GE Fanuc Automation

CIMPLICITY® Monitoring and Control Products

CIMPLICITY HMI Plant Edition

CimEdit

Operation Manual

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Following is a list of documentation icons:

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in the equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution provides information when careful attention must be taken in order to avoid damaging results.

Important flags important information.

To do calls attention to a procedure.

Note calls attention to information that is especially significant to understanding and operating the equipment.

Tip provides a suggestion.

Guide provides additional directions for selected topics.

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Preface

Contents of this Manual

Chapter 1. Introduction: Introduces you to CIMPLICITY MMI and MES/SCADA for Windows 95 and Windows NT and CimEdit.

Chapter 2. Opening CimEdit: Provides procedures for opening CimEdit through the CIMPLICITY HMI Configuration Cabinet.

Chapter 3. Configuration Overview: Gives an overview of the CimEdit configurtion process.

Chapter 4. Configuring a CimEdit Screen: Describes how to use the CimEdit screen to its fullest potential.

Chapter 5. Creating a Preliminary Layout: Describes how to find, create and place several objects that you can configure for your CimEdit screen.

Chapter 6: Saving Time with Linked Objects: Shows you how to create and use Linked Objects.

Chapter 7. Creating Expressions: Dexcribes the several functions and operators available in the Expression editor that can be used throughout CimEdit.

Chapter 8. Applying Inanimate Visual Features: Explains how to change objects' features, such as size, shape and color.

Chapter 9. Using Points for Values: Describes how to incorporate points into your CimEdit configuration.

Chapter 10. Using Variables: Describes variables and when using them is a viable alternative to using points.

Chapter 11. Configuring Runtime Movement and Animation: Explains how to make runtime objects move, rotate, change size, fill up and change color to reflect changes specified conditions.

Chapter 12. Creating Events in CimEdit: Explains an event's role in the CimEdit confuration and lists available events.

Chapter 13. Creating Procedures in CimEdit: Explains a procedure's role in the CimEdit configuration and lists the several actions that can be included in a procedure.

Chapter 14. Using CimEdit Scripts: Explains a script’s role in the CimEdit confuration and how a system administrator can incorporate scripts into the CimEdit configuration.

Chapter 15. Taking Advantage of ActiveX Controls: Describes how to incorporate ActiveX controls in your CimEdit screen.

Chapter 16. Point Addressing: Defines point addressing and, when and how to use it

Chapter 17. Monitoring Point Attributes: Provides the Attribute_Point syntax to let a user monitor the attributes of configured points through CimView.

Appendix A. CimEdit Text File Syntax: Documents the syntax for a text file created with the **/converttoctx** command line option.

Appendix B. Managing CimEdit Screens: Discusses screen performance issues, installing a screen, and command line options for installed screens and interactive functions.

Appendix C. CimEdit Global Parameters: Documents the global parameters available to tune CimEdit and CimView.

Related Publications

For more information, refer to these publications:

CIMPLICITY HMI Plant Edition User's Manual (GFK-1180)

CIMPLICITY HMI Plant Edition Device Communications Manual (GFK-1181)

CIMPLICITY HMI Trending Operation Manual (GFK-1260)

CIMPLICITY HMI SPC Operation Manual (GFK-1413)

CIMPLICITY HMI Recipes Operation Manual (GFK-1303)

CIMPLICITY HMI Plant Edition Basic Control Engine Language Reference Manual (GFK-1283)

CIMPLICITY HMI Plant Edition Basic Control Engine Program Editor Operation Manual (GFK-1305)

CIMPLICITY HMI Plant Edition Basic Control Editor Event Editor and BCEUI Operation Manual (GFK-1282)

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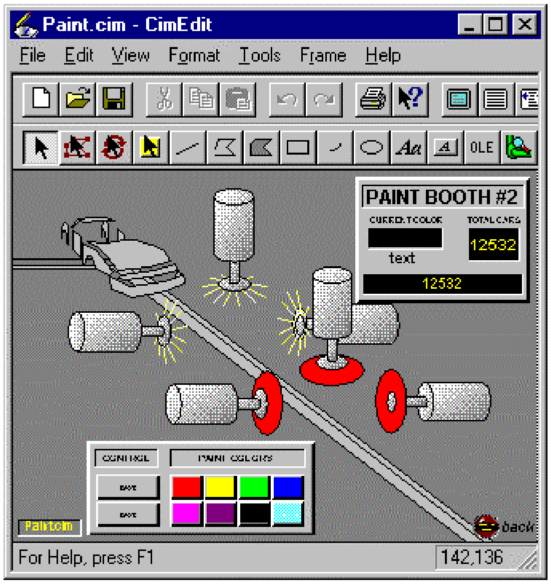
Introducing CimEdit

Welcome to CimEdit

You are about to reap the benefits of using CimEdit, with its runtime partner, CimView—the first ActiveX HMI graphics container. The object oriented graphics editing, CimEdit, and the runtime viewer, CimView, are easy to learn and easy to use. They blend industry standards with advanced interface designs to provide you with an intuitive package that lets you perform operations easily and naturally. Tight integration of all CIMPLICITY functionality makes system design, configuration, and operation simple. This package combines the power of CIMPLICITY software with the Windows user interface that you are used to, right out of the box —there is no complex set-up, installation, or programming to learn. Crisp graphics and smooth animation make CimEdit and CimView a pleasure to work with.

A Screen in CimEdit



CimEdit Tools

CimEdit provides a set of tools that let you graphically represent your facility. Windows users will quickly notice the toolbars located around the screen. The toolbars provide the drawing tools such as the capability to draw Line, Polyline, Polygon, Rectangle, Ellipse, Arcs, Text and Button objects. CimEdit provides the capability to import OLE and ActiveX objects into your screens. Trending, Quality Charts, and Alarm Viewer are examples of CIMPLICITY ActiveX objects. Third party OLE and ActiveX objects that can be embedded include Excel spreadsheets and charts to bitmaps, video, and sound files. Once objects are created, they can be resized, rotated or moved using the "handles" that appear when the object is selected. With this combination of graphic tools, drawing graphic screens that accurately depict a production process is very simple.

Once the objects are placed on the screen, another toolbar provides a powerful set of alignment tools. Objects can be aligned automatically with a configurable grid, or aligned as groups using the object alignment tools, which include the ability to space objects evenly as well as align them in relation to each other. Objects can also be rotated, flipped, grouped, or ungrouped.

Any object can then be animated using the object property sheet that pops up when you double-click on an object or click on the property sheet icon on the forms toolbar. This property sheet allows you to choose from a wide variety of animation and control functions.

The animation properties of any object are displayed in a file tabular format that allows you to navigate quickly between animation properties including: rotation, fill, movement, color, and text annunciation, geometry, scaling, events, or the ability to take an action using the procedure card from the property page.

CimEdit Features

CimEdit comes with an abundance of features to give you maximum ease and flexibility when you configure the screens for your project. Some of these features are:

- Interactive, dynamic configuration allows you to add or modify point configuration data from anywhere within CimEdit
- A Point Browser dialog box gives you the ability to access any CIMPLICITY point on the entire network, and use this point to animate an object.
- Standard Object shapes are provided for use in your system, including squares and rectangles, circles and ellipses, lines, polylines, arcs, pies, and cords. Position, style, color, and rotation are some of the attributes that can be defined.
- OLE and ActiveX embedded objects give your screens more power. Trend charts, spreadsheet charts, multimedia presentations, and live motion video can all provide power and extensibility to your system. OLE and ActiveX in-place editing of embedded objects allows you to view your screen as a single document without popping up other application windows. OLE and ActiveX drag-and-drop support means you can just drag an OLE or ActiveX object from one document to another. Drag Excel charts into CimEdit. Drag objects from one CimEdit screen to another.
- A Drag and Drop Library of over 2000 Symbols and SmartObject™ objects makes creating screens a snap. The CIMPLICITY Object Explorer allows you to easily drag and drop the symbols and SmartObjects into the screens you are creating.

  You can also add to the library by creating your own set of SmartObjects. SmartObjects are easily created with standard CIMPLICITY objects through Group Editing and Expression Variables. Group Editing provides the ability to edit properties of objects within a group without ungrouping the objects. Expression Variables provide the ability to use variables anywhere an expression or point can be used. A variable can be replaced with either a string or numeric value. The substitution of a variable can take place at either edit time or at run time.
- Movement and Rotation are two animations that can be performed on objects.
- Filled Objects including fill from top, bottom, left, right, or bi-directional. Bi-directional fill is a unique feature that allows you to configure a single object, which can fill in two directions from a center point. This is ideal for bipolar bar graphs.
- Interior and Border Animation provides you the ability to animate the internal and outline aspects of objects. Interior Animation allows for color and pattern changes. Border Animation changes the line surrounding the object.

- Events can be configured to handle
  - ➔ Expression High, Expression Update
  - ➔ Key Down, Key Up
  - ➔ Mouse Down, Mouse Up
  - ➔ Object Inserted, Object Removed
  - ➔ Periodic
  - ➔ Screen Close, Screen Open
  - ➔ SmartObject
  - ➔ While Key Down
  - ➔ While Mouse Down
- Frame Animation is a compound object that allows a series of frames to be defined. Each frame can consist of different objects. A particular frame is displayed based on the value of an expression. This allows areas of the screen to change like a filmstrip.
- Hold Last Value can be defined on a project basis. This feature allows you to configure the system to hold the last known values of points in your CimView screens if the points go into an Unavailable State. Text points in this state will display in a configured color (determined for the entire project).
- Metafile Import allows Windows Metafile objects produced by programs such as AutoCad and PowerPoint to be cut and pasted into CimEdit. The imported images can be decomposed into CIMPLICITY objects and can be fully animated. This is in contrast to bitmap imports that remain as single static objects.
- Point Search & Replace allows you to search the screen for a point and highlight all objects that contain the point. You can then replace point identifiers within a CimEdit screen by simply typing over the name in a list of points used in the screen.
- Scalable Objects provides the ability to change the size of an object based on the value of a point. The object can be scaled independently in the X and Y directions.
- Scripting allows Basic Control Engine Scripts to be run from a CimView procedure.
- Undo/Redo allows you to undo and redo a series of modifications to graphic screens.
- Visibility Animation allows an object's visibility to be controlled by an expression. If an object is invisible, it cannot be selected.
- Online Help provides comprehensive, indexed documentation, which is just a keystroke away at any time.
- Object Help can be configured for any object on the screen. The operator can then access this help at any time using the right mouse button.
- Dynamic Screen Testing allows you to test screen-editing changes in CimEdit without changing your original screen. By using the **Test** button on the standard menu bar, you can automatically start a CimView window to view your edits without committing to them.

A Word about CimView

CimView is the powerful, graphics runtime portion of CIMPLICITY HMI where the features you used in CimEdit come to life. Powerful animation techniques give smooth, flicker-free animation to your graphic screens. With CimView, you will see your process information displayed in both textual and graphic format. Alarms, video clips, pop-up windows, and the large selection of animation features help you transform your process data into process information, allowing you to improve your quality, productivity, and profitability.

With CimView you can:

- View powerful graphic and text information.
- Access powerful scripts by pressing a key or clicking on an object.
- Get a description of the animation and actions associated with an object with a click of the mouse.
- Display Help text with a click of the mouse.
- Display screens from other applications via OLE Automation.

Using CimEdit's Dynamic Screen Testing, you can review what CimView will display as frequently as you want.

Opening CimEdit

About Opening CimEdit from the Workbench

The CIMPLICITY HMI Workbench offers you familiar features (also found in Windows Explorer) for opening new and existing CimEdit screens.

This chapter reviews the methods available to you for:

- Opening a new CimEdit screen.
- Open an existing screen to edit.

Opening a New CimEdit Screen

There are several ways to open a new CimEdit screen.

To open a new CimEdit screen:

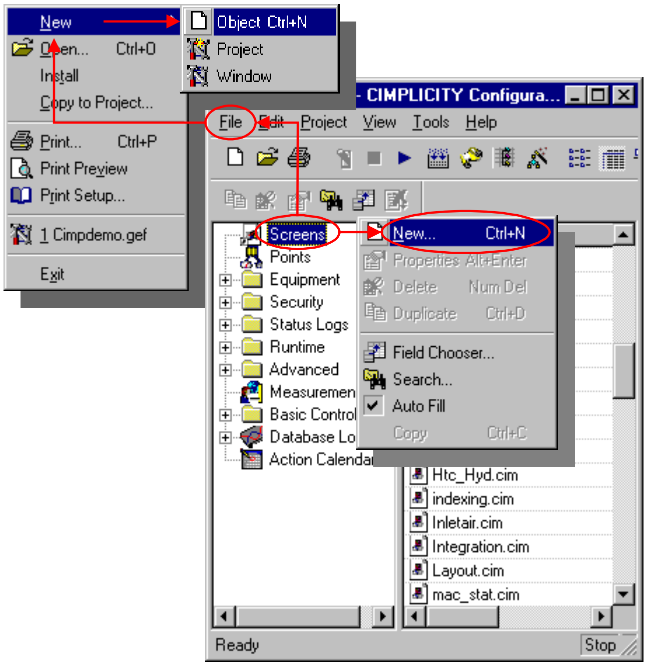
1. Select **Screens** in the left pane of the Workbench.

Method 1–Use a quick method

Double-click **Screens**.

Method 2–Use the popup menu

2. Click the right mouse button.
3. Select New from the popup menu.



Method 3–Use the Workbench menu bar

2. Select **Screens** in the left pane of the Workbench.
3. Clock File on the Workbench menu bar.
4. Select New.
5. Select Object.

Method 4–Use the keyboard

2. Select **Screens** in the left pane of the Workbench.
3. Press **ALT+F** on the keyboard.

   The drop down File menu opens.
4. Press **N** on the keyboard.
5. Press **O**.

Method 5–Use the keyboard

Press **Ctrl+N** on the keyboard.

Result: A new CimEdit screen opens when you use any of the five methods.

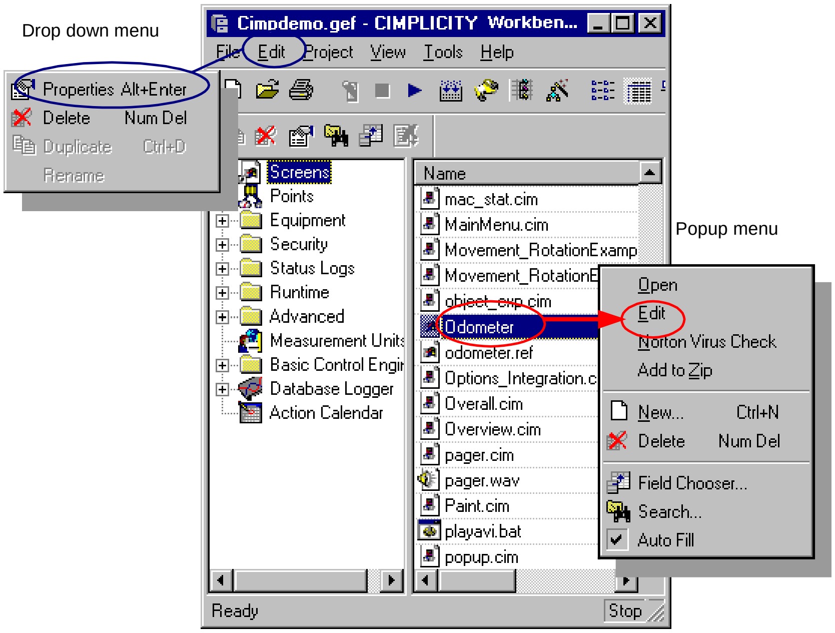
Opening an Existing CimEdit Screen

There are several ways to open an existing CimEdit screen.

To open an existing CimEdit screen:

1. Select **Screens** in the left pane of the Workbench.
2. Select the screen that you want to edit in the right pane of the Workbench.

Opening an Existing CimEdit Window



Drop down menu

Popup menu

Method 1–Use the popup menu

3. Click the right mouse button.
4. Select Edit from the popup menu.

Method 2–Use the Workbench menu bar

3. Click Edit on the Workbench menu bar.
4. Select **Properties**.

Method 3–Use the keyboard

Press **Alt+Enter** on the keyboard.

Result: The CimEdit window you selected opens when you use any of the three methods.

Reviewing CimEdit Configuration

CimEdit Configuration Overview

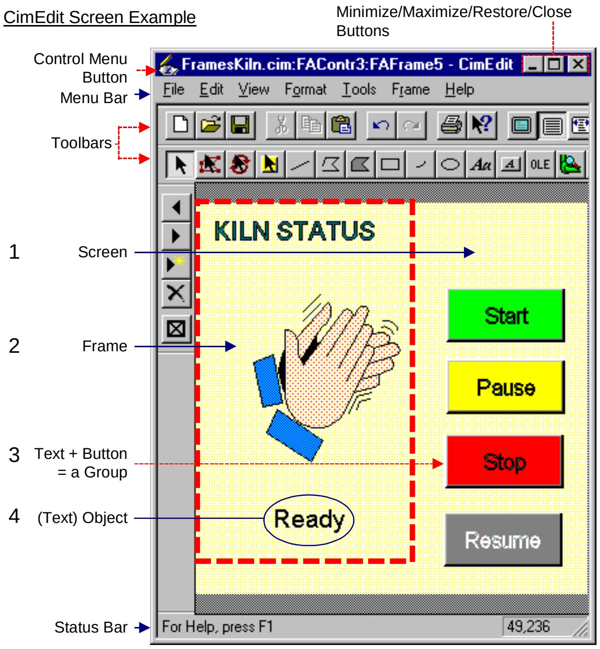
CimEdit combines the features commonly found in high-powered graphics applications, with an abundant number of state of the art configuration tools. They all help you take advantage of CIMPLICITY HMI’s extensive runtime capabilities. Consequently, you can create CimView screens that are clear, easy, and robust.

Looking over the CimEdit Window

As you configure your CimEdit screen, you will work on two or more levels.

The levels are as follows:

- ***Screen–***the primary workspace in which you create the CimEdit/CimView configuration.
- ***Frame container*** –containing two or more frames. Each frame can contain groups and/or objects that display when the frame’s pre-configured conditions evaluate to True.
- ***Group–***a collection of several objects that are combined to act like a single object in certain instances.
- ***Object–***the primary item with which you work.


CimEdit Screen Example

Minimize/Maximize/Restore/Close Buttons
Control Menu Button
Menu Bar
Toolbars
1 Screen
2 Frame
3 Text + Button = a Group
4 (Text) Object
Status Bar
FramesKiln.cim:FAContr3:FAFrame5 - CimEdit
File Edit View Format Tools Frame Help
KILN STATUS
Start
Pause
Stop
Resume
Ready
For Help, press F1
49,236

In addition to providing you with high-powered graphics tools in its toolbars and menus, CimEdit provides you with easy to use dialog boxes. These dialog boxes are powerful enough for the most sophisticated programmers and easy enough for screen designers whose abilities lean more toward design. .

Reviewing Configuration Steps

If you are designing screens in CimEdit that will be used during runtime in CimView, you are probably a system administrator, engineer and/or screen designer. That means you know how to add one simple element to another until you create, what can be, an elaborate and complex final product.

You design CimEdit screens the same way. Although your completed CimEdit screens will provide your plant with unprecedented monitoring power, developing them is a systematic process. Because each step is self-contained, you can jump around as much as you want.

When you begin to plan how CimView will monitor, evaluate, and report on the status of your system's processes, there are some basic factors to consider.

They include:

- Information requirements for CimView
  - ➔ Choosing data sources.
  - ➔ Determining user interaction needs.
  - ➔ Determining where runtime information will be used.
- CimEdit configuration choices
  - ➔ Estimating the number of screens that are needed.
  - ➔ Selecting CimEdit objects that will convey the information most effectively.
  - ➔ Choosing which CimEdit processes will unleash the power of the objects.
  - ➔ (Optional) Adding ActiveX and third party objects.

Information Requirements for CimView

How you design your CimEdit configuration depends on your project's information requirements. Therefore, your planning begins with determining those requirements. The requirements include:

- Choosing data sources.
- Determining user interaction needs.
- Determining information destinations.

Choosing Data Sources

Information that CimView displays, calculates, and monitors can come from a wide variety of sources.

Sources include:

- Point data.
- Variables.
- Expressions.
- Other data sources.

Point Data Sources for CimView

Point values are at the core of CimView monitoring and regulation of processes. Points defined in CIMPLICITY's Point Configuration application are readily available whenever you need them in CimEdit. In addition, if you need to create new points you can easily open the Point Configuration application through CimEdit.

- ***Device Point*** values from PLCs or other devices provide the CimView viewer with the ability to monitor a process represented by several points.
- ***Virtual Points*** provide a flexible way to create calculated values.

Two common uses for a point are:

- Setpoints to affect a process.
- Alone or in expressions to display information about a process.

Variables as Data Sources within CimView

Variables are flexible containers for information and do not add to your project's overhead. A variable has a unique name, a variable ID, and represents a value that can be assigned to it during configuration of the CimEdit screen or at runtime.

Some of the data sources it can represent are:

- Full Point ID
- Partial Point ID
- Text string in an expression.

A variable does not communicate with the PLC but is wholly contained in CimEdit.

Example of a Variable

Different values (types of values) are assigned to a variable ID **`{var_value}`** for different items on a CimEdit screen.

Variable ID	Value
`var_level`	**`40`**
`var_level`	**`tank_level`** (point)
`var_level`	**`tank_level+50`**
`var_level`	Assigned during runtime

In addition to providing you with several options for assigning values, variables can streamline your configuration time. For example, when you create an object that uses variable IDs, you can use the same object in several locations on a CimEdit screen, or on several different screens and assign different text strings to each instance of the object.

Expressions as Data Sources for CimView

Expressions provide a valuable and flexible way to help you evaluate, compare, and use the information gathered by points or variables or both.

An expression includes points, variables, or both along with any of the following CimEdit operations:

- Arithmetic
- Logical
- Alarm functions
- Bitwise
- Conversion
- Relational
- Scientific

CimEdit provides you with an easy to use Expression dialog box, in which you build complicated expressions with just a few clicks of the mouse.

Other Data Sources for CimView

Although points, variables, and expressions are sources for the most current information in CimView, you may need to view logged, historical, or other types of information. These values can come from vast number of sources, including:

- Logged files
- Text files
- Other database type files

Note: These data sources are available through features, such as Trending, or scripts.

Determining User Interaction with CimView Screens

CimView provides you with the framework to take full advantage of CIMPLICITY HMI’s powerful setpoint capabilities.

These capabilities include enabling CimView users to change device point values in a PLC to turn a machine on/off, open/close valves, or increase/decrease values to control how processes will function.

Determining where Runtime Information will be used

If you have more than one CimView viewer, it is a good idea to lay out what information needs to be displayed and what type of user interaction is required at each location. The number and type of locations may be a major factor in how the screen design will be most effective.

For example, locations can be as disparate as being on:

- On one or more Viewers in the network.
- Remote, with a user accessing the CIMPLICITY HMI project through WebView.
- Remote, with a user accessing the CIMPLICITY HMI project through PocketView on a handheld PC.

CimEdit Configuration Choices

CimEdit offers you a number of tools and features to help you design the CimView screens that will work most effectively in your organization. The choices you make depend, of course, on your project's information requirements. You also have the flexibility to cater to your own and the users' design preferences.

The basic issues you will deal with are to determine the:

- Estimated number of screens for the project.
- Objects that will convey CimEdit data.
- CimEdit processes that will unleash the power of the objects.
- (Optional) ActiveX and third party objects that may enhance CimView's capabilities.

Estimating the Number of Screens for a Project

When you have determined your information requirements, you can estimate the number of screens that need to be designed. The number will be influenced by the:

- Anticipated number of viewer destinations that require different screens
- Type and number of monitoring and regulating tasks that can be divided into logical units
- Amount of information to be displayed, keeping in mind that displays need to be clear to view in a runtime environment

Note: Using frames is another layout option if you have several objects on a screen that will change during runtime, based on a similar set of conditions. *See the "Configuring Runtime Movement and Animation" chapter in this manual for detailed information about configuring frames.*

Selecting Objects to Convey CimView Data

CimEdit provides you with a huge variety of objects to contain, display, and let the CimView user act on the data flowing to, from, and within it.

Objects include:

- Basic graphic shapes that you create.
- Text objects.
- Wide variety of SmartObjects from CimEdit's Object Explorer.
- OLE objects.
- Picture objects (Metafiles) converted by you into to CimEdit objects.
- Entire AutoCad drawings imported as a set of CIMPLICITY HMI objects.
- ActiveX controls including the CIMPLICITY Alarm Viewer and Trend chart.

These objects may be a:

- Single element, such as a text message
- Pre-configured group of objects, such as most objects in CimEdit's Object Explorer
- Group of objects combined by you

CimEdit also provides you with a huge variety of tools as toolbar buttons and menu items to change the object's appearance. This includes changing its:

- Size.
- Shape.
- Angle of rotation.
- Color and fill.

Another time saving feature provided by CimEdit is the ability to create linked objects.

Linked objects save you valuable time by providing you with the ability to change a single object, the linked object, and then let CIMPLICITY HMI finish the job of updating every link to that linked object, in your entire project.

In addition, this single source capability insures that any specification or change made to the linked object will be reproduced exactly in every link to that linked object.

By mapping out the data flow, you can narrow down your choice of objects for each CimEdit task. Because each configuration is composed of a series of small steps, you can easily change your mind as you begin configuration.

Unleashing the Power of CimView

When objects are laid out you are ready to make them work for you.

Anything on the screen, including the screen, can be involved in actions that occur

- Within CimEdit, for example, another screen can be opened.
- A machine or process can be turned on and off or regulated.

Objects can also be used to monitor plant processes, including:

- Normal operations
- Alarm states
- Trends

It is in this phase of configuration that you will involve various types of data. What you want each object to represent and do will determine which type you use.

You may have placed some of the objects on your CimEdit screen to promote one or more actions. The screen, itself, can also be involved.

Process for Triggering Actions in CimView

The process is straightforward, involving a:

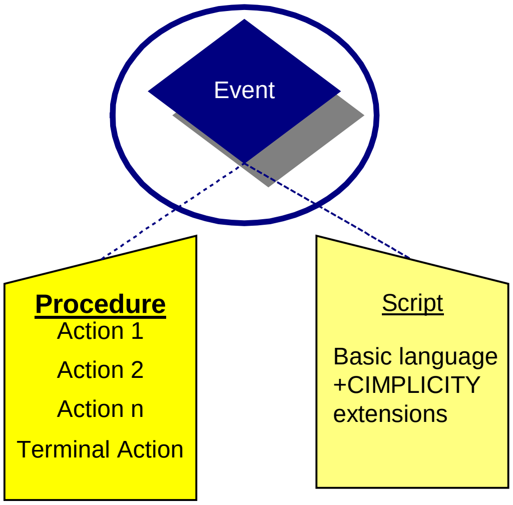
Trigger

An ***event*** triggers a procedure or calls a script. CimEdit provides a long list of events from which you can choose the best one for your requirements.

Result

A ***procedure*** is one or more actions that are triggered in the specified order when an event occurs and while the screen is displayed in **CimView**. CimEdit provides several actions from which a screen designer can easily compile a meaningful list.

A ***script***, which is usually written by a system administrator, uses the same Editor and Basic language as the Basic Control Engine. Anything you can do in a normal script, you can do in a **CimEdit** script. CimEdit provides additional extensions to give you a wider range of screen development choices. However, **CimEdit** scripts are *only* accessible from the screen in which you create them.



Options for Monitoring Processes in CimView

CimEdit provides several choices to create activity on your screens that make if easy for a CimView user to quickly determine the status of a point or expression. Items can:

- Move.
- Rotate.
- Change in size.
- Fill up.
- Change color and text through animation.

Items can be:

- Groups.
- Objects.
- Text.
- Lines.
- Shapes.

Each configuration involves a few simple arithmetic calculations. Combining or nesting activities requires only the simple configuration that you do for each.

Your options depend only on the requirements for your project, your ingenuity, and system resources.

Adding ActiveX and Other Objects

Because CimEdit provides you with ActiveX objects, such as Trend and XY charts, as well as the ability to use such diverse items as entire CAD drawings you may need to do more configurations. Simply continue in the same systematic manner.

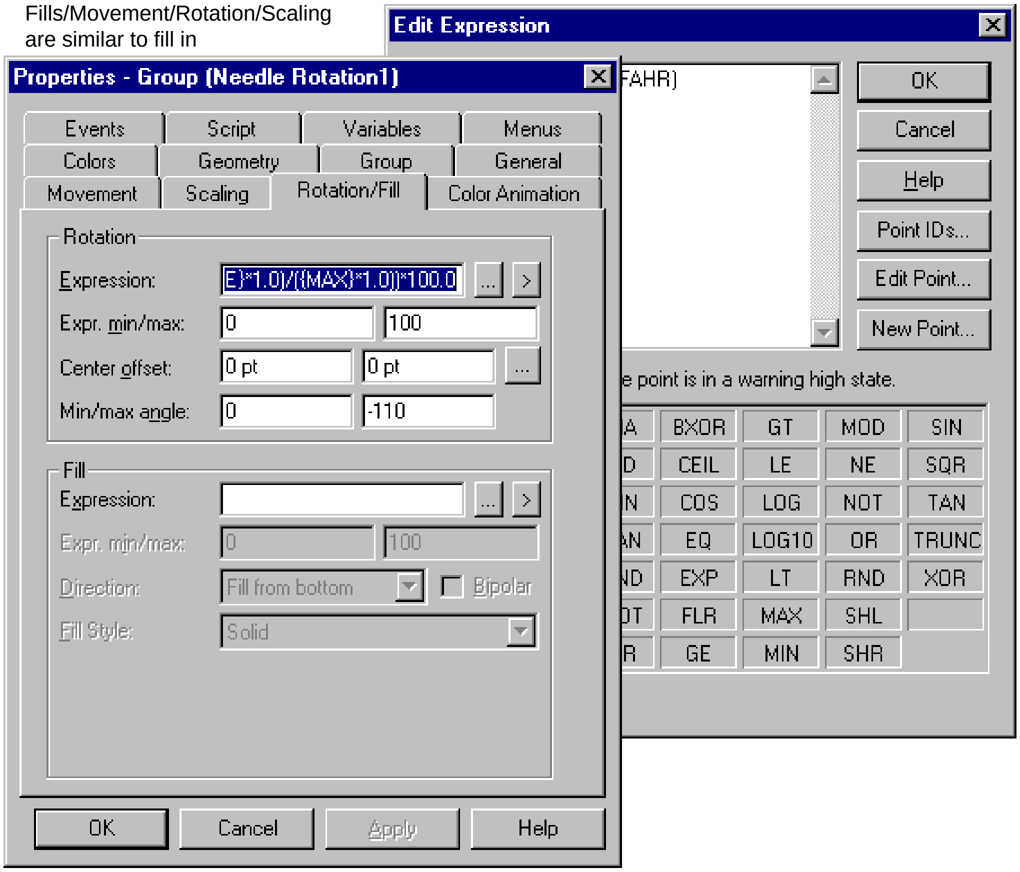
Dialog Boxes Overview

CimEdit configuration is accomplished in several tabs of a Properties dialog box. However, you will discover that there is an internal consistency making many of the tabs similar to others. In addition, dialog boxes at the different levels in CimEdit, from screens to objects have many of the same tabs. Consequently, by understanding a few basic concepts, you can easily do the configuration you need to create an effective and powerful CimEdit interface for your CIMPLICITY HMI project.

Sample of Easy to Fill in tabs Found in CimEdit Dialog Boxes

Expression dialog provides you with the operators.

Fills/Movement/Rotation/Scaling are similar to fill in



FAHR)

e point is in a warning high state.

Rotation

Expression: E}*1.0)/({MAX}*1.0))*100.0

Expr. min/max: 0 100

Center offset: 0 pt 0 pt

Min/max angle: 0 -110

Fill

Expression:

Expr. min/max: 0 100

Direction: Fill from bottom □ Bipolar

Fill Style: Solid

CimEdit Screen Configuration Example

Following is a simple CimEdit configuration example. It begins with determining some information requirements for a process and continues with configuring screen for CimView that will address the information requirements.

Procedures can be grouped into six steps for basic configuration.

Steps include:

Step 1. Determine the information sources. *See page 3-11.*

Step 2. Determine any required user interaction. *See page 3-12.*

Step 3. Determine the information destinations. *See page 3-12.*

Step 4. Estimate the number of screens that will be needed. *See page 3-13.*

Step 5. Select and layout objects that will effectively display the information. *See page 3-14.*

Step 6. Configure each object to function as required during runtime. *See page 3-15*.

Step 1. Determine the Information Sources

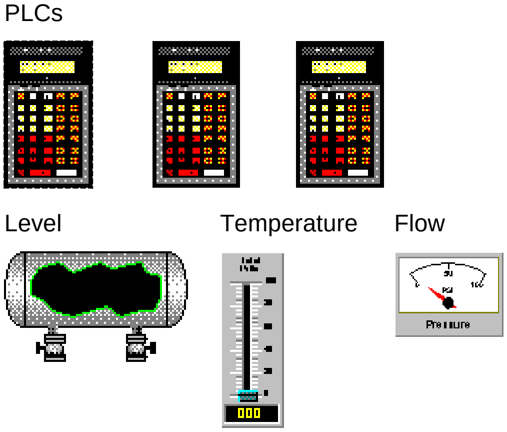
There are three PLCs.

1. PLC 1 is connected to Tank 1.
2. PLC 2 is connected to a throttling valve regulating flow to Tank 1.
3. PLC 3 is connected to Tank 2.

CIMPLICITY HMI has the following configured points:

1. **`Tank1_Level`**
2. **`Tank1_Temp`**
3. **`Tank1_Flow`**
4. **`Valve_Piston`**
5. **`Tank2_Flow`**

Example: Some Information Sources for which CimEdit will be Configured



Step 2. Determine any Required User Interaction

On Viewer 1

Users need to regulate the valve piston opening through PLC 2.

Step 3. Determine the Information Destinations

There are two Viewers.

CimView users need to:

On Viewer 1

1. Monitor the current level of Tank 1.
2. Monitor the current temperature of Tank 1.
3. View a Tank 1 level trend.
4. View a Tank 1 temperature trend.
5. Monitor the rate of flow out of the Tank 1 valve (into Tank 1).

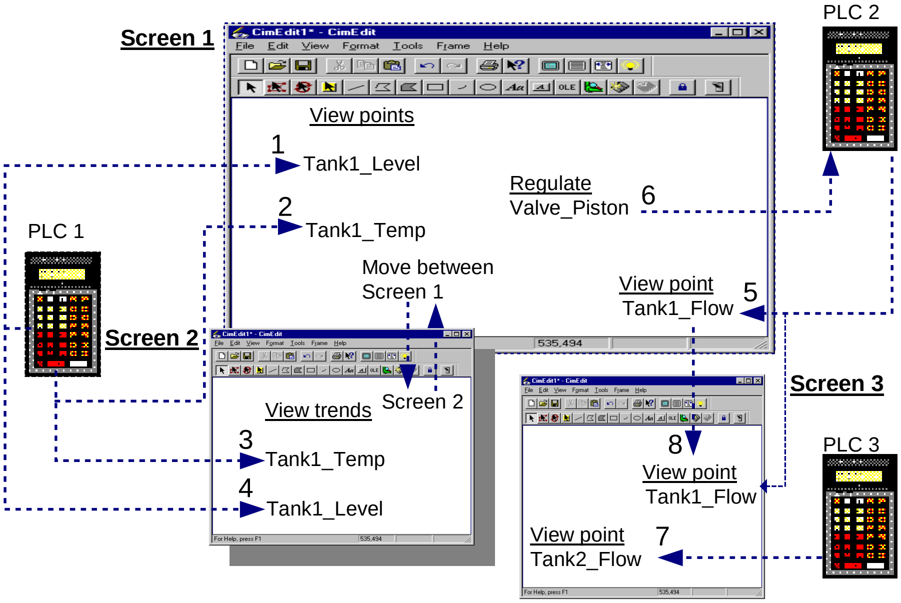
On Viewer 2

6. View the percent level in Tank 2.
7. View the rate of flow to Tank 1.

Step 4. Estimate the Number of Screens

In response to the information requirements, three CimView screens will be designed.

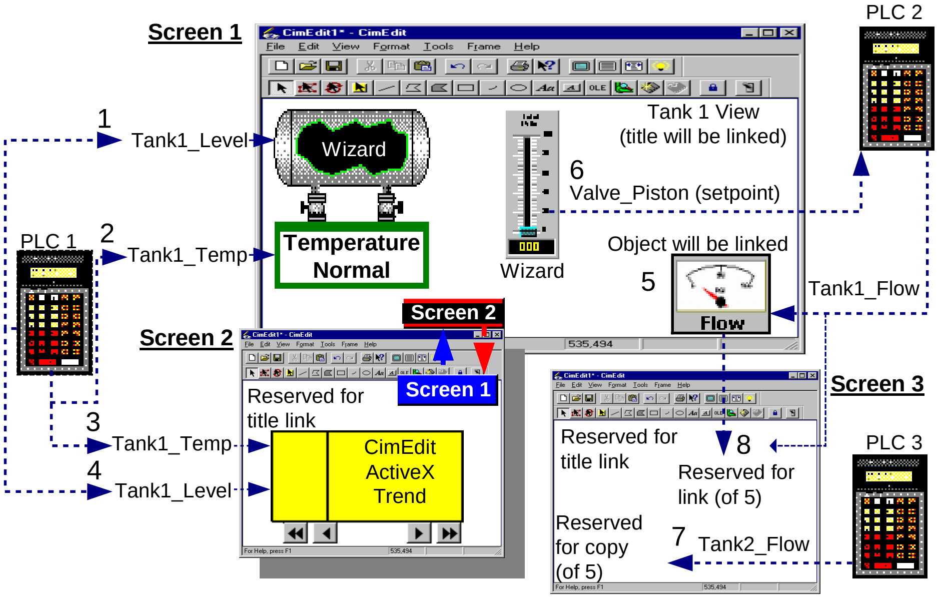
1. Screen 1 will:
   - A. Display as the main screen on Viewer 1.
   - B. Receive device data from PLC 1 and PLC 2.
   - C. Send setpoint input to PLC 2.
2. Screen 2 will:
   - A. Display on Viewer 1.
   - B. Be opened through Screen 1.
   - C. Receive device data from PLC 1.
3. Screen 3 will:
   - A. Display on Viewer 2.
   - B. Receive data from Screen 1 (Tank 1 flow).
   - C. Receive device data from PLC 3 (Tank 2 flow)



Step 5. Select and Layout Objects

Objects that will effectively display the information requirements include:

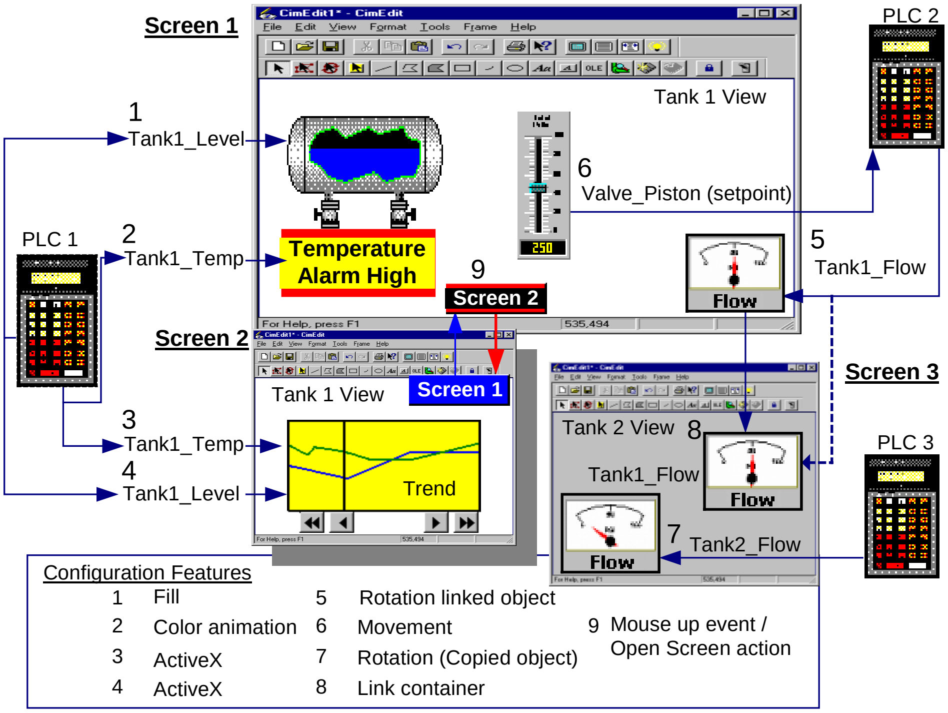
1. A CimEdit SmartObject tank to display the Tank 1 level.
2. A text object to display the exact Tank 1 temperature.
3. A CIMPLICITY HMI ActiveX trend object to display a trend of Tank 1 temperatures.
4. A CIMPLICITY HMI ActiveX trend object to display a trend of Tank 1 levels.
5. A CimEdit SmartObject gauge to display the Tank 1 flow.
6. A CimEdit SmartObject lever to enable user setpoint action for the valve piston.
7. A space is reserved on Screen 3 for a copy of the CimEdit SmartObject gauge. To save time, this object will be copied after it is fully configured. Settings can then be changed after the object is copied to apply the object to Tank 2.
8. A space is reserved on Screen 3 for a linked copy of the CimEdit SmartObject gauge after it is fully configured. The gauge display will be the same on Screen 3 as it is on Screen 1.
9. Text buttons to open Screens 1 and 2.



Step 6. Configure each Object Runtime Function

The objects are configured using some of CimEdit's powerful configuration features.

