimEdit screen will be used. The default is True.

### *Step 4. Make an XY Title Visible*

Select True for Visible (in the tree under Title) to display the title. The default is True.

## *XY Plot Updates*

When you make a change in an XY Plot, it automatically updates by default.

Turning of the automatic update stops a chart from being refreshed by your configuration. However, other actions, such as moving the dialog box over the chart will invalidate the current settings and cause the screen to refresh itself. This will update the chart to the most current settings.

This feature is most useful if you are doing complicated scripting and want to minimize the screen updates.

### **todo: To specify an XY Plot's update method:**

1. Open the CIMPLICITY XY Plot Control Properties dialog box.
2. Select **AutoUpdate**.
3. Select one of the following:

True (Default)	XY will automatically update
False	Updates are not automatic

## *Plot XY Data*

### *Plot XY Data*

CIMPLICITY XY Plot Control allows you to plot one or more series of data values in its chart region. Each data value is a pair of coordinates in a two-dimensional plane (hence, XY coordinates). In order to plot series in the chart region, you need to provide the values through the control's object model.

The object model is a hierarchy of objects and properties that allow you to modify the configuration of the control through an automation implementation. CimEdit Scripts are an example of an automation implementation.

Review:

- Create a series of data values.
- Scripting examples for XY Plots.

## *Create a Series of Data Values*

The XY Plot control object model provides you with methods to add, retrieve and remove one or more series of data values from its configuration. :

Example 1. Create a Series through the XY Plot Control Object Model

**Series name:** Series 1 (displays in an XY Plot control object in a CimView screen)

**Scripting purpose:** Create a series through an XY Plot Control object model

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.
2. Display the Edit Script tab.
3. Write the following Basic excerpt within a subroutine.

**' Add the series:**

**cimOleObj.Series.Add "Series 1", apSeriesStandard**

Example 2. Create a Series through an Object Other Than the XY Plot Control Object:

**Series name:** Series 1 (displays in an XY Plot control object in a CimView screen)

**Scripting purpose:** Create a series through and object other than the XY Plot Control object model

**Procedure:**

4. Open the CimEdit Properties dialog box for the XY Plot control object.
5. Display the General tab.

6. Enter XY in the **Object name** field.
7. Open the CimEdit Properties dialog box for an object that is not an XY Plot control.
8. Display the Edit Script tab.
9. Write the following Basic excerpt within a subroutine.

**' Access the XY Plot control object:**

**Dim xyPlot As CimGraphLib.DCimGraph**

**Dim screenObjects As GefObjects**

**Set screenObjects = CimGetScreen().Object.Objects**

**Set xyPlot = screenObjects("XY").OleObject**

**' Add the series:**

xyPlot.Series.Add "Series 1", apSeriesStandard

## *Scripting Examples for XY Plots*

### Scripting Examples for XY Plots

XY Plot interfaces include:

- CimSeries:
  - Is the XY Plot control series interface.
  - Stores its two-dimensional data values in two vectors, X and Y, of fixed size.
- **CimPairData** is
  - The interface that groups the X and Y vectors.
  - Accessed through the Data property in CimSeries.
- **CimData** is
  - The interface that defines each vector.
  - Accessed through either the X or the Y property in CimPairData.

CimPairData and CimData have properties and methods that allow you to perform various operations on the data values. You can:

- Resize the series vectors
- Access, retrieve and modify vectors' individual values.

- Insert one or more values either from the end of the vector or at a specific location within the vector within the same operation.

Review examples to:

- Resize the series vectors.
- Access, retrieve and modify vectors' individual values.
- Push one or more data values.
- Push values from points.
- Set values from points.
- XY Plot SmartObject enhancements.

## Resize Series Vectors

CimPairData has a property called Count.

**Count** allows you to set the number of data values in both the X and Y vectors.

Scripting examples for setting single and array values include:

Example 1. Resize Series Vectors

**Series name:** Series 1

**Purpose:** Set the X and Y vector sizes to 500

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.
2. Display the Edit Script tab.
3. Write the following Basic excerpt within a subroutine.

**' Access the series object:**

**Dim series as CimSeries**

**Set series = cimOleObj.Series("Series 1")**

**' Access the pair of vectors:**

### **Dim data as CimPairData**

**Set data = series.Data**

**' Resize the vectors:**

**data.Count = 500**

Example 2. Resize Series Vectors (Alternate Method)

You can alternate the following excerpt for the previous one:

**' Access objects directly to resize the vectors:**

`cimOleObj.Series("Series 1").Data.Count = 500`

### Set Individual Data Values

CimData, the interface for both the X and Y series vectors, has a property called **Item**.

#### **Item:**

- Allows you to get and set individual data values within the vector.
- Is the default property of CimData. It can be invoked without having to write its name.
- Returns a single **variant** type when retrieving data and expects a single **variant** type when setting the data.

This **variant** type can be a single value of any of the following Basic types that result in a numeric value including:

- Integer
- Long
- Single
- Double
- Decimal
- Boolean
- Byte
- Variant
- String

To invoke the **Item** property to retrieve data you can use either of the following two formats:

- `X = CimData.Item(n)`
- `X = CimData(n)`

Where

**n** is the location of the data value you are retrieving.

To invoke the **Item** property to set data you can use either of the following two formats:

- CimData.Item(n) = X
- CimData(n) = X

Where

**n** is the location of the data value you are setting.

Scripting examples for setting single and array values include:

Example 1. Access Data Values from a Series Vectors

**Series name:** Series 1

**Script purpose:** Set a point to the third Y data value

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.
2. Display the Edit Script tab.

**' Define the point:**

**Dim x As New Point**

**x.Id = "X\_POINT"**

**' Set the point to the third Y data value in the series:**

**x.SetValue = cimOleObj.Series("Series 1").Data.Y(2)**

Example 2. Set Individual Data Values to a Particular Value

**Series name:** Series 1

**Script purpose:** Set the fifth X data value to the value of a point

**Procedure:**

3. Open the CimEdit Properties dialog box for the XY Plot control object.

4. Display the Edit Script tab.
5. Write the following Basic excerpt within a subroutine.

**' Define the point:**

**Dim x As New Point**

**x.Id = "X\_POINT"**

**' Set the fifth X (which has an index of 4)**

**' data value in the series:**

**cimOleObj.Series("Series 1").Data.X(4) = x.GetValue**

Example 3. Set Individual Data Values to Unavailable

**Series name:** Series 1

**Script purpose:** Set the fourth y data value to null, the fourth X data value to empty

Both operations result in the value being unavailable.

**Procedure:**

6. Open the CimEdit Properties dialog box for the XY Plot control object.
7. Display the Edit Script tab.

Write the following Basic excerpt within a subroutine.

**' Set the fourth X and Y data values to unavailable**

**' (either null or empty):**

**cimOleObj.Series("Series 1").Data.Y(3) = Null**

**cimOleObj.Series("Series 1").Data.X(3) = Empty**

Push one or more Data Values

CimPairData provides a method called Push.

**Push:**

- Allows you to insert one or more pairs of X and Y data values through the end of the X and Y vectors. This is particularly useful if your series plots a continuous flow of data. An example of continuous flow of data is a function curve such as cosine of an incremental variable.
- Expects the variant type for the type of X and Y values

This **variant** type can be a single or array value of any of the following Basic types that result in a numeric value including:

- Integer
- Long
- Single
- Double
- Decimal
- Boolean
- Byte
- Variant
- String

Example. Push One or More Data Values

You have a series whose X and Y values are the following:

<b>X</b>	5	10	15	20	25	30
<b>Y</b>	22	17	9	-7	22	41

You push the following X and Y values:

<b>X</b>	35	40	45	50
<b>Y</b>	59	37	21	6

The series X and Y values are now the following:

<b>X</b>	25	30	35	40	45	50
<b>Y</b>	22	41	59	37	21	6

The first four pairs of XY values have been removed from the series because the size of the X and Y vectors is fixed.

Scripting examples for setting single and array values include:

Example 1. Push values into a Series

**Series name:** Series 1

**Script purpose:** Push an integer and a double value into Series 1

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.
2. Display the Edit Script tab.
3. Write the following Basic excerpt within a subroutine.

**' Create an integer and a double value:**

**Dim x as Integer**

**x = 7**

**Dim y as Double**

**Y = 22.74**

**' Push the data into the series object:**

**cimOleObj.Series("Series 1").Data.Push x, y**

Example 2. Push Array Values into a Series

**Series name: Series 1**

**Script purpose:** Create an array of variant values and an array of double values and push them into Series 1

**Procedure:**

4. Open the CimEdit Properties dialog box for the XY Plot control object.
5. Display the Edit Script tab.
6. Write the following Basic excerpt within a subroutine.

**' Create an array of variant values:**

**Dim x(4) As Variant**

**x(0) = 1**

**x(1) = Null**

**x(2) = 4.78**

**x(3) = Empty**

```
x(4) = "5.78"
```

```
' Create an array of random double values:
```

```
Randomize
```

```
Dim y(4) As Double
```

```
For i = 0 To 4
```

```
    y(i) = Random(0, 50)
```

```
Next i
```

```
' Push the data into the series object:
```

```
cimOleObj.Series("Series 1").Data.Push x, y
```

### Push Values from Points

CimEdit Scripts provide you with a type called **Point**.

**Point** can be used to set and get CIMPLICITY point management information for:

<b>For</b>	<b>You can use:</b>
Single (1 element) points	<b>GetValue</b> or a combination of <b>Get</b> and <b>Value</b> to get a single value and push it into a series.
Array points	<b>GetSafeArray</b> or a combination of <b>Get</b> and <b>SafeArray</b> to get a single value and push it into a series.

### Example (Get and Value) for Single Points

To push the values of two single points

#### Option 1

Use the following format to push the values of single points using **GetValue**:

```
CimPairData.Push Point.GetValue, Point.GetValue
```

#### Option 2

Use the following format to push the values of two points using a combination of **Get** and **Value**:

```
Point.Get
```

```
CimPairData.Push Point.Value, Point.Value
```

Example (GetSafeArray or Get and SafeArray ) for Array Points

To push the values of two array points:

Option 1

Use the following format to push the values of two points using **GetSafeArray**.

**CimPairData.Push Point.GetSafeArray, Point.GetSafeArray**

Option 2

Use the following format to push the values of two points using a combination of **Get** and **SafeArray**.

**Point.Get**

**CimPairData.Push Point.SafeArray, Point.SafeArray**

Scripting examples for setting single and array values include:

Example 1. Push Single Point Values into a Series

**Series name: Series 1**

**Script purpose:** Push the single values of two CIMPLICITY points into Series 1

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.
2. Display the Edit Script tab.
3. Write the following Basic excerpt within a subroutine.

**' Get two point values:**

**Dim x As New Point**

**x.Id = "X\_POINT"**

**Dim y As New Point**

**y.Id = "Y\_POINT"**

**' Push the data into the series object:**

**cimOleObj.Series("Series 1").Data.Push x.GetValue, y.GetValue**

Example 2. Push Arrays Values through the End of a Series Vectors

**Series name: Series 1**

**Script purpose:** Push the array values of two CIMPLICITY points into Series 1

**Procedure:**

4. Open the CimEdit Properties dialog box for the XY Plot control object.
5. Display the Edit Script tab.
6. Write the following Basic excerpt within a subroutine.

**' Get two point values:**

**Dim x As New Point**

**x.Id = "X\_ARRAY\_POINT"**

**Dim y As New Point**

**y.Id = "Y\_ARRAY\_POINT"**

**' Get the series object:**

**Dim series as CimSeries**

**Set series = cimOleObj.Series("Series 1")**

**' Push the array data into the series object:**

**series.Data.Push x.GetSafeArray, y.GetSafeArray**

Set Values from Points

CimEdit Scripts provide you with a type called **Point**.