1. Tank 1 tank uses the fill feature.
2. Tank 1 temperature changes through Expression and color animation.
3. Tank 1 temperature trends are the result of configuring the CIMPLICITY HMI ActiveX trend object.
4. Tank 1 level trends are the result of configuring the CIMPLICITY HMI ActiveX trend object.
5. The Tank 1 SmartObject gauge uses rotation.
6. The Level for the valve piston setpoint uses the movement feature.
7. The reserved place for a copy of the gauge uses rotation with criteria modified to reflect Tank 2.
8. The reserved place for a link container on Screen 3 displays the link to the SmartObject gauge on Screen 1.
9. Buttons to open each screen are activated by a Mouse up event.



This powerful configuration was done through simple and similar tabs in each object's (or screen's) Properties dialog box. The dialog box is accessed by double-clicking the object (or screen). It could also have been configured through scripts.

Configuring a CimEdit Screen

About CimEdit Screens

Your CimEdit screen provides you with several diverse features and capabilities that you can use at any time during your screen design session. These features enable you to:

- Alter the screen's appearance.
    - ➔ Screen color, fill, pattern, and border
    - ➔ Screen size
- Use workspace aids.
    - ➔ Grid display
    - ➔ Mouse location status
    - ➔ Toolbar selection and descriptions
- Create variables that are available to all objects.
- Create procedures that are available to objects in any direct path from the screen down.
- Create scripts that are available to all objects.
- Apply ambient properties.
- Add your own Help for the screen (simple text help or full Window help.
- Create popup menu items.
- Name the screen.
- Save the screen as a runtime only file.

The screen has its own Properties dialog box and an Options dialog box to accommodate its unique position within the CimEdit workplace.

This chapter describes all the screens features and capabilities. However, features such as selecting colors, will only be addressed briefly. This is because the basic procedure is the same as for any object and is discussed in great detail later in the manual.

Accessing the Screen Properties

There are several ways to open the Properties dialog box.

To open the screen's Properties dialog box:

Method 1

1. Click Format on the menu bar.
2. Select Screen Properties.

Method 2

1. Make sure all the objects on the screen are deselected
2. Click Edit on the menu bar.
3. Select Properties.

Method 3

1. Hold down the right mouse button.
2. Select Properties from the drop-down menu over a portion of the screen that has no objects.

Result: The Properties dialog box opens when you use any of these methods.

Screen Appearance

Because the screen is the background for your work, by the time you finish the configuration it will have to be:

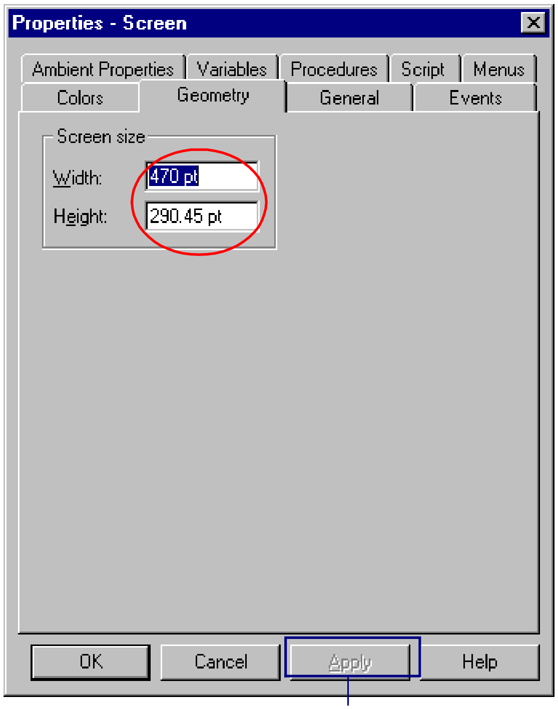
- Large enough to contain all the objects you have placed, but small enough to fit easily on the viewers.
- Colored or filled with a solid color, gradient, or pattern that will focus viewers' attention on the objects.

Specifying the Screen's Size

You can change the size of the screen as frequently as you want. If your viewers have different resolutions or want to enlarge the screen by using the zoom feature, it is a good idea to test the size before you go too far placing and resizing the objects.. In order to insure that text and images will be the size you believe is most effective, as a rule of thumb, the actual screen size (Zoom 100%) should fit comfortably on any viewer where it will be used.

To specify a screen's size:

1. Open the Properties dialog box.
2. Choose the Geometry tab.



Screen size

Width: 470 pt

Height: 290.45 pt

Apply is activated when a dimension is changed

3. Enter the screen dimensions you want to use in the Width and Height fields.

   See "Object Form" in the "Applying Inanimate Visual Features" chapter in this manual.

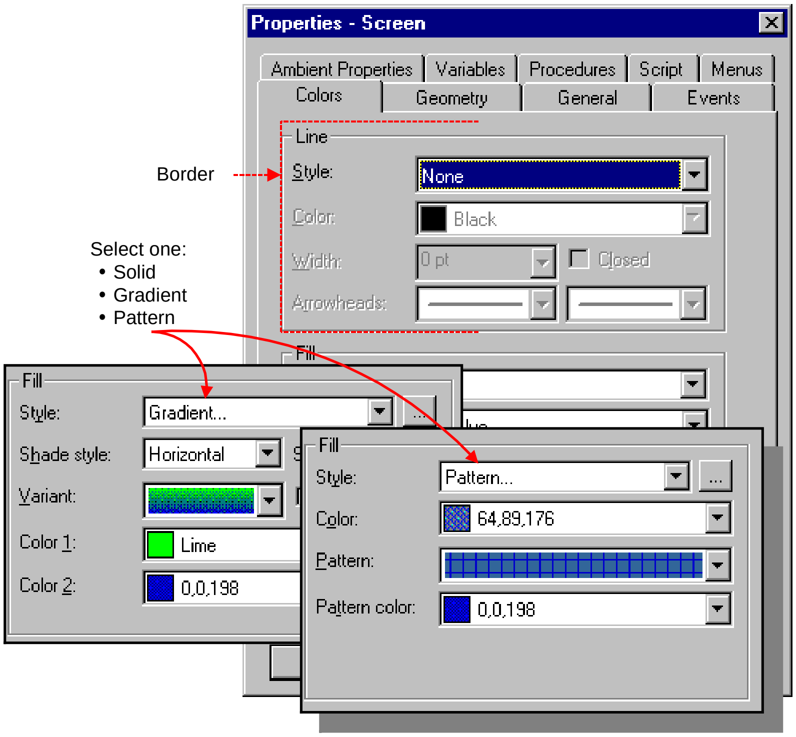
4. Do one of the following to apply the new dimensions:
   A. Click **Apply** to keep the dialog box open.
   B. Click **OK** to close the dialog box.
5. Click View on the CimEdit menu bar when the Properties dialog box is closed
6. Select Zoom 100%.
7. Click View again.
8. Select Size Window to Zoom. This resizes your window to fit the new actual screen size.

Specifying the Screen's Color

Even though you specify the screen color in the Properties dialog box, the procedure is the same as it is for most objects on the screen.

To specify a screen color:

1. Open the Properties dialog box.
2. Select the Colors tab.



Border

Select one:
- Solid
- Gradient
- Pattern

Line
Style: None
Color: Black
Width: 0 pt
□ Closed
Arrowheads:

Fill
Style: Gradient...
Shade style: Horizontal
Variant:
Color 1: Lime
Color 2: 0,0,198

Fill
Style: Pattern...
Color: 64,89,176
Pattern:
Pattern color: 0,0,198

3. Select the line style you want in the Line section, if you want the screen to have a border. *See "Applying Other Styles and Colors" in the "Applying Inanimate Visual Features" chapter in this manual.*
4. Select the fill type and color(s) for that type in the Fill section. *See "Color and Fill Selection" in the "Applying Inanimate Visual Features" chapter in this manual.*

Note: Arrowheads and **Closed** are disabled for the screen border.

Workspace Aids Displayed on the Screen

While you are working on your CimEdit screen you can choose several aids to display or hide. They include:

- A grid of horizontal and vertical lines across your workspace.
- Display of the mouse location in the status bar.
- A variety of toolbars and tool tips that identify a toolbar button when you move the cursor over the button.
- Tools to zoom the CimEdit screen display size.
- Option to specify the undo stack size for a CimEdit screen.

You choose these options in the Options dialog box.

To open the Options dialog box:

1. Click Tools on the CimEdit menu bar.
2. Select Options…

Result: The Options dialog box opens.

Displaying a Grid on your CimEdit Screen

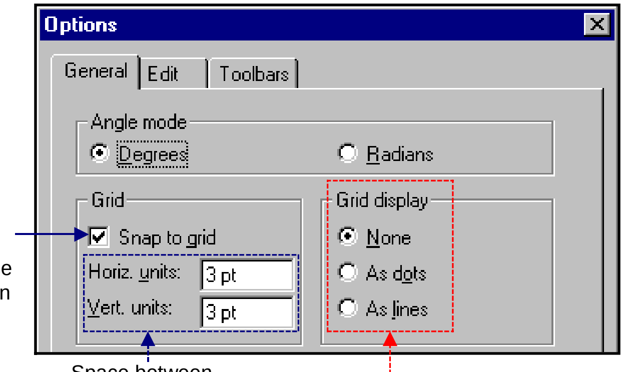
CimEdit provides you with the option to display a grid on your CimEdit screen and features of the display. The grid is one of many tools that help you place and align objects exactly where you want them to appear.

See "Object Layout" in the "Creating a Preliminary Layout" chapter of this manual for other alignment tools.

To display a grid on the CimEdit screen:

1. Click Tools on the CimEdit menu bar.
2. Select Options…
3. Select the General tab.

Specifications for a Grid Display



Angle mode: ● Degrees ○ Radians

Grid: ☑ Snap to grid

Horiz. units: 3 pt

Vert. units: 3 pt

Grid display: ● None ○ As dots ○ As lines

Object will snap to the nearest grid dots or line when you release the mouse button

Space between lines horizontal and vertical

Check if or how the grid should display

4. Choose if and how the grid should display.
5. Enter the number of points (default CimEdit measurement) between horizontal and vertical lines.
6. Check Snap to grid if you want the object to snap to the nearest grid.

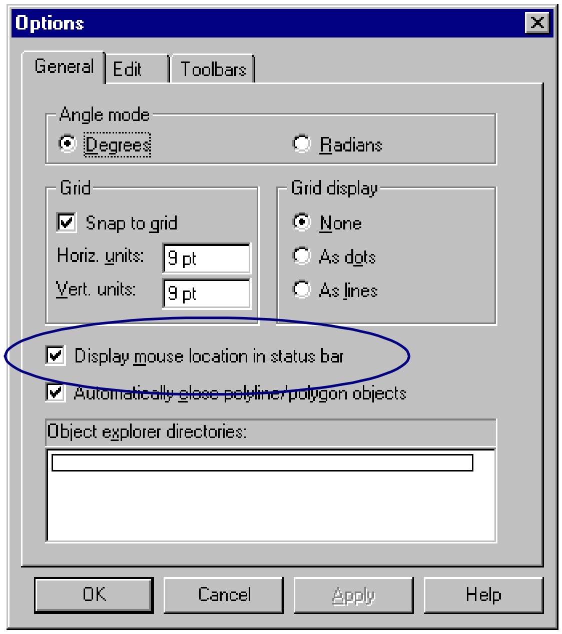
Snap to grid affects the selected object. When you move an object, resize it, or reshape it.

Displaying the Mouse Location

You can have CimEdit display at what X,Y coordinate your cursor is on the screen by choosing to display the information on the screen's status bar. This provides you with the numbers to make precise calculations about placement and size.

To display the mouse location in the status bar:

1. Click Tools on the CimEdit menu bar.
2. Select Options…
3. Select the General tab.
4. Check Display mouse location in status bar.



Angle mode
● Degrees ○ Radians

Grid
☑ Snap to grid
Horiz. units: 9 pt
Vert. units: 9 pt

Grid display
● None
○ As dots
○ As lines

☑ Display mouse location in status bar
☑ Automatically close polyline/polygon objects

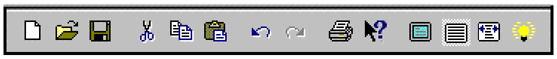
Object explorer directories:

Choosing What Toolbars to Display

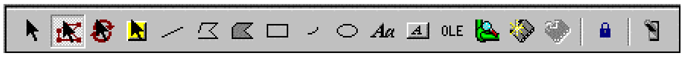
CimEdit provides you with several toolbars that you can display when you need them and hide to increase your workspace. In addition, you can choose to display tips that will describe each button when you hold your cursor over it.

The toolbars are:

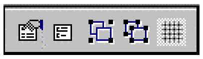
Standard



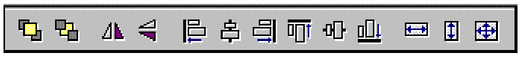
Tool



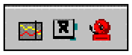
Format



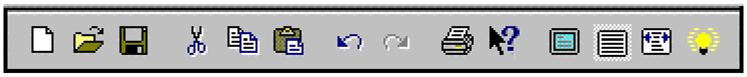
Layout



OLE



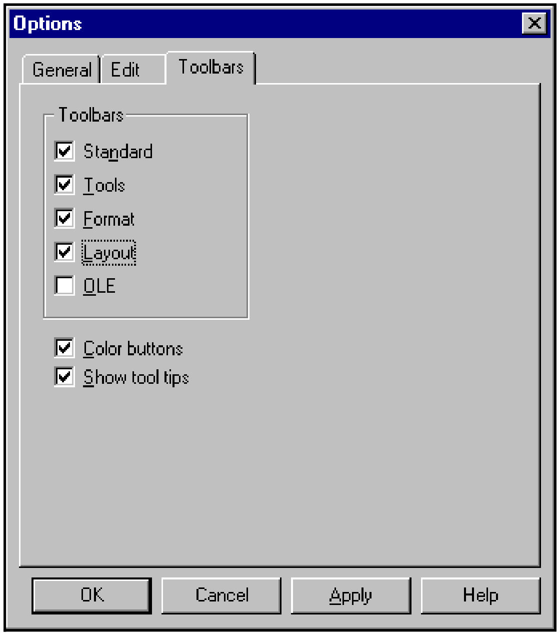
Standard



To choose what toolbars to display or hide:

1. Click Tools on the CimEdit menu bar.
2. Select Options…
3. Select the Toolbars tab.

Toolbar and Tips Display



Options

General | Edit | Toolbars

Toolbars

☑ Standard
☑ Tools
☑ Format
☑ Layout
☐ OLE

☑ Color buttons
☑ Show tool tips

4. Check the toolbar checkboxes to display the toolbar.
5. Check Show tool tips to display a description of a button when you move your cursor over it.

Zooming the CimEdit Screen Display Size

CimEdit offers you several methods to magnify or reduce your CimEdit display size during configuration.

When you have zoomed the screen, you can fit the window to the zoom.

Note: These methods are for display in CimEdit. To change the display of the CimView screen, enter the screen dimensions on the Geometry tab of the Properties dialog box.

To zoom the screen, choose either:

Method 1. CimEdit toolbar buttons

Method 2. A quick zoom percent displaying on the CimEdit Edit menu

Method 3. Precise zoom from the CimEdit Zoom dialog box

Then

Continue. Fit the window to the new workspace display size.

To change a CimEdit screen display size during configuration:

Method 1. Use CimEdit toolbar buttons

Click either the:

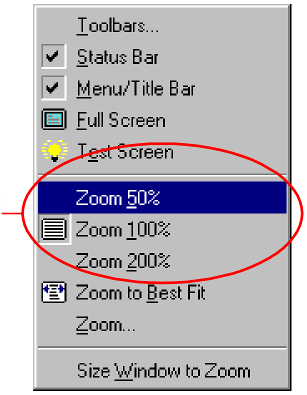
- **Zoom 100** button to zoom the screen to the size it will display in CimView.
- **Full Screen** button to use the entire monitor screen for display.

  Press **ESC** on the keyboard to return to the CimEdit window environment.

Method 2. Use the zoom percents on the CimEdit Edit menu

1. Click View on the CimEdit menu bar.
2. Select the percent you want the display to zoom from one of the percent choices.

Edit Menu: Zoom Percent Selected

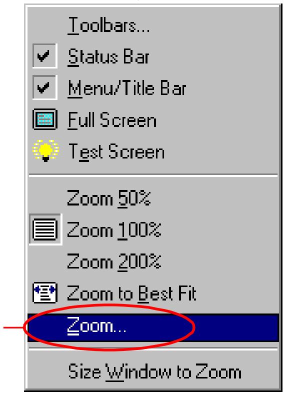


Choose percent screen will zoom.

Method 3. Enter a precise zoom percent

1. Click Edit on the menu bar.
2. Select Zoom.

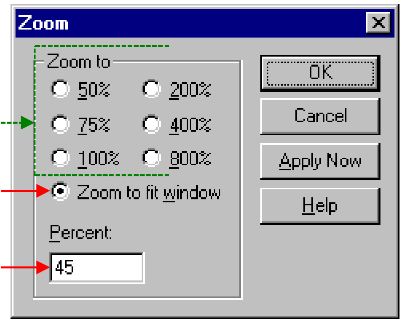
Edit Menu: Open Zoom Dialog Box



Open Zoom dialog box

The Zoom dialog box opens.

Zoom Dialog Opened Through Edit Menu



● Zoom to fit window

Percent: 45

Percent screen zoom

Screen expands or contracts to fit workspace

Enter an exact percent zoom

3. Either:

   A. Select one of the zoom choices.

   B. Enter a precise zoom percent in the Percent field.

To fit the CimEdit window to a zoomed display, choose:

- Click the **Zoom to fit** button on the toolbar
- Select Size Window to Zoom on the Edit menu
- Check the Zoom to fit window radio button on the Zoom dialog box.

Result: The CimEdit window will expand or contract to fit the workspace display size.

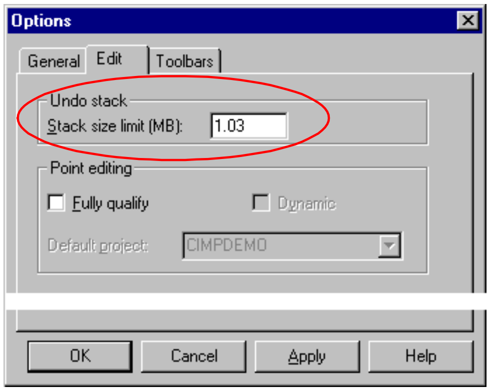
Specifying the Undo Stack Size for a CimEdit Screen

You can specify how much information CimEdit should keep in an undo stack before the oldest information is discarded. This stack size determines how much you can undo in your configuration.

To specify the undo stack size:

1. Click Tools on the CimEdit menu bar.
2. Select Options.

   The Options dialog box opens.
3. Select the Edit tab.



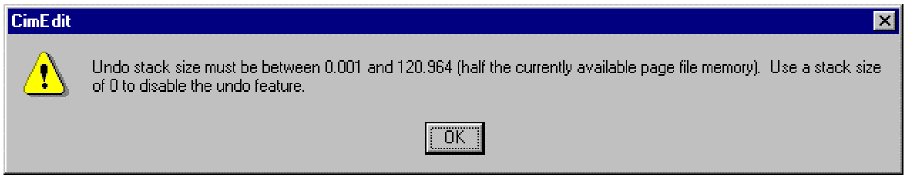
Stack size limit (MB): 1.03

□ Fully qualify

□ Dynamic

Default project: CIMPDEMO

4. Enter either:
   - A number between 0.001 and half the currently available page file memory.
   - Zero (0) to disable the undo feature.



Undo stack size must be between 0.001 and 120.964 (half the currently available page file memory). Use a stack size of 0 to disable the undo feature.

Variables at the Screen Level

Because the screen is at the top of the data hierarchy, you can create variables at this level that will be available to all objects.

See "Variable Evaluation Hierarchy" in the "Using Variables" chapter of this manual.

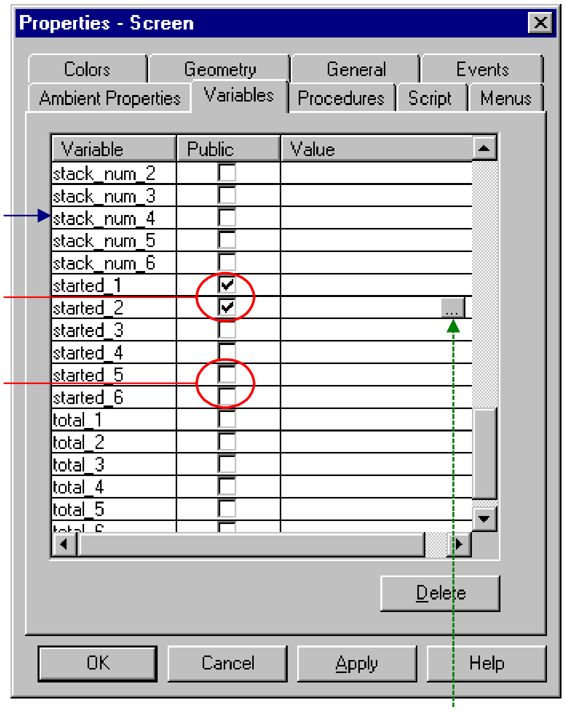
At the CimEdit screen level, you can:

- Create variables.
- Modify variables.
- Delete variables.

Variables Created at the CimEdit Screen Level

To create variables at the screen level:

1. Open the Properties dialog box.
2. Select the Variables tab.



Variable	Public	Value
stack_num_2	☐	
stack_num_3	☐	
stack_num_4	☐	
stack_num_5	☐	
stack_num_6	☐	
started_1	☑	
started_2	☑	
started_3	☐	
started_4	☐	
started_5	☐	
started_6	☐	
total_1	☐	
total_2	☐	
total_3	☐	
total_4	☐	
total_5	☐	
total_6	☐	

Variables created at the screen level

Public variables

Private variables

Expression dialog box

3. Enter a unique name (variable ID) in the Variable column.
4. To specify whether the variable is public or private:
   - Check the Public column if the value of the variable can be entered at different locations.
   - Leave the Public column blank to specify a private variable–the value of the variable can not be changed at different locations. *See "Choosing Public or Private Variables" in the "Using Variables" chapter in this manual.*

5. (Optional at this time) Enter a value in the Value column.

   Two buttons [...][>] appear at the right of the Value field you are in. Use them to find existing or create new Point Ids, and/or to open the Expression dialog box. The value you enter can be a:

   - Point ID
   - Partial Point ID
   - An expression that can include a text string

6. Repeat Steps 3–4 (or 5) until you have completed your list of variable IDs.
7. Click **Apply**.

Variables Modified at the CimEdit Screen Level

To modify a variable at the screen level:

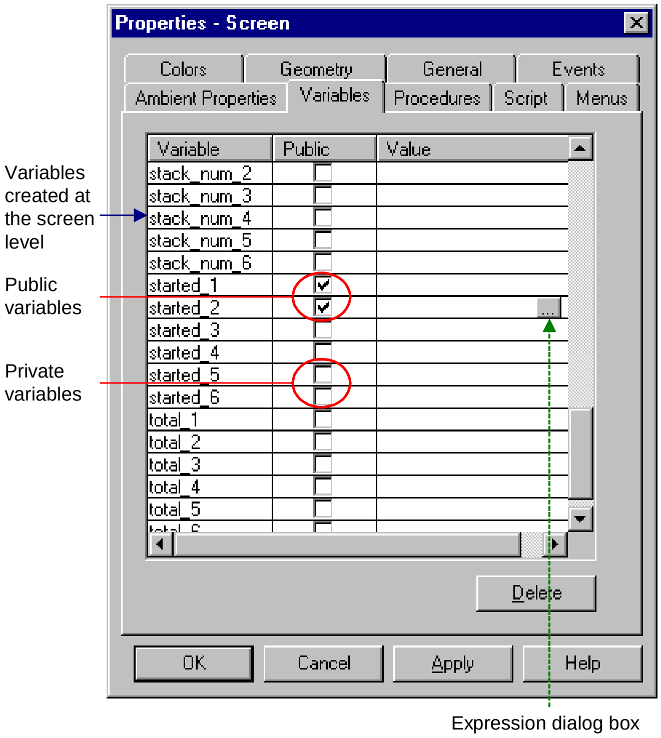
1. Select the Variables tab of the Properties dialog box.
2. Select the variable you want to modify.
3. Make the required changes.
4. Click **Apply**.

Variables Deleted at the CimEdit Screen Level

To delete a variable at the screen level:

1. Select the Variables tab of the Properties dialog box.
2. Select the variable you want to delete.
3. Click **Delete**.

Result: The variable is deleted from the list.



Variable	Public	Value
stack_num_2	☐	
stack_num_3	☐	
stack_num_4	☐	
stack_num_5	☐	
stack_num_6	☐	
started_1	☑	
started_2	☑	...
started_3	☐	
started_4	☐	
started_5	☐	
started_6	☐	
total_1	☐	
total_2	☐	
total_3	☐	
total_4	☐	
total_5	☐	
total_6	☐	

Events and Procedures at the Screen Level

CimEdit offers you the ability to:

- Review, edit and create events that trigger procedures.
- Review, edit and create procedures independent of a specific event.

Creating Events with Procedures at the Screen Level

You follow the same procedure to create a procedure that is associated with an event at the screen level as you do at any level of your CimEdit screen. You simply:

- Create a new event.
- Create a procedure for a new event.

See the chapters "Creating Events in CimEdit" and "Creating Procedures in CimEdit" in this manual for detailed information.

Available Events for the Screen

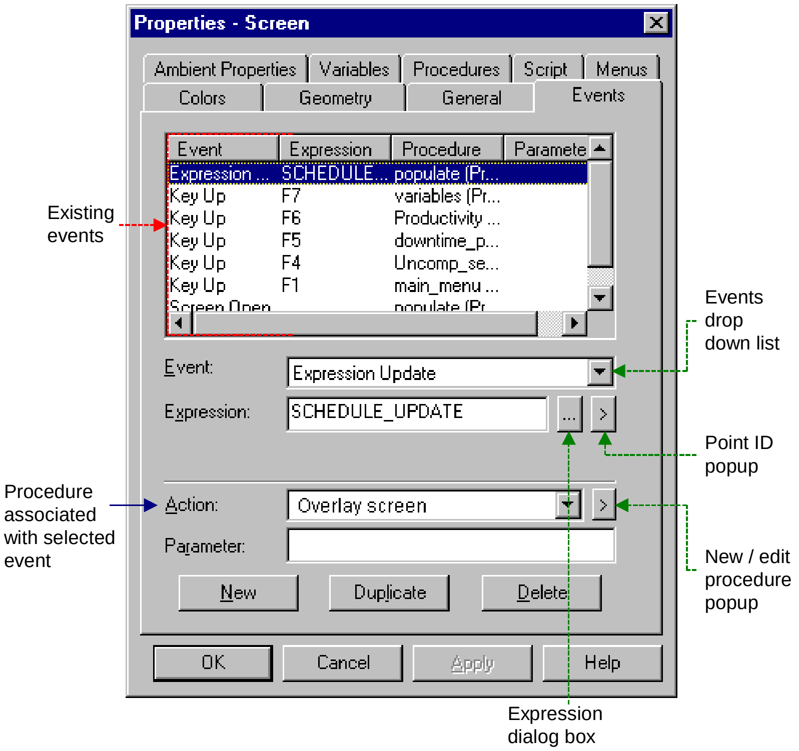
The events available to you at the screen level include:

- Expression High
- Expression Update
- Key Down
- Key Up
- Mouse Down
- Mouse Up
- Periodic
- Screen Close
- Screen Open
- While Key Down
- While Mouse Down

Procedure for Creating a Procedure for a New Event

To create a procedure for a new event at the screen level:

1. Open the Properties dialog box.
2. Select the Events tab.



Event	Expression	Procedure	Paramete
Expression ...	SCHEDULE...	populate (Pr...	
Key Up	F7	variables (Pr...	
Key Up	F6	Productivity ...	
Key Up	F5	downtime_p...	
Key Up	F4	Uncomp_se...	
Key Up	F1	main_menu ...	
Screen Open		populate (Pr...	

Event: Expression Update

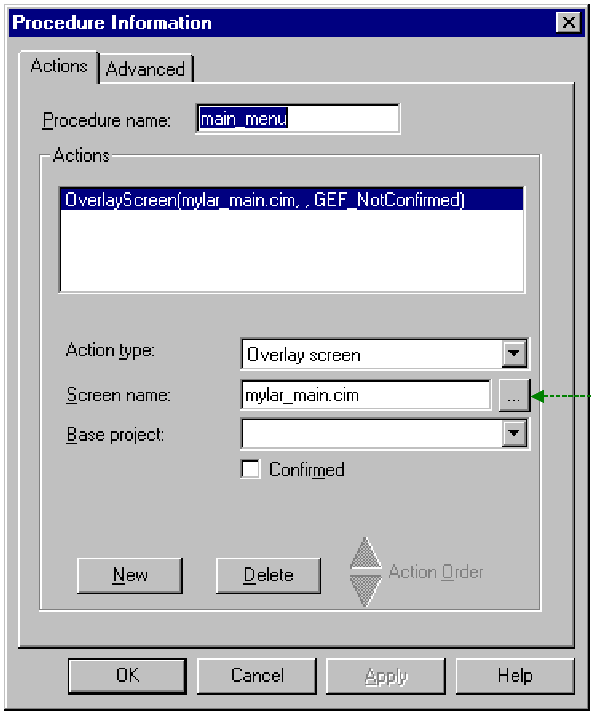
Expression: SCHEDULE_UPDATE

Action: Overlay screen

Parameter:

3. Click **New.**
4. Select an Event from the Events drop down list.
5. Select New Procedure from the New/Edit procedure popup menu.

Result: The Procedure Information dialog box opens in which you create the new procedure.



Procedure Information

Procedure name: main_menu

Actions

OverlayScreen(mylar_main.cim, , GEF_NotConfirmed)

Action type: Overlay screen

Screen name: mylar_main.cim

Base project:

□ Confirmed

Expression dialog box

The events that are currently defined are displayed at the top of the Events tab. *See page 4-14 for a graphic example.* You can use this tab to create new events, duplicate existing events, modify existing events, or delete existing events.

See "Creating Events in CimEdit" in this manual.

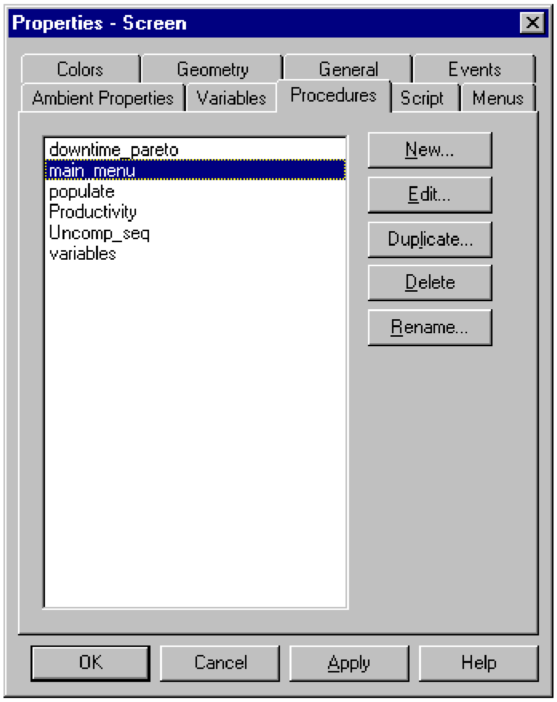
When you select a new Event type you can create a new procedure that the event will trigger.

Dealing with Procedures Independent of Events

Procedures that you configure at the screen level are available for any object on the screen when you configure an event for that object. However, if you create a procedure for an object that has the same name as a procedure created for the screen, CimEdit uses the object's procedure for the object.

To review procedures created on a CimEdit screen:

1. Open the Properties dialog box.
2. Select the Procedures tab.



downtime_pareto
main_menu
populate
Productivity
Uncomp_seq
variables

You can:

- Create,
- Edit,
- Duplicate,
- Delete or
- Rename

procedures.

See the "Creating Procedures" chapter in this manual for more information about procedures.

How to Create A New Procedure–Summary

1. Click **New**... on the Procedures tab of the Properties dialog box.

   The Procedure Information dialog box opens.
2. Enter information to define the procedure.

How to Edit A Procedure–Summary

1. Select a procedure from the list on the Procedures tab of the Properties dialog box.
2. Click **Edit...** to change it.

   The Procedure Information dialog box opens with the current attributes for the procedure.
3. Continue with editing the procedure.

How to Duplicate A Procedure

1. Select a procedure from the list on the Procedures tab of the Properties dialog box
2. Click **Duplicate...** to create another procedure with the same actions as the one you selected.
3. Enter the new procedure name when the Procedure Name dialog box opens.
4. Click **OK**.

How to Delete A Procedure

1. Select a procedure from the list on the Procedures tab of the Properties dialog box.
2. Click **Delete** to remove the procedure from the list.

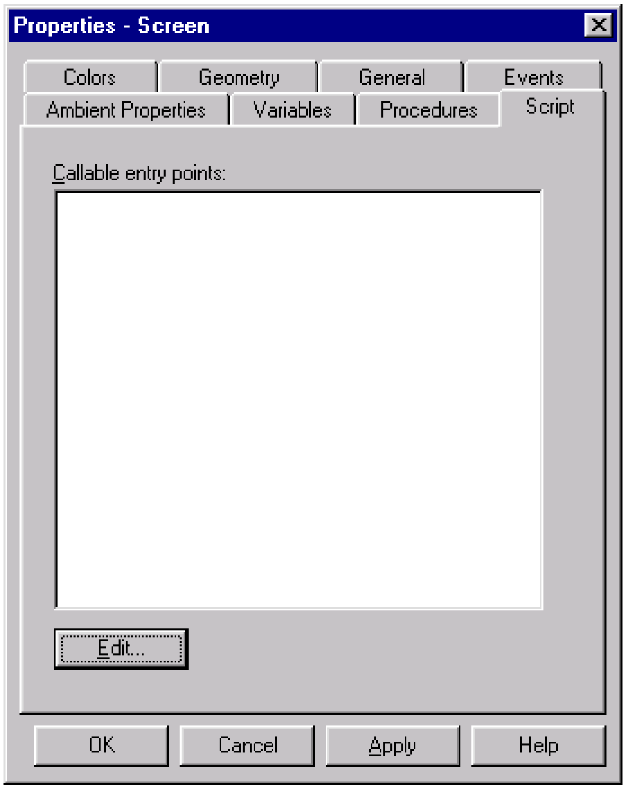
   A CimEdit dialog box opens, asking you to confirm your request. It also tells you the number of actions and objects associated with the procedure.
3. Click **OK** to confirm your request.

How to Rename A Procedure

1. Select a procedure from the list on the Procedures tab of the Properties dialog box.
2. Click **Rename...** to rename it.
3. Enter the new procedure name when the Procedure Name dialog box opens.
4. Click **OK**.

Screen Scripts

Use the Script tab to create and edit a script for the screen.



The **Callable entry points** display lists all the subroutines and functions in the script.

Select **Edit** to open an Edit Script dialog box and create or update the script for the object.

In the Program Editor window, you can edit, compile, and run the script. You can also set breakpoints for debugging.

Once you create a script, you can create an **Invoke script** procedure and select an entry point in the script, or you can configure it exactly in each script.

See the "Using CimEdit Scripts" chapter in this manual for more information,

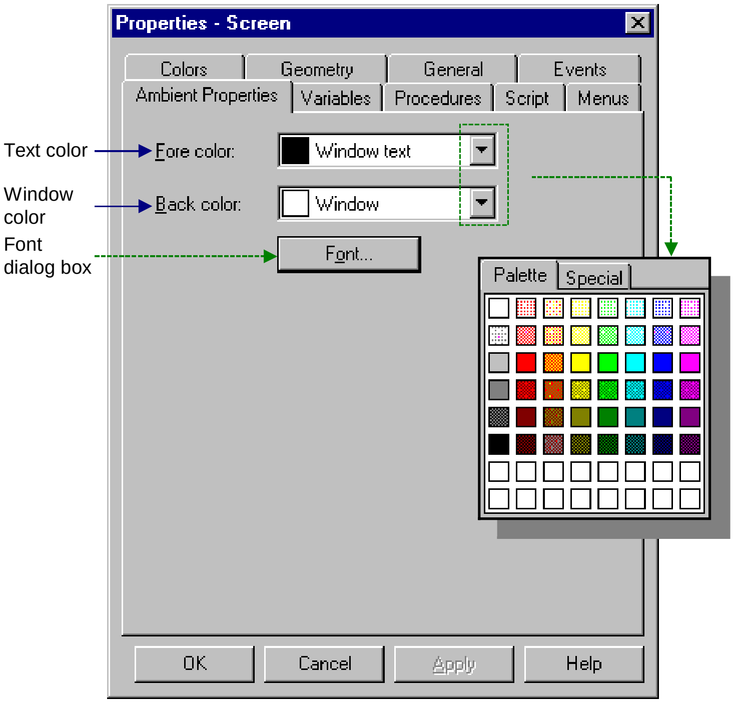
Ambient Properties

It is at the screen level that you define the default ambient properties that will be used by ActiveX control objects when you insert them into your screen.

Ambient properties are the window foreground color, background color, and text font that will be used by ActiveX control objects when you insert them into your screen.

To specify a screen's ambient properties:

1. Open the Properties dialog box.
2. Select the Ambient Properties tab.



3. Enter the foreground and background colors you want in the Fore color and Back color input fields.
4. Click **Font...** to open the Font dialog box and change the default font.
5. Click **OK** to activate the new defaults.

Note: When you change the ambient properties, all ActiveX controls currently embedded in the screen will reflect the changes.

Help for a CimEdit Screen or Object

You can provide users with help at the screen, frame, group, and object levels.

Important: A user sees help that

You can:

- Designate a Help file for a screen or object.
- Create popup menu items for the screen or objects.

Designating a Help File for a Screen or Object

CimEdit supports three types of Help files.

- Text
- Text File
- Help File

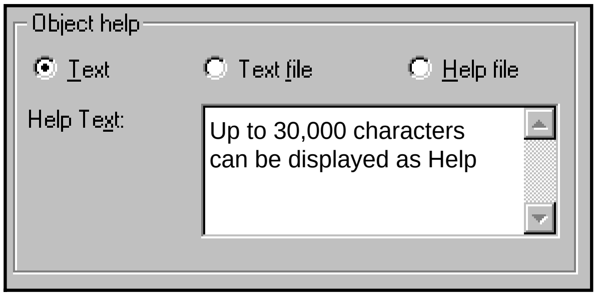
In CimEdit or CimView, when you select the **Help** button on the toolbar and click on the screen, the help that you define here will be displayed.

To specify the Help file to use:

1. Open the Properties dialog box.
2. Select the General tab.
3. Click one of the following.

Text

A. Click Text.



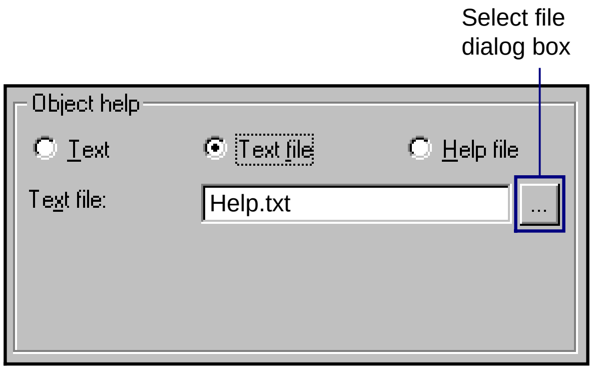
Help Text: Up to 30,000 characters can be displayed as Help

B. Enter up to 30,000 characters in the scrolling field.

Result: The text you enter will display when help is selected.

Text file

A. Click Text file.



Object help

○ Text ● Text file ○ Help file

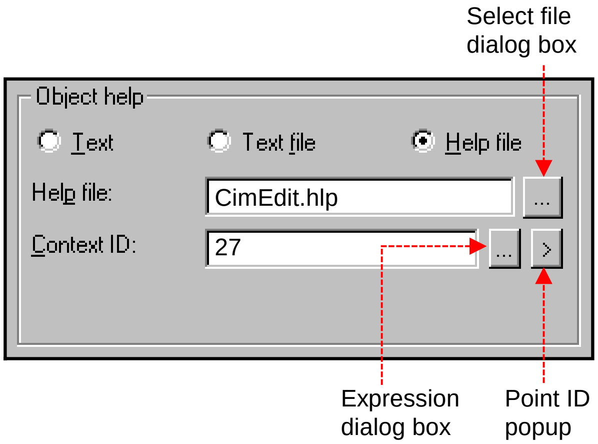
Text file: Help.txt

B. Enter the name of a text (**`.txt`**) file in the Text file field. The file will be opened in **Notepad** when **Help** is selected.

Result: Use the Select File dialog box to search for and select the file name.