**Point** can be used to set and get CIMPLICITY point management information.

<b>For</b>	<b>You can use:</b>
Single (1 element) points	<b>GetValue</b> or a combination of <b>Get</b> and <b>Value</b> to get a single value and set it into a series.
Array points	<b>GetSafeArray</b> or a combination of <b>Get</b> and <b>SafeArray</b> to get a single value and set it into a series.

Example. (GetValue and Get and Value) for Single Points

To set the values of two single points

Option 1

Use the following format to set the values of single points using GetValue:

**CimPairData.Set Index, Point.GetValue, Point.GetValue**

Option 2

Use the following format to set the values of two points using a combination of **Get** and **Value**:

**Point.Get**

**CimPairData.Set Index Point.Value, Point.Value**

Example. (GetSafeArray or Get and SafeArray) for Array Points

To set the values of two array points:

Option 1

Use the following format to set the values of two points using **GetSafeArray**.

**CimPairData.Set Index, Point.GetSafeArray, Point.GetSafeArray**

Option 2

Use the following format to set the values of two points using a combination of **Get** and **SafeArray**.

**Point.Get**

**CimPairData.Set Index, Point.SafeArray, Point.SafeArray**

**Scripting examples for setting single and array values include:**

Example 1. Set the First Location in a Series

**Series name:** Series 1

**Scripting purpose:** Set the first location (index 0) in Series 1. The values of two CIMPLICITY points are used.

**Procedure:**

1. Open the CimEdit Properties dialog box for the XY Plot control object.

2. Display the Edit Script tab.
3. Write the following Basic excerpt within a subroutine.

**' Get two point values:**

**Dim x As New Point**

**x.Id = "X\_POINT"**

**Dim y As New Point**

**y.Id = "Y\_POINT"**

**' Set the data in the series object:**

**cimOleObj.Series("Series 1").Data.Set 0, x.GetValue, y.GetValue**

Example 2. Set a Series with the Array Values of Specific Points

**Series name:** Series 1

**Scripting purpose:** Set Series 1 with array values of two CIMPLICITY points. The set starts at the first location up to the smaller of either: the size of the array points or the number of available locations in the series.

**Procedure:**

4. Open the CimEdit Properties dialog box for the XY Plot control object.
5. Display the Edit Script tab.
6. Write the following Basic excerpt within a subroutine.

**' Get two point values:**

**Dim x As New Point**

**x.Id = "X\_ARRAY\_POINT"**

**Dim y As New Point**

**y.Id = "Y\_ARRAY\_POINT"**

**' Get the series object:**

**Dim series as CimSeries**

```
Set series = cimOleObj.Series("Series 1")
```

' Set the array data in the series object:

```
series.Data.Set 0, x.GetSafeArray, y.GetSafeArray
```

## *XY Plot SmartObjects*

### *XY Plot SmartObjects*

1. Place the XY Plot SmartObject in your CimEdit screen.
2. Make a few quick entries on the tabs of the XY Plot SmartObject dialog box. The tabs let you configure the XY chart's:
  - Series.
  - Axes.
  - Names and colors.
  - Grid.

When you complete your initial configuration, you can continue at any time.

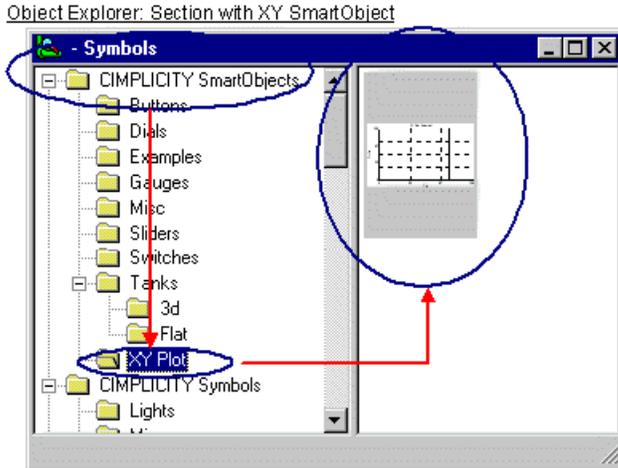
3. Double click the XY Plot Control to re-open the XY Plot SmartObject dialog box.
4. Click the right mouse button to display the popup menu that leads you to the CIMPLICITY XY Plot Control Properties dialog box. .

### *XY Plot SmartObject Placement*

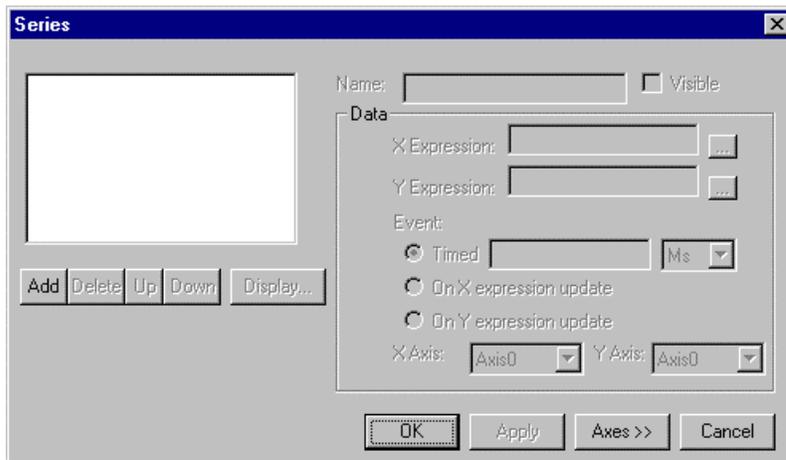
The XY Plot SmartObject is in the Object Explorer.

 **todo: To place an XY Smart Object Control:**

1. Click the **Object Explorer** button  on the CimEdit toolbar.
2. Select CIMPLICITY SmartObjects.
3. Select XY Plot.
4. Double click the XY SmartObject.



A blank Series dialog box opens.



## *XY Plot SmartObject Configuration*

### XY Plot SmartObject Configuration

The SmartObject Plot Control provides you with several tabs on which you can quickly configure an XY Plot Control. You can, of course, change all of the defaults. However, you will frequently discover that you need to modify very few options to get a meaningful XY Plot Control up and running.

The XY Plot SmartObject dialog box tabs represent the main features you will configure for the XY Plot Control. The tabs are for an XY Plot are:

- Series.

- Axes
- Name and colors.
- Grid.

When you finish your initial configuration, you can easily modify or enhance the Plot Control whenever you want.

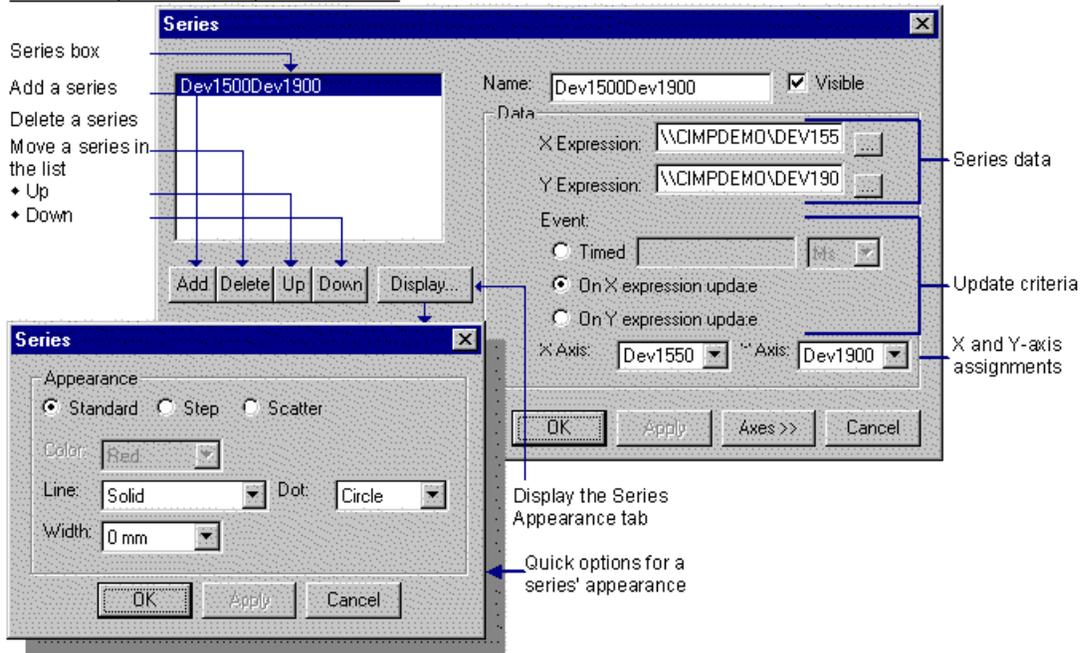
### Configure the XY Plot SmartObject Series

#### *Configure the XY Plot SmartObject Series*

Use the following steps to configure an XY Plot series:

Step 1	Add a series to the series dialog box.
Step 2	Name the series.
Step 3	Specify the data for the series.
Step 4	Specify the series display features.
Step 5	Apply your series configuration.

XY SmartObject Chart Dialog Box: Series Tab



#### *Step 1. Add a Series to the Series Dialog Box*

1. Click **Add**.

SeriesX appears in the **Series** box.

where

**X** equals the next number above the highest SeriesX.

The first series created is Series0.

When a series displays in the **Series** box, the fields in the right side of the Series dialog box become active and ready for configuration.

2. Check the **Visible** box if you want the series to display on the XY Plot Control.

Step 2. Name the Series

1. Select the series to be named in the **Series** box.
2. Enter a name in the **Name** field.
3. Click **Apply**.

The name changes in the Series box to reflect your entry.

Step 3. Specify the Data for the Series

1. Configure the X-axis expression. Either:
  - a. Enter an expression in the **X Expression** field, or
  - b. Select a point to represent the expression or be included in an expression.
    - a. Click **Select a Point** to the right of the **X Expression** field.
    - b. Select a Point ID.
    - c. (Optional) Enhance the Point ID with an expression operator found in the CimEdit.

Example

**Point ID** can be `\\CIMPDEMO\DEV1550`

**Point ID in an Expression** can be `SQR(\\CIMPDEMO\DEV1550)`

2. Configure the Y-axis expression by repeating the procedure to configure the X-axis expression.
3. Specify the Expression Update method. the options are:

Timed	Enter the number of one of the following options found in the drop down menu: Milliseconds (Ms) Seconds (Sec) Minutes (Min) Hours (Hour)
-------	---------------------------------------------------------------------------------------------------------------------------------------------

On X expression update	How frequently the X expression updates depends how the expression values are configured. e.g. A Point ID that is updated On Change, will update the XY Plot Control whenever it changes.
On Y expression update	How frequently the Y expression updates depends how the expression values are configured. e.g. A Point ID that is updated On Change, will update the XY Plot Control whenever it changes.

*Step 4. Specify the series display features*

1. Click **Display** under the **Series** box.

The Series Appearance dialog box opens.

2. Select the series Type:

Select	For a
Standard (Default)	A standard series, which is a line between two data values (connects the dots).
Step	An X-based step that flows horizontally, then vertically from one data value to the next.
Scatter	A series that has no lines

3. Select the line **Style**.

Solid (Default)	
Dashed	
Dotted	
Dashed-Dotted	
Dashed-DoubleDotted	

4. Select the marker (Dot) from the three options:

**Circle**

**Square**

**Triangle**

5. Select the **Width** for the line and the Marker (dot) edge.

6. Click **Apply** to

*Step 5. Apply your Series Configuration*

Click **Apply**.