Help File

A. Click Help file.



Object help

○ Text ○ Text file ● Help file

Help file: CimEdit.hlp

Context ID: 27

B. Enter the name of a help (**`.hlp`**) file generated by a Microsoft HELP compiler.

C. Enter the map number in the Context ID field for the Help topic you want to display.

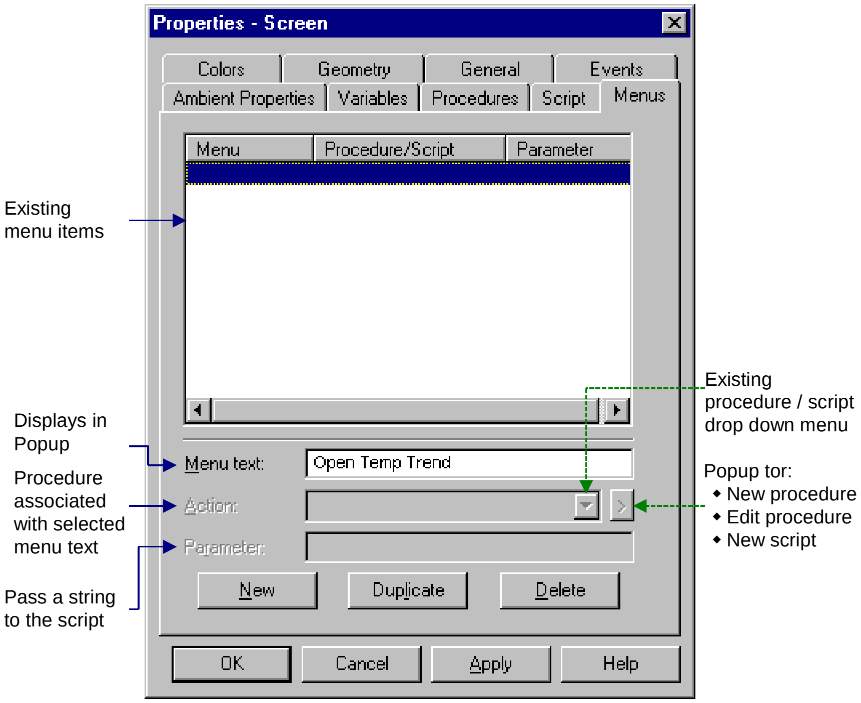
Result: A context ID of 1 usually displays the Contents page of the Help file.

Creating Popup Menu Items for the Screen or Objects

All menu items currently defined for the screen or objects are listed in the list box along with the procedures or scripts they execute and any additional parameters.

To create a new popup menu item:

1. Open the Properties dialog box.
2. Select the Menu tab.



Menu text: Open Temp Trend

3. Enter the menu text in the Menu text field. This text appears in the pop-up menu when you right-click on the object at runtime.
4. Click **New**.
5. Enter the action, in the Action field, that is executed when the menu item is selected from the pop-up menu. Do one of the following:

   A. Select an existing procedure or script from the Action field's drop down menu.

   B. Click the **Popup** button > to:

   - Edit an existing procedure or script
   - Create a new procedure or script

6. Use the Parameter field to pass a string to the script if the procedure in the Action field invokes a script. The script must use the **CimGetEventContext().UserParameter** property to accept the parameter,

To duplicate a selected menu item:

Click **Duplicate**.

To delete a selected menu item:

Click **Delete**.

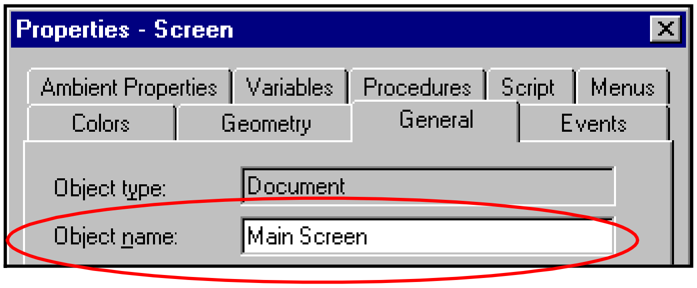
CimEdit Screen or Object Name

You can name a CimEdit screen or object in the associated Properties dialog box. You need to identify an object for some scripting and procedure operations.

To name your CimEdit screen or object:

1. Open the Properties dialog box.
2. Select the General tab.

Screen Name in the Properties - Screen Dialog Box



Object type: Document

Object name: Main Screen

The entry **Document** displays in the read only Object type field.

3. Enter a name in the Object name field.

CimEdit/CimView File Types and Search Paths

CimEdit enables you to save screens in three formats.

Format	Type
`.cim`	Binary, editable.
`.cimrt`	Binary, protected.
`.ctx`	Text, editable.

CimEdit can also read files that are in **`.asc`** text format.

The format you choose determines:

- Whether the screen is protected or editable.
- When the screen is looked for in a CimEdit/CimView screen search sequence. CimEdit searches for the file when you instruct CimEdit/CimView to open a screen, e.g., through an Open Screen action or Overlay Screen action.

Deciding the Format for a CimEdit Screen

The two most common file formats you will work with are the binary formats:

- **`.cim`** *(See the next section.)*
- **`.cimrt`** *(See page 4-25.)*

In some instances you may want to save the file in a text format.

- **`.ctx`** *(See page 4-29.)*

Note: CimEdit/CimView can read **`.asc`** files.

CimEdit Binary, Editable .cim Screen

The **`.cim`** is the binary CimEdit screen format that you enables you and any designer who opens the screen to edit the configuration.

To save a .cim file:

1. Do one of the following:

   Method 1

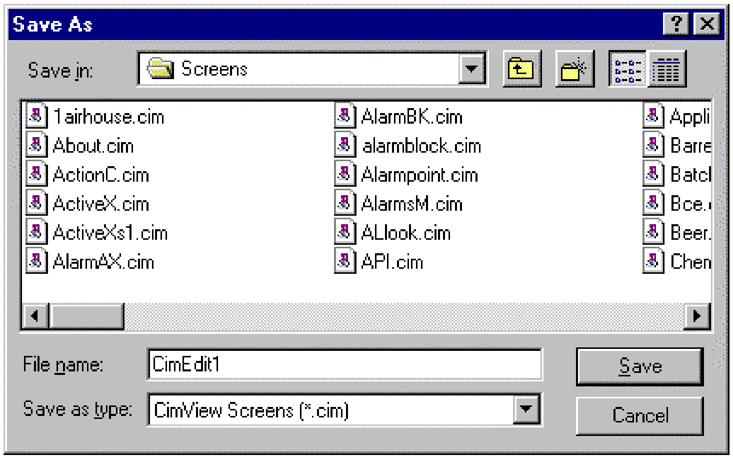
   Click the **Save** button 💾 on the CimEdit toolbar.

   Method 2

   A. Click File on the CimEdit menu bar.

   B. Select Save.

The Save As dialog box opens, when you use either method, prompting you for the file name and location.

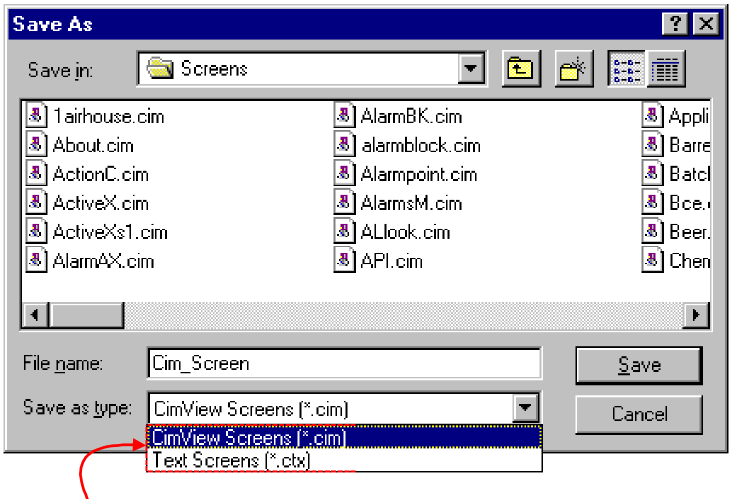


Save in: Screens

File name: CimEdit1

Save as type: CimView Screens (*.cim)

2. Enter a name for the screen in the selected directory.
3. Select **CimView Screens (*.cim)** in the **Save as type** field.



Save in: Screens

File name: Cim_Screen

Save as type: CimView Screens (*.cim)

CimEdit Save as options are:
*.cim–Binary
*.ctx–Text

4. Click **Save**.

Result: The screen is saved as a binary, editable .cim file.

CimEdit Binary, Protected .cimrt Runtime-Only Screen

You can protect your CimEdit screen by saving it as a runtime-only screen. .

The ***runtime-only*** screen, which has a **`.cimrt`** extension, is a snapshot of the editable **`.cim`** screen. There is no information stored about the name or location of the source **`.cim`** screen. Runtime-only screens provide you with two major advantages. You can create protected:

1. Screens that cannot be modified or decomposed.
2. SmartObjects that cannot be modified or decomposed. When a screen is saved in the **`.cimrt`** format, a designer can only link the named SmartObjects. This

enables you to distribute the object for development purposes, while protecting your proprietary development information.

Guidelines for runtime-only screen and objects include:

1. You can open a runtime-only screen using CimEdit. However, you cannot modify the screen.
2. You cannot modify an object on a runtime-only screen. The Properties dialog box for an object on a runtime-only screen contains a read-only General tab. It does not contain any other tabs.
3. You can select named objects on the runtime-only screen and copy them or drag them onto other screens. However, doing so does not move or copy the objects, it creates links to the objects on the runtime-only screen.
4. You can configure the appearance and potential runtime behavior (e.g. rotation and fill) of the linked container on an editable (`.cim`) screen.
5. The link container retains the properties of the source object. However, you cannot see code or configuration for the source object when you open the link container's Properties dialog box.
6. You cannot link unnamed objects from a runtime-only screen because you cannot create a link to an unnamed object.

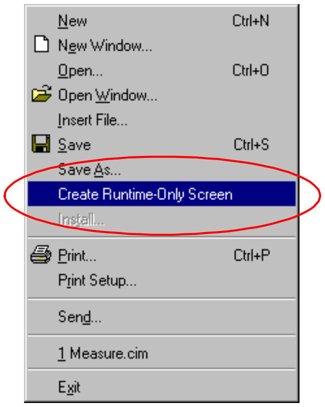
Warning: Keep the original `.cim` file because if it is lost, there is no way to recover the editable screen from the runtime screen.

The prompts you receive when you first save a screen as a runtime-only screen depend on the saved condition of the screen as follows:

- The screen has never been saved,
- A saved editable `.cim` screen has been modified, or
- A saved editable `.cim` screen has been saved and not modified.

To save a runtime-only screen:

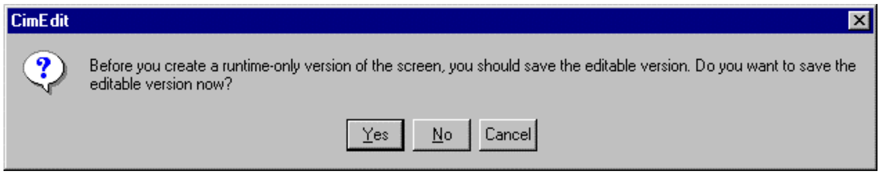
1. Click File on the CimEdit menu bar.
2. Select Create Runtime-Only Screen.



Result: The remainder of procedure that you follow depends on the saved state of the screen.

Condition 1. The screen has never been saved.

A message appears advising you to save an editable version of the screen.



Before you create a runtime-only version of the screen, you should save the editable version. Do you want to save the editable version now?

3. Do one of the following.

Option 1. Save a .cim screen along with the .cimrt screen.

This option is recommended. You must save a **`.cim`** screen if you want to edit your configuration.

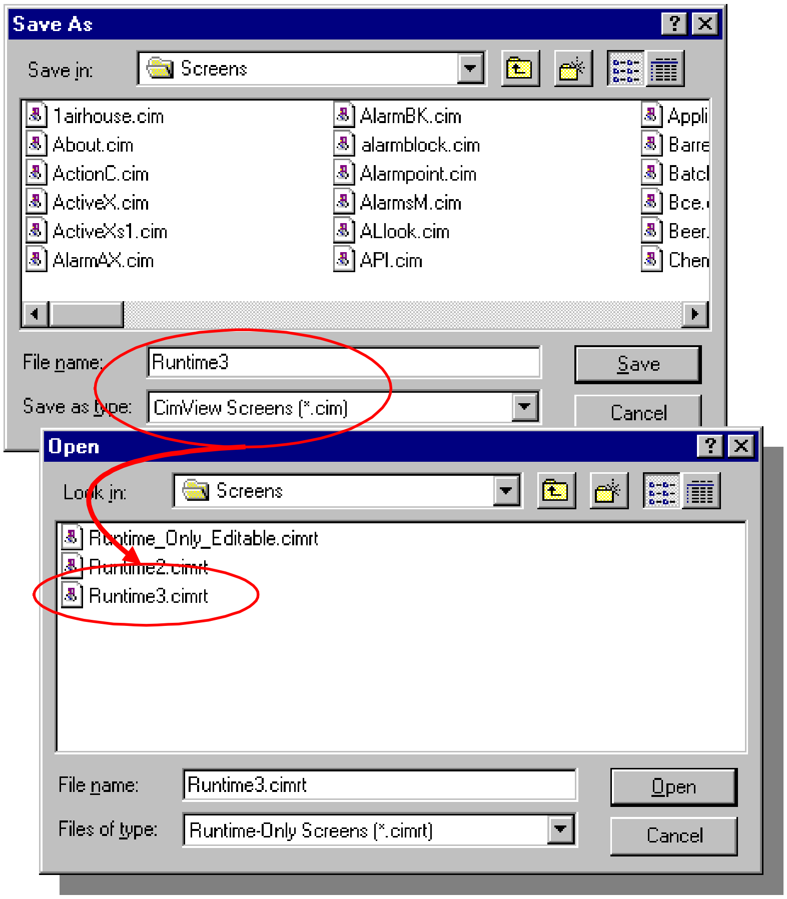
Click **Yes**.

You are prompted for a name with a Save As dialog box.

Result: Two new files now exist in the folder you select. One is editable with a .cim (or .ctx) extension. The other is runtime only with a .cimrt extension.

1 Save a .cim screen when you select "Create Runtime-Only Screen"

2 CimEdit automatically creates a companion .cimrt screen.



File name: Runtime3

Save as type: CimView Screens (*.cim)

File name: Runtime3.cimrt

Files of type: Runtime-Only Screens (*.cimrt)

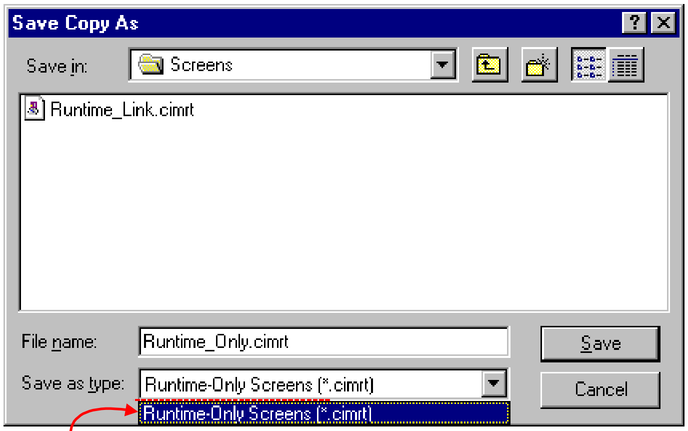
The editable CimEdit screen displays. If you make further changes, save both screens again.

Option 2. Save only the runtime-only screen.

If you choose this option you will not be able to edit your configuration.

Click **No**.

You are prompted for a name in a Save Copy As dialog box.

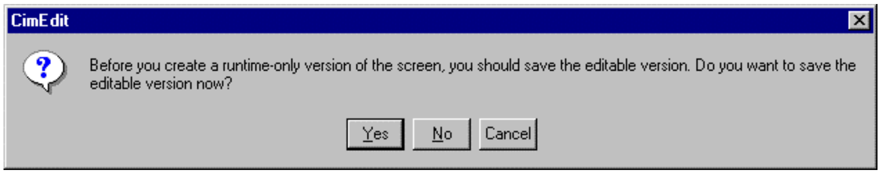


Runtime-only option (when an editable file is NOT saved) is *.cimrt–Binary

Result: A runtime-only screen is created. This screen cannot be modified or decomposed. Objects on this screen can serve as source objects for links on other screens.

Condition 2. A saved .cim screen has been modified.

A message appears advising you to save an editable version of the screen.



Before you create a runtime-only version of the screen, you should save the editable version. Do you want to save the editable version now?

3. Do one of the following.

Option 1. Save a .cim screen along with the .cimrt screen.

This option is recommended. You must save the **`.cim`** screen if you want to retain editable changes when you close and re-open your new **`.cim`** screen.

Click **Yes**.

Result: CimEdit saves the modified screen as .cim and .cimrt files.

Option 2. Save only the .cimrt screen.

Click **No**.

Result: CimEdit saves the modified screen as a .cimrt file only. The unsaved, modified .cim screen displays and can be saved before it is closed.

Condition 3. A saved .cim screen has not been modified.

There is nothing further for you to do.

Result: CimEdit saves the unmodified screen as .cim and .cimrt files.

Note: Only the **`.cimrt`** file needs to reside on the target machine. Save the .cim file where only authorized persons can open it.

CimEdit, Text, Editable .ctx Files

Text **`.ctx`** files take slightly longer to open than the binary **`.cim`** files. However, there may be times when you want to do a massive character search and replace, for example changing a tr in a Point ID to an RT. You can do this easily by saving the file as a **`.ctx`** file, opening it in a text editor such as Notepad and making your changes.

You save the **`.ctx`** file the same way you save a **`.cim`** file, except you select the (Text screens **`*.ctx`**) file format option. *See page 4-24 for details.*

Understanding the CimEdit/CimView Screen Search Sequence

When an action, such as **`Open Screen`**, opens a screen that is identified with a CimEdit extension (e.g., **`.cim`**), in an absolute path, CimEdit/CimView opens that screen.

More frequently, commands for CimEdit/CimView to find another screen include a relative path and may or may not provide a CimEdit extension to the file name. CimEdit/CimView follows a specific search sequence to find the file.

Factors affecting when CimEdit/CimView will look for the screen in the sequence include:

- Whether the screen from which the action is triggered is editable or protected.
- The directory in which the current screen resides (current directory).
- The file name extension that was entered for the screen to be opened.

CimEdit/CimView Screen Search from an Editable Screen

CimEdit/CimView goes through the following search sequence for another screen when the current screen file is in a **`.cim`** or **`.ctx`** format. When a match is found, CimEdit/CimView uses the screen file and stops the search..

CimEdit/CimView looks for:

1st. The exact specified file in the current directory.

2nd. A **`.cim`** or **`.cimrt`** extension in the current directory.

If the specified extension is a CimEdit extension (.cim, .cimrt, .ctx or .asc), for its search, CimEdit substitutes in the following order:

A. **`.cim`**.

B. **`.cimrt`**.

If the specified extension is not a CimEdit extension (.cim, .cimrt, .ctx or .asc), for its search, CimEdit appends in the following order:

A. **`.cim`**.

B. **`.cimrt`**.

3rd. A **`.cim`** or **`.cimrt`** extension in the directory path specified by the GMMI_SCREENS library directories. *See "CimEdit/CimView GMMI_SCREENS Libraries" in the "Managing CimEdit Screens" appendix in this manual.*

If the specified extension is a CimEdit extension (.cim, .cimrt, .ctx or .asc), CimEdit substitutes:

A. **`.cim`**.

B. **`.cimrt`**.

If the specified extension is not a CimEdit extension (.cim, .cimrt, .ctx or .asc), CimEdit appends:

A. **.cim**.

B. **.cimrt**.

4th. A **.ctx** extension, per the 2nd and 3rd search sequence.

5th. A **.asc** extension, per the 2nd and 3rd search sequence.

CimEdit/CimView Screen Search from a Protected Screen

CimEdit goes through the following search sequence for another screen when the current screen file is in a **.cimrt** format. When a match is found, CimEdit/CimView uses the screen file and stops the search.

CimEdit/CimView looks for:

1st. The exact specified file in the current directory.

2nd. A **.cimrt** or **.cim** extension in the current directory.

If the specified extension is a CimEdit extension (.cim, .cimrt, .ctx or .asc), for its search, CimEdit substitutes in the following order:

A. **.cimrt**.

B. **.cim**.

If the specified extension is not a CimEdit extension (.cim, .cimrt, .ctx or .asc), for its search, CimEdit appends in the following order:

A. **.cimrt**.

B. **.cim**.

3rd. A **.cimrt** or **.cim** extension in the directory path specified by the GMMI_SCREENS library directories. *See "CimEdit/CimView GMMI_SCREENS Libraries" in the "Managing CimEdit Screens" appendix in this manual.*

If the specified extension is a CimEdit extension (.cim, .cimrt, .ctx or .asc), CimEdit substitutes:

A. **.cimrt**.

B. **.cim**.

If the specified extension is not a CimEdit extension (.cim, .cimrt, .ctx or .asc), CimEdit appends:

A. **.cimrt**.

B. **.cim**.

4th. A **.ctx** extension, per the 2nd and 3rd search sequence.

5th. A **.asc** extension, per the 2nd and 3rd search sequence.

Creating a Preliminary Layout

About Creating a Preliminary Layout

CimEdit offers you a wide assortment of objects and object types to place on your CimEdit screen. Consequently, you can place objects that deal with data from any source you specify and display the data or evaluation results in a manner that is most effective for your project's runtime requirements

You can also take any one object and:

- Combine it with other objects in a:

  Group: Permanently (or for as long as you want)

  Set: Temporarily until the mouse is clicked on anything other than the set, or any one object in the set.

- Move it around the screen.
- Move it in front or behind other objects.
- Align it with other objects.

You can also change the order in which objects will be selected in CimView when an operator presses the **Tab** key from one to the next.

Tip: Place several of the objects you think you need before you start in-depth configuration. This way you can easily make changes in your choice of objects as you experiment with layout. This will also help you decide if you want to use the same object in more than one place on the same screen or on other screens. If that is the case, there are shortcuts available to you.

In CimEdit, you can easily create multiple copies of objects you create and configure. You can place the additional copies in different locations on the same screen or different screens.

1. The most powerful method is to create as many link containers as you need from a linked object.

   Link containers created from a linked object initially contain all the properties of the linked object. In addition, when a component designer updates a linked object, all of its link containers are automatically updated. A basic method is to copy an object from one screen to another, leaving the original object on the first screen.

2. If you want to change the location of an object, you can simply cut it from one screen and paste it on another.

While you are determining what objects to use, take advantage of CimEdit's tools to experiment with the layout by moving the objects around, flipping them and rotating them.

Available Objects

CimEdit provides you with a large variety of objects to deal with the different requirements you will have as you design your screens. Available objects include:

- Basic graphic shapes that you create.
- Text objects.
- Wide variety of designed shapes from CimEdit’s Object Explorer including CIMPLICITY HMI's powerful SmartObjects.
- ActiveX controls.
- Picture objects (Metafiles) converted by you into to CimEdit objects.
- Entire AutoCad drawings imported as a set of CIMPLICITY HMI objects.
- OLE objects.

This chapter describes how to place these objects for an initial layout.

Creating Basic Graphic Objects

As you design your CimEdit screen, you will probably create one or more basic shapes for any number of reasons. CimEdit makes it easy to create:

- Lines.
- Polylines.
- Polygons.
- Rectangles.
- Arcs.
- Ellipses.

CimEdit offers several tools to speed up the process.

Lines in CimEdit

To create a line:

Method 1–Use the toolbar

Click the **Line** button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Line.

   The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the line.
2. Hold down the left mouse key and drag the mouse to the ending location for the line.
3. Release the mouse button.

Result: A line appears.

Polylines in CimEdit

A polyline can have as many sides as you need.

To create a polyline:

Method 1–Use the toolbar

Click the **Polyline** button on the Tools toolbar.

Method 2–Use the menu bar

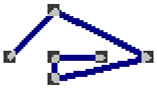
1. Click Tools on the menu bar.
2. Select Polyline.

The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the object.
2. Click the left mouse button to set the first point.
3. Move the cursor to the next point you want to set. As you move the cursor, a line will be drawn between the last point you set and the cursor.
4. Click the left mouse button to set the next point.
5. Repeat steps 3 and 4 until you reach the last vertex.
6. At the last vertex, double-click the left mouse button to finish drawing your polyline.

Result: A polyline in the shape you designed appears.



Note: If you attach the end of last line to the beginning end of the first line when you finish the polyline, you will create a closed polygon. You can choose to have CimEdit automatically close the polyline/polygon objects.

1. Click Tools on the menu bar.
2. Select Options…
3. Check Automatically close polyline/polygon objects.

Polygons in CimEdit

To create a polygon:

Method 1–Use the toolbar

Click the **Polygon** button on the Tools toolbar.

Method 2–Use the menu bar

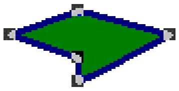
1. Click Tools on the menu bar.
2. Select Polygon.

The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the object.
2. Click the left mouse button to set the first point (or vertex) of the polygon.
3. Move the cursor to the second point you want to set. As you move the cursor, a line will be drawn between the last point you set and the cursor.
4. Click the left mouse button to set the next point.
5. Move the cursor to the next point you want to set. As you move the cursor, lines will be drawn between the last point you set and the cursor and between the cursor and the first point to create a closed polygon.
6. Click the left mouse button to set the next point.
7. Repeat steps 5 and 6 until you reach the last point in your polygon.
8. Double-click the left mouse button to finish drawing the polygon.

Result: A polygon that represents the shape you drew appears.



Tip: You can easily turn your polygon into a single straight line. Double-click the left mouse button after you create the first line of the polygon. You will create a single straight line.

Rectangles in CimEdit

To create a rectangle:

Method 1–Use the toolbar

Click the **Rectangle** button on the Tools toolbar.

Method 2–Use the menu bar

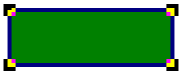
1. Click Tools on the menu bar.
2. Select Rectangle.

The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the object.
2. Hold down the left mouse button and drag the mouse diagonally to the ending location for the rectangle.
3. Release the mouse button.

Result: A rectangle that represents the size you drew appears.



Tip: When you click the **Rectangle** button, then click the left mouse button a duplicate of the last rectangle appears.

Arcs in CimEdit

While you are creating an arc, you can choose several design characteristics. Your choices include:

- The type of arc
- The arc’s direction
- A shape that is either a free drawn arc or quarter circle

To create an arc, chord, or pie shape object:

Method 1–Use the toolbar

Click the **Arc** button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Arc.

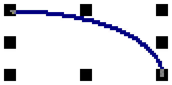
The cursor changes to a crossbar.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the object.

2. Hold down the left mouse button. The cursor location becomes the starting location of the arc.
3. Drag the mouse to the ending position for the arc.
4. Release the mouse button when you are done.

Result: An arc that represents what you drew appears.

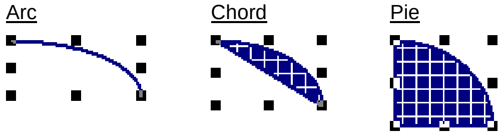


To choose design options when creating an arc:

Option 1: Choose the arc type.

1. Click the right mouse button while holding down the left mouse button. Each click of the right mouse button will display one of three arc types:
   - Arc
   - Chord
   - Pie
2. Release the left mouse button when the shape you want displays.

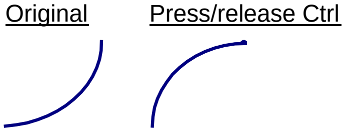
Hold down the left mouse button Click the right mouse button



Option 2: Choose the arc's direction

1. Hold down the left mouse button and begin creating the arc.
2. Press the **Ctrl** key while holding down the left mouse button. This toggles the arc's direction using the same start and end points.
3. Release the left mouse button when the arc is in the direction you want.
4. Release the **Ctrl** key.

Example: Changing the Direction of an Arc

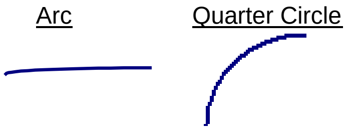


Option 3: Choose between an arc and quarter circle shape.

1. Hold down the left mouse button and begin creating the arc.
2. Press the **Shift** key while holding down the left mouse button.
   This changes the arc between its current shape and a quarter circle with the same starting point and a radius equal to either the width or height of the original ellipse, whichever is greater.
3. Release the left mouse button when the shape you want displays.

4. Release the **Shift** key.

Example: Changing an Arc to a Quarter Circle



When you draw the first arc on the screen, a quarter circle arc is drawn. Otherwise, the arc's size and type (arc, chord, or pie) will be the same as the last one you created.

Tip: When you create an arc, the control points for the arc and its ellipse are displayed. Use the ellipse or arc control points to reshape the arc. If you use the **Resize** tool on an arc, you will not see the control points.

If you reshape the arc with one of its control points, you can also hold down the:

- **Ctrl** key while reshaping–both ends of the are move
- **Shift** key while reshaping–the end of the arc moves in increments of 45°

Ellipses in CimEdit

To create an ellipse:

Method 1–Use the toolbar

Click the **Ellipse** button ⬭ on the Tools toolbar.

Method 2–Use the menu bar

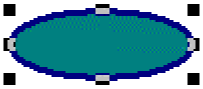
1. Click Tools on the menu bar.
2. Select Ellipse from the Tools menu.

The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the starting position for the object.
2. Hold down the left mouse button and drag the mouse to the ending position for the ellipse.
3. Release the mouse button.

Result: The ellipse will appear as you drew is.



Tip: When you click the **Ellipse** button, then click the left mouse button a duplicate of the last ellipse appears.

Tools to Create Several Objects Quickly

You may want to make several of the same type of graphics object or create duplicates of the same object. You can do either easily.

- Use CimEdit's tool lock to create several of the same type of object.
- Take advantage of CimEdit's quick duplicate features.

Tool Lock on the CimEdit Screen

By default, the Tools toolbar enables an object tool for only the one time you create the object.

Example

Click the **Rectangle** button on the toolbar. Draw a rectangle. By default, you have to Click the **Rectangle** button on the toolbar again in order to draw another rectangle.

If you have several objects of the same type that you want to create without having to reselect the object tool each time, you can use the Tool Lock feature.

To lock an object tool:

1. Select the object type you want to create from the Tools toolbar or the Tools menu.

Method 1–Use the toolbar

2. Click the **Lock** button 🔒 on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Lock.

Continue from Method 1 or 2

1. Create as many objects of that type as you want.
2. When you are through creating the objects, click **Tool Lock** off.

Quick Duplicates on the CimEdit Screen

Quick duplicates, at the least, can save you time with your preliminary layout. When you are ready to add variables, scripts or configured objects to the screen, you can then configure the duplicates as separate objects or you can replace them with copies or linked copies of one that you have completely configured.

To make a duplicate of the last ellipse, rectangle, arc, or text button created:

1. Select the **Ellipse**, **Rectangle**, **Arc**, or **Text** button on the CimEdit toolbar.
2. Click the left mouse button anywhere on the screen. A duplicate of the last circle, rectangle, or arc that was created appears.

Note: You can also use this method to create the first of an object on the screen. When you do, they will appear as follows:

Ellipse Size	36 pt by 36 pt (in other words, a circle)
Rectangle Size	36 pt by 36 pt.
Arc Shape	One quarter of an underlying 36 pt by 36 pt ellipse.
Text Button Size	36 pt by 36 pt.

To make a duplicate of a selected object:

1. Select the object by placing the cursor anywhere in the object.
2. Hold down the left mouse button.
3. Press the **Ctrl** key while holding down the left mouse button.
4. Drag the cursor in any direction. A duplicate of the object moves to where you drag it.

Placing Text Objects

Most likely, your CimEdit screens will need one or more text strings and text buttons. They are easy to place in CimEdit.

Text Strings in CimEdit

You can use text strings to display text or point values. If you are displaying a point value, you can also let users perform setpoints on the value.

To place a text string:

Method 1–Use the toolbar

Click the **Text String** button Aa on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Text String.

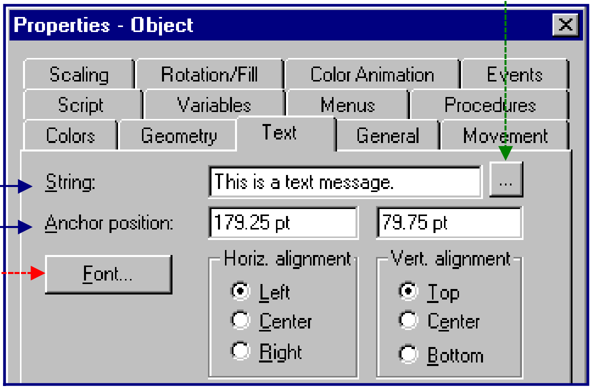
The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the spot where you want to create the text string.
2. Click the left mouse button.

   The Text tab of the Object Properties dialog box displays.

Object Properties Dialog Box: Text Tab



String: This is a text message.

Anchor position: 179.25 pt 79.75 pt

Horiz. alignment: ● Left ○ Center ○ Right

Vert. alignment: ● Top ○ Center ○ Bottom

Text box

Enter a string that displays either:
- For the duration of the CimView Session
- As a placeholder for an expression or setpoint

X /Y location for the left top corner of the string

Font dialog box

3. In the String field, enter one of the following to display on the screen:
   - Text that will display for as long as CimView is open
   - A string that is a default display for a setpoint

   Note: Click the **Text Box** button to the right of the String field if you want to write a longer text string. This opens the Text Box dialog box. The string will appear in the String field when you close the Text Box dialog box.
4. Click **OK** to save your changes and close the dialog box.

   Result: The object will look similar to this:

This is a text message.

Note: You add color to text objects the same way you do other objects, in the *Color* tab of the Properties – Object dialog box. For best performance, it is recommended that you configure **Text** objects to have no line and a solid fill with a non-dithered color. *See "the "Text Objects on a CimView Screen" section of the "Applying Inanimate Visual features" chapter in this manual.*

Text Buttons

You can use the text button tool to create 3D buttons.

If you assign a procedure or a setpoint to a text button, and a user moves the cursor over the button in CimView and clicks the left mouse button, the button on the screen goes down.

When the user releases the left mouse button, the button on the screen goes up.

To create a text button:

Method 1–Use the toolbar

Click the **Text Button** button on the Tools toolbar.

Method 2–Use the menu bar

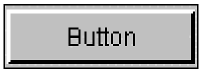
1. Click Tools on the menu bar.
2. Select Text Button.

The cursor changes to crosshairs.

Continue from Method 1 or 2

1. Move the cursor to the spot where you want to create the text button.
2. Hold down the left mouse button and drag the mouse to the ending position for the button.
3. Release the mouse button.

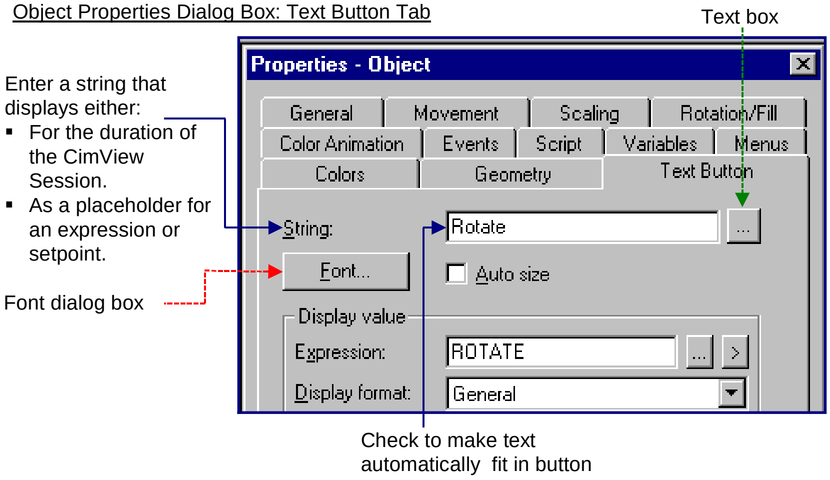
   The object will look similar to this:



4. Double-click the left mouse button.

The Properties – Object dialog box appears. Select the Text Button tab.

Object Properties Dialog Box: Text Button Tab



Properties - Object

String: Rotate

Font...

☐ Auto size

Display value

Expression: ROTATE

Display format: General

Enter a string that displays either:

- For the duration of the CimView Session.
- As a placeholder for an expression or setpoint.

Font dialog box

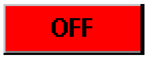
Check to make text automatically fit in button

5. In the String field, enter one of the following to display on the screen:
   - Text that will display for as long as CimView is open
   - A string that is a default display for a setpoint

   Note: Click the **Text Box** button ... to the right of the String field if you want to write a longer text string. This opens the Text Box dialog box. The string will appear in the String field when you close the Text Box dialog box.

6. Click **OK** to save your changes and close the dialog box.
7. Select the text color on the Colors tab of the Properties – Object dialog box if the color should be animated.
8. Click **OK** to save your changes and close the dialog box.

   The object will look similar to this:



Note: You can make duplicates of text buttons the same way you do basic graphic objects. *See "Creating Basic Graphic Objects" earlier in this chapter.*

Placing Objects from the Object Explorer

The Object Explorer provides you with access to thousands of objects that have been drawn by artists and enable you to create professional looking screens with a minimum of graphic effort. In addition to helping you with the CimView screen's graphic presentation, the Object Explorer provides you with several SmartObjects that are already automated and simply prompt you for configuration values.

Technique to Display an Object from the Object Explorer

To display the Object Explorer:

Method 1–Use the toolbar

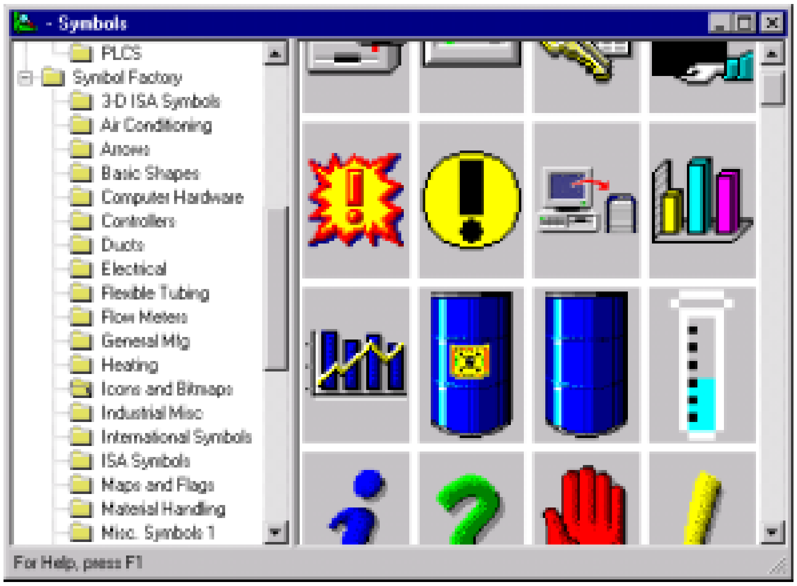
Click the **Object Explorer** button on the toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select the Show Object Explorer

Result: The Object Explorer opens.

The Object Explorer displays objects in a grid format. All objects are scaled to the same size.



The default Object Explorer contains:

- CIMPLICITY objects.
- CIMPLICITY SmartObjects.
- Symbol Factory objects.

Techniques to Select an Object in the Object Explorer

To select an object from the Object Explorer:

Select a folder in the Object Explorer tree that contains the category of objects you are looking for.

Method 1–Use the mouse

Click the left mouse button on an object.

Method 2–Use the keyboard

Use the keyboard keys as follows:

Tab	Move to the portion (the category tree or the object grid) of the Object Explorer that you want to affect
Left-arrow and **up-arrow**	Select top-left most object that is currently visible before any object is selected
Right-arrow and **down-arrow**	Select the bottom-right most object that is currently visible before any object is selected
Arrows	Select the object that is next to the current object in the direction of the arrow when an object is already selected
Home	Select the top-left most object
End	Select the bottom-right most object.

Note: When you select an object, it is highlighted with a black and white border. If the object has any help text configured, the text displays in the status bar at the bottom of the Object Explorer. This text also appears in a Tool-Tip when you move the cursor over the object.

Typical Object Inserted from the Object Explorer

The Object Explorer contains thousands of objects that you can place on a CimEdit screen and configure with movement, rotation, fill, animation and other characteristics on a CimView screen.

To insert typical objects from the Object Explorer into a CimEdit screen:

Method 1–Use the mouse

1. Select the object.
2. Drag the object to where you want it in the CimEdit workspace.

Method 2–Use the mouse

Double-click the left mouse button on the desired object.

Method 3–Use the keyboard

Select an object and press **Enter**.

Result: The object is placed in the center of the last active CimEdit window and that window becomes the foreground window.

Note: You can bring the Object Explorer to the foreground by using its toolbar button or by selecting its menu item. This allows for easy use when you maximize the Object Explorer.

SmartObject Inserted from the Object Explorer

SmartObjects make it possible for screen designers who are not programmers to use automated objects that only require Point Id's or values to be entered during the design phase and do not require scripting know-how. Unlike typical objects, SmartObjects display dialog boxes when they are placed on a CimEdit screen that prompt the designer for values. The behind-the-scenes configuration that will cause the SmartObject to perform in CimView already exists.

Note: The designer can also trigger the SmartObjects while they are on the screen. *See "SmartObject Event" in the "Creating CimEdit Events" chapter in this manual for details about triggering SmartObjects when they are already on the CimEdit screen.*

You can place, configure and test a SmartObject in a few easy steps.

Step 1. Select a SmartObject in the Object Explorer.

Step 2. Fill in the fields in the SmartObject Configuration dialog box.

Step 3. (Optional) Adjust the SmartObject display and position on screen.

Step 4. Test the SmartObject.

Tip: You can also create your own SmartObjects and place them in the Object Explorer.

See "SmartObject Event" in the "Creating Events in CimEdit" chapter in this manual for more information about creating SmartObjects. See also "Object Explorer Libraries" in this chapter for specifying paths to other Object Libraries.

Step 1. Select a SmartObject in the Object Explorer:

1. Use either:

   Method 1

   Click the **Object Explorer** button on the CimEdit toolbar.

   Method 2

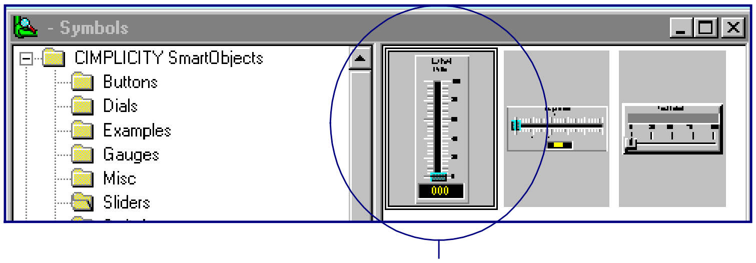
   A. Click Tools on the CimEdit menu bar.

   B. Select Show Object Explorer.

   The Object Explorer opens when you use either method.

2. Expand CIMPLICITY SmartObjects.
3. Double-click the SmartObject you want.

SmartObject Selected: Example



Double-click a SmartObject

Result: A SmartObject Configuration dialog box appears that corresponds to the SmartObject you selected.

Step 2. Fill in the fields in the SmartObject Configuration dialog box:

1. Enter the Point Ids, strings, expressions or other values in the SmartObject Configuration dialog box that direct what the SmartObject should display during runtime (in CimView).

   The number of fields in a SmartObject Configuration dialog box depends on the number of values the SmartObject requires.

2. Click **OK**.

Result: The SmartObject Configuration dialog box closes and the SmartObject displays on the CimEdit screen.

Example

A thermometer is selected in the Object Explorer. The thermometer's SmartObject Configuration dialog box contains three fields.

Field	Enables the SmartObject thermometer to display
Label	What the value represents
Value	The value
Units	The type of measurement units the value represents

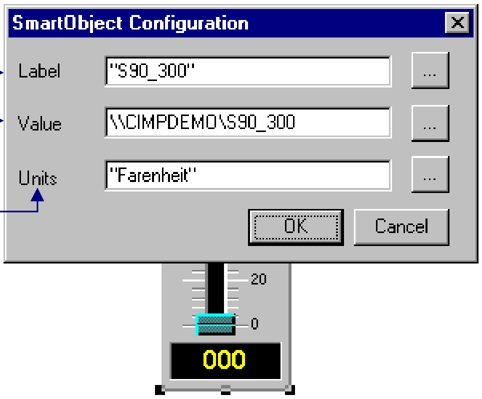
SmartObject Dialog Box Filled in: Example

Entries in this example include:

1 A string that tells what the SmartObject thermometer represents

2 The Point ID expression value that will display.

3 The measurement unit of the value. This string will appear on the SmartObject thermometer during runtime.



SmartObject Configuration

Label "S90_300"

Value \\CIMPDEMO\S90_300

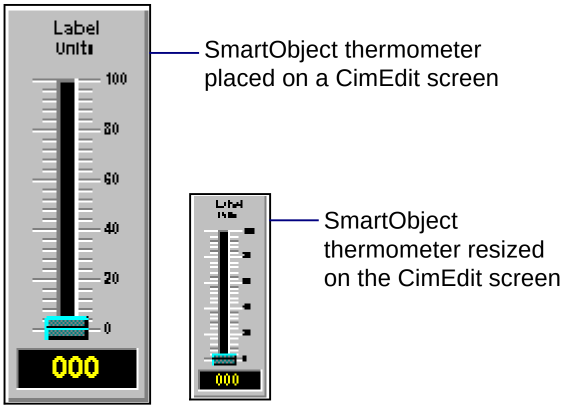
Units "Farenheit"

Step 3. (Optional) Adjust the SmartObject display and position on the screen:

Use any of CimEdit's Object Layout and Form tools to adjust the SmartObject's appearance and position on the screen.

See "Moving Objects on a CimEdit Screen" in this chapter and "Object Form" in the "Applying Inanimate Visual Features" chapter in this manual for details about moving objects and changing their appearance.

SmartObject Resized: Example

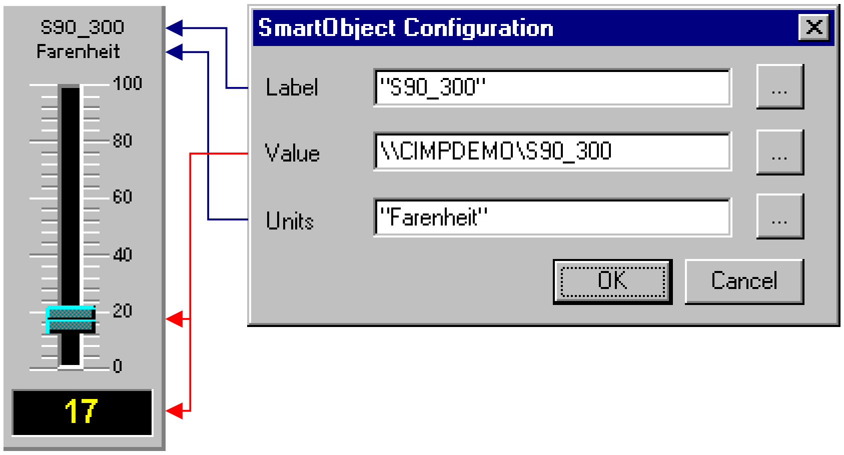

Label
Units
100
80
60
40
20
0
000
000
SmartObject thermometer placed on a CimEdit screen
SmartObject thermometer resized on the CimEdit screen

Step 4. Test the SmartObject in CimView:

Click the Runtime button on the CimEdit toolbar.

The SmartObject will display the values you entered in the SmartObject Configuration dialog box.

SmartObject At Runtime Displaying Entered Values: Example



SmartObject Configuration

Label: "S90_300"

Value: \\CIMPDEMO\S90_300

Units: "Farenheit"

Displayed Size of Objects in the Object Explorer

You can change the size of the objects you view in the Object Explorer. Because they are scaled to the same size, when you change one, you change them all.

To change the displayed size of the objects in the Object Explorer:

1. Select an object.
2. Move the mouse to the highlighted border of the selected object.
3. Hold down the left mouse button and drag the border to the size you want.

Result: When you release the left mouse button, all the objects in the library change to the new size.

Object Explorer Libraries

By default, the Object Explorer uses the directory structure in the **`%BSM_ROOT%symbols`** directory on your computer. If the Objects Library is not installed there, you need to define its location on the General tab of the Options dialog box for CimEdit.

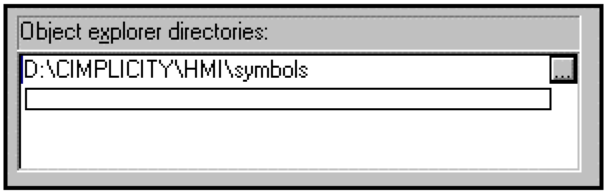
You can also create libraries of your own objects that display when you open the Object Explorer by placing them on a CimEdit screen. You can place the screen, or screens:

- In a new folder under one of the three primary Symbols subdirectories,
- Create a new subdirectory under the Symbols directory, or
- Place them a directory that is in a different path from the Symbols directory.

To specify directories for displaying objects in the Object Explorer:

1. Click Tools on the CimEdit menu bar.
2. Select Options.

   The Options dialog box displays.
3. Enter the path for the default Object Explorer in the Object explorer directories box.



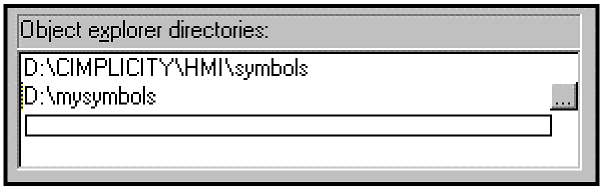
Object explorer directories:

D:\CIMPLICITY\HMI\symbols

If you are simply entering a different path for the Object Explorer, you have completed configuration.

Continue to enter additional directories.

4. Enter the path to a directory in which your symbol directories will be located.



Object explorer directories:

D:\CIMPLICITY\HMI\symbols
D:\mysymbols

5. Click **OK** to save your changes and close the Options dialog box.
6. Open the Windows NT or Windows 95/98 Explorer.

7. Find the directory you specified in the Object explorer directories box.
8. Create as many subdirectories (folders) to that directory as you want.

Result: The subdirectories you create will display as folders in the left pane of the CIMPLICITY HMI Object Explorer.

Examples of folders are as follows.

Subdirectory	Folder in the Object Explorer
C:\mysymbols\Circles	Circles
C:\mysymbols\Squares	Squares
C:\mysymbols\Hexagons	Hexagons

Important: Do not put screens directly into the directory you specify in the Object explorer directories box. They have to be in subdirectories in order to display.

Note: You cannot enter **%BSM_ROOT%symbols**. You must enter actual path as shown in the example.

Using a Class Object Graphic

The Workbench enables a developer to create a class that includes a class CimEdit screen with a specified default class object graphic, and possibly other class object (sometimes referred to as OpenObject™) graphics. An object designer can create objects based on the class–class objects.

You can then:

- Place a default class object graphic on a new CimEdit screen,
- Use the default or other available class object graphics,
- Do any other custom configuration for the screen you are configuring,
- Save the screen and
- Work with the class object's values in CimView.

The complexity of the class object screen depends on the configuration when the source object was created for the class.

See the "Configuring Classes" and "Configuring Class Objects" chapter in the Base System User's Manual, GFK-1180 for details about classes and objects.

To use a class object graphic on a CimEdit screen:

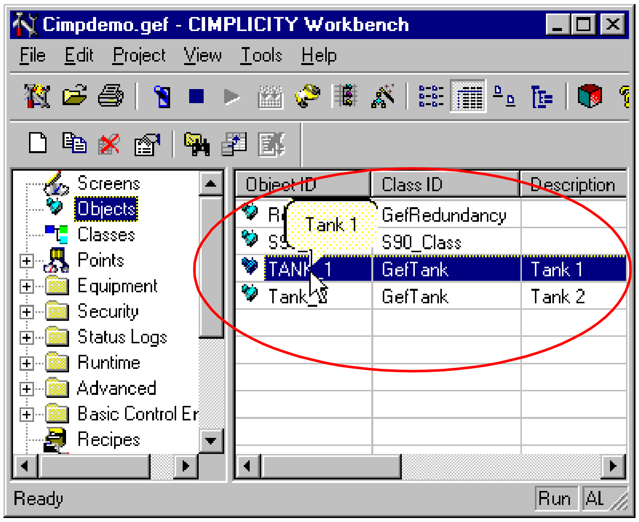
1. Select the object using one of the following methods:

   Method 1

   A. Select Objects in the Workbench left pane.

   B. Select the object you want to place on the CimEdit screen.

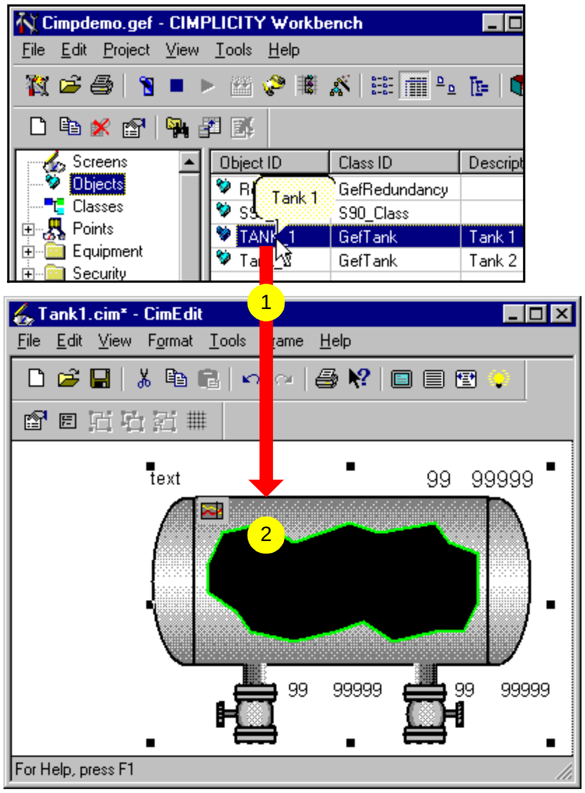
Class Object Selected in the Workbench



Object ID	Class ID	Description
R	GefRedundancy	
S9	S90_Class	
TANK_1	GefTank	Tank 1
Tank_2	GefTank	Tank 2

C. Drag the object onto a new CimEdit screen.

An object that is linked to the class source object appears on the screen.



1 Drag a class object from the Workbench onto a new CimEdit screen.

2 The Class Object graphic appears. (The graphic was created when the class was configured.)

Method 2

A. Click the **Object Browser** button on the CimEdit toolbar.

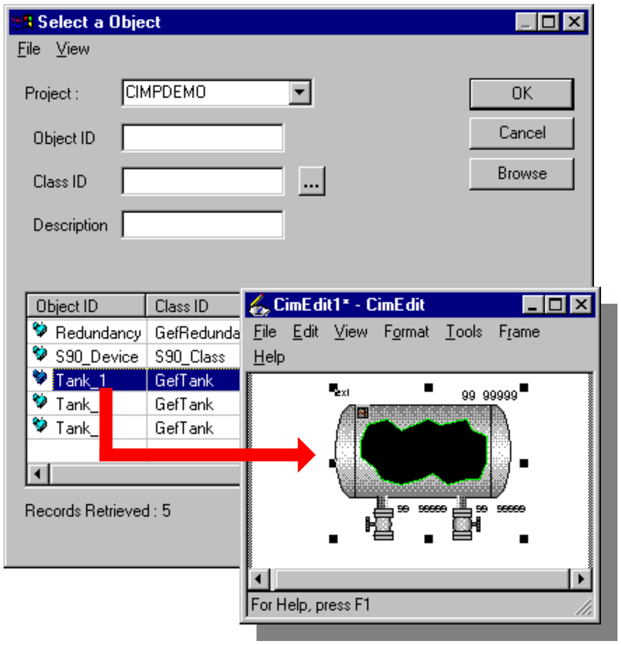
B. Place the cursor ⌈ where you want the object to be placed.

C. Click the left-mouse button.

The Select an Object browser appears.

D. Select the object.

The object you select appears on the CimEdit screen.



Project : CIMPDEMO

Object ID

Class ID

Description

Object ID	Class ID
Redundancy	GefRedunda
S90_Device	S90_Class
Tank_1	GefTank
Tank_	GefTank
Tank_	GefTank

Records Retrieved : 5

2. (*Optional*) Change the class object graphic, if more than one object is available, as follows:

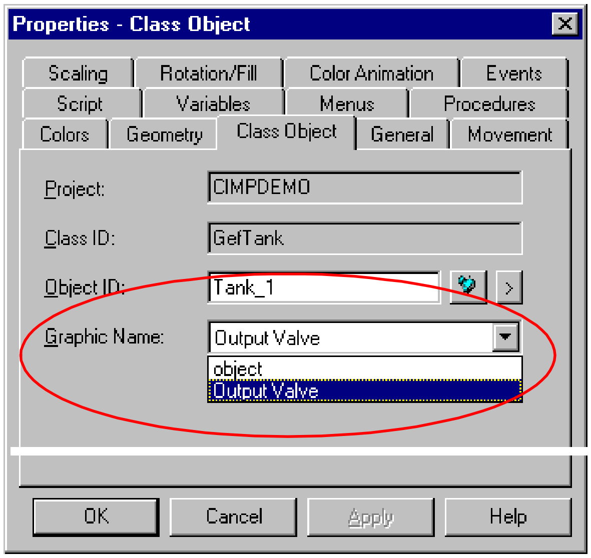
A. Right-click the class object graphic.

The Properties dialog box opens.

B. Select the Class Object tab.

C. Select an object from the Graphic Name field drop-down list.

Graphic Objects Available for a Selected Class Object: Example



Project: CIMPDEMO

Class ID: GefTank

Object ID: Tank_1

Graphic Name: Output Valve

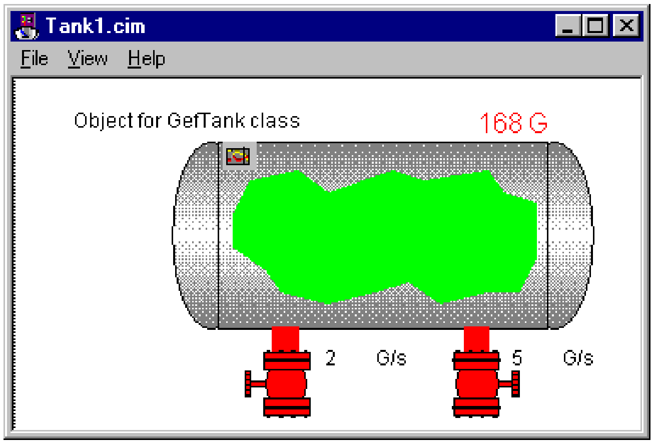
D. Click **OK** or **Apply**.

The selected object replaces the default object on the CimEdit screen.

3. (*Optional*) Resize or move the class object so it will appear the way you want during runtime.
4. (*Optional*) Place, create and configure other non-class objects on the screen.
5. Save the CimEdit screen.

Result: The screen is ready to be used during runtime.

Class Object CimView Screen-Default Graphic Selected: Example



Inserting ActiveX and OLE controls

CimEdit screens accommodate the most complex controls and objects.

Once placed, these controls can be opened, edited, manipulated and converted depending on the object involved.

You can insert:

- ActiveX controls.
- Embedded CIMPLICITY ActiveX objects.
- (Metafile) objects that are converted to CimEdit objects.
- AutoCad drawings that are converted to CimEdit objects.
- OLE objects.
- CimEdit screens.
- Files.

ActiveX Controls Inserted on a CimEdit Screen

As with OLE objects, you find the list of available ActiveX controls in the Insert Object dialog box.

To insert an ActiveX control:

Method 1–Use the toolbar

1. Click the **OLE** button OLE on the Tools toolbar.

   The cursor changes to a right angle.
2. Move the cursor to the spot where you want to put the upper left corner of the object.
3. Click the left mouse button.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select OLE Object.

   The cursor changes to a right angle.
3. Move the cursor to the spot where you want to put the upper left corner of the object.
4. Click the left mouse button. The Insert Object dialog box opens.

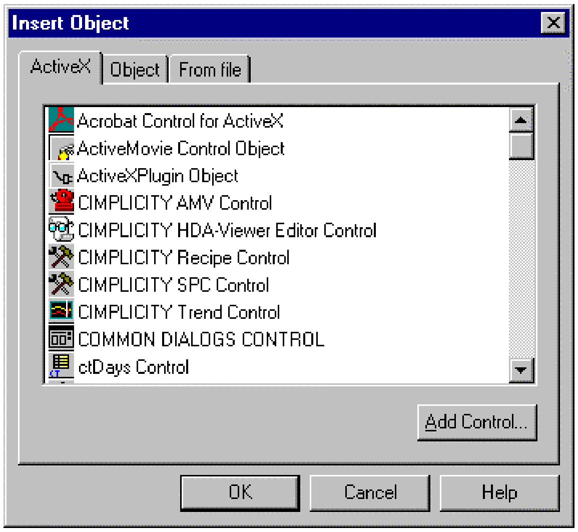
Method 3–Use the menu bar

1. Click Edit on the menu bar.
2. Select Insert New Object.

   The Insert Object dialog box opens when you choose any of the above methods.

Continue from Method 1, 2, or 3

3. Select the ActiveX tab.



4. Select the object you want to insert.
5. Click **OK**. The dialog box closes and the object you selected is displayed on your CimEdit screen.

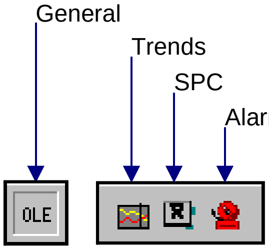
See "Taking Advantage of ActiveX Controls" for detailed information about ActiveX controls.

To embed a CIMPLICITY ActiveX object:

Click the button for the CIMPLICITY ActiveX object that you want to embed. The object you select is automatically embedded in the upper left corner of the screen.

The toolbar buttons for CIMPLICITY ActiveX objects are:

ActiveX Toolbar Buttons



For more information on configuring CIMPLICITY Trend objects, see the CIMPLICITY HMI Trending Operation Manual (GFK-1260).

For more information on configuring CIMPLICITY SPC objects, see the CIMPLICITY HMI Statistical Process Control Operation Manual (GFK-1344).

For more information on configuring CIMPLICITY Recipes objects, see the CIMPLICITY HMI Recipes Operation Manual (GFK-1303).

For more information on configuring an Alarm Viewer object, see the CIMPLICITY HMI Base System User's Manual (GFK-1180)

(Metafile) Objects to CimEdit Objects

CimEdit's Picture Conversion feature lets you take a Picture (Metafile) object embedded in a CimEdit screen and convert it into CimEdit objects.

This powerful feature lets you import graphics from many popular graphics programs (including PowerPoint, Visio, and AutoCad) and apply CimEdit animation features to individual pieces of the object:

To convert a metafile object:

Step 1. Insert the metafile object in the CimEdit screen.

Step 2. Convert the object.

Step 1. Insert a picture (Metafile) object in CimEdit

1. Display the picture in the view you want in the other graphics program.
2. Select the portion of the picture you want to bring into CimEdit
3. Copy the selected portion to the clipboard.
4. Click Edit on the CimEdit menu bar.
5. Select Paste Special.
6. Select the Picture (Metafile) format from the Paste Special dialog box. This pastes the object into CimEdit as a picture.

Step 2. Convert a placed picture (Metafile) object into one CimEdit object:

1. Select the Picture object.
2. Click Edit on the menu bar.
3. Select Convert Picture Object.

Result: The picture is converted into a group of CIMPLICITY HMI objects.

The power of this approach becomes apparent if you think about importing an AutoCad drawing of a 3D object. If you import the DXF file, you have all the lines that make up the framework of the 3D object -- no hidden line removal, no surface shading. With the power of CIMPLICITY software, you can import the wire-frame view, the view with hidden lines removed, or even the view with surface shading.

Note: Not all of the drawing commands that are in a Picture can be accurately represented using CimEdit objects. If this is the case, your converted object will look different from your original Picture. If the results of the conversion are not acceptable, you can use the Undo command to restore the original picture object. When the original picture object is restored:

1. Click Format on the menu bar.
2. Select Ungroup.

You can now select and manipulate the individual objects in the picture.

AutoCad Drawings Converted into CimEdit Objects

To import an entire AutoCad drawing as a set of CIMPLICITY HMI objects:

In AutoCad

1. Display the picture, as you want to import it.
2. Click Edit on the AutoCad menu bar.
3. Select Copy View (*not* Copy).

In CimEdit

4. Click Edit on the CimEdit menu bar.
5. Select Paste Special
6. Insert the picture as a Windows metafile.
7. Click Edit on the CimEdit menu bar.
8. Select Convert Picture Object.

Result: You now have a group of CimEdit objects.

OLE Objects Placed

An ***OLE object*** is information or an object created in other applications that is embedded or linked as an object in an application with OLE capability. You can insert OLE objects in CimEdit.

By linking or embedding, you can insert, for example:

- Clip Art pictures
- PowerPoint slides
- Microsoft Excel worksheets and charts
- Microsoft Word documents
- CIMPLICITY ActiveX controls for Trend charts, SPC charts, Recipes, and Alarm Viewer
- Third-party ActiveX controls

Linking and embedding determine where the object's data is stored. Basically:

An ***embedded object*** becomes part of the CimEdit screen.

A ***linked object*** is stored in its source file, and **CimEdit** stores the location of the information.

To insert a general OLE object:

Method 1–Use the toolbar

1. Click the **OLE** button OLE on the Tools toolbar.

   The cursor changes to a right angle.

2. Move the cursor to the spot where you want to put the upper corner of the object.
3. Click the left mouse button.

Method 2–Use the menu bar

1. Click Tools on the CimEdit menu bar.
2. Select OLE Object.

The cursor changes to a right angle.

3. Move the cursor to the spot where you want to put the upper corner of the object.
4. Click the left mouse button.

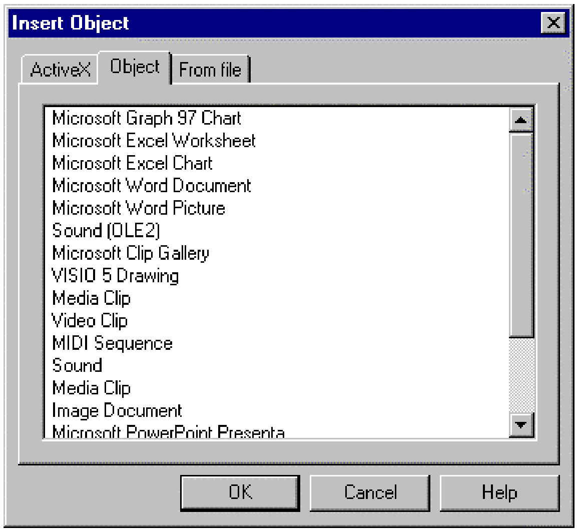
Method 3–Use the menu bar

1. Click Edit on the CimEdit menu bar.
2. Select Insert New Object.

The Insert Object dialog box opens.

Continue from Method 1, 2, or 3

1. Select the Object tab.



Microsoft Graph 97 Chart
Microsoft Excel Worksheet
Microsoft Excel Chart
Microsoft Word Document
Microsoft Word Picture
Sound (OLE2)
Microsoft Clip Gallery
VISIO 5 Drawing
Media Clip
Video Clip
MIDI Sequence
Sound
Media Clip
Image Document
Microsoft PowerPoint Presenta

2. Select the object you want to insert.
3. Click **OK**.

Result: The dialog box closes and the object you selected is displayed on your CimEdit screen.

You can assign object properties to OLE objects with some restrictions:

- For Colors properties, the object line and fill colors apply to the background of the OLE object. The line may only be partially visible. If the object does not have a transparent background, the fill color is invisible.
- For Geometry properties, you may define a position for the object, but not rotation or shear.
- For Rotation/Fill properties:
    - ➔ You can rotate around any point on the screen. However, the center of the object rotates around the point and the orientation of the object remains fixed.
    - ➔ Fill animation is applied to the background only. If the object does not have a transparent background, fill animation is invisible to the user.
    - ➔ For Color Animation properties, animation is applied to the background only. If the object does not have a transparent background, color animation is invisible to the user.

CimEdit Screen Inserted into a CimEdit Screen

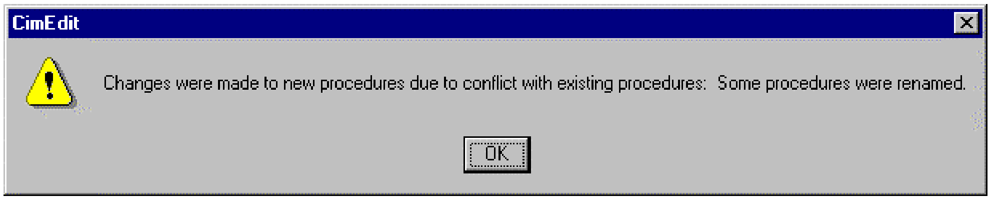
You can insert an existing CimEdit screen into a CimEdit screen that you are configuring.

To insert one CimEdit screen into another:

1. Click File on the CimEdit menu bar.
2. Select Insert File.

   The Insert File Objects dialog box opens.
3. Search for and select the screen to be inserted.

Result: CimEdit deals with and informs you if there are conflicts and duplications between the inserted screen and the screen you are configuring.



Changes were made to new procedures due to conflict with existing procedures: Some procedures were renamed.

File Inserted into a CimEdit Screen

CimEdit's Insert File feature provides you with the ability to place an external object as an icon on the CimEdit screen.

To place a file icon on the CimEdit Screen:

Method 1–Use the menu bar

1. Click Edit on the CimEdit menu bar.
2. Select Insert New Object.

Method 2–Use the toolbar.

1. Click the OLE button [OLE] on the toolbar.

   The cursor changes to a right angle.

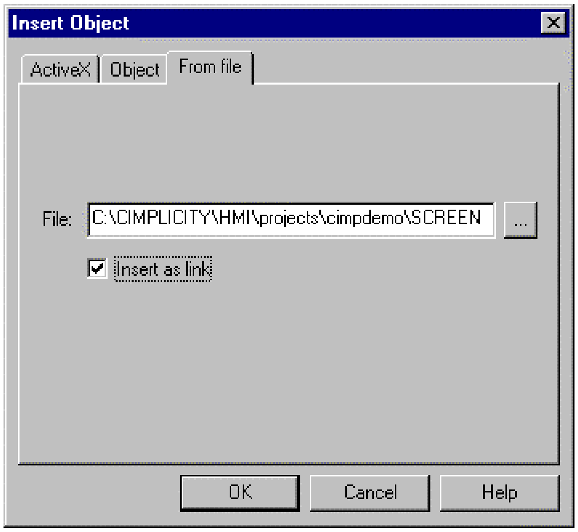
   ┌

2. Place the cursor where you want the top left corner of the object to be positioned.
3. Click the left mouse button.

Result: The Insert Object dialog box appears when you use either method.

Continue from Method 1 or 2

1. Select the From file tab.



File: C:\CIMPLICITY\HMI\projects\cimpdemo\SCREEN

☑ Insert as link

2. Click the **Browse** button [...] to the right of the File field to find the file you want.

4. (Optional) Check Insert as link.

Result: The file will be linked to the CimEdit screen. It will not be placed on the screen. When a user clicks the icon, the file will open.

Special Pasting Objects onto a CimEdit Screen

CimEdit offers a Special Paste feature that enables you to Special Paste or Link an object onto the CimEdit screen. This method of placing an object provides you with the functionality of the application from which it was copied.

To special paste or link an object onto the CimEdit screen:

1. Open the application that contains the object that will be pasted, for example, Microsoft Excel
2. Select the object.
3. Copy the object.
4. Select the CimEdit screen.
5. Click Edit on the CimEdit menu bar.
6. Select Paste Special.

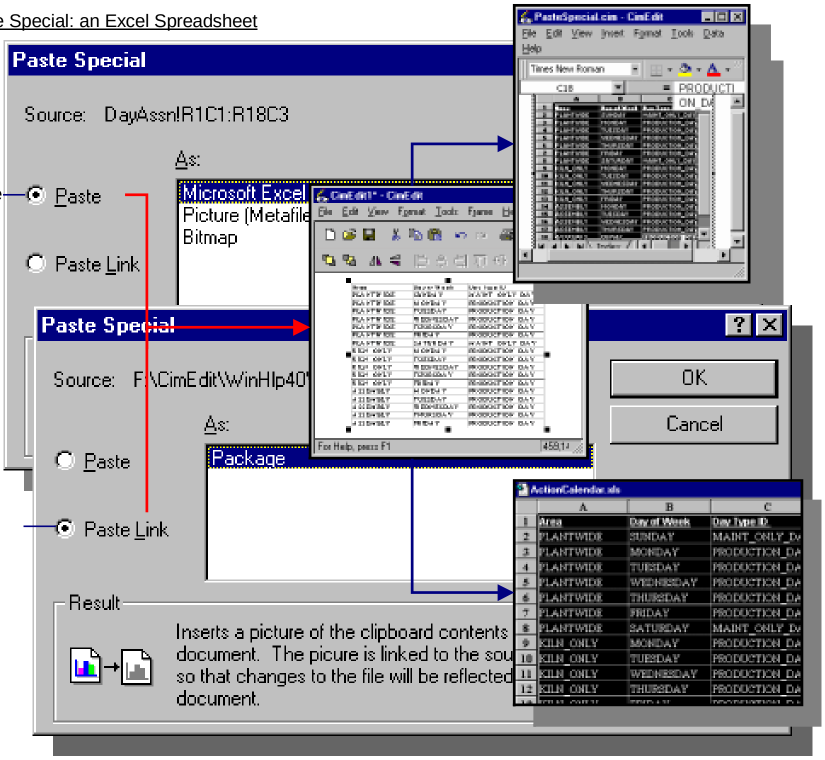
   The Paste Special dialog box opens.
7. Check either the:

   A. Paste option to paste the object into CimEdit.

   The paste options that display in the As box depend on the object you are special pasting. If you choose to paste it in its original format, CimEdit will assume the functionality of the object's application when the object is selected.

   B. Paste Link option to cause the object's application to open when the object is selected in CimEdit.

Example of Paste Special: an Excel Spreadsheet



Paste Special Brings Excel capabilities to the object on the CimEdit screen.

Paste Link opens Excel

Paste Special

Source: DayAssn!R1C1:R18C3

As:

● Paste

○ Paste Link

Microsoft Excel
Picture (Metafile
Bitmap

Paste Special

Source: F:\CimEdit\WinHlp40\

As:

○ Paste

● Paste Link

Package

Result

Inserts a picture of the clipboard contents document. The picure is linked to the sou so that changes to the file will be reflected document.

PasteSpecial.cim - CimEdit
File Edit View Insert Format Tools Data Help
Times New Roman
C18
PRODUCTI
ON_DA
CimEdit1* - CimEdit
File Edit View Format Tools Frame He
For Help, press F1
458,14
? ×
OK
Cancel
ActionCalendar.xls

	A	B	C
1	Area	Day of Week	Day Type ID
2	PLANTWIDE	SUNDAY	MAINT_ONLY_DA
3	PLANTWIDE	MONDAY	PRODUCTION_DA
4	PLANTWIDE	TUESDAY	PRODUCTION_DA
5	PLANTWIDE	WEDNESDAY	PRODUCTION_DA
6	PLANTWIDE	THURSDAY	PRODUCTION_DA
7	PLANTWIDE	FRIDAY	PRODUCTION_DA
8	PLANTWIDE	SATURDAY	MAINT_ONLY_DA
9	KILN_ONLY	MONDAY	PRODUCTION_DA
10	KILN_ONLY	TUESDAY	PRODUCTION_DA
11	KILN_ONLY	WEDNESDAY	PRODUCTION_DA
12	KILN_ONLY	THURSDAY	PRODUCTION_DA

Object Layout

As you experiment with what objects to use on your CimEdit screen, there are several ways to specify how and where they will be placed and to modify their size and shapes.

You can:

- Create:
    - ➔ Single objects. *See page 5-2 for details.*
    - ➔ A set of several objects.
    - ➔ A group of objects.
    - ➔ Move objects.
        - Around the screen.
        - In front of/to the back of other objects.
        - Aligned with other objects.
- Change the runtime tab order.

Configuring Sets of Objects in CimEdit

You can take any one object and combine it with other objects to form a Set. The objects are in the set temporarily–until the mouse is clicked on anything other than the set, one.

When a set is created, the last object selected becomes the dominant object.

You can change the dominant object in a set.

To select and deselect a set of objects:

Method 1: Quick select/deselect

Select objects

Hold down the left mouse button and sweep a rectangle over the objects that you want to include in the set.

The newest object in the set becomes the dominant object.

Deselect all objects that are selected

Click the mouse button anywhere on the screen

Method 2: Precise select/deselect

Select objects

Hold down the **Shift** key and click on each object that you want to include in the set.

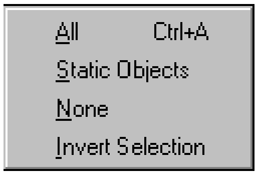
The last object you select becomes the dominant object.

Deselect one object in the set

Click a selected object while holding down the **Shift** key.

Method 3: Use the Edit extended menu options

1. Click Edit on the CimEdit menu bar.
2. Select Select.
3. Choose one of the following options from the Select extended menu.



All — Selects all the objects on the screen.

Static Objects — Selects only non-control objects that do not have actions associated with them.

None — De-selects any selected objects. The set is eliminated.

Invert Selection — Selects all the objects that are not selected; deselects all the objects that are selected.

Guideline: When you select a set of objects, one object is dominant. The dominant and subordinate objects display and behave as follows:

1. The dominant object has square handles while the other objects have star handles.
2. When you align objects, all other objects in the set align to the dominant object.
3. When you size objects, all other objects in the set take their new size from that of the dominant object.

To select another object as the dominant object:

1. Hold down the **Shift** key.
2. Click once on the object to deselect it.
3. Click the object again to select it. The object just selected is now the dominant object.

Configuring Groups of Objects in CimEdit

You can take any one object and combine it with other objects to form a Group. The group remains as a group permanently (or for as long as you want).

If you want two or more objects to be connected so you can manipulate them, e.g. resize them, as one object, you can group them. In addition, you can split a group back into its individual components by ungrouping it.

Five basic procedural steps you can follow when you work with a group are:

Step 1. Create a group.

Step 2. Display the Group tab on the group's Properties dialog box.

Step 3. Configure the group's properties.

Step 4a. Work with objects through the group's Properties Group tab and/or

Step 4b. Work with objects in Group Edit mode.

Step 1. Create a Group

1. Hold down the **Shift** key.
2. Click the objects you want to include in the group.
3. Create a group using either method:

   Method 1–Use the toolbar

   Click the **Group** button on the Format toolbar.

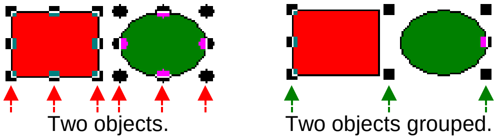
   Method 2–Use the menu bar

   A. Click Format on the menu bar.

   B. Select Group.

After the group is created, instead of individual object handles, you will see group handles on the screen.

Handles for Objects and Groups



At any time, you can split the group into its individual objects

When you create a group, you can still configure properties for its individual objects. However, you can make the objects uniform in their border and interior attributes by creating group properties that override the individual properties.

Note: Several objects in the Object library are actually groups.

Step 2. Display the Group Tab

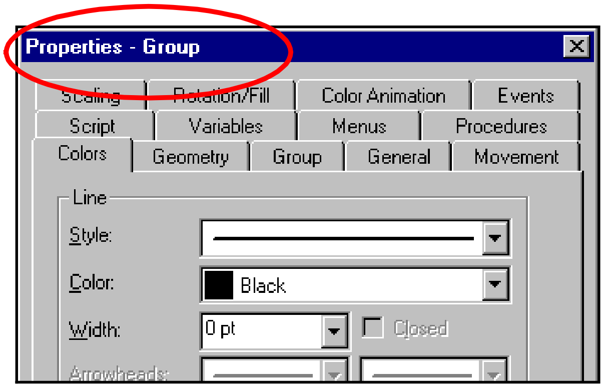
Method 1–Use a popup menu

1. Select the group.
2. Click the right mouse button.
3. Select Properties from the popup menu.

Method 2–Use the keyboard

1. Press **Alt+Enter** on the keyboard.

The Properties - Group dialog box opens.



Style: ————————

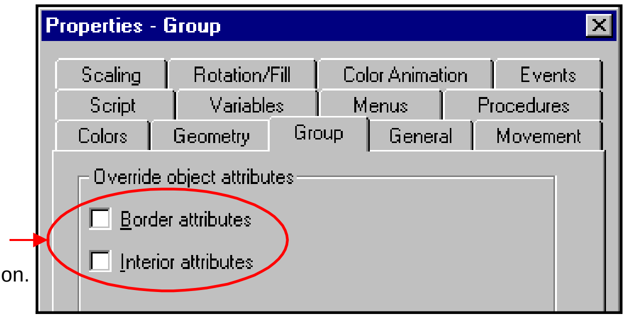
Color: ■ Black

Width: 0 pt

□ Closed

Step 3. Configure the Group's Properties

1. Select the Group tab in the Properties - Group dialog box.
2. Choose whether to override objects' borders and interiors as follows.
   A. Check Border attributes to have the borderlines you configure for the group override borders you configure for the objects.
   B. Check Interior attributes to have the fill properties you configure for the group override fills you configure for the objects.



Override object attributes

□ Border attributes

□ Interior attributes

When checked, override object configuration.

3. Configure other properties for the group the same as you configure them for objects.

Note: Events, procedures and variables configured at the group level are available to the objects within the group.

Step 4a. Work with Objects through the Group Tab

The Group tab of a selected group's Properties dialog box contains every object in that group. Some objects are groups within the group and can be expanded to display its tree of objects.

You can review what objects are in the group and open any object's Properties dialog box through this tab.

Tip: You can also use the Group Edit mode to review the group's objects and open any object's Properties dialog box. *See page 5-36 for details.*

Step 4a. Work with the objects in the group through the Group tab:

1. Review what objects are in the group as follows:
   - A. (If it is not displaying) select the Group tab in the Group Properties dialog box.
   - B. Click the + to expand nested groups.
   - C. Click the – to collapse nested groups.
   - D. Review the objects which may include:

     Group

     Button object

     OLE or ActiveX control

     Shape or object

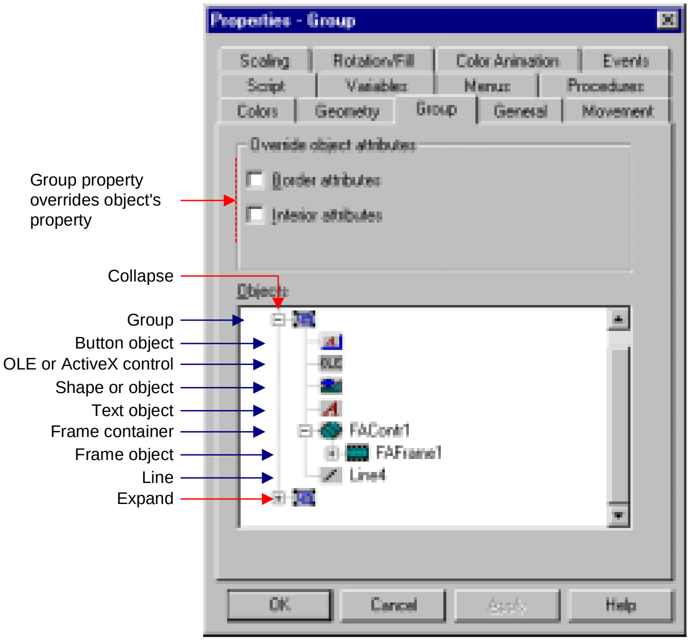
     Text object

     Frame container

     Frame object

     Line

Group Tab of Properties Dialog Box



2. Open an object's properties dialog box:
   A. Select the object to be configured.
   B. Click the right mouse button.
   C. Select Properties from the popup menu.