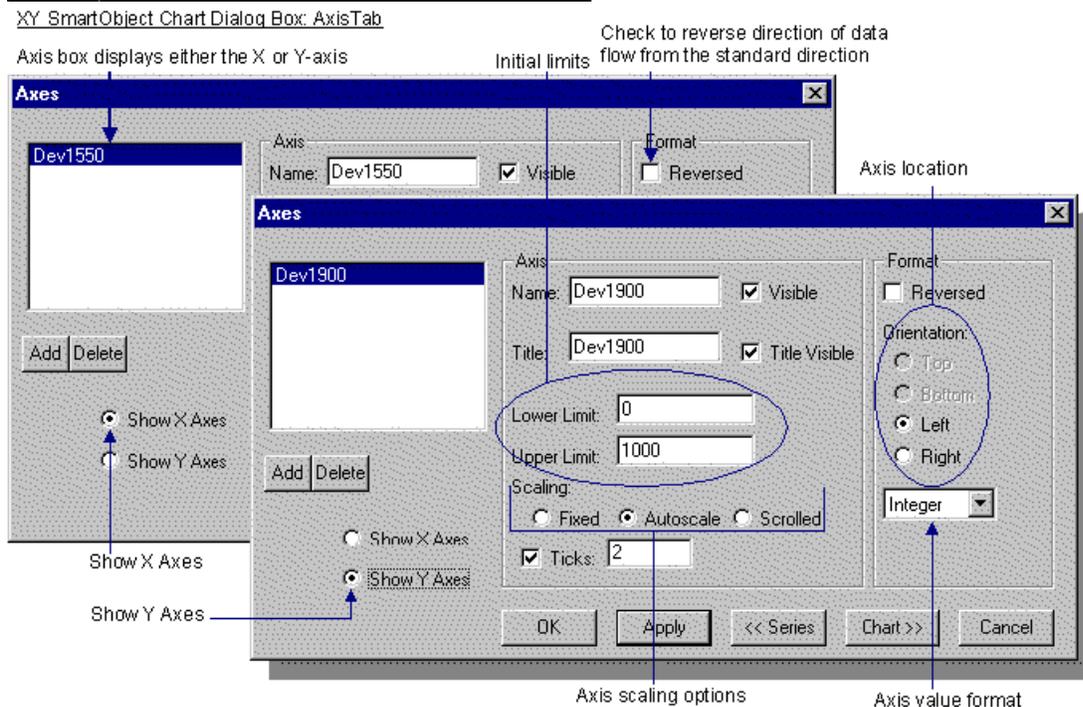
Result: Your configuration is applied.

Configure the XY Plot SmartObject Axes

Configure the XY Plot SmartObject Axes

You can configure a series' X and Y-axis in the following steps.

Step 1	Select an X and Y-axis for configuration.
Step 2	Specify the X or Y-axis name and limits.
Step 3	Specify the X or Y-axis format and orientation.
Step 4	Apply your axis configuration.
Step 5	Configure the other axis.
Step 6	(Optional) Add additional axes.
Step 7	Apply the axis configuration.



Step 1. Select an X and Y-axis for Configuration

1. Click **Axes** on the bottom of the Series tab.

The Axes tab displays with Axis0 displaying in the **Axis** box.

2. Check either the **Show X Axes** or **Show Y Axes** check box.

The Axis0 represents the axis you select, e.g. if you checked the Show X Axes checkbox, Axis0 becomes the X-axis.

Step 2. Specify the X or Y-axis Name and Limits

1. Enter a name for the axis in the **Name** field.

When you click **Apply**, the name will replace Axis0 in the Axis box.

2. Check the **Visible** check box to display the axis on the XY Plot.
3. Enter an axis title in the **Title** field.
4. Check the **Visible Title** check box to display the title you entered on the XY Plot.
5. Enter a Lower and/or Upper limit if you want either to be different from the default of 0 and 100.
6. Specify how the axis should scale during runtime, as follows:

<b>Scale Selection</b>	<b>During Runtime</b>
Fixed	The limits remain fixed to the values entered in the <b>Lower Limit</b> and <b>Upper Limit</b> fields.
Autoscale	XY automatically change the axis limits each time a value goes above or below the existing limit.
Scrolled	Scrolling is activated to accommodate values above or below the specified limits.

7. Check the **Ticks** checkbox to display ticks on the axis being configured.
8. Enter the number of ticks to display. The default is 2.

Step 3. Specify the X or Y-axis Format and Orientation

1. Specify the direction of the data flow.
  - a. Leave the **Reversed** check box blank if you want the data to flow in the standard direction. (upward for a Y-axis, rightward for an X-axis).
  - b. Check the **Reversed** check box if you want the data flow in the opposite direction (downward for a Y-axis, leftward for an X-axis).

2. Select the location for the X or Y-axis.
3. For the X-axis, check the **Top** or **Bottom** button.
4. For the Y-axis, check the **Left** or **Right** button.
5. Select the format in which the labels will display. The choices with default precision entries are:

Format	Precision	Result
Integer (default)	NA	33
Fixed	5	33.33333
Scientific	5	33.33333e+001
Compact	5	33.333
Absolute Time	h:mm:ss:tt	7:00:33 PM
static Time	NA	0.5
Custom	%d	33

#### Step 4. Apply Your Axis Configuration

Click **Apply**

Result: Your configuration is applied.

#### Step 5. Configure the Other Axis

Check **Show Y Axis** or **Show X Axis**, whichever represents the axis that still needs to be configured.

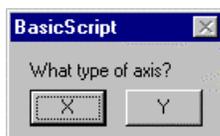
Result: Axis0 displays in the Axis box.