Result: The object's Properties dialog box opens.

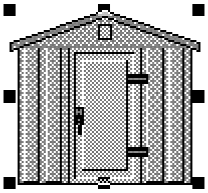
Step 4b. Work with Objects in Group Edit Mode

CimEdit's Group Edit mode enables you to work with objects in a group as if they were not grouped.

You simply put the group in Group Edit mode and select any object in the group for configuration.

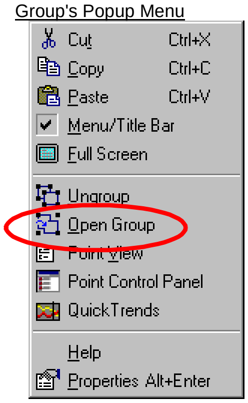
Step 4b. Work with a group's objects in Group Edit mode:

1. Put the group in Group Edit mode as follows.
   A. Select the group.



   B. Open Group Edit mode using one of the following methods:
      i. Click the **Group Edit** button on the CimEdit toolbar.
      ii. Use the group's popup menu.
         a. Right-click the group.
         b. Select Open Group from the popup menu.

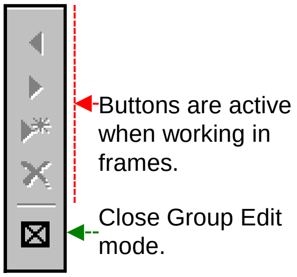
Group's Popup Menu



      iii. Use the CimEdit Format menu.
         a. Click Format on the CimEdit menu bar.
         b. Select Open Group.

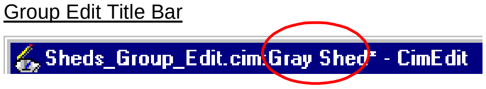
The group is now in Group Edit mode.

- The Container toolbar appears on the left side of the CimEdit screen.



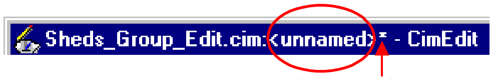
- The group's name, entered on the General tab in the Properties - Group dialog box, appears on the CimEdit title bar.

Group Edit Title Bar



Sheds_Group_Edit.cim:Gray Shed* - CimEdit

The group is named on the General tab of the Properties - Group dialog box.



Sheds_Group_Edit.cim:<unnamed>* - CimEdit

The group is not named.

There are changes since the last screen save.

Note: Only the selected group is in Group Edit mode. You cannot select other groups or objects on the CimEdit screen.

2. Configure an object in the group as follows.

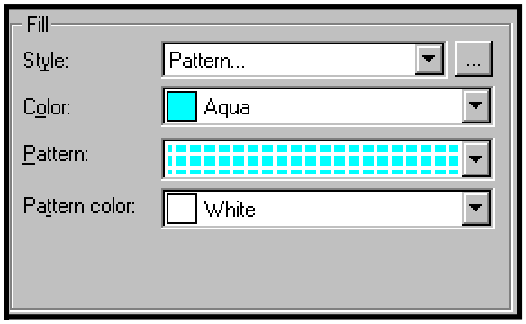
A. Select an object in the group.

B. Double-click the object.

The Properties - Object dialog box opens.

C. Configure the object's properties.

Properties Dialog Box Color Tab: Example for Door



Fill

Style: Pattern...

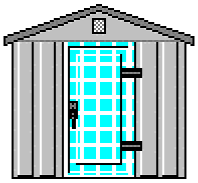
Color: Aqua

Pattern:

Pattern color: White

D. Click **OK** when you have completed the object's configuration.

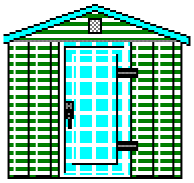
The object's properties are changed.



3. Continue configuration until properties of the objects in the group are what you want.

4. Click the **Close Group** button ☒ on the Container toolbar.

Result: The group contains the configuration.



Now you:

- Can work with the group object.
- Cannot select objects in the group.
- Can select other groups and non-grouped objects on the screen.

Group Ungrouped in CimEdit

To ungroup a group:

Select the group you want to ungroup.

Method 1–Use the toolbar

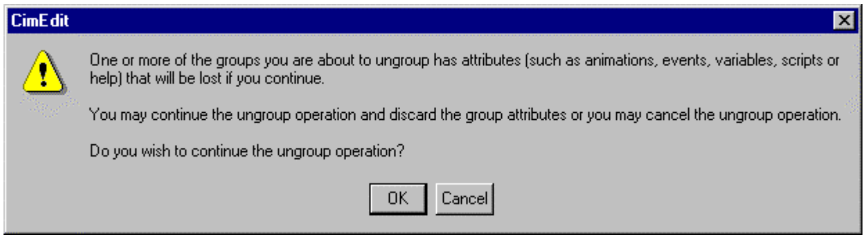
1. Click the **Ungroup** button on the Format toolbar

Method 2–Use the menu bar

1. Click Format from the menu bar.
2. Select Ungroup.

Result: Either:

- The group is ungrouped or
- If you have configured attributes, such as events, for the group object a warning message displays.



One or more of the groups you are about to ungroup has attributes (such as animations, events, variables, scripts or help) that will be lost if you continue.

You may continue the ungroup operation and discard the group attributes or you may cancel the ungroup operation.

Do you wish to continue the ungroup operation?

Either

➔ Click **OK**.

The group is ungrouped.

➔ Click **Cancel**.

The group remains a group.

When a group is ungrouped, instead of group handles, you will see the individual object handles on the screen.

Moving Objects on a CimEdit Screen

CimEdit provides you with several ways to move and position an object on the screen.

You can:

- Place objects using a grid.
- Position objects precisely on the screen.
- Position an object in front/back of other objects.

Placement of Objects Using a Grid

To place an object using a grid:

Step 1. Make the grid visible on the CimEdit screen.

Step 2. Move the object by grid units.

CimEdit provides you with a grid to help you arrange objects more precisely in the workspace. A Snap to Grid feature makes it even easier.

Step 1. Make the grid visible on your CimEdit screen and enable snap to grid:

Method 1–Use the toolbar

Click the **Grid** button ▦ on the **Format** toolbar.

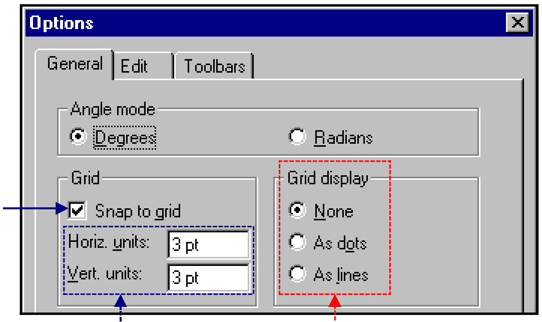
When you enable the **Grid** button on the Format toolbar, both the Grid Visible and Snap to Grid tools are enabled.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Options.

   The Options dialog box opens.
3. Select the General tab.
4. Check one of the following option buttons in the Grid display section:
   - As dots
   - As lines
5. Check Snap to Grid.

When you uncheck Snap to Grid on the Tools menu, the **Grid** button is disabled. However, the grid is still displayed.



Angle mode

● Degrees ○ Radians

Grid

☑ Snap to grid

Horiz. units: 3 pt

Vert. units: 3 pt

Grid display

● None

○ As dots

○ As lines

Object will snap to the nearest grid dots or line when you release the mouse button

Space between lines horizontal and vertical

Check if or how the grid should display

Using your mouse is a convenient way to move an object from one location on the screen to another. However, the keyboard allows you to move an object by grid units, when you need to be more precise.

Step 2. Move an object by grid units:

Method 1–Use the keyboard

Press an arrow key to move the object in the specified direction by one grid unit when the grid is on or one pixel when the grid is off.

Method 2–Use the keyboard

Press **Ctrl+<arrow>** to move the object in the specified direction by two grid units when the grid is on or five pixels when the grid is off.

Tip: You can toggle the grid on or off temporarily by holding down the **Alt** key while pressing the arrow keys. For example, if the grid is on, and you press **Alt+<arrow>** the object will move one pixel to the right.

Object Positioned Precisely on a CimEdit Screen

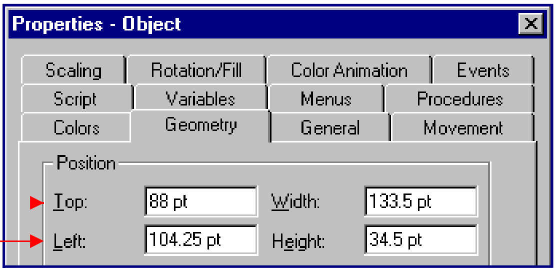
You can enter the precise top and left location of an object in the object's Properties dialog box. This is very useful if you have more than one object that you want to be positioned in the exact same location on different screens.

To precisely position an object on a CimEdit screen:

1. Select the object.
2. Click the right mouse button.
3. Select Properties from the popup menu.

   The Properties dialog box opens.
4. Select the Geometry tab.
5. Enter the number of points (from the bottom of the screen) to define where the top of the object will be located.
6. Enter the number of points (from the left of the screen) to define where the left of the object will be located.

Position an Object through the Properties Dialog Box



Top: 88 pt

Width: 133.5 pt

Left: 104.25 pt

Height: 34.5 pt

From the
- Bottom
- Left

Object Position in Front of/In Back of Other Objects

You can use the overlay tools on the Layout toolbar to adjust the order in which objects are overlaid on the screen. You can bring an object to the front, or one place forward, or send it to the back, or one place back, in a set of objects.

To bring one object to the front:

Select the object you want to bring to the front.

Method 1–Use the toolbar

Click the **Bring to front** button on the Layout toolbar.

Method 2–Use the menu bar

1. Click Format on the menu bar.
2. Select Bring to front.

To send one object to the back:

Select the object you want to send to the back.

Method 1–Use the toolbar

Click the **Send to back** button on the Layout toolbar.

Method 2–Use the menu bar

1. Click Format on the menu bar.
2. Select Send to back.

To bring an object forward one place:

1. Click Format on the CimEdit menu bar.
2. Select Bring Forward.

To send an object back one place:

1. Click Format on the CimEdit menu bar.
2. Select Send Backward.

Objects Spacing Configured on a CimEdit Screen

When you have placed two or more objects on a CimEdit screen, you can configure the space between one object and the next.

You can:

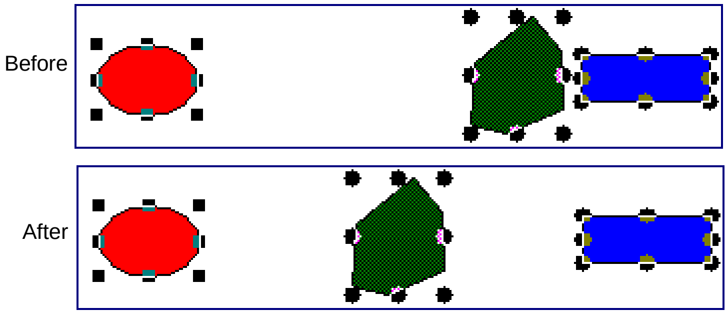
- Space the objects evenly between the two horizontal end objects.
- Space the objects evenly between the two vertical end objects.
- Precisely define the horizontal space between.
- Precisely define the vertical space between objects.

To space objects evenly between the two horizontal end objects:

1. Press and hold down the **Shift** key.
2. Select each object involved.
3. Click Format on the CimEdit menu bar.
4. Select Space Evenly.
5. Select Horizontal from the extended menu.

Result: CimEdit spaces the objects horizontally evenly.

Example Spacing Objects Evenly Horizontally

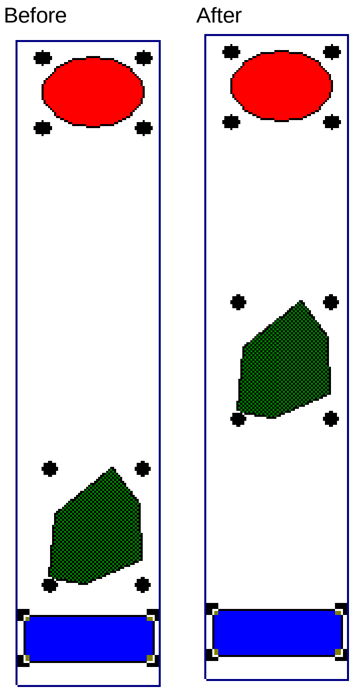


To space objects evenly between the two vertical end objects:

1. Press and hold down the **Shift** key.
2. Select each object involved.
3. Click Format on the CimEdit menu bar.
4. Select Space Evenly.
5. Select Vertical from the extended menu.

Result: CimEdit spaces the objects vertically evenly.

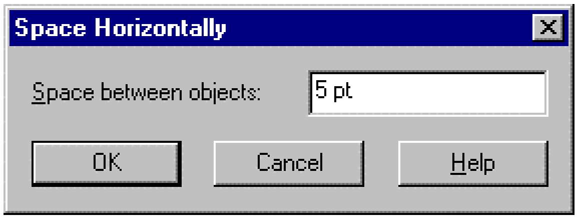
Example Spacing Objects Evenly Vertically



To adjust the horizontal space between selected objects:

1. Press and hold down the **Shift** key.
2. Select each object involved.
3. Click Format on the CimEdit menu bar.
4. Select Adjust Spacing.
5. Select Horizontally from the extended menu.

   The Space Horizontally dialog box appears.



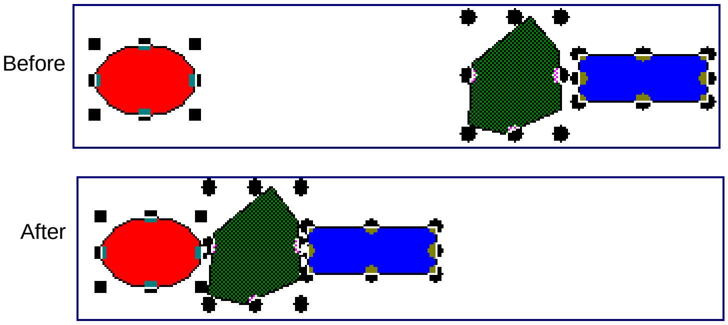
Space Horizontally

Space between objects: 5 pt

6. Enter the number of points for the Space between objects.
7. Click **OK**.

Result: CimEdit spaces the objects according to your specifications, beginning with the object at the left end.

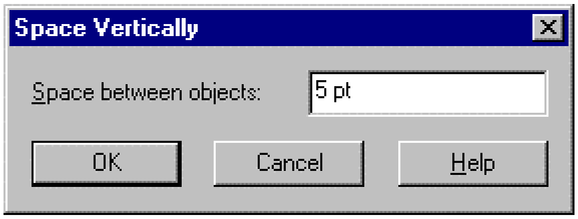
Example Adjusting Horizontal Spacing Between Objects



To adjust the vertical space between selected objects:

1. Press and hold down the **Shift** key.
2. Select each object involved.
3. Click Format on the CimEdit menu bar.
4. Select Adjust Spacing.
5. Select Vertically from the extended menu.

   The Space Vertically dialog box appears.

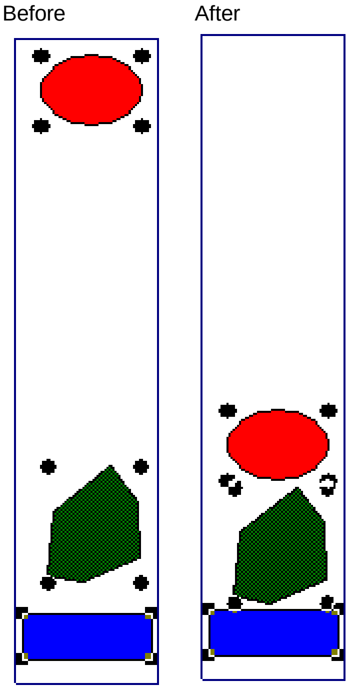


Space between objects: 5 pt

6. Enter the number of points for the Space between objects.
7. Click **OK**.

Result: CimEdit spaces the objects according to your specifications, beginning with the object at the bottom.

Example Adjusting Verticall Spacing Between Objects



Objects Aligned on a CimEdit Screen

When you have placed two or more objects in the workspace and need align them, use CimEdit's tools to automatically align:

- Lefts
- Centers
- Rights
- Tops
- Middles
- Bottoms

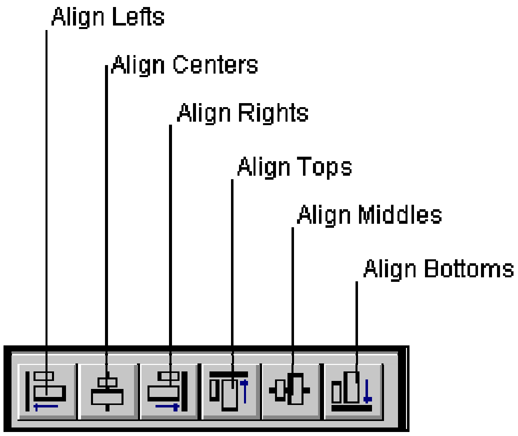
The Layout toolbar and Format menu provide you with the buttons and menu options you need.

To automatically align two or more objects:

Select the objects that will be aligned. The last object you select will be the one to which the others are aligned.

Method 1–Use the toolbar

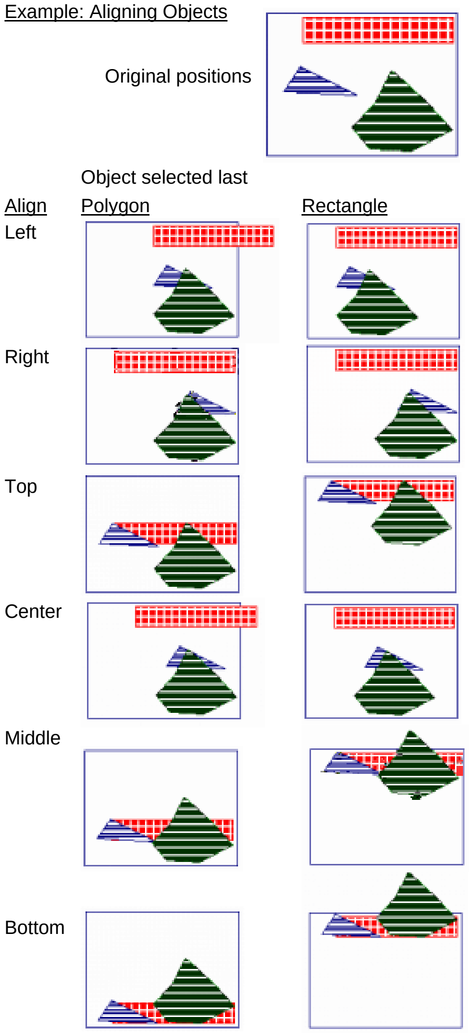
Select the button on the Layout toolbar that activates the appropriate alignment.



Method 2–Use the menu bar

1. Click Format on the menu bar.
2. Select Align.
3. Select the type of alignment you want from the popup menu.

Example: Aligning Objects



Changing Objects Tab Order

Users can tab to action objects during runtime in CimView. These objects have to meet one or more of the following criteria:

- The object is a Text object with a setpoint action.
- One or more of the following events are configured for the object:
  - ➔ **`Mouse Down`**
  - ➔ **`While Mouse Down`**
  - ➔ **`Mouse Up`**
- A Slider setpoint is defined for the object.
- The object is an OLE object that has a primary verb. However the verb cannot modify the object (for example, play the object, for an embedded sound).

Users in CimView can find action objects by:

- Using the tab and arrow keys to highlight the objects, then using the Enter key to invoke the actions on the highlighted object.
- Moving the mouse around the screen. When the user moves the mouse over one of these objects, the object is highlighted with a rectangle.

The order in which you create objects that meet the above criteria determines the initial tab order.

You can use one of several methods to change the tab order of an object. When you change the order of one object on the screen, the order of the other objects will automatically be adjusted to accommodate your selection.

To configure objects tab order:

Method 1–Use the toolbar

Click the **Tab Order** button on the Tools toolbar.

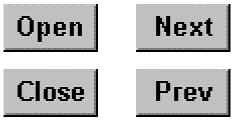
Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Tab Order.

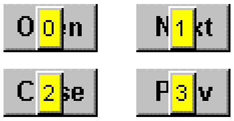
Continue from Method 1 or 2

All the objects that are tab-ordered are numbered.

<u>**Example**</u>



changes to



.

1. Select a numbered object. You can either click on the object or use the **Tab** key to select it.
2. (Optional) change an object's tab order:

Method 1. Use CimEdit's toolbar or menu tools

Option 1. Move an object to the first place in the tab order; do one of the following:

- Press **Ctrl+<down arrow>**.
- Click the **Bring to Front** button on the Layout Toolbar.
- Select Bring to Front on the Format menu.

Option 2. Move an object to last place in the tab order; do one of the following:

- Press **Ctrl+<up arrow>**.
- Click the **Send to Back** button on the Layout Toolbar.
- Select Send to Back on the Format menu.

Option 3. Move an object later in the tab order (Increase its tab order number); do one of the following:

- Press the <**up arrow**>or <**right arrow**>.
- Select **Send Backward** on the **Format** menu.

Option 4. Move an object earlier in the tab order (decrease its tab order number), do one of the following:

- Press the <**down arrow**>or <**left arrow**>.
- Select **Bring Forward** on the **Format** menu

Result: As you change the object's order, you will see the order of the other objects automatically change.

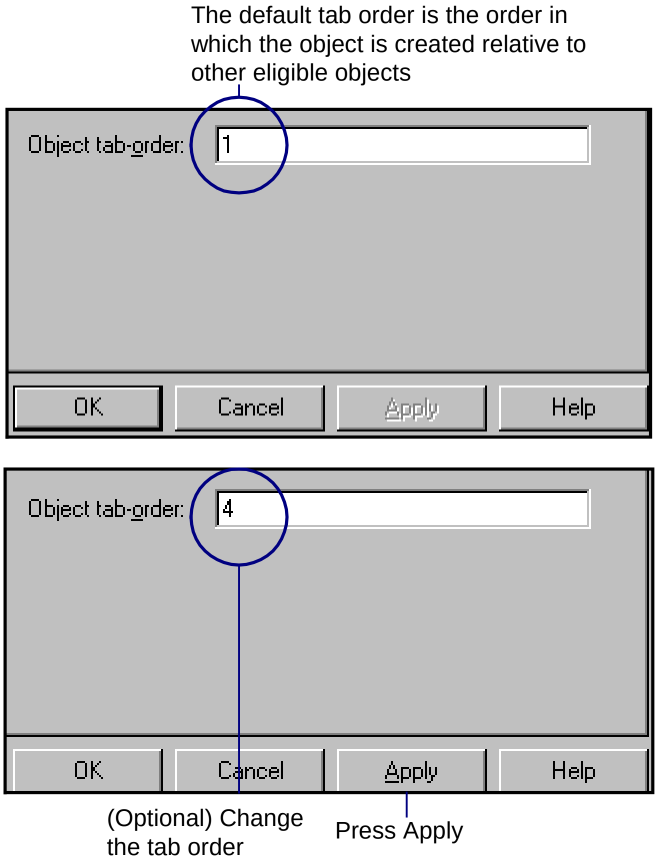
Method 2. Use the object's Properties dialog box.

You can also use Object Tab-order field in the General tab of the Properties dialog box for the object to configure the order in which the objects are highlighted.

1. Enter the number of the order in which the object will be tabbed, relative to other objects.
2. Click **Apply**.

Result: You will see that the tab numbers on the other objects have changed to reflect the new order.

General Tab: Tab Order Enabled



The default tab order is the order in which the object is created relative to other eligible objects

Object tab-order: 1

Object tab-order: 4

(Optional) Change the tab order

Press Apply

Note: While you are using the Tab Order tool, the Bring to Front, Send to Back, Bring Forward, and Send Backward operations only affect the tab order of the object. They do *not* affect the position of the object in relation to other objects in the screen.

Saving Time with Linked Objects

About Linked Objects

Linked objects save system designers valuable time by providing them with the ability to change a single object, a linked source object, and then let CIMPLICITY HMI finish the job of updating every link to that source object, in the entire project.

In addition, this single source capability insures that any specification or change made to the source object will automatically be reproduced exactly in every link to that source object.

Common uses for linked objects include using a single source to create and edit a:

- Common navigation tools that appear on several screens e.g. title bars.
- SmartObjects.
- Common footers.

All users benefit indirectly when links are used. They receive updates more quickly and can be assured that there will be no duplication errors.

Component designers and screen designers benefit directly.

- When component designers need to create several objects that have the exact same features (for example, a title bar), they create (or edit) one object with the intent that it will be the source object for several linked objects.

  When they need objects with the same internal functionality (for example, gauges), they can create a template that has the capability of being used as the source for a linked object. The template can use public variables whose values can be specific to each screen. This obviously provides the designer with extensive development flexibility.

- When screen designers use linked objects provided by the component designer, they can create and configure application screens much more quickly than they can without the linked object. Instead of having to regularly place updated copies of the same object on different screens, all they have to do is create as many links as they want. CIMPLICITY HMI automatically updates all the links when any change is made to the linked source object. As a result, this automation obviously provides the screen designer with more time for other projects.

Basic Principles about Linking Objects

The basic principles behind linked objects are straightforward.

1. An object can be either:
   - Copied to another location. In this case the copy will not be linked to the original object

     Or
   - Linked at another location.
2. An object can have from one to several variables. Variables can be either:
   - Public

     or
   - Private.
3. Configuration written for linked source objects, including scripts or procedures, carry over to a linked object. However, the linked object's container can also have its own scripts or procedures.

A ***linked container*** is the "shell" of a linked object. You can configure properties for the container, such as movement and animation that, in addition to the linked properties, will affect the linked object's runtime behavior. This configuration has no affect on the linked source object.

Choosing to Copy or Link an Object

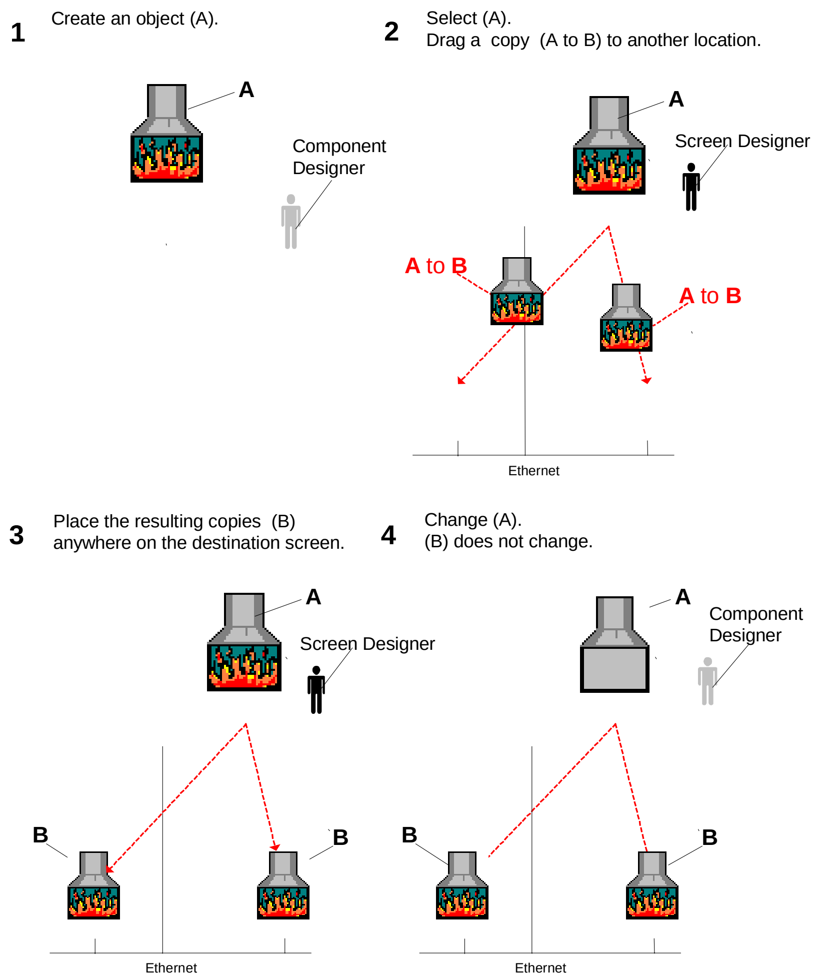
If a component designer creates an object, a screen designer can copy or link that object to any screen. The true power of CimEdit objects is unleashed when the screen designer links objects from a source object.

An ***unlinked copy*** of an object initially contains all the properties of the original object. However, when the component designer updates the original object, the unlinked copy will *not* be updated.

When working with an unlinked object, a screen designer can:

- Edit the value of any Variable ID and scripts assigned to the unlinked object.
- Make changes to the unlinked object's properties; including those that were originally configured in the linked object.

Evolution of Copied Unlinked Objects



1 Create an object (A).

2 Select (A).
Drag a copy (A to B) to another location.

3 Place the resulting copies (B) anywhere on the destination screen.

4 Change (A).
(B) does not change.

When a source object is linked to another screen, CimEdit creates a linked object on that screen. Components of a linked object are:

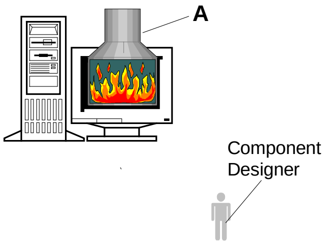
- A link container that
  - ➔ Can be configured with its own properties, e.g. color, movement, animation.
  - ➔ Contains the path to the linked source object.
- A dynamic copy of the source object (that is a child to the link container). When a component designer updates the source object, the dynamic copy is updated when the linked object screen is re-opened.

When working with a link container, a screen designer:

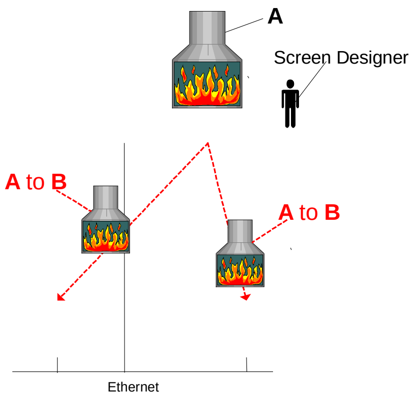
- Can change the value of only public Variable IDs assigned to the source object.
- Cannot change any of the properties configured in the linked source object.

Evolution of Linked Objects

1 Create an object (A).

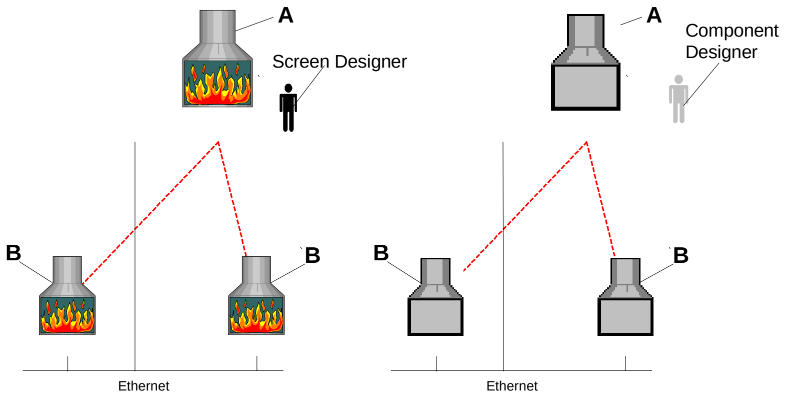


2 Select (A).
Drag a link (A to B), while pressing Ctrl+Shift, to another location.



3 Place the resulting linked container (B) anywhere on the destination screen.

4 Change (A).
(B) changes automatically.



Choosing Public or Private Variables

A Variable ID can be a public or a private variable.

A component designer can make a Variable ID in a linked object either public or private. Using:

> ***Public variables,*** a screen designer *can* enter a value for the Variable ID in the link container, thus making some values unique to that container.
>
> ***Private variables,*** a screen designer *cannot* change the value for the Variable ID in the link container.

Example - Public and Private Variable Application

You create a linked source object that performs a setpoint.

If you use a public Variable ID to define the Point ID for the setpoint, each time a screen designer creates a link container from the source object, the designer can assign a new Point ID value to the Variable ID.

If you use a private Variable ID, the link uses the Point ID you assigned in the source object. The screen designer cannot change it.

Private vs. Public Variable for a Linked Object: Example

For a procedure in which the switch handle changes from red to green and goes up when a setpoint is attained.

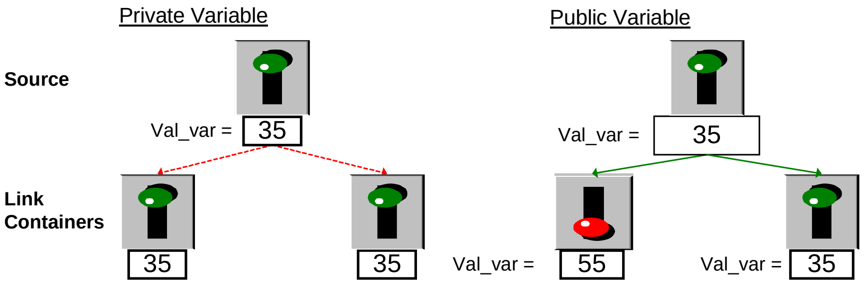
1 = Source object
2 = Link containers

If the setpoint value should be the same for all linked objects,

1. Create a Private variable and
2. Specify the value at the source level.

If the setpoint value can be different among linked objects,

1. Create a Public variable and
2. Specify the value at both the source and link container levels.



Linked Object Creation

If you are a component designer creating a linked source object, you have the difficult job of determining how specific public and private Variable IDs, procedures and scripts operate between the source object and its links. Once you make your choices, making the object a source for linked objects is easy.

Guide: When sorting out the choices for linked objects:

Variables:

- Need to have different values for different links, make the variable public
- Should be identical to the linked source object's variable, make the variable private

Scripts or procedures:

- Need to be executed for all the linked objects, write them for the linked source object.
- Are unique to one or more linked containers, write them for the linked containers only.

Creating Linked Objects

To create a source object that will have one or more links:

1. Open CimEdit.
2. Create all the elements (objects) you want to include in the linked object.
3. Group the objects.
4. Name the group.
5. Open the group's Properties dialog box.
6. Select the group Variables tab.
7. Create the variables needed in the group.
8. Either:
   - check Public, if a variable is public or
   - Uncheck the Public checkbox if the variable is private.
9. Implement events, procedures and scripts as needed.
10. Close and save the CimEdit screen that now contains the source object.

Result: Now screen designers can create links to the source object on other screens and change the public variables to those needed for each new link.

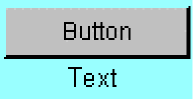
Screen designers can also do a normal copy of the source object to create an unlinked object on a new screen. However, when they do, any changes you make to the source object will not automatically be made to the copied object.

Example–Creating an Object that can be the Source for a Linked Object

This example creates a button with a script that increments a point and text that displays the current value of the point.

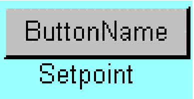
To create an example source for a linked object:

1. Open the CimEdit screen where you want to save your source objects.
2. Create a text button object and a text object. Arrange them to look like this:

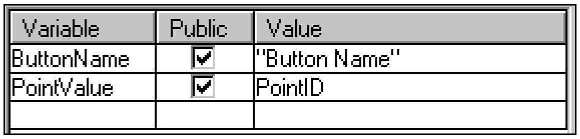


3. Change the text for the button object to **`ButtonName`** and name the object **`SetpointButton`**.
4. Change the text for the text object to **`Setpoint`** and name the object **`SetpointValue`**.
5. Group the two objects.

   Your group looks similar to this:



6. Open the Properties dialog box for the group.
7. Select the General tab.
8. Name the group **`IncrementSetpoint`**.
9. Select the Variables tab.
10. Create two public variables that look like this:



Variable	Public	Value
ButtonName	☑	"Button Name"
PointValue	☑	PointID

11. Select the Group tab.
12. Select the **`SetpointButton`** object.

13. Open the **SetpointButton** object's Properties dialog box.

    A. Select the Text Button tab.

    B. In the Expression field, enter the variable **{ButtonName}.**

    C. Select the Events tab.

    D. Select **MouseUp** in the Event field.

    E. Create a new script in the Action field. The script will increment the value of the Point ID assigned to the variable **{PointValue}**and looks like this:

```
Sub OnMouseUp(x As Long, y As Long, flags As Long)

   Dim var As CimObjectVariable

   Set var = CimGetScriptOwner().GetVariable("PointValue")

   i = PointGet(var.Value)

   PointSet var.Value, i+1

End Sub
```

Note that although the button owns the script, the variable will be resolved at the group level.

14. Select the Group tab.

15. Select the **SetpointValue** object.

16. Open the **SetpointValue** object's Properties dialog box.

    A. Select the Text tab.

    B. In the Expression field, enter the variable **{PointValue}**.

17. Save the screen and close it.

Updating Linked Objects

The component designer can update the source object's properties at any time. Changes to links appear when an individual viewing a screen with a linked container, opens the screen *after* the designer saves the screen containing the source object.

If you have a screen open that uses the link container, when the screen containing the source object is saved, the link does *not* update immediately. You must close your screen and reopen it.

Note: Once you place a linked object, it remains in the location where it is placed. If you manipulate the source object, such as rotating it or changing its size, the linked object will change around its own center. If you move the source object, the link position will be unaffected.

Linked Object Placement

If you are a screen designer working with linked objects, your basic decision is whether to copy the object to another location or create links to the source object at different locations.

See "Choosing Unlinked Copies or Link Containers" earlier in this chapter.

If you decide to link the objects, you then need to assign the appropriate values to the source object and linked container variables. What and where you assign them depends on whether the variables are public or private.

Creating Copies or Links

The procedures to create copies or links are similar.

Note: If a named object, including SmartObjects, is on a runtime-only screen (**`.cimrt`**), you can only link it. You cannot copy it. *See "CimEdit Binary, Protected .cimrt Runtime-Only Screen" in the "Configuring a CimEdit Screen" chapter in this manual for details about the .cimrt format.*

To copy an object to another location:

1. Select the object.
2. Drag a copy of the object to another location.
3. Use the mouse or arrow keys to position the copy where you want it on the screen.

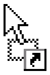
Result: The copy is not linked to the object from which it was copied.

See page 6-2 for more information.

To create links to a linked source object:

1. Select the source object.
2. Hold down **Ctrl** and **Shift** keys and the left mouse button.
3. Drag a link of the source object to another location button. (Keep holding down the keys and button.)

   As you move the object to the destination screen, the cursor looks like this:

4. Use the mouse or arrow keys to position the container where you want it on the screen.

Result: The container is linked to the link source object.

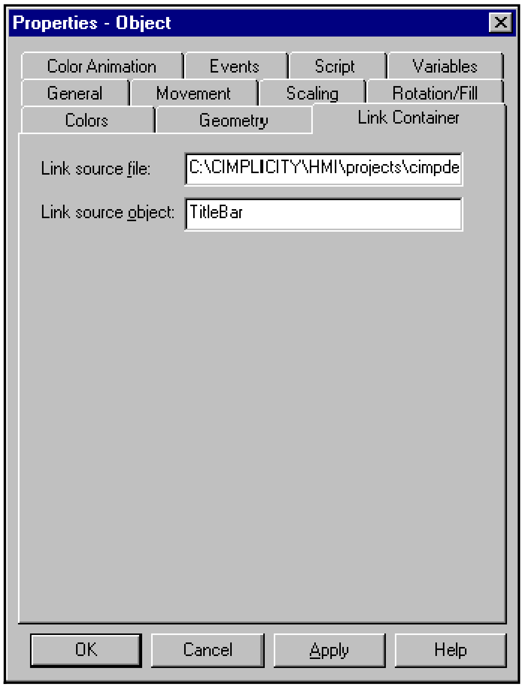
See page 6-3 for more information.

Finding the Source of Linked Objects

When two or more objects are linked together you can easily find the path to the source of the linked object.

To find the source of a selected linked object:

1. Click the right mouse button over the selected object.
2. Select the Linked Container tab of the linked object's Properties dialog box.



Link source file: C:\CIMPLICITY\HMI\projects\cimpde

Link source object: TitleBar

Result: The source file path and object are displayed for the linked object.

Assigning Public Variable ID Assignments to Links

When you assign values to variables attached to linked objects, assign to the source object:

- Private variables that will be applied to all its links.
- Public variables that will enable linked objects to have different values from the source.

To assign values to a linked source object:

1. Open the Properties dialog box for the source object.

   You now see the Linked Object property tab.

2. Select the Variables tab.

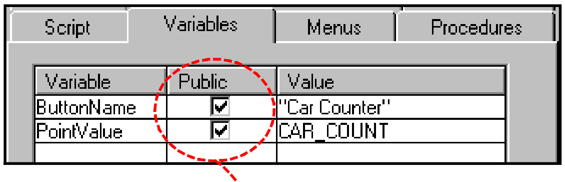
   You will see, if you are working with the:

   - Linked source object–All of the variables configured by the component designer
   - Linked container—Only public Variable IDs configured by the component designer on this page. You will not see the private variables because you have no control over them.

3. Change the text for any text variables.
4. Assign Point IDs to any point variables.

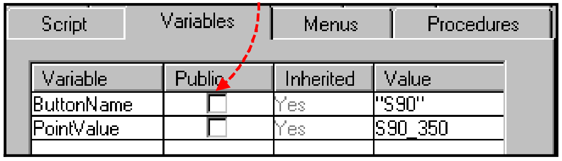
   When you are done, the filled in section of the Variable tab will look similar to this:

1. Variable tab for source object. Public is checked.



Variable	Public	Value
ButtonName	☑	"Car Counter"
PointValue	☑	CAR_COUNT

2. Variable tab for linked container displays public variables.



Variable	Public	Inherited	Value
ButtonName	□	Yes	"S90"
PointValue	□	Yes	S90_350

5. Click **Test Screen** to display the screen and verify that the link functions correctly after you assign all the public **Variable ID**s.