**i Tip:** Check the **Show ...** button that represents the axis you just configured. You will see that the name in the **Axis** box has changed to the name you entered in the **Name** field for that axis.

#### Step 6. Add Additional Axes

1. Click **Add** underneath the **Axis** box.

A dialog box displays asking you whether you want to create an X or Y-axis.



2. Click the axis you want to create.

An AxisN displays

Where

N is the next number up from the last AxisN (unnamed) axis.

Example

If a named axis and an Axis0 exists, then the next axis created will initially display as Axis1.

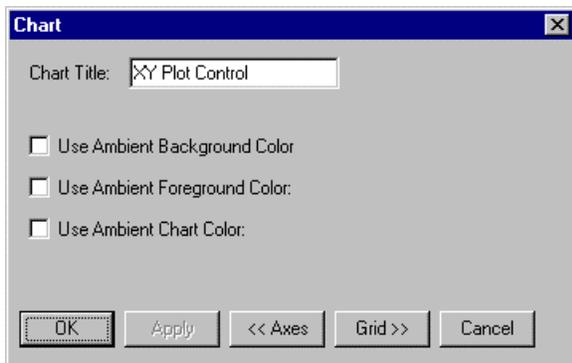
3. Configure the new axis in the same manner that you configured the primary X and Y-axes.

### *Step 7: Apply the Axis Configuration*

Click **Apply**

Result: Your configuration is applied.

### Configure an XY Plot SmartObject Name and Colors



You can easily enter a title for the XY Plot SmartObject.

You can also specify whether the XY Plot SmartObject should use the CimEdit ambient colors. If you decide to choose colors for the Plot Control, you can easily do so in the CIMPLICITY XY Plot Control dialog box.

### **todo: To name and color an XY Plot SmartObject:**

1. Click **Chart** at the bottom of the Axis tab.

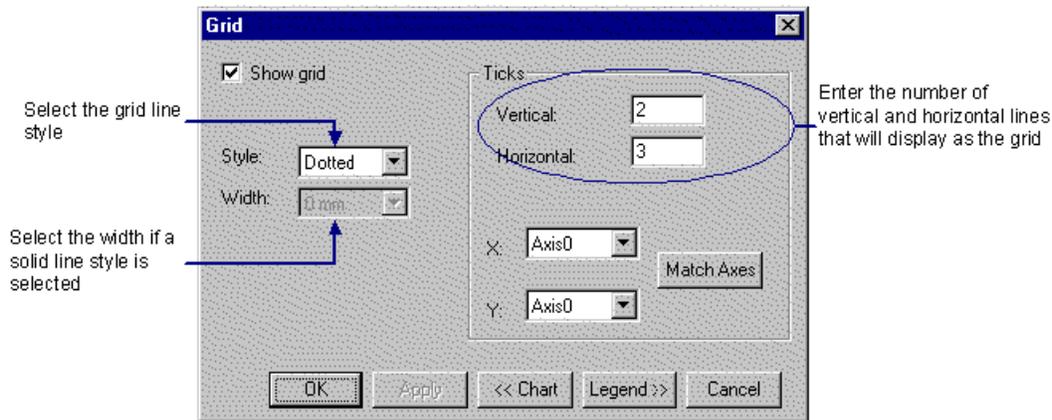
The Chart tab displays.

2. Enter a title in the **Title** field.
3. Specify whether to use CimEdit ambient colors.
  - a. (Optional) Check one or more of the **Ambient** check boxes to use the CimEdit ambient colors.
  - b. Choose any non-ambient color when you complete using the XY Plot SmartObject dialog box and refine your configuration using the CIMPLICITY XY Plot Control dialog box.

## Configure an XY SmartObject Grid

If your XY Plot Control will benefit by displaying a grid, you can easily configure one in the XY Plot SmartObject dialog box.

XY SmartObject Chart Dialog Box: Grid Tab



### **todo:** To configure a grid for an XY Plot SmartObject:

1. Click **Grid** on the bottom of the Chart tab in the XY Plot SmartObject dialog box.

The Grid tab of the XY Plot SmartObject dialog

2. Check the **Show Grid** check box to display the grid on the XY Plot Control.
3. Select the Style from the Style drop down menu.
  - Solid–Select the line width in the Width drop down menu if you choose this option
  - Dashed
  - Dotted (default)
  - Dash Dotted
  - Dash Double Dot
4. Configure the grid's density.
  - a. Enter the number of vertical ticks (lines) that should display for the XY Plot Control grid in the **Vertical** field.

- b. Enter the number of horizontal ticks (lines) that should display for the XY Plot Control grid in the **Horizontal** field.
5. Click **Match Axes** to display the two horizontal and two vertical grid lines.