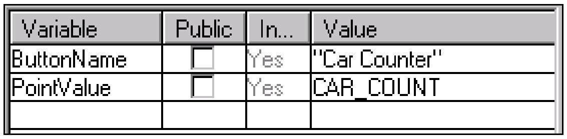
Example. Placing a Linked Object

This example uses a linked source object to create a link container. It also uses the CAR_COUNT point in the CimpDemo demo project. In order for the test screen to work properly the CimpDemo project needs to be running. You can start the project from the Start Demo option on the CIMPLICITY HMI menu, or you can open the Demo Project and start it from the CimpDemo Workbench.

To create an example link to a linked object, on a destination screen:

1. Open the screen containing the linked source object.
2. Open a new screen.
3. Create a link of the source object to a new screen.
4. Open the Properties - Object dialog box for the linked object. Note that a Link Container tab is included in the dialog box.
5. On the Variables tab for the linked object:
   - Change the text for **`ButtonName`** to **`Car Counter`**.
   - Assign a Point ID to **`PointValue`** to **`CAR_COUNT`**.

   When you are done, the tab will look similar to this:

Variable	Public	In...	Value
ButtonName	□	Yes	"Car Counter"
PointValue	□	Yes	CAR_COUNT

6. Click **Test Screen** to display the screen.

Result: The button title displays the text you entered, and the text at the bottom of the link container displays the value of CAR_COUNT. When you click the button, the value of CAR_COUNT increments by one.

Protected Linked Objects

CimEdit provides you with a powerful capability to create protected linked source objects. Protected links contain the properties of the source object. However, a protected link user will not be able to view or decompose the source code or configuration.

You create these links by saving them to a runtime-only screen (**`.cimrt`**) and distributing that screen for use instead of the editable (**`.cim`**) screen.

See the "CimEdit/CimView File Types and Search Paths" section in the "Configuring a CimEdit Screen" chapter in this manual for more information about runtime only screens.

Creating a Protected Link Example

Step 1. Place a rectangle object on a CimEdit **`.cim`** screen. *See page 6-13.*

Step 2. Name the rectangle object. *See page 6-14.*

Step 3. Configure properties for the object. *See page 6-14.*

Step 4. Create a runtime-only screen, **`Runtime_Link.cmrt`**. *See page 6-15.*

Step 5. Create second **`.cim`** screen, **`Link.cim`**. *See page 6-16.*

Step 6. Create a link container on **`Link.cim`**. *See page 6-16.*

Step 7. Enter a value for the link's public variable. *See page 6-18.*

Step 8. Configure horizontal scaling for the link container. *See page 6-18*

Step 9. Test the screens in CimView. *See page 6-19.*

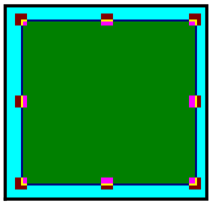
Step 1. Place an object on a CimEdit .cim screen:

1. Open the CimpDemo project that is included with CIMPLICITY HMI.
2. Double-click Screens in the left pane of the Workbench.

   A blank CimEdit screen opens.

3. Click the **Rectangle** button ▭ on the CimEdit toolbar.
4. Place a rectangle object on the screen.

Result: The object is ready for configuration.

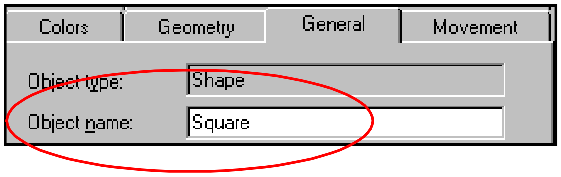


Step 2. Name the rectangle object:

1. Right-click the rectangle object.

   The Properties - Object dialog box opens.

2. Select the General tab.
3. Enter Square in the Object name field.



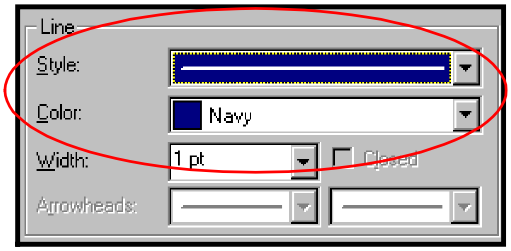
Object type: Shape

Object name: Square

Result: The named object can now be linked.

Step 3. Configure properties for the object:

1. Select the Variables tab.
2. Configure the following:
   - A. Enter **`value`** in the Variable column.
   - B. Check Public.
   - C. Enter 0 in the Value column.
3. Select the Colors tab.
4. Configure the following:
   - A. Select a solid line style in the Style field.
   - B. Select Navy in the Line Color field.



Style:

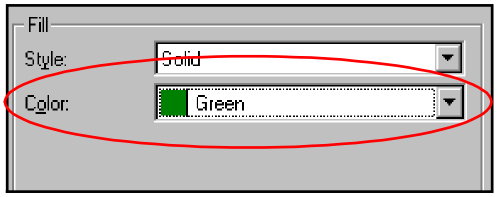
Color: 🟦 Navy

Width: 1 pt

☐ Closed

Arrowheads:

   - C. Select Green in the Fill Color field.



Style: Solid

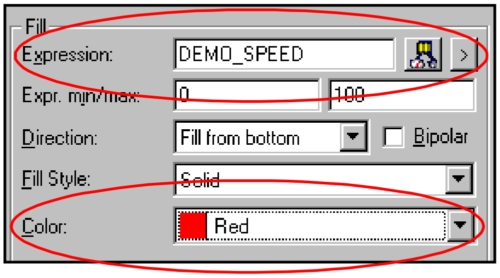
Color: 🟩 Green

5. Select the Rotation/Fill tab.

6. Configure the following:

   A. Enter DEMO_SPEED (a CimpDemo project point) in the Fill Expression field.

   B. Select Red in the Color field.



Fill

Expression: DEMO_SPEED

Expr. min/max: 0 100

Direction: Fill from bottom ☐ Bipolar

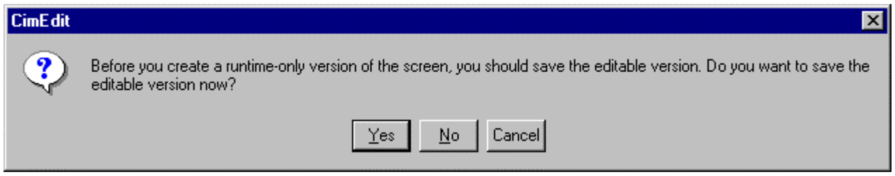
Fill Style: Solid

Color: 🟥 Red

Step 4. Create a runtime-only screen:

1. Click File on the CimEdit menu bar.
2. Select Create Runtime-only Screen.

   A Message box appears asking you if you want to save the **.cim** screen.



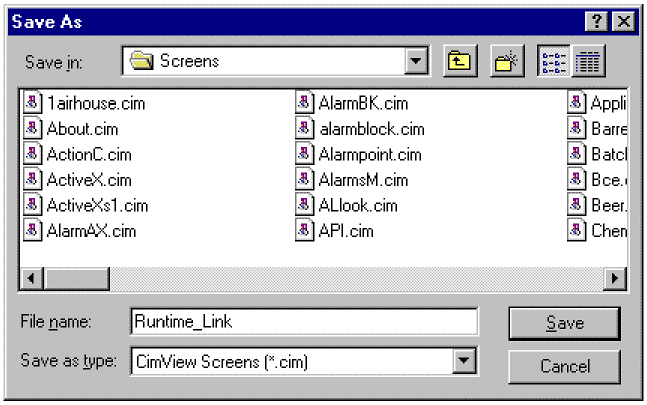
CimEdit

Before you create a runtime-only version of the screen, you should save the editable version. Do you want to save the editable version now?

3. Click **Yes**.

   A Save As dialog box opens.

4. Enter **Runtime_Link** in the File name field.



Save As

Save in: Screens

1airhouse.cim
About.cim
ActionC.cim
ActiveX.cim
ActiveXs1.cim
AlarmAX.cim
AlarmBK.cim
alarmblock.cim
Alarmpoint.cim
AlarmsM.cim
ALlook.cim
API.cim
Appli
Barre
Batcl
Bce.
Beer.
Chen

File name: Runtime_Link

Save as type: CimView Screens (*.cim)

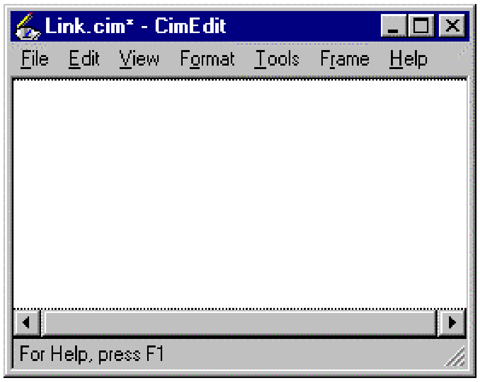
5. Click **Save**.

Result: CimEdit saves Runtime_Link.cim and automatically creates Runtime_Link.cimrt.

Step 5. Open an additional CimEdit .cim screen:

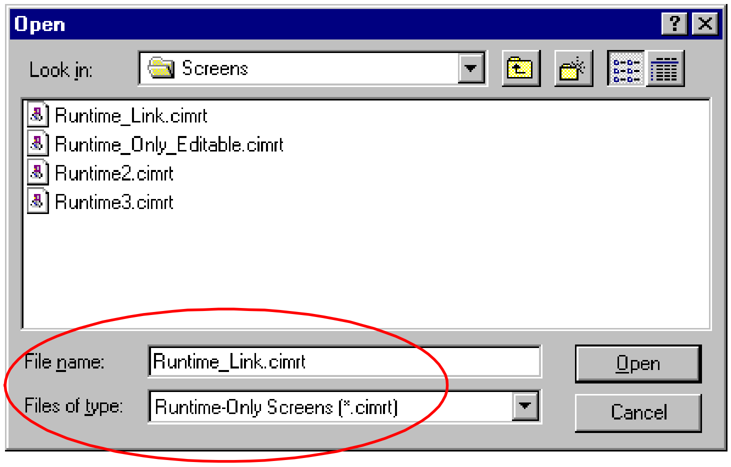
1. Double-click Screens in the left pane of the Workbench.
2. Save the **`.cim`** screen with the name **`Link2`**.

Result: A new CimEdit screen is created.



Step 6. Create a link container from the Runtime_Link.cimrt screen:

1. Open the **`Runtime_Link.cimrt`** screen.



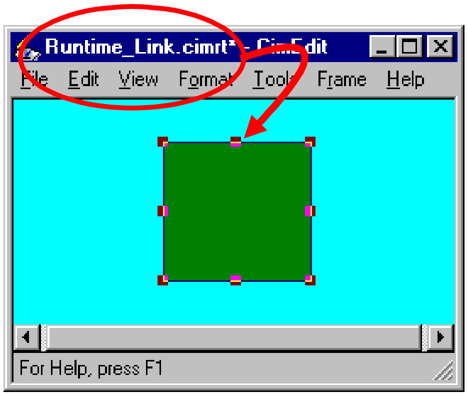
Look in: Screens

Runtime_Link.cimrt
Runtime_Only_Editable.cimrt
Runtime2.cimrt
Runtime3.cimrt

File name: Runtime_Link.cimrt

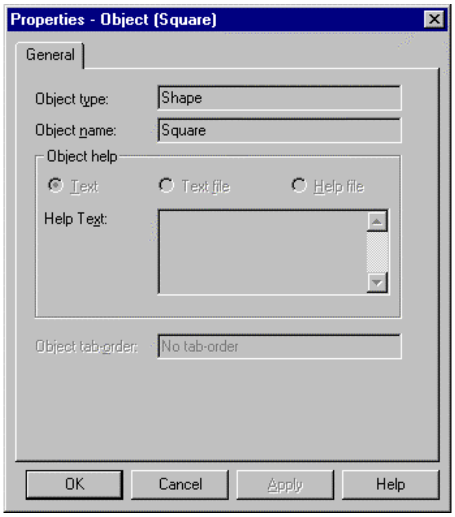
Files of type: Runtime-Only Screens (*.cimrt)

2. Select the object named Square on the runtime-only screen.



3. Right-click Square to review its properties.

   Result: The configuration for the source object is completely protected. The Properties - Object dialog box on Runtime_link.cimrt displays a read-only General tab. There are no other tabs.



Object type: Shape

Object name: Square

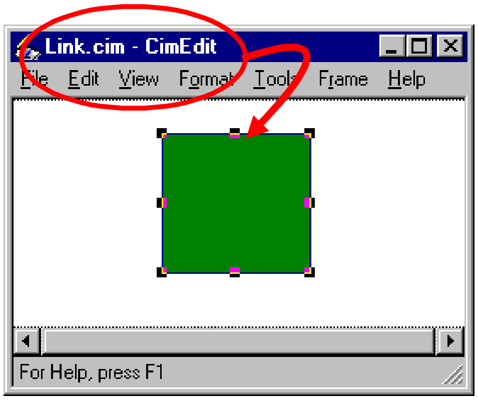
Object help

● Text ○ Text file ○ Help file

Help Text:

Object tab-order: No tab-order

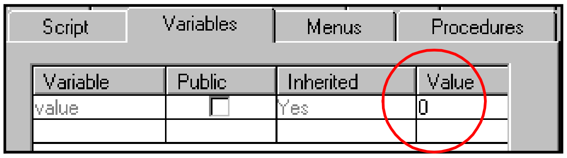
4. Press **Shift+Ctrl** while dragging the object from **`Runtime_Link.cimrt`** to **`Link.cim`**.
5. A link container displays on **`Link.cim`**.



Step 7. Enter a value for the link's public variable:

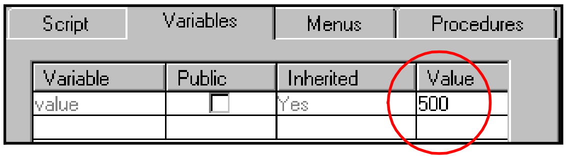
1. Open the Properties - Object dialog box for the link.
2. Select the Variables tab.

   The Value column displays the inherited value 0.



Variable	Public	Inherited	Value
value	□	Yes	0

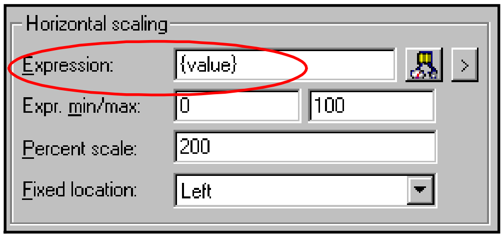
3. Enter 500 in the Value column.



Variable	Public	Inherited	Value
value	□	Yes	500

Step 8. Configure horizontal scaling for the link container:

1. Select the Scaling tab.
2. Enter **`{value}`** in the Horizontal scaling Expression field.



Expression: {value}

Expr. min/max: 0 100

Percent scale: 200

Fixed location: Left

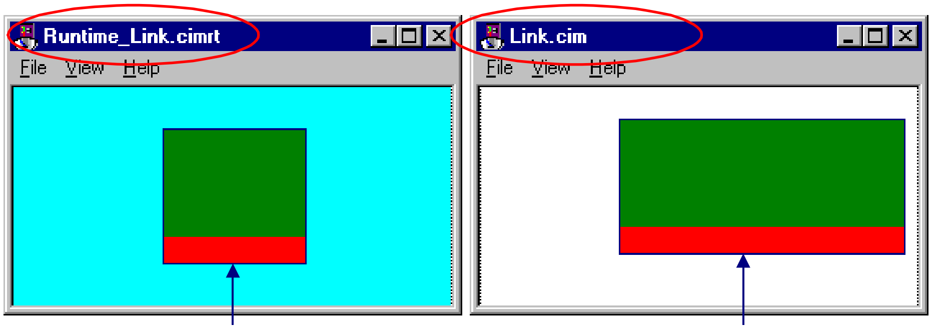
Step 9. Test the screens in CimView.

1. Double-click **`Runtime_Link.cimrt`** in the right pane of the Workbench. (Configuration capability is not available on the runtime screen, including testing it in runtime mode.)

2. Click the **Runtime** button 💡 on the **`Link.cim`** toolbar.

Result:

- The source object displays its configured (fill) runtime properties.
- The link container:
  - ➔ Retains the properties of the source object, even though the source configuration did not display in the Properties - Object dialog boxes and
  - ➔ Displays the Scaling runtime property that was configured for the link container.



The source object on a runtime-only screen displays values according to its configuration.

The link container displays values according to custom configuration and the protected source configuration.

Creating Expressions

About the Expression Editor

There are several places in CimEdit where you enter an expression as part of your configuration.

Whenever you are asked to enter an expression, you can take advantage of the convenient Expression dialog box to create the expression and easily find any Print IDs or variables that you want to include.

To create an expression:

Method 1–Use a button

Click ... to the right of an Expression field

Method 2–Use a popup menu

Select Edit Expression from the Popup menu

Result: Either method opens the Edit Expression dialog box.

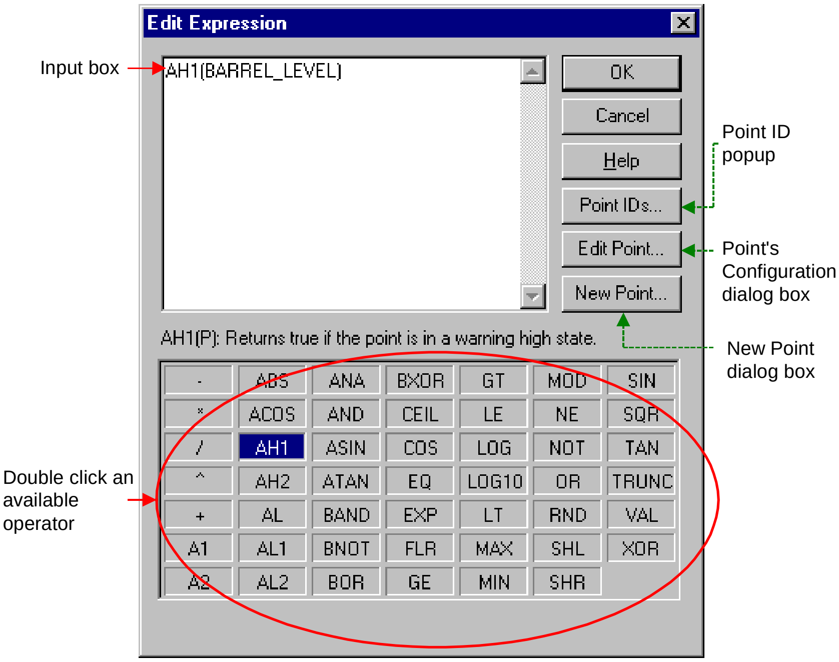
Continue from Method 1 or 2

1. Double click an operation to select it.
   The operation is put at the current cursor position in the input box. If the operation requires an argument, the cursor is positioned for you to type the argument.
2. Insert a Point ID, point attribute or variable either after the operator or between parentheses, if they appear with an operator.

Note: An expression can be up to 300 characters long.

Operations are divided into the following areas:

- Alarm functions
- Arithmetic operations
- Bitwise operations
- Conversion operations
- Logical operations
- Relational operations
- Scientific operations



Edit Expression
OK
Cancel
Help
Point IDs...
Edit Point...
New Point...
- ABS ANA BXOR GT MOD SIN
* ACOS AND CEIL LE NE SQR
/ AH1 ASIN COS LOG NOT TAN
^ AH2 ATAN EQ LOG10 OR TRUNC
+ AL BAND EXP LT RND VAL
A1 AL1 BNOT FLR MAX SHL XOR
A2 AL2 BOR GE MIN SHR

AH1(BARREL_LEVEL)

AH1(P): Returns true if the point is in a warning high state.

Input box

Point ID popup

Point's Configuration dialog box

New Point dialog box

Double click an available operator

Tip: Use the **Point IDs...**, **Edit Point…** and **New Point…** buttons to browse through existing points, edit a selected point or create a new point.

Alarm Functions

Alarm functions supported by the Expression Editor are:

`AL`

Returns True if the point is in any Alarm or Warning state.

Format is **`AL(<point id>)`**

`A1` or `WARNING`

Returns True if the point is in a Warning High or Warning Low state.

Format is **`A1(<point id>)`**

`A2` or `ALARM`

Returns True if the point is in an Alarm High or Alarm Low state.

Format is **`A2(<point id>)`**

`AH1` or `WARNING_HIGH`

Returns True if the point is in a Warning High state.

Format is **`AH1(<point id>)`**

`AH2` or `ALARM_HIGH`

Returns True if the point is in an Alarm High state.

Format is **`AH2(<point id>)`**

`AL1` or `WARNING_LOW`

Returns True if the point is in a Warning Low state.

Format is **`AL1(<point id>)`**

`AL2` or `ALARM_LOW`

Returns True if the point is in an Alarm Low state.

Format is **`AL2(<point id>)`**

`ANA` or `ALARM_NOT_ACKED`

Returns True if the point is in Alarm State and the alarm has not been acknowledged.

Format is **`ANA(<point id>)`**

Important: ANA is not supported for Enterprise points.

Arithmetic Operations

Arithmetic operations supported by the Expression Editor are:

`+` Addition

`-` Subtraction

`*` Multiplication

`/` Division

The result of dividing two integers in an expression will be an integer. If you want a floating point result, multiply the numerator by 1.0 before dividing.

For example, **POINTA** is set 6 and **POINTB** is set to 4. The result of the expression **POINTA/POINTB** is 1, while the result of the expression **(POINTA*1.0)/POINTB** is 1.5.

`SQR` Takes the square root of an expression.

The format for this operation is SQR expr

`ABS` Takes the absolute value of an expression.

The format for this operation is **ABS (expr)**

For example, **ABS** (-2.6) return 2.6.

`MIN` Returns the minimum value of two expressions.

Format is **(expr1) MIN (expr2)**

For example, 3 **MIN** 4 returns 3.

`MAX` Returns the maximum value of two expressions.

Format is **(expr1) MAX (expr2)**

For example, 3 **MAX** 4 returns 4.

`MOD` Returns the modulus value of an expression.

Format is **(expr1) MOD (expr2**)

For example, 9 **MOD** 8 returns a value of 1.

`RND` Rounds a floating-point expression to the nearest integer.

Format is **RND (expr)**

For example, **RND** (2.6) returns a value of 3 and **RND** (-2.6) returns a value of -3.

`TRUNC` Truncates a floating-point expression to its integer value.

Format is **TRUNC (expr)**

For example, **TRUNC** (2.6) returns a value of 2 and **TRUNC** (-2.6) returns a value of -2.

FLR

Rounds a floating-point expression to the nearest integer that is smaller than the expression.

Format is **FLR (expr)**

For example, **FLR** (2.6) returns a value of 2 and **FLR** (-2.6) returns a value of -3.

CEIL

Rounds a floating-point expression to the nearest integer that is larger than the expression.

Format is **CEIL (expr)**

For example, **CEIL** (2.3) returns a value of 3 and **CEIL** (-2.3) returns a value of -2.

Bitwise Operations

You can use Boolean, integer or floating point number for Bitwise operations. If a number/expression is in floating point, it is rounded off to the nearest integer for these operations.

Bitwise operations supported by the Expression Editor are:

BAND

Performs a bitwise **AND** of two expressions.

Format is **<expr1> AND <expr2>**

BOR

Performs a bitwise **OR** of two expressions.

Format is **<expr1> OR <expr2>**

BNOT

Performs a bitwise **NOT** of an expression.

Format is **NOT <expr>**

BXOR

Performs a bitwise **XOR** of two expressions.

Format is **<expr1> XOR <expr2>**

SHL

Performs a binary left shift on an expression.

Format is **(expr1) SHL (expr2)**

For example, 2 **SHL** 1 returns a value of 4.

Note: When **SHL** goes out of range the:

- Point becomes unavailable.
- Point Control Pane is starred.
- Core status log notes that it is unavailable.

SHR

Performs a binary right shift on an expression.

Format is **(expr1) SHR (expr2)**

For example, 2 **SHR** 1 returns a value of 1.

Note: When **SHR** goes out of range the:

- Point becomes unavailable.
- Point Control Pane is starred.
- Core status log notes that it is unavailable.

Conversion Operation

VAL — Convert a variable that consists of numbers in text string format to a numeric format that can be included in calculations.

Logical Operations

You can use Boolean, integer or floating point numbers for logical operations. If an expression has a non-zero value, it is TRUE; if the value is zero (0), it is FALSE.

Logical operations supported by the Expression Editor are:

AND — Performs a logical **AND** of two expressions.

Format is **<expr1> AND <expr2>**

OR — Performs a logical OR of two expressions.

Format is <expr1> OR <expr2>

NOT — Performs a logical NOT of an expression.

Format is NOT <expr>

XOR — Performs a logical **XOR** of two expressions.

Format is **<expr1> XOR <expr2>**

IF…ELSE — Performs a logical if A is TRUE, then B, else C.

Format is:

If (expr1) THEN (expr2) ELSE (expr3)

Or

(expr1) ? (expr2) : (expr3)

Note: The **IF…ELSE** statement is not available from the operation keys. However, you can enter it manually.

Relational Operations

Relational operations supported by the Expression Editor are:

`LT`	Less Than or Below Format is **`(expr1) LT (expr2)`**
`GT`	Greater Than or Above. Format is **`(expr1) GT (expr2)`**
`EQ`	Equal To Format is **`(expr1) EQ (expr2)`**
`LE`	Less Than or Equal To Format is **`(expr1) LE (expr2)`**
`GE`	Greater Than or Equal To Format is **`(expr1) GE (expr2)`**
`NE`	Not Equal To Format is **`(expr1) NE (expr2)`**

Scientific Operations

The scientific operations supported by the Expression Editor are:

SIN

Returns the sine (angle in radians) of an expression.

Format is **SIN (expr)**

COS

Returns the cosine (angle in radians) value of an expression.

Format is **COS (expr)**

TAN

Returns the tangent (angle in radians) of an expression.

Format is **TAN (expr)**

ASIN

Returns the arc sine (angle in radians) value of an expression.

Format is **ASIN (expr)**

ACOS

Returns the arc cosine (angle in radians) value of an expression.

Format is **ACOS (expr)**

ATAN

Returns the arc tangent (angle in radians) value of an expression.

Format is **ATAN (expr)**

X^Y

Raise a value to a power.

Format is **<value> ^ (<power>)**

EXP

Returns the exponential **(ex)** value of an expression where x is the expression.

Format is **EXP (expr)**

LOG

Returns the natural logarithm **(base e)** of an expression.

Format is **LOG (expr)**

LOG10

Returns the base 10 logarithm of an expression.

Format is **LOG10 (expr)**

Applying Inanimate Visual Features

About Inanimate Visual Features

There are numerous reasons to modify the appearance of an object. They range from modifying its size so it will fit where you want it go, to displaying a several similar objects that represent similar but independent functions. An obvious example, is a group of buttons that need to have different colors.

CimEdit offers you several ways to manipulate how an object appears on the screen, making it easy to achieve the result that you want.

You can alter an object’s outward form by:

- Changing its size.
- Changing its shape.
- Rotating it.

You can change a graphic object’s inanimate fill by making it a:

- Transparency.
- Solid color.
- Pattern.
- Gradient.

Text objects can also be rotated and colored. However, because they have some inherent characteristics that are different from graphic objects, CimEdit provides special features to deal with those characteristics.

Object Form

CimEdit provides you with several handy tools to adjust an object's form. The tools include several ways to change its:

- Size.
- Shape.
- Display angle.

Note: The default unit of measure for screens and objects is points (pt). A point is a printer's basic unit of type measurement. There are 72 points in one inch.

There are many places in CimEdit where you are asked to enter location, size, or units as a number and a unit of measure. In addition to points, you can use any of the following for a unit of measure in CimEdit:

"	Inches
in	Inches
mm	Millimeters
cm	Centimeters
twips	1/20th of a point

If you enter any of these other units of measure, the measurement will be automatically converted to points by CimEdit.

For example, if you enter horizontal and vertical grid units of .5" in the Options dialog box for Tools, when you apply the change, the values will be displayed as 36 pts.

Changing an Object's Size

You can change the size of a closed frame container, group, or object by:

- Giving several items the same dimensions
- Resizing a selected item
- Scaling a selected item

Important: When you change the appearance of a closed frame container, you also change the appearance of the groups and objects in that container.

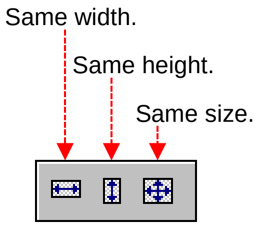
Techniques to Give Several Items the Same Dimensions

To automatically make objects have the same dimensions:

Select the objects that will be resized. The last object you select is the object to which the others will conform.

Method 1–Use the toolbar

Click the button on the Layout toolbar that produces the appropriate type of sizing you.

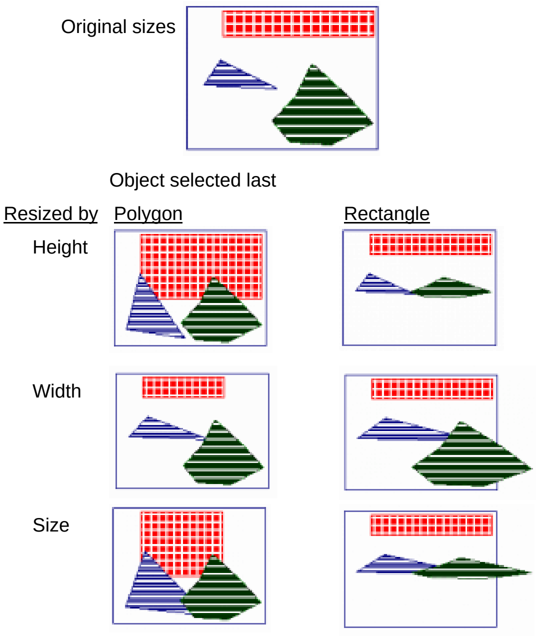


Method 2–Use the menu bar

1. Click **Format** on the menu bar.
2. Select **Size**.
3. Select the type of sizing you want from the popup menu.

Note: Each object on the screen is enclosed in a rectangle. When you resize an object, the position of the top left vertex of the enclosing rectangle remains the same. You may need to readjust the position of the objects after you resize them.

Example: Resizing Objects



Techniques to Resize a Selected Item

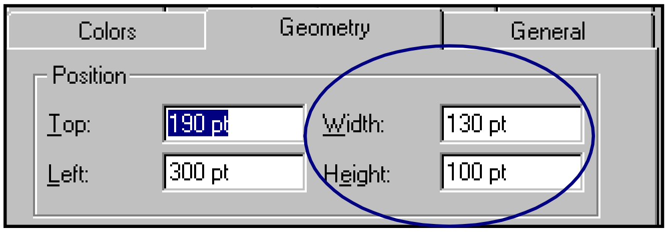
There are several ways to resize objects in CimEdit. They include using:

- Precision resizing.
- A grid.
- The Resize tool.

To resize an object precisely:

1. Select the object.
2. Open the Properties dialog box.
3. Select the Geometry tab.

Size Specification through the Properties Dialog Box



Top: 190 pt
Left: 300 pt
Width: 130 pt
Height: 100 pt

4. Enter the new width and / or height in the Width and Height fields.

Note: Text size is changed in the Font dialog box.

If a shape has been rotated, changing its size will change its rotation angle and shearing.

There are several methods for directing how you resize an object by using the grid.

To resize an object by grid units:

Method 1–Use the keyboard

Press **Shift+<arrow>** on the keyboard. The object expands or contracts in the specified direction by:

- One (1) grid unit when the grid is on
- One (1) pixel when the grid is off

Method 2–Use the keyboard

Press **Ctrl+Shift+<arrow>** on the keyboard. The object expands or contracts in the specified direction by:

- Two (2) grid units when the grid is on
- Five (5) pixels when the grid is off

When you use either method, the upper left corner of the object remains fixed. Each arrow key does the following:

Up	Decreases the height of the object.
Down	Increases the height of the object.
Left	Decreases the width of the object
Right	Increases the width of the object.

For example, if snap to grid is off and you press **Ctrl+Shift+<Down>** the height of the object increases in size by five (5) pixels, instead of grid units.

Method 3–Use the keyboard

1. Press the **Ctrl** key and hold down the right mouse button.
2. Drag a side of the object to expand it or contract it.

   The object expands or contracts in two directions, on the side you are dragging and on the opposite side.

Tip: Click the **Grid** button on the CimEdit toolbar to display the grid. Press the **Alt** key to toggle Snap to Grid on and off.

To resize an object using the Resize tool:

Method 1–Use the toolbar

Click the **Resize** button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select **Resize**.

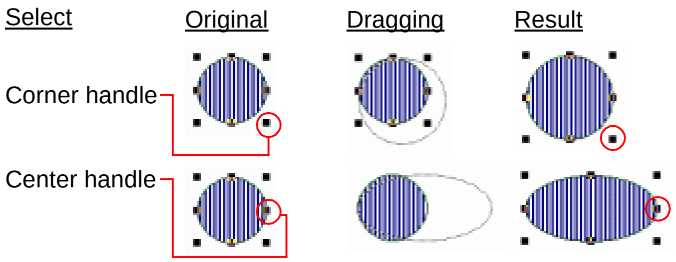
Continue from Method 1 or 2

1. Select the object. When you do, the handles of its enclosing rectangle are displayed.
2. Move the mouse cursor over one of the handles.
3. Hold down the left mouse button.
4. Drag the handle to its new location. The proposed outline of the object is displayed as you do this.
5. Release the mouse button.

Result: The resizing that takes place depends on the type of object and the handle that you use to perform the resize.

Choose a:

- Corner handle to change both the height and width at the same time.
- Side handle to increase the height or the width



Tip: Hold down the **Ctrl** key to resize around the center of the object.

Hold down the **Shift** key to maintain the aspect ratio.

Techniques to Scale a Selected Item

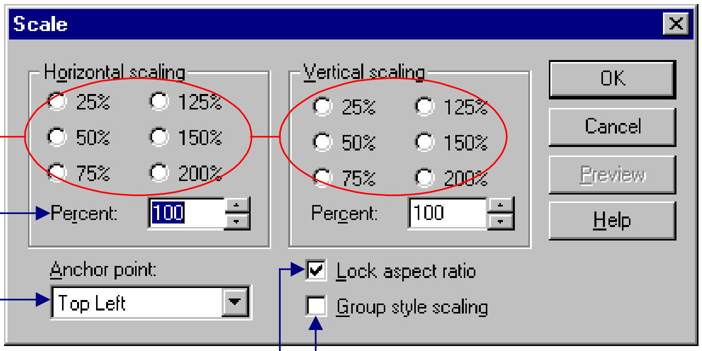
Object size can be increased or decreased by a specified percent. Scaling can be horizontal, vertical, or both.

To scale an object:

1. Click Format on the CimEdit menu bar.
2. Select Scale.

   The Scale dialog box opens.

Scale Dialog Box



Percent: 100

Percent: 100

Anchor point: Top Left

☑ Lock aspect ratio

□ Group style scaling

Horizontal/Vertical
Select one for horizontal and/or vertical.
or
Enter between 1 and 32767.

Choose one:
- Top Left
- Top Right
- Middle
- Bottom Left
- Bottom Right

Check to maintain relative horizontal/ vertical size

Check to anchor the scale to a "phantom rectangle" that surrounds the selections.

3. Select a quick scale or enter between 1 and 32767 percent for horizontal and/or vertical size.
4. Check Lock aspect ratio to maintain the object's relative proportions.
5. Choose the anchor point from which the scaling will occur.
6. For several objects, choose how they will be sized relative to each other as follows:
   - Check Group style scaling to maintain the objects' relative positions and anchor points within the rectangular area in which they exist
   - Leave Group style scaling unchecked for the anchor point to apply to each individual object

Reshaping Objects

The Reshape tool is particularly useful for changing the shape of a polyline or polygon. Several keys on the keyboard and the CimEdit grid provide you with additional aids when you are reshaping the object.

To reshape an object:

Method 1–Use the toolbar

Click the **Reshape** button on the Tools toolbar.

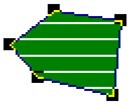
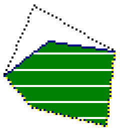
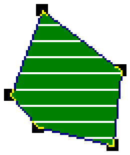
Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Reshape.

Continue from Method 1 or 2:

1. Select the object. When you do, the handles of its vertices are displayed.
2. Move the mouse cursor over one of the handles.
3. Hold down the left mouse button.
4. Drag the handle to its new location. The proposed outline of the object is displayed as you do this.
5. Release the mouse button.

Result: The reshaping that takes place depends on the object type.

Select	Original	Dragging	Result
Corner handle			

To use additional aids when reshaping an object:

Method 1–Use the toolbar

1. Click the **Grid** button ▦ to display the grid.
2. Press the **Alt** key to toggle Snap to Grid.

Method 2–Use the keyboard

1. Press **Ctrl** on the keyboard.
2. Hold the cursor over an edge of the selected object.

   For a polyline or polygon, the cursor turns to a crosshair. Do one of the following.

   A. Click a vertex to delete it. The line straightens between the vertex to the right and left of the deleted vertex.

   B. Click a point in the line. A new vertex appears.

   For all other shapes, the Reshape tool behaves like the Resize tool.
3. Duplicate the object.

   A. Move the cursor inside the object.

   B. Move the object.

   A copy of the object is created.

Changing an Object's Display Angle

CimEdit provides you with complete versatility to rotate and flip items on the screen so they display in the angle and face the direction you want.

Options include:

- Precise object rotation
- Visual object rotation
- Techniques for flipping

Precise Object Rotation

To rotate an object precisely (available for Lines, Text, Shapes or Groups):

1. Double-click the object to open its Properties dialog box.
2. Select the Geometry tab.
3. Enter a positive or negative Angle value between one of the following:
   - 0 and 360 degrees
   - -6.28139 and +6.28139 radians

   For Shape or Text objects, once you apply the angle, the value you entered remains in the field.

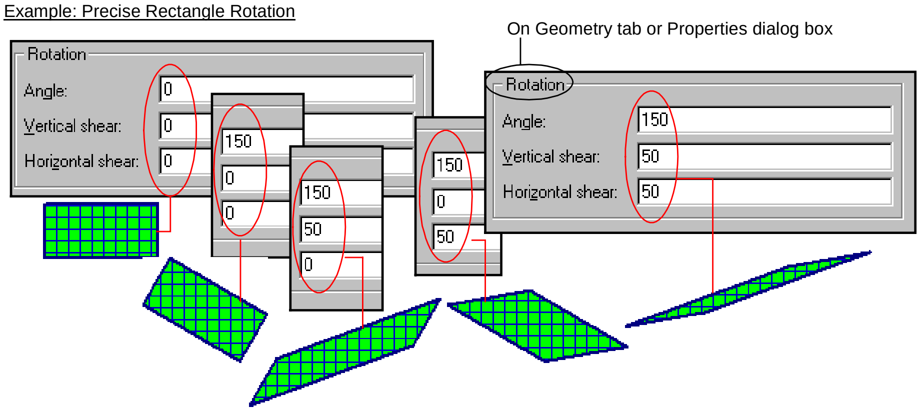
   For Group or Line objects, once you apply the angle, the value in this field is reset to zero (0).
4. Enter a positive or negative Vertical shear value (if the object is a Shape) between one of the following:
   - -85 and + 85 degrees.
   - -1.48353 and +1.48353 radians.

Result: Vertical shear slides the sides of the rectangle enclosing the shape in opposite directions

5. Enter a positive or negative Horizontal shear value (if the object is a Shape) between one of the following:
   - -85 and + 85 degrees.
   - -1.48353 and +1.48353 radians.

Result: Horizontal shear slides the top and bottom of the rectangle enclosing the shape in opposite directions.

Example: Precise Rectangle Rotation



On Geometry tab or Properties dialog box

Visual Object Rotation

To rotate an object visually:

Method 1–Use the toolbar

Click the **Rotate** button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select Rotate.

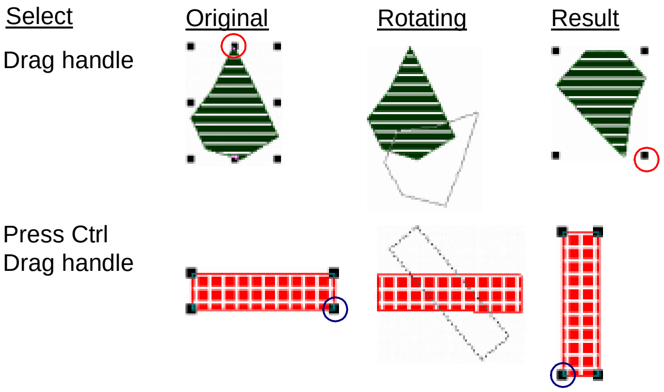
Continue from Method 1 or 2

1. Select the object. When you do, the corner handles of the object's enclosing rectangle are displayed.
2. Move the mouse cursor over one of the handles.
3. Hold down the left mouse button.
4. Drag the handle to its new location. The proposed outline of the object is displayed as you do this.
5. Release the mouse button.

Result: The rotation that takes place depends on the object type.

Tip: Hold down the **Shift** key to constrain the rotation to 45-degree increments.

Hold down the **Ctrl** key to rotate the shape round its center.