## XY Plot SmartObject Enhancements

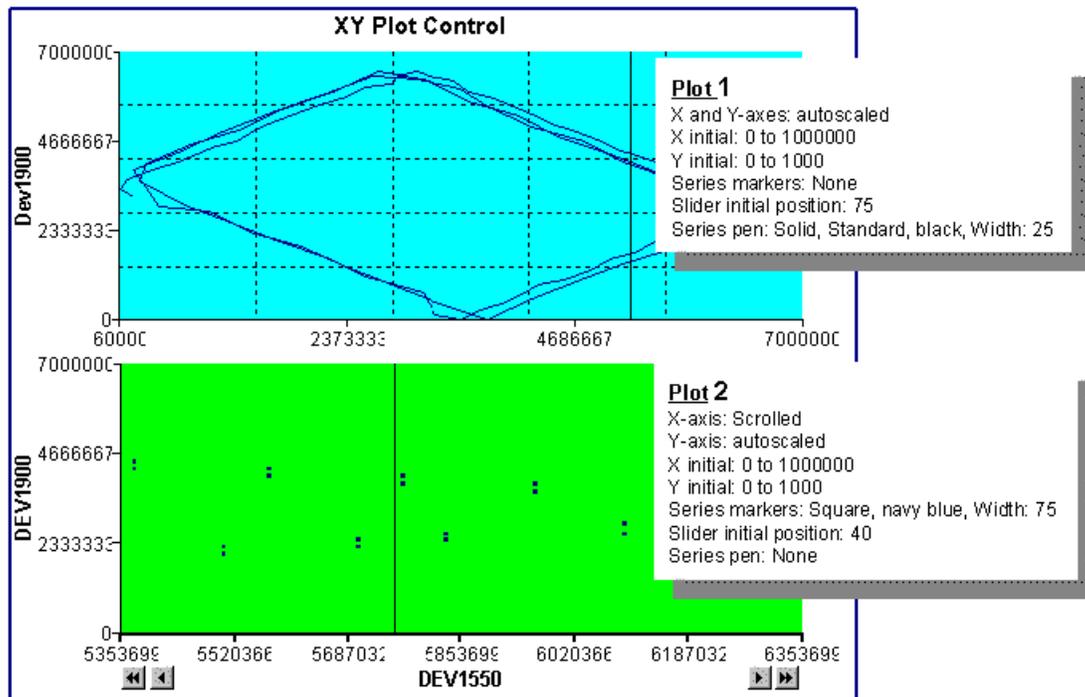
### XY Plot SmartObject Enhancements

1. Re-open the XY Plot SmartObject dialog box by double clicking the XY Plot Control, or
2. Open the CIMPLICITY XY Plot Control dialog box, as follows:
  - a. Click the right mouse button over the XY Plot Control.
  - b. Select CIMPLICITY XY Plot Control Object from the popup menu.
  - c. Select Properties from the extended menu.

The following example displays two views of the same values.

Each chart was configured first in the XY Plot SmartObject dialog box and then enhanced through the CIMPLICITY XY Plot Control Properties dialog box.

XY Plot: Two Views of the Same Data



Both plots display the same Point ID Values:

Axis	Point ID
X	DEV1550
Y	DEV1900

A quick description of how to create each chart can clearly demonstrate how to use the XY Plot Control dialog boxes in order to quickly achieve the display you want. The examples were created to help you become familiar with the process. They include only a few of the many configuration options available to you.

The Point ID's used in the example are connected to a local PLC. You can use any Point ID that is active in your project.

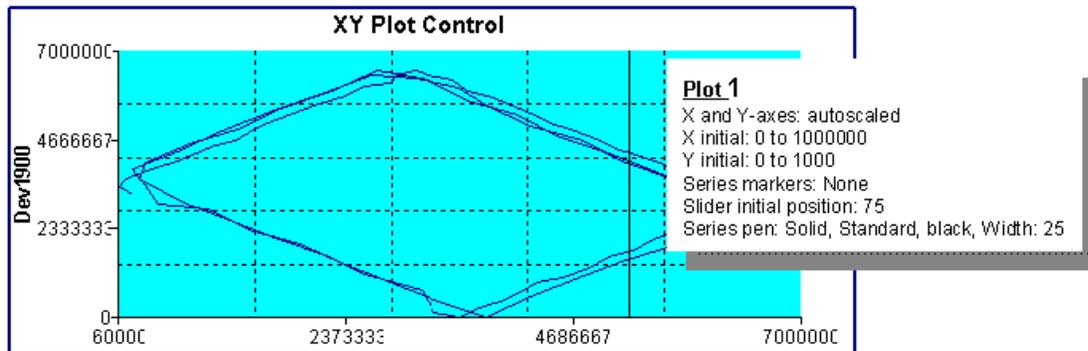
## Configuring an XY Plot 1 Example

### XY Plot 1 Example

The two steps to configure the Plot 1 example are:

Step 1	Configure some Plot 1 basics in the XY Plot SmartObject dialog box.
Step 2	Enhance Plot 1 in the CIMPLICITY XY Plot Control Properties dialog box.

XY Plot: Standard Example



### Step 1. Configuring XY Plot 1 Example

1. Place an XY Plot SmartObject on a CimEdit screen.

The Series tab of the XY Plot SmartObject dialog box displays.

2. Configure a Series.
  - a. Click **Add** to add a series to the chart.
  - b. Name the series. (The example name is DEV1550xDEV1900.)
  - c. Check **Visible**.
  - d. Click **Select a Point** in the **X Expression** field.
  - e. Select a Point ID. (The example is \\CIMPDEMO\DEV1550.)
  - f. Click **Select a Point** in the **Y Expression** field.
  - g. Select a Point ID. (The example is \\CIMPDEMO\DEV1900.)
  - h. Check On Y expression update.

3. Click **Axes**.
4. Configure the X-axis.
  - a. Check **Show X Axis**.
  - b. Name the axis. (The example is DEV1550.)
  - c. Check **Visible**.
  - d. Leave the title blank. (Plot 1 X-axis does not have a title.)
  - e. Enter the limits:

Lower	0
Upper	1000000

- a. Check **Autoscale** for the scaling.
5. Configure the Y-axis:
  - a. Check **Show Y Axis**.
  - b. Name the axis. (The example is DEV1900.)
  - c. Check **Visible**.
  - d. Enter a title in the **Title** field. (The example is DEV1900.)
  - e. Check **Title Visible**.
  - f. Enter the Limits:

Lower	0
Upper	1000

- a. Check **Autoscale** for the scaling.
6. Click **Chart**.
7. Keep the defaults.
8. Click **Grid**.
9. Specify the number of ticks (lines) for the grid:

Vertical	4
Horizontal	4

10. Click **OK**.

The dialog box closes and an XY Plot Control appears on the CimEdit screen. You can display Plot 1 in CimView or you can further enhance it.