Techniques for flipping

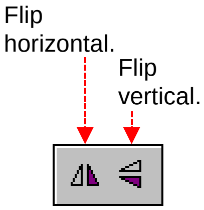
Use CimEdit's flip tools to flip objects: Objects

- Horizontally
- Vertically

To flip an object:

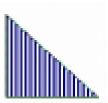
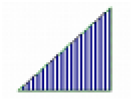
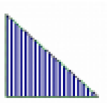
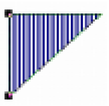
Method 1–Use the toolbar

Click the button on the CimEdit Layout toolbar to flip the object horizontally or vertically.



Method 2–Use the menu bar

1. Click Format on the CimEdit menu bar.
2. Select Flip.
3. Select Horizontally or Vertically from the popup menu.

Select	Original	Flip
Horizontal		
Vertical		

Color and Fill Selection

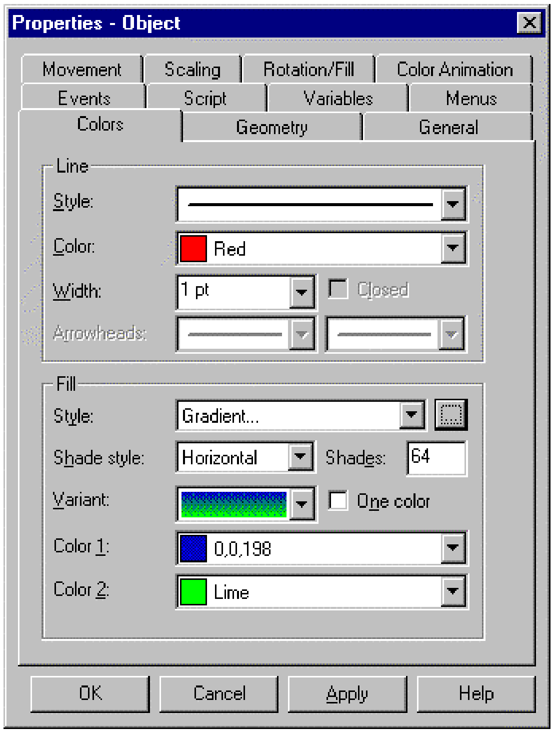
Inanimate colors, patterns, and style not only add to the attractiveness of CimEdit / CimView screens, but they can communicate important information clearly and quickly. Therefore:

- Polygons, rectangles, ellipses, chords, pies, buttons, and text objects support the following fill styles:
  - No fill.
  - Solid.
  - Pattern.
  - Gradient.
- Line objects can be any color you choose

Begin configuring the color and fill for the screen or selected object in the Colors tab of its Properties dialog box.

To display the Colors tab of the Properties dialog box:

1. Select the object, group or screen.
2. Click the right mouse button.
3. Select Properties from the popup menu. The Properties dialog box for the object, group, or screen appears.
4. Select the component of the object you want to color in the tree of the Group tab.
5. Click the right mouse button again. The Properties dialog box for that component appears.
6. Select the Colors tab.



Properties - Object

Line

Style: ———

Color: 🟥 Red

Width: 1 pt ☐ Closed

Arrowheads:

Fill

Style: Gradient...

Shade style: Horizontal Shades: 64

Variant: ☐ One color

Color 1: 🟦 0,0,198

Color 2: 🟩 Lime

Selecting Fills

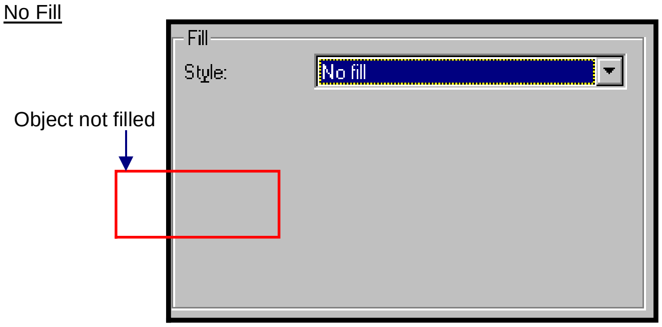
The decisions you make about the fill depend on what style you select in the Style field. You find the Style field in the Fill section of the Colors tab on the Properties dialog box.

No Fill for an Object

Since there is nothing to configure when you select No fill for the fill Style, the Fill section only displays your selection.

You can see any objects behind the unfilled object. Only the line you select as the border (in the Line section above the Fill section) defines the object. The fill is transparent.

No Fill

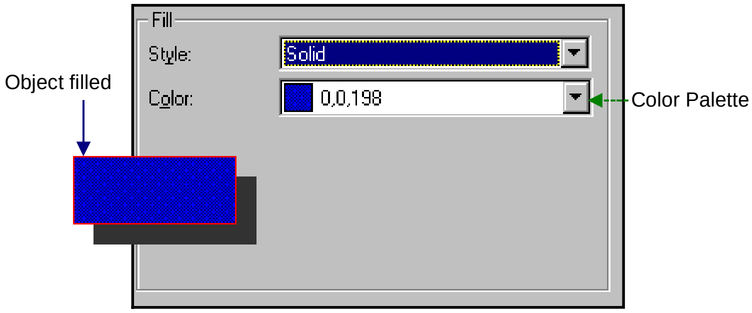


Style: No fill

Solid Colors for an Object

When you select Solid for the fill Style, the Fill section changes so you can select the color of the fill.

Solid Fill



Style: Solid

Color: 0,0,198

To select a solid color fill:

1. Click the down arrow in the Color field to display the Color Palette.
2. Select the color you want.

Pattern Colors for an Object

A Pattern selection requires a few decisions, including:

- Pattern type
- Background color
- Pattern color

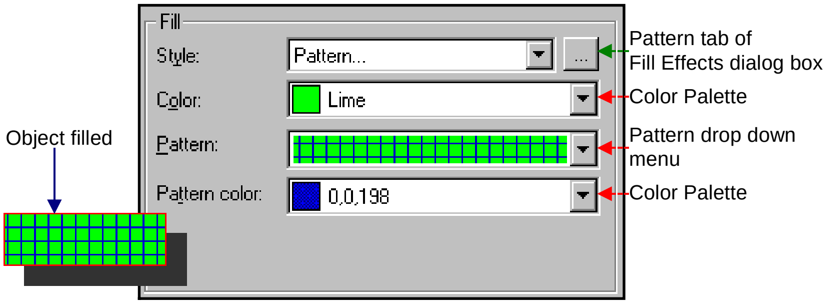
Therefore, when you select Pattern for the fill Style, the Fill section on the Colors tab of the Properties dialog box provides you with the tools to make your choices.

You can create a pattern with:

- Two opaque colors.
- One transparent and one opaque color.

Patterns with Two Opaque Colors

Pattern Fill



Fill

Style: Pattern...

Color: 🟩 Lime

Pattern:

Pattern color: 0,0,198

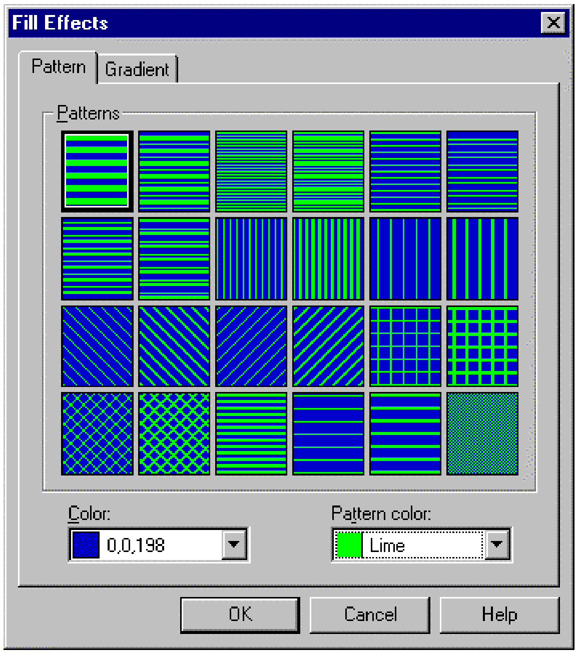
To configure a two color pattern:

Method 1–Quick

1. Click the down arrow in the Color field display the Color Palette.
2. Select the background color.
3. Click the down arrow in the Pattern Color field to display the Color Palette.
4. Select the pattern color.
5. Click the down arrow in the Pattern field to display a drop down menu of pattern styles.
6. Select the pattern.

Method 2–View larger pattern samples

1. Click ... to the right of the Style field to open the Fill Effects dialog box. The Fill Effects dialog box appears.
2. Select the Pattern tab.



Color: 0,0,198

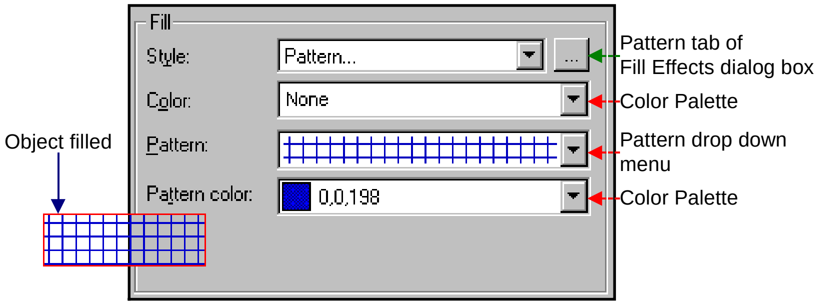
Pattern color: Lime

3. Click the down arrow in the Color field to display the Color Palette.
4. Select the background color.
5. Click the down arrow in the Pattern color field to display the Color Palette.
6. Select the pattern color.
7. Click a pattern.
8. Click **OK**.

Patterns with a Transparent Effect

If you want an object to show behind another object, but you want the front object to have more than substance than just a border, you may want a pattern with a transparent affect.

Pattern Fill with Transparent Effect



Style: Pattern...

Color: None

Pattern:

Pattern color: 0,0,198

To give a pattern a transparent effect:

1. Click the down arrow in the Color field to display the Color Palette.

2. Select the Special Effects tab.
3. Select None.
4. Select the pattern.
5. Select the pattern color.

Gradient Fills for an Object

A Gradient selection requires a few decisions, including:

- Pattern type
- Background color
- Pattern color

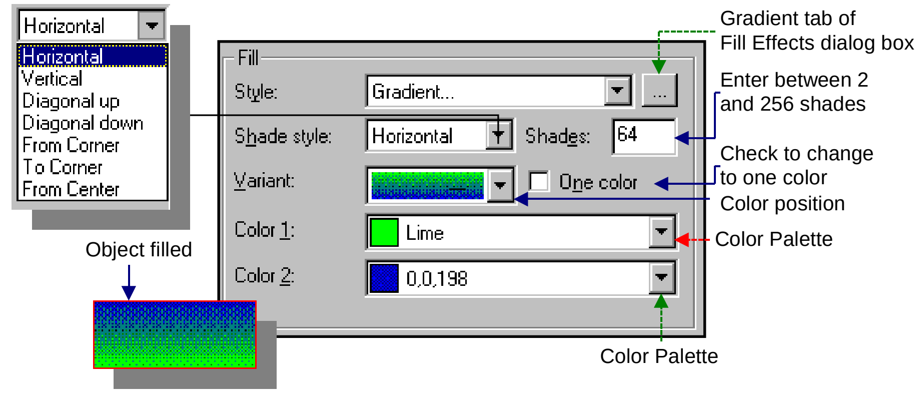
Therefore, when you select Pattern for the fill Style, the Fill section on the Colors tab of the Properties dialog box provides you with the tools to make your choices.

You can create a gradient with:

- Two colors.
- One color.

Gradients with Two Colors

Gradient Fill with Two Colors



Horizontal
Horizontal
Vertical
Diagonal up
Diagonal down
From Corner
To Corner
From Center

Fill
Style: Gradient...
Shade style: Horizontal
Shades: 64
Variant:
□ One color
Color 1: Lime
Color 2: 0,0,198

Gradient tab of Fill Effects dialog box
Enter between 2 and 256 shades
Check to change to one color
Color position
Color Palette
Object filled
Color Palette

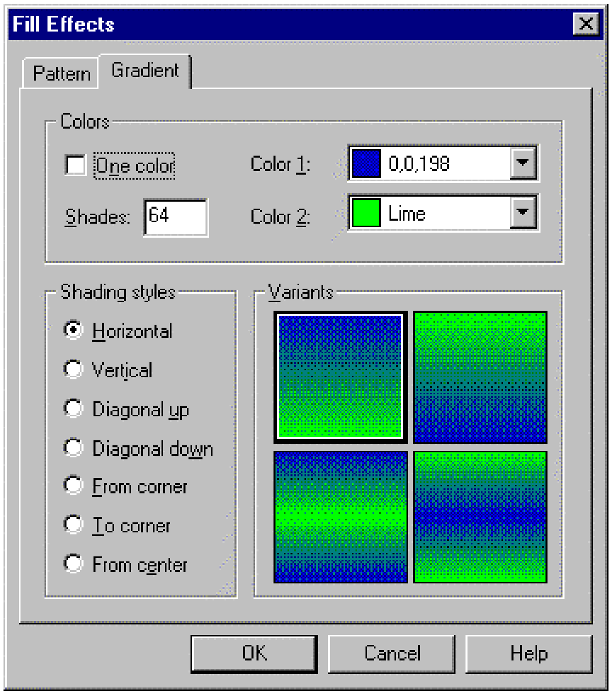
To configure a two color gradient:

Method 1–Quick

1. Click the down arrow in the Color 1 field to display the Color Palette for the first color.
2. Select the first color.
3. Click the down arrow in the Color 2 field to display the Color Palette for the second color.
4. Select the second color
5. Click the down arrow in the shade style field to display and select from the shading (fill style) options.
6. Enter the number of shades the gradient will display. Enter a number between 2 and 256. The higher the number, the finer the shading will be.
7. Click the down arrow for the Variant field to display and select from the options for the selected Shade style.

Method 2–View larger gradient samples

1. Click … to the right of the Style field. To open the Fill Effects dialog box.
2. Select the Gradient tab.



Colors

☐ One color

Color 1: 0,0,198

Shades: 64

Color 2: Lime

Shading styles

● Horizontal
○ Vertical
○ Diagonal up
○ Diagonal down
○ From corner
○ To corner
○ From center

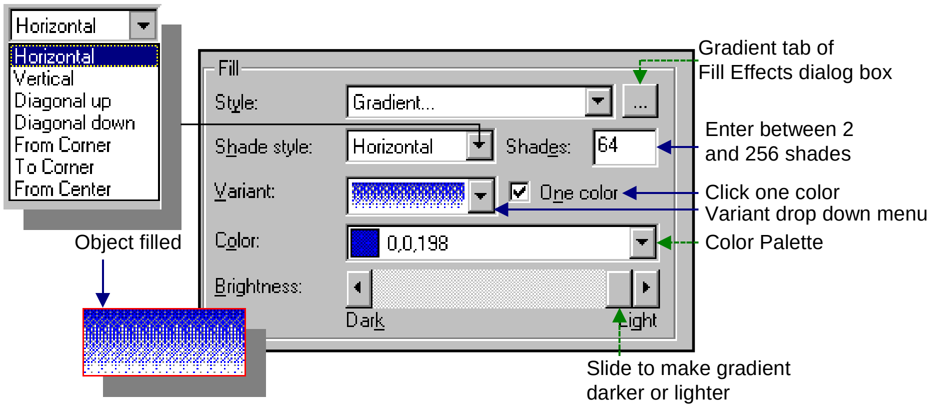
3. Click the down arrow in the Color 1 field to display the Color Palette for the first color.
4. Select first color.
5. Click the down arrow in the Color *2* field to display the Color Palette for the second color.
6. Select the second color.
7. Click one of seven possible shading styles. When you select a shading style, the four variants for the style display in the Variants section.
8. Enter a number in the Shades field for the gradient. Enter a number between 2 and 256. The higher the number, the finer the shading will be.
9. Click **OK**.

Note: If you decide you want to use one color, check the One color box.

Gradients with One Color

If you want a fill to be one color that becomes lighter or darker in a specified manner, you can easily.

Gradient Fill with One Color



Fill

Style: Gradient...

Shade style: Horizontal

Shades: 64

Variant:

☑ One color

Color: 0,0,198

Brightness: Dark Light

Gradient tab of Fill Effects dialog box

Enter between 2 and 256 shades

Click one color

Variant drop down menu

Color Palette

Slide to make gradient darker or lighter

To create a gradient with one color:

1. Click the down arrow in the Color field to display the Color Palette.
2. Select the color.
3. Select a Shade style.
4. Enter the number of shades the color should display. Enter a number between 2 and 256. The higher the number, the finer the shading will be.
5. Slide the Brightness tab to the spot that defines the desired intensity of the fill.

   The leftmost position corresponds to the minimum possible intensity of zero (black).

   The rightmost position corresponds to the maximum possible intensity of 255 (white).

Applying Other Styles and Colors

You will define the color for most objects in the Fill section of the Colors tab. In addition, there are some other color features and objects that you will use frequently.

Features include:

- Borders and line colors and styles.
- Text button colors.

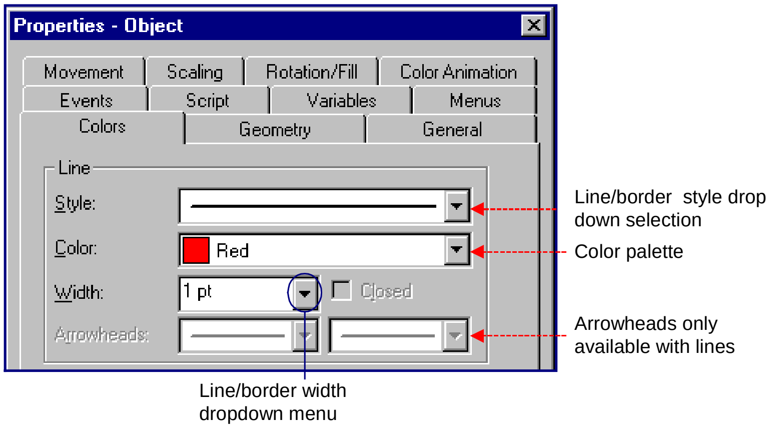
Borders and Line Colors and Styles

Many objects you place on your screens, including text, can be outlined with a border. In addition, you can change the style and shape of any line.

To add a border to an object:

1. Select the object.
2. Click the right the mouse.
3. Select Properties from the popup menu.
4. Select the Colors tab.
5. Enter the line style and its other color and style features in the Line section of the tab.

Line Section of Color Tab



Style:

Color: Red

Width: 1 pt

□ Closed

Arrowheads:

Line/border style drop down selection

Color palette

Arrowheads only available with lines

Line/border width dropdown menu

Note: Limitations in a line display on a Windows 98 Viewer include:

- Lines that are wider than 0 display in the solid line style.
- There are fewer styles available with 0 width lines.

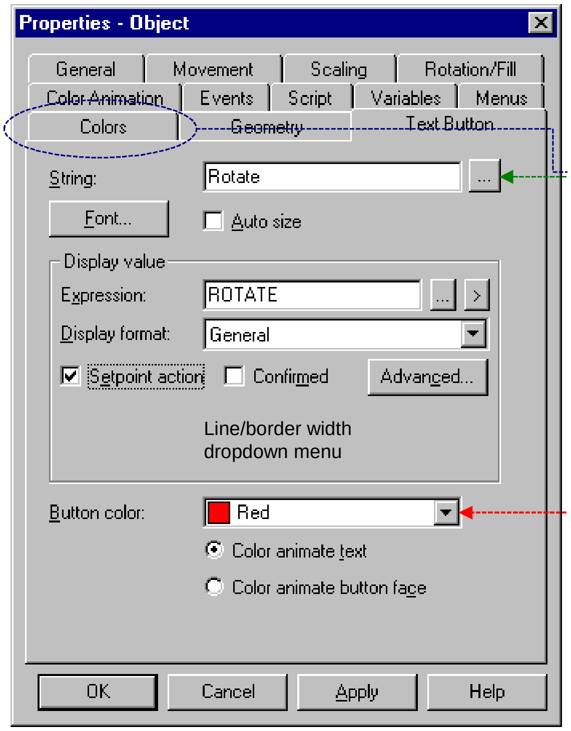
Text Button Colors

For a text button, you.

- Configure the text.
- Apply color to the button.

To apply color to a text button:

1. Select the button.
2. Click the right mouse button.
3. Select Properties from the popup menu.
4. Select the Group tab.
5. Select the button object.
6. Click the right mouse button.
7. Select Properties from the popup menu.
8. Select the Text Button tab.



String: Rotate

□ Auto size

Display value

Expression: ROTATE

Display format: General

☑ Setpoint action □ Confirmed

Button color: 🟥 Red

● Color animate text

○ Color animate button face

Select the text color on the Colors tab.

Line/border width dropdown menu

Color palette for button color

9. Select the color for the text on the Colors tab.
10. Click the down arrow in the Button color field to display the color palette.
11. Select a color.
12. Check Color animate text for the text to change color when you configure button animation.
13. Check Color animate button face for the button to change color when you configure button animation.

See the "Configuring Runtime Movement and Animation" chapter in this manual for detailed information about configuring animation.

Using the Color Palettes

When you are asked to specify a color, you can select one from CimEdit's easy to use color palettes.

CimEdit's basic color palette consists of two tabs called:

- Palette

  Using the Color Palette, you can:

  ➔ Select a basic color.

  ➔ Create a customized color.

  ➔ Edit an existing color.

- Special–Ambient colors.

The exact colors on the basic color palette are based on whether you use the original Windows color palette or the newer CIMPLICITY 3.0 color palette. You can select which to use through the basic color palette.

Palette Tab of the Color Palette

The Palette tab displays 48 fixed colors and 16 user definable custom colors. When you move the mouse pointer over one of the colors, the color name, or the RGB values for the color displays.

In addition, you can open a customized color palette through the Palette tab.

Note: On videos with 16 and 256-color displays, the palette colors that display RGB values will be dithered colors.

A ***dithered color*** is a pattern of dots that simulates the exact color.

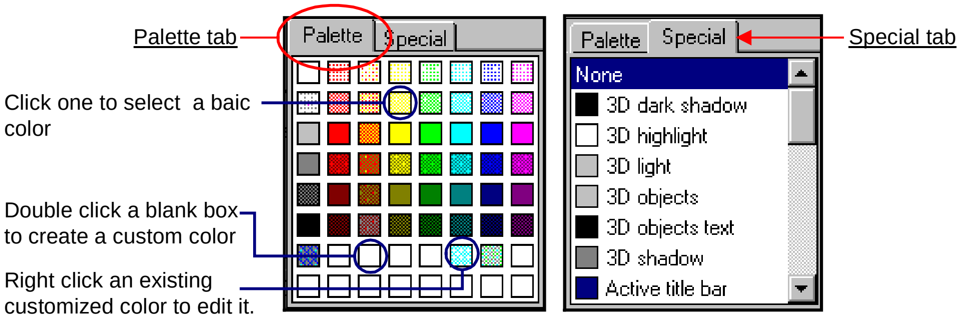
Only the solid portion of a dithered color will be displayed in a pattern.

To select a color:

1. Click the drop-down list button to the right of any Color field.

   A Color Palette appears.

Basic Palette


Palette tab
Click one to select a baic color
Double click a blank box to create a custom color
Right click an existing customized color to edit it.
Palette
Special
Special tab
None
3D dark shadow
3D highlight
3D light
3D objects
3D objects text
3D shadow
Active title bar

2. Select the Palette tab.
3. Double-click the color of your choice on the Palette tab.

Special Palette Color Selection

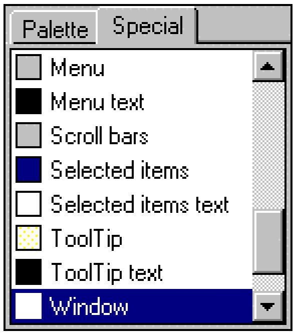
The Special tab on CIMPLICITY's basic palette provides options that correspond to the colors selected on the Appearance tab in the Windows Display Properties dialog box.

To select a Windows display color on the Special tab:

1. Click the drop-down list button to the right of any Color field.

   A Color Palette appears.

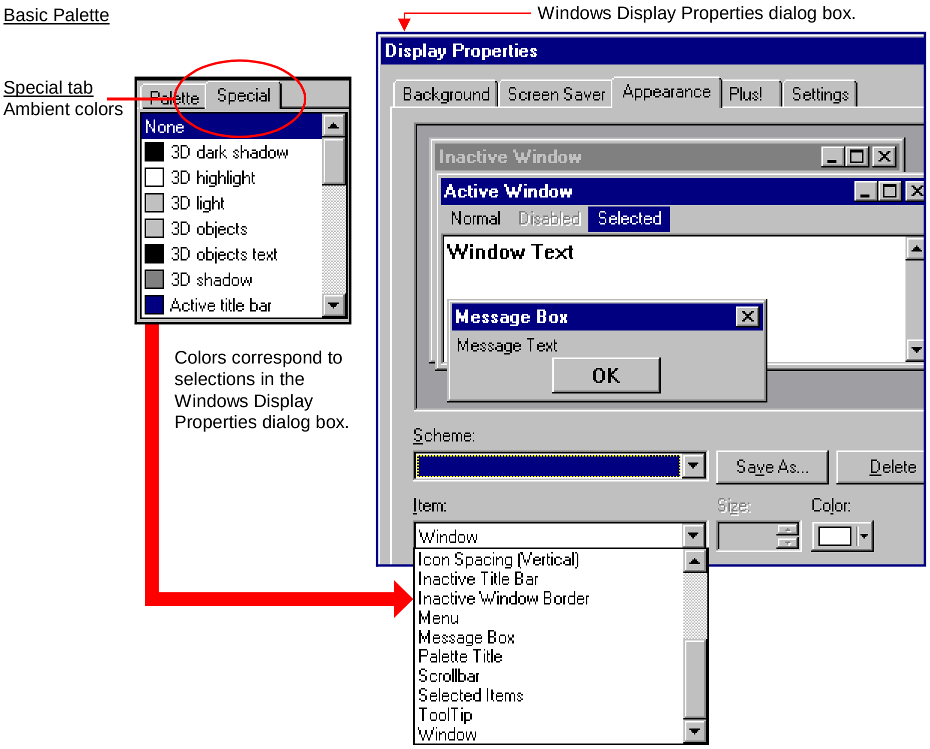
2. Select the Special tab.



3. Select the option that corresponds to a Windows display color.

Result: The color that was selected in the Windows Display Properties dialog box will display.

Change the color in the Windows Display Properties dialog box.



Basic Palette

Special tab
Ambient colors

Windows Display Properties dialog box.

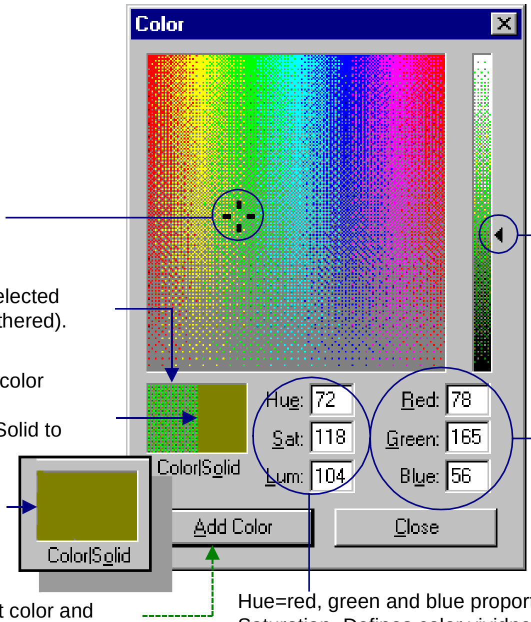
Colors correspond to selections in the Windows Display Properties dialog box.

To create a custom color:

1. Click the drop-down list button to the right of any Color field.
2. Click an empty box at the bottom of the Palette tab.

   The Color (custom color) palette opens.

Color Palette: To create Customized Color



Color
Color picker
Luminosity picker
Actual color selected (example is dithered).
Closest solid color available Double click Solid to choose it.
Solid double clicked
Color|Solid
Color|Solid
Add Color
Close
Press to select color and add it to the basic palette.
Change a single color's index value, to change its luminance in the mix.
The picker positions and color box reflect the change.

Hue: 72
Sat: 118
Lum: 104
Red: 78
Green: 165
Blue: 56

Hue=red, green and blue proportions based on their entered values.
Saturation=Defines color vividnes (amount of gray).
Luminance=Amount of light in the color (0=Black).

3. Do one or more of the following until you have created the color you want. You can see the exact color and the solid color that is closest to it in the Color|Solid box.

   A. Move the Color picker around to change the color.

   B. Enter exact RGB Index values for any or all of the colors in the Color fields.

   Zero for all colors = Black.

   0 for one color = Black for that value

   255 for all colors = White

   255 for one color = Pure red, green, or blue for that value

   The color that displays reflects the combination of the three entries

   C. Move the Luminosity picker up and down to change the amount of light (absence of black) in the color.

   D. Enter an exact value that specifies the amount of light in the color in the Lum field.

   0 = Black (The colors' values will change to 0)

   240 = White (The colors' values will change to 255.

   Any changes you make in this value will affect all the colors.

E. Specify how vivid the color specified by the balance of the three basic colors should be in the Sat field.

0 = Gray

240 = No gray.

F. Specify the balance of red, green, and blue that you want in the Hue field. This balance is calculated against the values that are already in the Color fields.

4. Decide whether to use the exact color or the solid color displayed in the Color|Solid box. Selection possibilities are:
   - The exact color is the same as the solid color. The box will be entirely solid.
   - The exact color is dithered and is different from the solid color. The dithered color appears on the left.
   - The solid color that is closest to the exact color appears on the right.
5. Select the option you want.

A. Double-click the Solid side of the Color|Solid box to add the solid color. The box changes to the solid color

B. Click **Add Color** either when in the Color|Solid box:

Both the exact and solid display. The exact color will be selected.

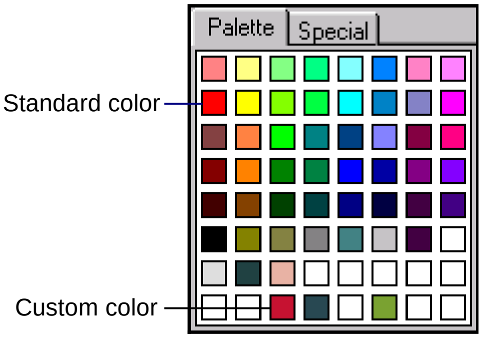
Only the solid color displays. The solid color will be selected.

Result: The color will be added to the Custom Colors section of the Color Palette that you selected in step 2 of this procedure and to the Color field.

To edit a color:

1. Click the drop-down list button to the right of a Color field.

The Color palette displays.



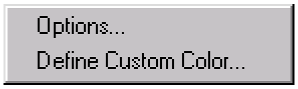
Method 1–Use the customized color section

2. Select a color in the customized color section.
3. Click the right mouse button.

Method 2–Use the standard color section

2. Click on a standard color to select it.
3. Click the right mouse button.

The following popup menu displays:



4. Select Define Custom Color…

   The Color dialog box opens and displays the complete palette of colors when you use either method.

Continue from Method 1 or 2

Proceed as you would if you were creating a new color.

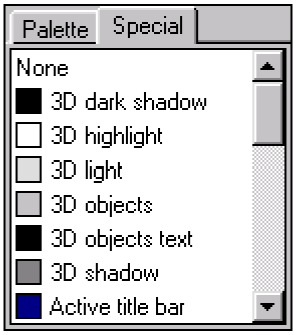
Result: When you have edited the color, the new color appears in the custom color box that the edited color used to occupy.

Special Colors Tab of Color Palette

The Special tab contains the None color (which is part of a pattern transparent) and all the special system effects/colors.

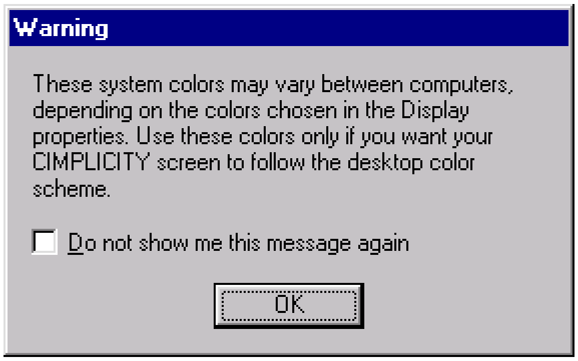
To select a special system color:

1. Click the drop-down list button to the right of the Color field.
2. Select the Special tab.
3. Choose one of the special effects/colors.



Note: In some situations (such as picking a color for a gradient fill), the None color is not allowed and it will not appear in the list on the Special tab.

The system special effects follow the color scheme you select in the Display Properties on your Control Panel. If you pick one of these colors, you are warned that the color may change from computer to computer depending on the color scheme the user selects for that computer.



Warning

These system colors may vary between computers, depending on the colors chosen in the Display properties. Use these colors only if you want your CIMPLICITY screen to follow the desktop color scheme.

□ Do not show me this message again

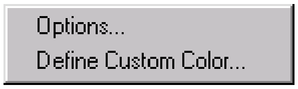
You can use the check box on the warning dialog box to silence the warning. After you silence the warning, use the Options dialog box to turn the warning back on.

Fixed Color Palette Options

You can use two fixed color palettes. The original one from CIMPLICITY HMI 3.0 and earlier (really the standard Windows choose color palette), and a new spectrum based palette (which is what Microsoft is using now).

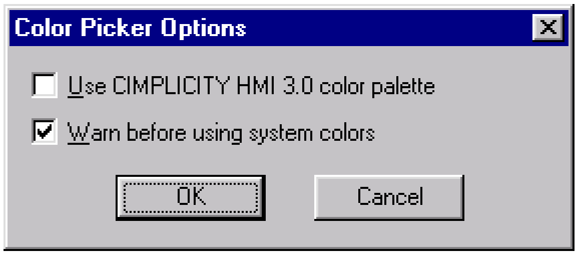
To choose between two fixed color palettes:

1. Right-click on a color in the Palette tab, the following popup menu displays:



2. Select Options…

   The Color Picker Options dialog box opens.

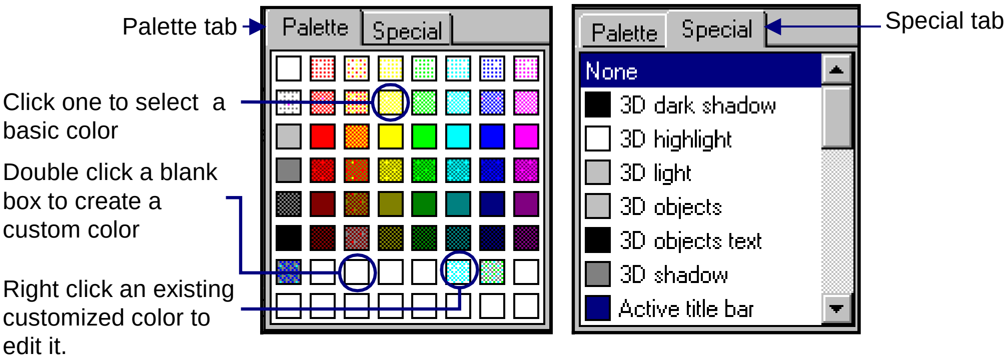


☐ Use CIMPLICITY HMI 3.0 color palette

☑ Warn before using system colors

3. Check Use CIMPLICITY HMI 3.0 color palette to use the new palette. Leave it blank to retain the original palette.

Basic Palette


Palette tab
Click one to select a basic color
Double click a blank box to create a custom color
Right click an existing customized color to edit it.
Palette
Special
Special tab
None
3D dark shadow
3D highlight
3D light
3D objects
3D objects text
3D shadow
Active title bar

4. Check Warn before using system colors if you want to be warned before the system colors are used.

Dealing with the RGB Index

Each RGB color is:

- Made up of a balance of red, green, and blue luminosity values ranging from 0 to 255.

  Example

  Single Color

Red	Green	Blue	Total Color
0	0	0	Black
128	0	128	Purple
255	255	255	White

See "Default color Mappings for Alarm Class Colors" in this chapter for more examples.

- Identified by an index number

  Example

	Single Color			
Index No.	Red	Green	Blue	Total Color
1	255	0	0	Red

RGB.dat Files

Normally, an RGB.dat file is not necessary to create or have.

However, you may need to create an RGB.dat file if you want to

- Change the default indexes for
  - ➔ Alarm State animation
  - ➔ Color Index animation
- Import screens from a CIMPLICITY System-I/U, -D/V, -H/U, or -RS/U system that do not use the default color mappings.

If you change the file on a:

- CIMPLICITY Server, you will need to store a copy of the RGB.dat file in each project's **`\data`** directory.
- CIMPLICITY Viewer, you will need to store it in the **`\data`** directory under the main directory where your CIMPLICITY software is installed.

Alarm State and Color Index Animation

The default colors used by Alarm State and Color Index animation are:

Index Numbers	
0–15	Default colors used (also used by the Alarm Viewer and Alarm Strings).
16–63	Rainbow colors.
64–95	Gray tones.
96-255	Available for other purposes

Note: For Alarm State and Color Index animation, if an index value does not have a defined color and an object's color has been assigned that index value, the color displays as black.

Imported Screens from a CIMPLICITY System…

When you import screens from a CIMPLICITY System-I/U, -D/V, -H/U, or -RS/U system that do not use the default color mappings you will need to create an RGB.dat file.

If you are importing screen files from a CIMPLICITY System-D/V, -H/U, -I/U, or -RS/U system, the color mappings should match the RGB.dat file on that system.

If the system you are importing from does not use the default color mappings, you will have to create an RGB.DAT file that matches the one on the source system to display its screens correctly.

You should use the same color mappings for all projects.

Default Color Mappings for Alarm Class Colors

The default color mappings used by the Alarm Viewer and Alarm Class Configuration to assign foreground and background colors to alarms in an RGB.dat file are:

Number	Red	Green	Blue	Total Color
0	0	0	0	Black
1	255	0	0	Red
2	0	255	0	Lime
3	0	0	255	Blue
4	128	0	0	Maroon
5	0	128	0	Green
6	128	0	128	Purple
7	255	255	255	White
8	0	128	128	Teal
9	128	128	128	Gray
10	128	128	0	Olive Green
11	32	64	64	(Dark)
12	224	176	160	(Rose)
13	255	0	255	Fuchsia
14	0	255	255	Aqua
15	255	255	0	Yellow

Creating an RGB.dat File

The logistics for creating an RGB.dat file are easy. It requires more experience to determine what values to enter.

To create an RGB.dat file:

1. Open Microsoft Notepad or any text editor.
2. Enter four numbers (separated by one tab) on each row that represent Row Number, Red, Green and Blue in that order.
3. Use as many rows as are needed to specify the colors you want in your system. Each row defines one color.

RGB.dat File Example

Example of Default Mappings in an RGB.dat file format

```
0       0       0       0
1       255     0       0
2       0       255     0
3       0       0       255
4       128     0       0
5       0       128     0
6       128     0       128
7       255     255     255
8       0       128     128
9       128     128     128
10      128     128     0
11      32      64      64
12      224     176     160
13      255     0       255
14      0       255     255
15      255     255     0
```

Note: Make sure you enter four numbers on each row.

Text Objects on a CimView Screen

You can

- Configure any text object that you place on a CimEdit screen to display current CIMPLICITY point values. *See "Placing Text Objects" in the "Creating a Preliminary Layout" chapter of this manual for information about placing text objects on the screen.*
- Specify the font type and size that will display.

Using Text Objects to Display Point Values

You can configure either a plain text object or text on a text button to display current CIMPLICITY HMI point values.

You do this in the Display value section on the Text or Text Button tab of the Properties - Object dialog box.

To make text display current CIMPLICITY HMI point values:

1. Open the Properties - Object dialog box for a selected text object.
2. For a:

   A. Plain text object:

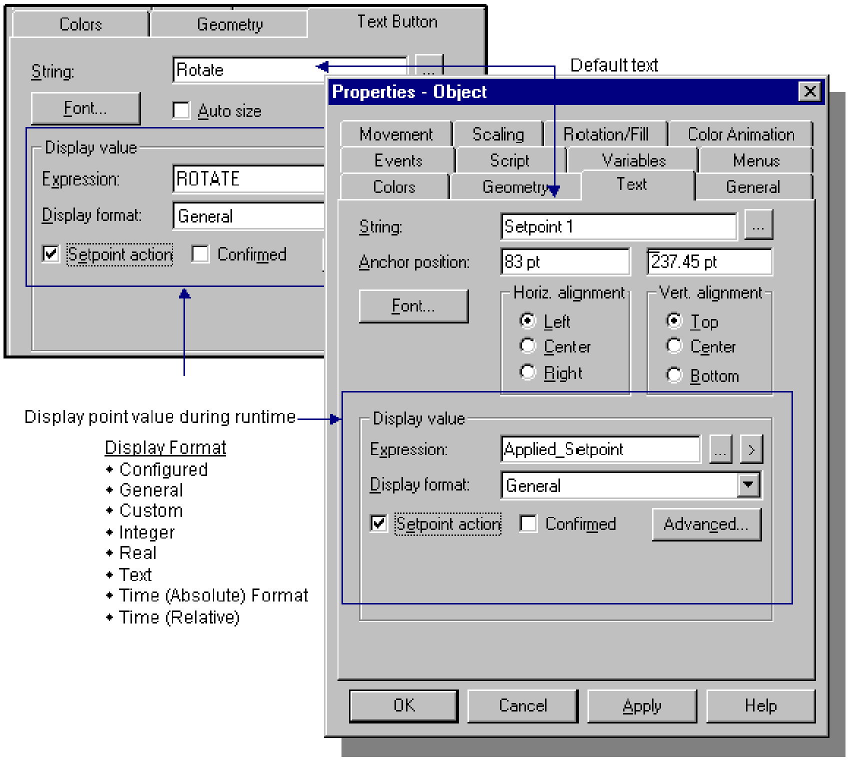
      Select the Text tab.