### Step 2. Configuring XY Plot 1 Example

1. Click the right mouse button over the XY Plot Control.

2. Select CIMPLICITY XY Plot Control Object from the popup menu.
3. Select Properties from the extended menu.
4. Select Chart Color.
5. Select the turquoise color from the chart color palette.
6. Modify the Series.
  - a. Expand Series.
  - b. Expand Item
  - c. Expand Pen.
  - d. Select Color.
  - e. Select the navy blue color on the pen color palette.
  - f. Select Width.
  - g. Enter 25.
7. Modify the Fonts.
  - a. Modify the Title font.
    - a. Expand Title.
    - b. Select Font.
    - c. Specify Arial, Bold, 10.
  - a. Modify the Axes fonts.
    - a. Expand X.
      - b. Expand Item
      - c. Expand Ticks.
      - d. Select Font.
      - e. Select Arial, Regular 9 in the Font dialog box.
      - f. Expand Y.
        - g. Expand Item.
        - h. Expand Title.
          - i. Select Font.
          - j. Select Arial, Bold, 10 in the Font dialog box.
        - k. Expand Ticks.
          - l. Select Font.
          - m. Select Arial, Regular 9 in the Font dialog box.
  8. Click **OK**.
  9. Test the chart in runtime.

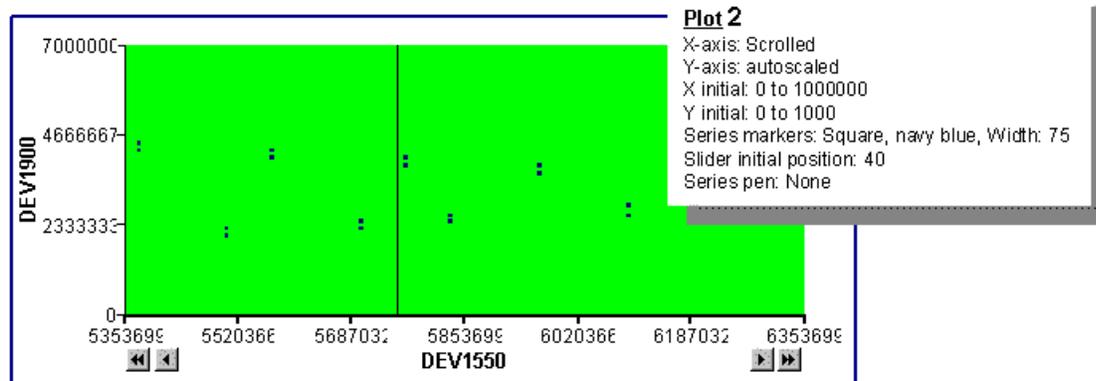
## Configure the Plot 2 Example

### Configure the Plot 2 Example

The two steps to configure the Chart 2 example are:

Step 1	Configure some Plot 2 basics in the XY Plot SmartObject dialog box.
Step 2	Enhance Plot 2 in the CIMPLICITY XY Plot Control Properties dialog box.

XY Plot Scatter Example



### Step 1. Configuring XY Plot 2 Example

1. Place an XY Plot SmartObject on a CimEdit screen.
2. Configure a Series.
  - a. Click **Add** to add a series to the **Plot Control**.
  - b. Name the series. (The example name is DEV1550xDEV1900.)
  - c. Check **Visible**.
  - d. Click **Select a Point** in the **X Expression** field.
  - e. Select a Point ID. (The example is \\CIMPDEMO\DEV1550.)
  - f. Click **Select a Point** in the **Y Expression** field.
  - g. Select a Point ID. (The example is \\CIMPDEMO\DEV1900.)
3. Check On Y expression update.
4. Click **Axes**.
5. Configure the X-axis.
  - a. Check **Show X Axis**.
  - b. Name the axis. (The example is DEV1550.)
  - c. Check **Visible**.
  - d. Enter DEV1550 in the **Title** field.
  - e. Check **Title Visible**.
  - f. Enter the limits:

Lower	0
Upper	1000000

- a. Check **Scrolling** for the scaling.
6. Configure the Y-axis:
  - a. Check **Show Y Axis**.

- b. Name the axis. (The example is DEV1900.)
- c. Check **Visible**.
- d. Enter a title in the **Title** field. (The example is DEV1900.)
- e. Check **Title Visible**.
- f. Enter the limits:

Lower	0
Upper	1000

- a. Check **Autoscale** for the scaling.
7. Click **Chart**.
  8. Clear the **Title** field. (Plot 2 does not have a title.)
  9. Click **Grid**.
  10. Make sure the **Show Grid** check box is clear. (Plot 2 does not display a grid.)
  11. Click **OK**.

Result: The dialog box closes and an XY Plot Control appears on the CimEdit screen.

12. Move Plot 2 underneath Plot 1.
13. Use CimEdit's graphics features to align and resize the charts.

You can display Plot 2 in CimView or you can further enhance it.

### Step 2. Configuring XY Plot 2 Example

1. Click the right mouse button over the XY Plot Control.
2. Select CIMPLICITY XY Plot Control Object from the popup menu.
3. Select Properties from the extended menu.
4. Select Chart Color.
5. Select the light green color on the Plot color palette.
6. Modify the Series.
  - a. Expand Series.
  - b. Expand Item.
  - c. Select Type.
  - d. Select apSeriesScatter.
  - e. Expand Markers.
  - f. Select Type.

- g. Select apMarkerSquare.
- h. Select Width.
- i. Enter 75.
- j. Expand Pen.
- k. Select Color.
- l. Select the navy blue on the pen color palette.

7. Modify the Axes Fonts.

- a. Expand X.
- b. Expand Item
- c. Expand Ticks.
- d. Select Font.
- e. Select Arial, Regular 9 in the Font dialog box.
- f. Expand Y.
- g. Expand Item.
- h. Expand Title.
- i. Select Font.
- j. Select Arial, Bold, 10 in the Font dialog box.
- k. Expand Ticks.
- l. Select Font.
- m. Select Arial, Regular 9 in the Font dialog box.

8. Click **OK**.

9. Test the Plot Control in runtime.