   B. Text button object:

      Select the Text Button tab.

3. Enter an Expression that consists of one or more CIMPLICITY Point IDs combined with logical or arithmetic operators.
4. Choose a Display format from the drop-down list.
5. Enter additional specifications, when additional fields display as a result of your selected display format.

Text and Text Button tabs of Text objects properties Dialog Boxes



String: Rotate

☐ Auto size

Display value

Expression: ROTATE

Display format: General

☑ Setpoint action ☐ Confirmed

Default text

String: Setpoint 1

Anchor position: 83 pt 237.45 pt

Horiz. alignment: ● Left ○ Center ○ Right

Vert. alignment: ● Top ○ Center ○ Bottom

Display value

Expression: Applied_Setpoint

Display format: General

☑ Setpoint action ☐ Confirmed

Display point value during runtime

Display Format

- Configured
- General
- Custom
- Integer
- Real
- Text
- Time (Absolute) Format
- Time (Relative)

Tip: CimEdit provides you with several ways to configure setpoints. They include:

- Setpoint actions

  See the "Setpoint Actions" sections of the "Creating Procedures in CimEdit" chapter in this manual for a list of available setpoint actions.

- Slider action checkboxes on the Movement tab in the Properties dialog box.

  See "Creating a Slider Action" in the "Configuring Runtime Movement and Animation" chapter in this manual for details about configuring slider actions.

- Setpoint action checkboxes on the Text tab in the Properties dialog box.

Configured

Settings that are entered on the General and View tabs in the Point Properties dialog box are used as the display format for point values in CimView, when you select **`Configured`** in CimEdit.

A width is specified in the Point Properties dialog box. This specification does not cause a value to be truncated. If the number of characters in the output value is greater than the specified width, or if a width is not given, all characters of the value are printed (subject to the precision specification).

If the number of characters in the output value is less than the specified width, blanks are added to the left or right of the values until the minimum width is reached. The blanks' position depends on whether the flag (for left alignment) is specified. If the width is prefixed with 0, zeros are added until the minimum width is reached.

If you configure a text object using this option’s features, make sure that you make the text object long enough to accommodate the anticipated length of the value.

General

If the number of digits exceeds the **`GSM_EXPONENT_PRECISION`** global parameter, then the number is displayed in scientific notation. If **`GSM_EXPONENT_PRECISION`** is not defined, the default number of digits is 6. If the number is larger than the precision of the format, it will be rounded in the display. For example, with the default precision:

1234567 displays as 1.23457e+6

7654321 displays as 7.65432e+6

Custom

Enter the specification using the standard C language format notation

Integer

A. Enter, in the Width field, the number of characters needed to display the results of the expression evaluation.

B. Check Zero filled to toggle the leading display of zeros.

Real

A. Enter, in the Precision field, the number of places to the right of the decimal place that you want displayed.

B. Enter, in the Width field, the number of characters needed to display the results of the expression evaluation.

C. Check Zero filled to display leading zeros.

D. Check Scientific to use scientific notation for the value display.

Text

Enter, in the Max width field, the maximum number of characters needed to display the text string.

Time (Absolute) Format

Interprets the expression as a UNIX absolute time. That is, the value represents the number of seconds since 00:00 GMT on January 1, 1970

Select the *Time format* you want to display. You can choose to display time, date, or both.

If you choose the YYYY:MM:DD:HH:MM:SS format, you can only display values after 1995:01:01:00:00:00 (January 1, 1995 at 00:00 AM). Values before that date are displayed as ----:--:--:--:--:--.

Time (Relative)

Interprets the expression value as an elapsed time value in seconds.

Select the Time format you want to display. You can choose to display time, date, or both.

Note: If you use a point with Custom conversion, the EU value of the point is a real (floating point) number and is best displayed with the General or Real format. These formats round floating-point numbers, while the Integer format truncates them.

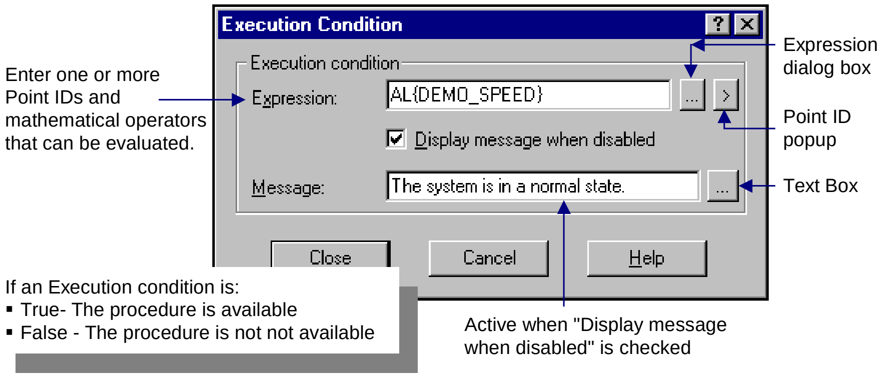
1. Check Confirmed if you want a confirmation message to be displayed at runtime after the Setpoint action is performed.
2. Check Setpoint Action if you enter a single Point ID to allow a user to perform a Setpoint action on the Point ID during runtime.

   The **Advanced…** button is activated.
3. Click **Advanced…** The Execution Condition dialog box opens.

Execute Condition for a Text Setpoint

Configure an Execution Condition if you want to control a user's access to a setpoint action.

Execute Condition Dialog Box



Execution Condition

Execution condition

Expression: AL{DEMO_SPEED}

☑ Display message when disabled

Message: The system is in a normal state.

Enter one or more Point IDs and mathematical operators that can be evaluated.

Expression dialog box

Point ID popup

Text Box

If an Execution condition is:
- True- The procedure is available
- False - The procedure is not not available

Active when "Display message when disabled" is checked

To control a user's access to a Setpoint action:

1. Enter an Expression that must evaluate to TRUE during runtime in order for a user to access the Setpoint action.
2. (Available if an expression is entered in the Expression field) Check Display message when disabled to display a message during runtime when a user attempts to perform the Setpoint action and the Execution Condition Expression evaluates to FALSE.
3. (Available if the Display message when disabled check box is checked) Enter a Message to display during runtime when a user attempts to perform the Setpoint action and the Execution Condition Expression evaluates to FALSE.

Changing a Font Type and Size

You can select the font, size and style for any text that you place on a CimEdit screen.

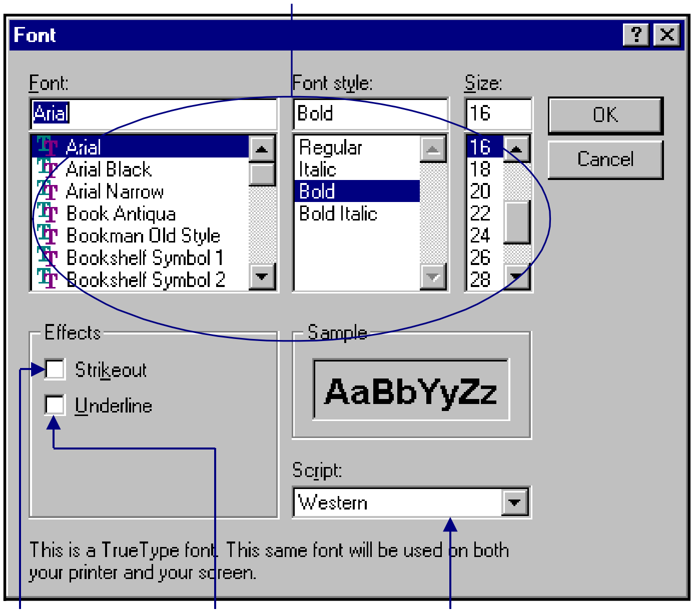
To change the font and style for text

1. Click **Font** , which appears on the tab where you enter the string for the text.**:**

   The Font dialog box opens.

Standard Font Dialog Box

Select a font, style and size from the scroll lists



Font: Arial

Font style: Bold

Size: 16

Script: Western

This is a TrueType font. This same font will be used on both your printer and your screen.

Check for ~~strikeout.~~ Check for underline Characters for active language

2. Select the Font, Style and Size from the scroll lists.
3. Make sure the specified Script is for the active language. For example, use Chinese script for the Chinese language; Western for English.
4. Check the Strikeout or Underline boxes for additional font styling.

Using Points for Values

Points vs. Variables

CimEdit provides you with two powerful options for monitoring the status of your processes. They are:

- Points
- Variables

Points report specific conditions in the system. Points are the result of detailed configuration, which is done in the Point Properties dialog box. As with other CIMPLICITY HMI applications, when you are in CimEdit, you can find and use any point that is already in any broadcasting project on your network. In addition, you can create new points by opening the Point Properties dialog box through CimEdit.

Variables are a container for a piece of information. The information can represent a full or partial Point ID, or text string in an expression. They are completely contained in CimEdit. At any given moment, CimEdit evaluates them and acts on the result of its evaluation in the manner that you specify. *See the "Using Variables in CimEdit" chapter in the manual for detailed information about variables.*

This chapter describes how to review the points you are using on the CimEdit screen.

If you are a system administrator, see the chapters:

> *"Using Point Addresses", for using points to reference data in CIMPLICITY HMI software.*
>
> *"Monitoring Point Attributes" for the point attributes' syntax that enables you to monitor the attributes of configured points through CimView.*

Point View in CimEdit

CimEdit provides you with an invaluable editing tool–the Point View dialog box. Point View eliminates any guessing about what Point IDs you are using on your screen and with what items they are associated because you can find out all in one easy dialog box. It also tells you if any point on your screen is invalid. In addition, Point View speeds up editing time by letting you access any item's Properties dialog box with one easy click.

Simply open the Point View dialog box when you want to:

- Know what Point ID, if any, is associated with an object or group
- Review a Point ID and associated information for the entire CimEdit screen

The Point View dialog box gives you the capability in:

- CimEdit or CimView to search both “forward and backward” to:
  - ➔ Find the objects associated with each Point ID.
  - ➔ Find the Point IDs associated with an object, group, frame or screen.
- In CimEdit to:
  - ➔ Change the Point ID used by one or more objects.
  - ➔ Rename an object.

Note: Currently the Point View dialog box does *not* display information about Point IDs used by scripts, variables or CIMPLICITY ActiveX controls.

When you select an object in the dialog box, it is highlighted in your CimEdit or CimView screen.

Opening the Point View Dialog Box

When the Point View dialog box opens, the information it displays depends on what you select before you open it. Once opened, you can expand or collapse your view whenever you want.

To control what you will see as soon as the Point View dialog box opens:

Method 1–Review the points associated with only one object or group

Select an object or group before you open the Point View dialog box.

This will bring you directly to the information you are looking for. You can expand your view when the Point View dialog box is open.

Method 2–Display the Point IDs for the entire CimEdit screen:

Place the cursor anywhere on the screen.

To open the Point View dialog box:

Method 1–Use the toolbar

Click the **Point View** button on the Format toolbar.

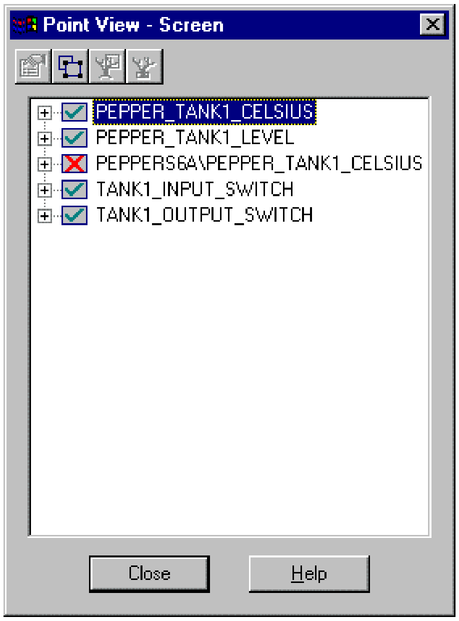
Method 2–Use the menu bar

1. Click Edit on the menu bar.
2. Select Point View.

Method 3–Use a popup menu

1. Click the right mouse button.
2. Select Point View from the popup menu.

When the Point View dialog box opens, the points you see are being used by the object you selected or by the entire screen if you did not select an object.



☑ PEPPER_TANK1_CELSIUS
☑ PEPPER_TANK1_LEVEL
☒ PEPPERS6A\PEPPER_TANK1_CELSIUS
☑ TANK1_INPUT_SWITCH
☑ TANK1_OUTPUT_SWITCH

Navigating through Point View

When Point View displays you:

- Expand or collapse the information for one or more points in the current view.
- Display points associated with a selected item (base object).

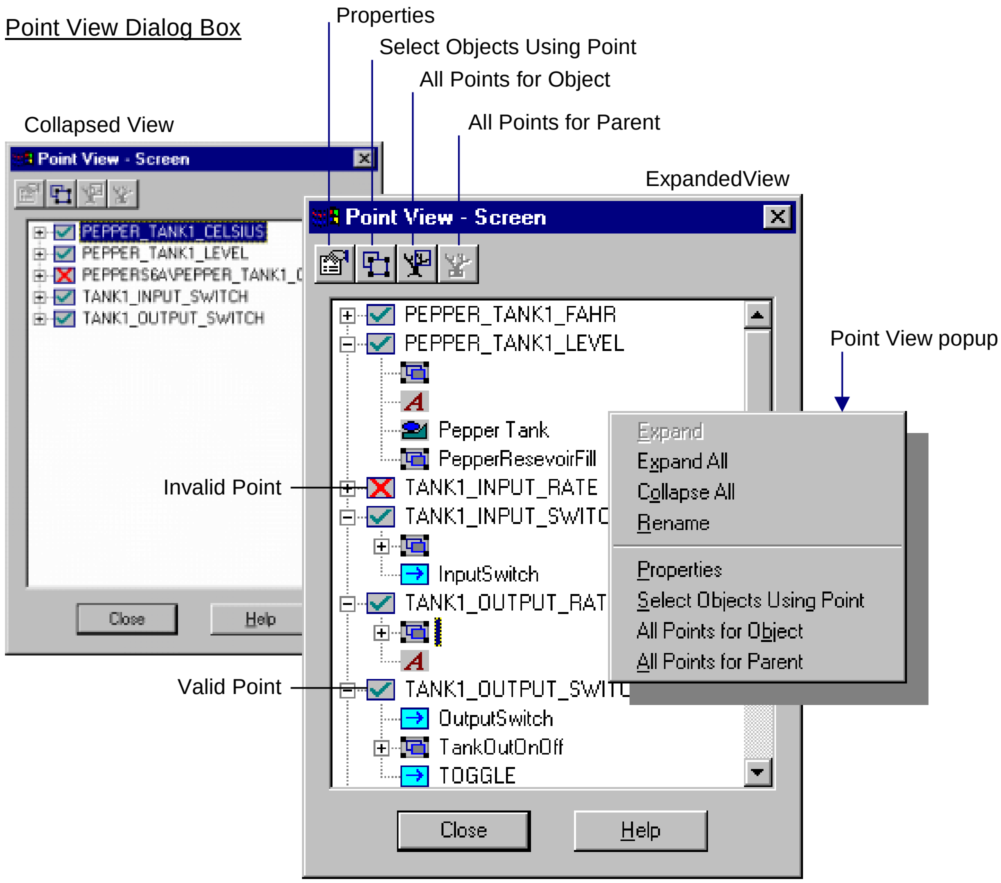
Note: Frames behave somewhat differently from other items.)

Information in Current View Expanded/Collapsed

When you open the Point View dialog box you see a list of all the Point IDs associated with the object you selected.

Expand any or all points to see what items are associated with those points. CimEdit makes it easy to see what you have selected by framing the actual item on the screen. In addition, you can open any item's Properties dialog box through a Point View popup menu.

Point View Dialog Box



The dialog box is resizable. The Title bar always reflects the object type and name of the current base object.

Note: Currently, the Point View dialog box does not display information about Point IDs used by scripts, variables, or ActiveX controls.

To expand/collapse the current view in the Point View dialog box:

Method 1

1. Click ⊞ to expand the view.
2. Click ⊟ to collapse the view.

Method 2

1. Select any displayed item.
2. Click the right mouse button.
3. Select from the available expand/collapse options on the Point View popup menu.

Base Object/Parent Levels

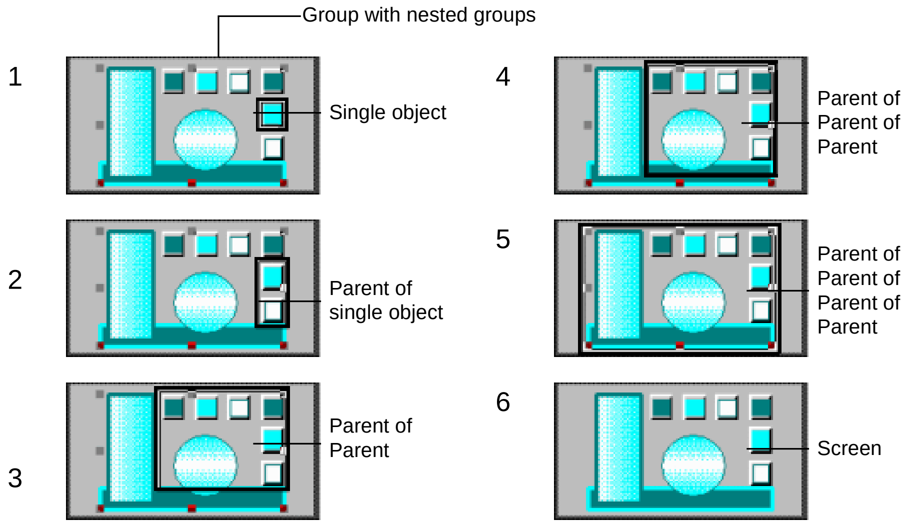
By incorporating base object/parent functionality, in addition to its expand/collapse features, the Point View dialog box displays exactly the information you are looking for.

A ***base object*** is the object that is selected. The item can range from one object to the entire screen.

A ***parent*** is the item that is one level above the base object. The parent can range from a group of two items to the entire screen.

Progression of a Base Object in a Deeply Nested Group

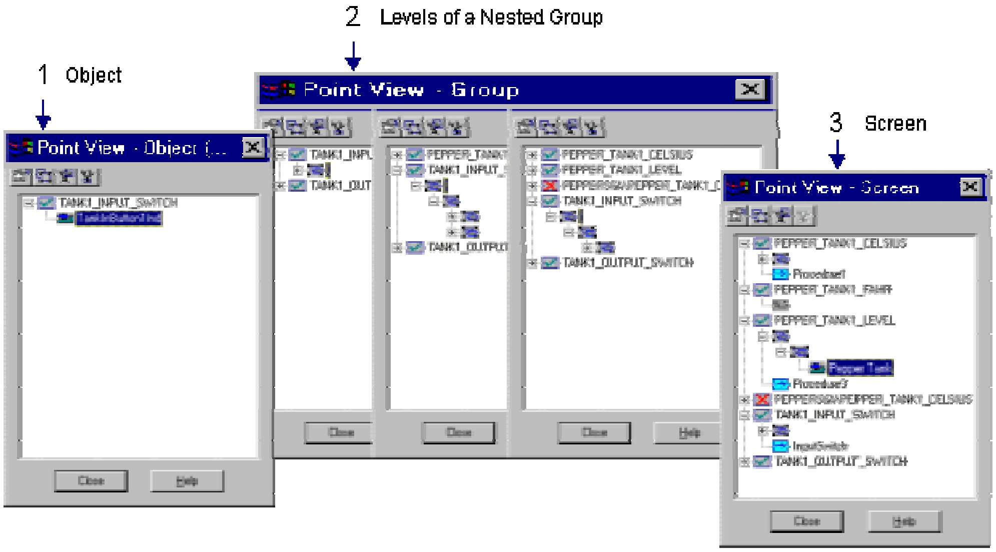
Each level in this nested group can be displayed as a base object.



You can choose any level to display as the base object in the Point View dialog box. You can then

- Select any displayed item in the base object to
  - ➔ Edit
  - ➔ Become the base object
- Make the parent of the displayed base object, the new base object

Progression of Base Object Display in Point View



To change the displayed base object:

Method 1

1. Click the **All points used by the highlighted object** button to display the selected item as the base object.

2. Click the **All points used by the parent of the base object** button to display the parent as the new base object.

Method 2

1. Click the right mouse button.
2. Select **All Points for Object** on the popup menu to display the selected item as the base object.
3. Select **All Points for Parent** on the popup menu to display the parent as the new base object.

Guidelines: Following are guidelines for dealing with frames as base objects and parents.

In CimEdit, when you select a frame object on your screen and then enter Point View, if the:

- Frame container is closed and you:
  - ➔ Select to view the parent of the frame object, the frame container becomes the base object.
  - ➔ Select an object in the frame container as the base object, the selected frame becomes visible and the object is highlighted on the CimEdit screen.
- CimEdit Screen is in frame mode and you:
  - ➔ Select to view the parent of the Frame Container as the base object in *Point View*, frame mode is closed on the CimEdit screen.
  - ➔ Select the Frame Container as the current object, **Select Objects Using Point** in Point View is disabled.
  - ➔ Use **Select Objects Using Point** in Point View, only the top-level objects for the current frame are selected.
  - ➔ Select to view the parent of a Frame Container, and then go back into it, you will not return to frame mode in the CimEdit window.

In CimView, if you select a frame container as the base object and open the Point View dialog box, then select any object in the frame container, the selected frame object on your CimView screen does not change.

All Objects for a Point ID Displayed

You can use the Point View dialog box to quickly find *all* objects on the CimEdit screen that use a particular Point ID. You can then manipulate the selected objects on the CimEdit screen after you close the Point View dialog box.

Important: If the Point ID is being used by an object in a Group, the ***Group*** is selected. If the Point ID is being used by a frame in a Frame Container, the ***Frame Container*** is selected.

Example

You want to delete all the objects that use Point ID **XYZ**:

1. Select **XYZ** in the Point View dialog box.
2. Click the **Select Objects Using Point** button .
3. Close the Point View dialog box.
4. Press **Delete** on the keyboard.

   Remember that if **XYZ** is being used by an object in a group or frame container, the *entire* group or frame container will be deleted.

To select all the objects using a highlighted Point ID:

Method 1–Use the toolbar

Click the **Select Objects Using Current Point** button.

Method 2–Use a popup menu

1. Click the right mouse button.
2. Select Select Objects Using Point from the popup menu.

Point View deselects all currently selected objects on the CimEdit screen, and then selects all the top-level objects on the CimEdit screen that use the Point ID. The contents of the Point View dialog box do not change.

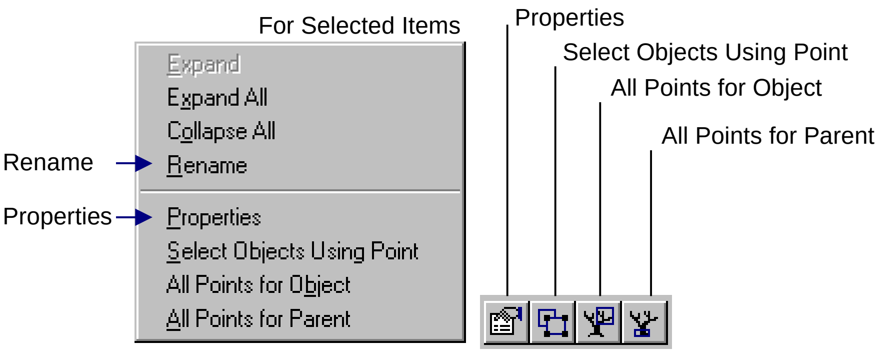
Making Changes through Point View

CimEdit provides you with a toolbar and popup menu so you can easily make changes to selected items in Point View. You can:

- Rename a non-point item.
- Edit most selected non-point items through the Point View dialog box.
- Replace a point.

Note: In CimView, you can look at the item's properties, but you cannot display the properties of a Point ID or a frame object.

Non Point Item Changes



To rename a highlighted item through Point View:

1. Click the right mouse button.
2. Select Rename from the popup menu.
3. Type the new name over the old.

To edit a highlighted item in Point View:

Method 1–Use the toolbar

Click the **Properties Dialog** button on the Point View toolbar.

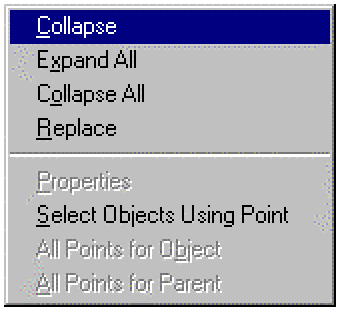
Method 2–Use a popup menu

1. Click the right mouse button.
2. Select Properties from the popup menu.

Result: The Properties dialog box for that item opens.

Point Replacement

You can replace any point with another by using Point View's Point ID popup.



To replace a highlighted point:

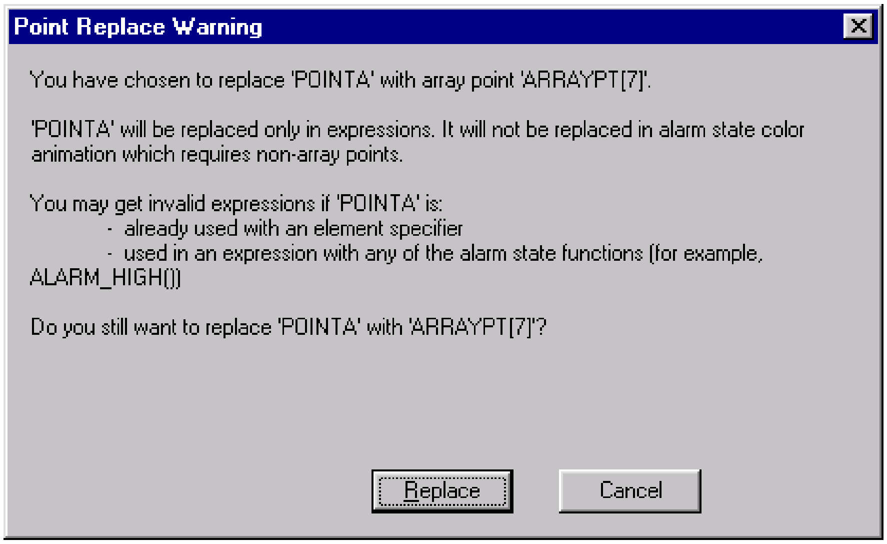
1. Click the right mouse button.
2. Select Replace from the popup menu.
3. Type the new Point ID over the old.

You will be asked to respond to verification messages when you replace the Point ID. After you verify the change, the new Point ID is entered for all objects and procedures listed under it in the Point View dialog box.

Important: If you change the name of a Point ID to an array point element be aware that:

- An array point element cannot be used in alarm state color animation.
- You may get invalid expressions if the point you are replacing
  - ➔ Already has an element specified
  - ➔ Is used in alarm state functions

A Point Replace Warning dialog box reviews the array point restrictions and asks you if you want to replace the Point ID anyway. You can choose to replace the Point ID or cancel your request.



You have chosen to replace 'POINTA' with array point 'ARRAYPT[7]'.

'POINTA' will be replaced only in expressions. It will not be replaced in alarm state color animation which requires non-array points.

You may get invalid expressions if 'POINTA' is:
- already used with an element specifier
- used in an expression with any of the alarm state functions (for example, ALARM_HIGH())

Do you still want to replace 'POINTA' with 'ARRAYPT[7]'?

Points Configured through CimEdit

Whenever a point can be used as a value, CimEdit gives you quick access to a Point Properties dialog box that is associated with your choice.

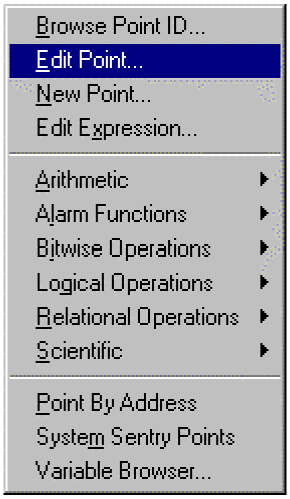
You can also specify the point location through qualified and unqualified points.

The same point naming rules apply throughout CIMPLICITY HMI software.

To display the Point ID popup menu in CimEdit:

1. Select the object for which you want to create or edit a point.
2. Open its associated Properties dialog box.
3. Click the **Popup Menu** button > to the right of a field that requests a Point ID.

Result: The Point ID popup appears.



From the Point ID popup menu, you can:

To open a New Point dialog box through CimEdit:

Select New on a Point ID popup menu to the right of the field in which the point displays.

The New Point dialog box that appears when you create a new point through the Point Properties dialog box appears here.

To open a point's Properties dialog box through CimEdit:

Select Edit on a Point ID popup menu to the right of the field in which the point displays.

The Point Properties dialog box for the point in the adjacent field opens.

Specifying Point Location

CimView can gather point information from any project on your network that is broadcasting. You will need to identify where the information comes from through:

- Unqualified points.
- Qualified points.

You make your specifications on the Edit tab of the Options dialog box.

Unqualified Points Defined

An ***unqualified point*** just specifies the Point ID.

Example

`MYPOINT`

Information about an unqualified point can come from the locally running project or from the default project determined by the **`/project <project>`** command line option used.

Unqualified points are best used when you:

- Have a single-node application.
- Are creating CimView screens in a project that will be copied.
- Want to create a screen to view points with the same IDs from different projects.

To get information about the point, CimEdit and CimView use the following steps to fully qualify an unqualified Point ID:

1. An **Open Screen** or **Overlay Screen** action can specify a project to be used to fully qualify any unqualified Point IDs. When a user opens a screen using one of these actions, the project specified in the action is used to fully qualify any unqualified Point IDs.
2. If a command line is used to open CimEdit or CimView, and the **`/project`** option is used, that project is used to fully qualify any unqualified Point IDs.
3. If the screen is in a project directory, that project is used to fully qualify any unqualified Point IDs.
4. If you are on a Server and a single project is currently running, that project is used to fully qualify any unqualified Point IDs.
5. If you are on a Server and multiple projects are running, the project that was started first is used to fully qualify any unqualified Point IDs. However, this behavior can be modified by using the PROJECT_ID global parameter.
6. If you are on a Viewer, unqualified Point IDs are unavailable.

Fully Qualified Points Defined

A fully ***qualified point*** is prefaced with a project name or a node name. For example:

`\\MYPROJ\MYPOINT`

Information about a fully qualified point always comes from the project or node specified in the Point ID.

Fully qualified points are best used when you have multiple projects running on the network at the same time. When you create a CimView screen using fully qualified Point IDs, and use that screen on any computer running CIMPLICITY HMI software, the point information always comes from the projects you specified in the Point IDs.

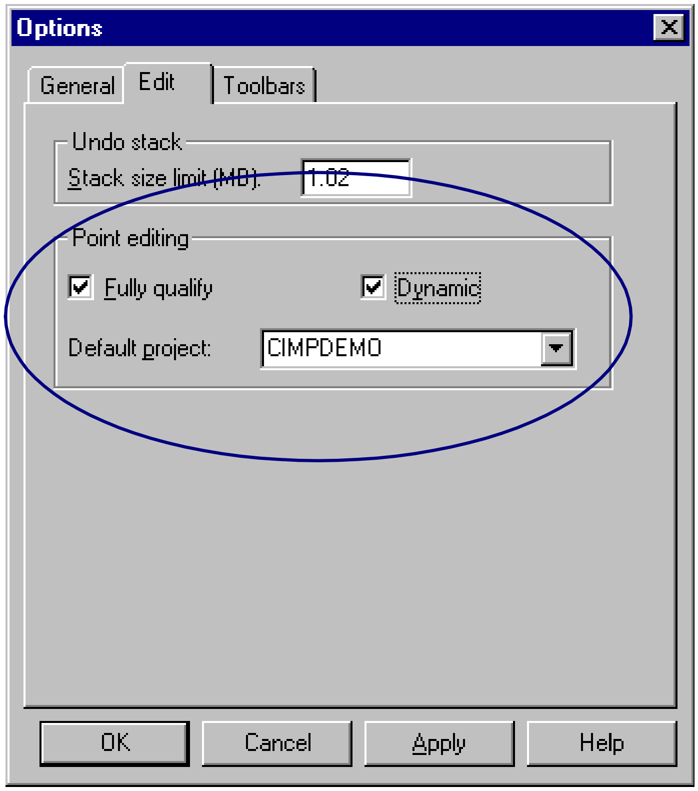
Unqualified or Fully Qualified Points Specifications

You specify whether points used on a CimEdit screen will be unqualified or fully qualified on the Edit tab of the Options dialog box.

To specify point qualification:

1. Click Tools on the CimEdit menu bar.
2. Select Options.

   The Options dialog box opens.
3. Select the Edit tab.
4. Check Fully qualify to make the points fully qualified.
5. Select the Default project from the drop down list of available projects.



Stack size limit (MB): 1.02

☑ Fully qualify ☑ Dynamic

Default project: CIMPDEMO

Note: Check Dynamic to enable dynamic configuration.

Naming Points

Because the same rules apply to creating and editing points throughout CimEdit, it is important to adhere to the rules about Point IDs.

Tip: Display all existing points in the Workbench when you need to create new points. That way you can refer to the existing list to avoid name duplication.

Each point in a project has a unique Point ID. This identifier may be up to 32 characters long. You may use any combination of upper-case letters and numbers to create a Point ID. You may also use special characters in a Point ID. There are however, some reserved words and reserved characters. If you use reserved words or characters for a Point ID:

- When you include a Point ID that contains reserved words or special characters in an expression or equation, you ***must*** enclose the Point ID in single quotes.
- File names for Alarm Help files will be difficult to correlate to Point IDs. These file names are usually generated automatically by CIMPLICITY software and are based on the Point/Alarm ID.

Reserved Words for Points

The following are reserved words in CIMPLICITY HMI software. You should *not* use these words for Point IDs:

A1
A2
AH1
AH2
AL
AL1
AL2
ALARM
ALARM_HIGH
ALARM_LOW
ALARM_NOT_ACKED
ANA
AND
BAND
BNOT
BOR
BXOR
EQ
EU_CONV
GE
GT
LE
LT
NE
NOT
OR
SQR
WARNING
WARNING_HIGH
WARNING_LOW
XOR

If, however, you do use a reserved word for a Point ID and you include such a Point ID in a point expression or equation, you *must* enclose the Point ID in single quotes.

Reserved Characters for Points

You cannot use a space (blank) or the following characters in a Point ID:

| $

If you attempt to do so, you will receive an error message.

The following characters are permitted. However, avoid using them as they can be misinterpreted by the Expression Editor and other software:

+ - * ? \ [ ]

You may use any other special character (such as @, #, %, etc.) on the keyboard in your Point ID. However, if you include such a Point ID in a point expression or equation, you *must* enclose the Point ID in single quotes. The only exception to this rule is the underscore character (_). You do not need to enclose the Point ID in single quotes if you use the underscore.

You may start a Point ID with a number (0-9). However, if you include such a Point ID in a point expression or equation, you *must* enclose the Point ID in single quotes.

Dynamic Point Configuration

CIMPLICITY software configuration information is held in files in the project's `master` and `data` directories.

- Runtime functions use information from configuration files in the `data` directory.
- Configuration functions use information in the `master` directory.

By separating runtime and configuration information in this manner, you can modify your configuration information while CIMPLICITY software is running, and update your runtime system as appropriate.

However, when you want to update configuration information and have the updated information immediately available to the runtime system, you can by using the Dynamic Update option.

To enable dynamic point configuration:

Method 1–Use the toolbar

Click the **Dynamic Points** button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the CimEdit menu bar.
2. Select Dynamic Points

The button remains enabled until you click it off.

While Dynamic Points is enabled, you can create points in both the `master` and `data` directories whenever you select:

- New on the Point ID popup menu
- New Point… on the Expression Popup menu.

While Dynamic Points is disabled, you only create points in the `master` directory.

To disable dynamic point configuration:

Method 1–Use the toolbar

Click the enabled Dynamic Points button on the Tools toolbar.

Method 2–Use the menu bar

1. Click Tools on the CimEdit menu bar.
2. Deselect Dynamic Points.

Point Attributes in CimEdit

You can associate point attributes with points for a user to monitor and, in some instances, write to, in CimView.

CIMPLICITY HMI provides point attributes that are:

- Available for applications.
- Available to evaluate point runtime performance.
- User defined attribute sets that are assigned to a point in the Point Properties dialog box.

See the "Using Point Attributes" chapter in the CIMPLICITY HMI Base System User's Manual (GFK-1180) for a list of and more information about point attributes.

Associating a point attribute with a point is as easy as configuring any expression in CimEdit.

To associate a point attribute with a point in a CimEdit expression:

1. Select or create an object to which the point attribute will be applied.
2. Open the object's Properties dialog box.
3. Click the **Edit Expression** button … next to the Expression field that applies to the object's runtime behavior.

   The Edit Expression dialog box opens.
4. Enter the Point ID and attribute you want to display using the following syntax.

   '<POINT_ID>.<ATTRIBUTE_ID>'

   where

   <POINT_ID> is the Point ID of any configured point

   <ATTRIBUTE_ID> is one of the CIMPLICITY HMI point attributes.

   Or

   '<POINT_ID>.<FIELD_NAME>'

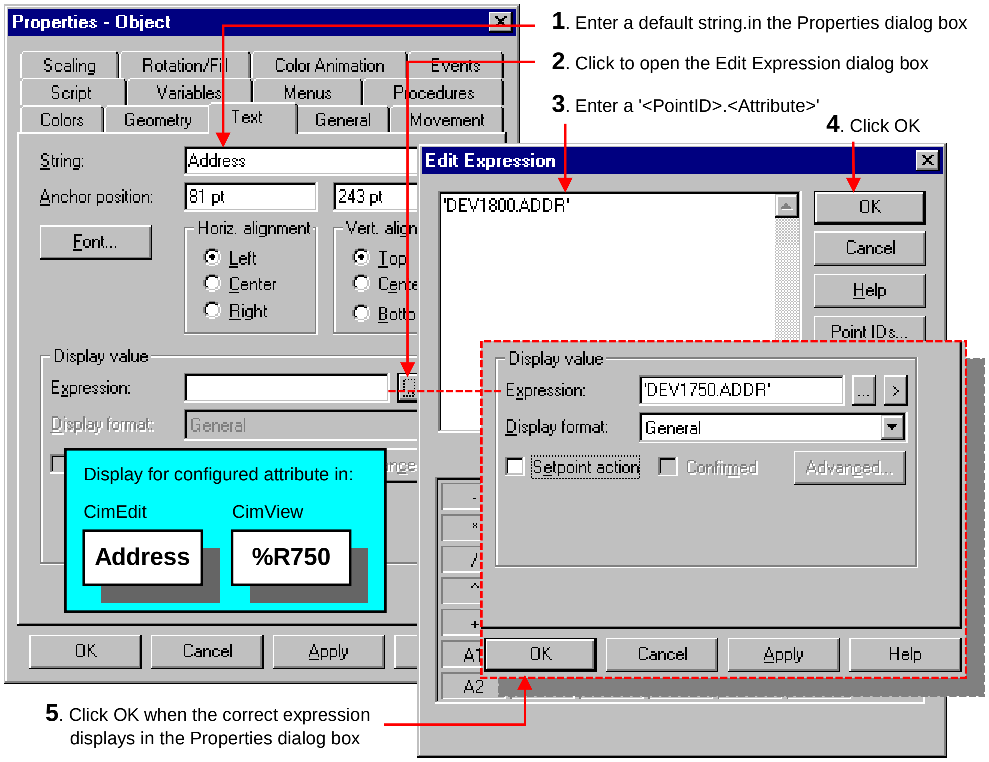
   where

   <POINT_ID> is the Point ID of a point to which an attribute set is assigned

   <FIELD_NAME> is the name of one of the fields in the attribute set that is assigned to the point

Important: You *must* enclose the syntax in single quotes, because the '.' character is a special character.

Example: Point Attribute in an Expression for CimView



String: Address

Anchor position: 81 pt 243 pt

Horiz. alignment: ● Left

Vert. align: ● Top

Expression:

Display format: General

Edit Expression: 'DEV1800.ADDR'

Display value

Expression: 'DEV1750.ADDR'

Display format: General

□ Setpoint action □ Confirmed

Display for configured attribute in:

CimEdit: Address

CimView: %R750

1. Enter a default string.in the Properties dialog box

2. Click to open the Edit Expression dialog box

3. Enter a '<PointID>.<Attribute>'

4. Click OK

5. Click OK when the correct expression displays in the Properties dialog box

Point Attribute Guidelines in CimEdit

Guidelines for using point attributes in expressions:

- The list of attributes in this chapter specifies the type of value that each attribute returns, e.g. integer, character. Use the basic syntax to return the value, as specified.

  Examples

  ```
  'GEF_DEMO_PT.DESCRIPTION'
  'GEF_DEMO_PT.ALARM_HIGH'
  ```

- You can force an expression to return a numeric value, if the value is a number but the attribute is listed as returning a character. You use the operator **VAL** to do this.

  Example

  ```
  VAL('DEV1750.ALARM_HIGH')+VAL(DEV1900.ALARM_HIGH')
  ```

- Some of the attributes are specific to points of a particular type. Valid point types, which are specified in the attribute list, are:
  - ➔ All (point types)
  - ➔ Device
  - ➔ Derived (Virtual)
  - ➔ Global (Virtual)
- All field names and enumerated data are case insensitive.

Quick Trends in CimEdit

Quick Trends is a valuable, new feature that enables you to immediately view a current trend for any point, whenever you need it. You can do this without a special button or without having previously defined the trend.

For example, you notice a point on your plant overview screen that might have a problem and you want to watch how it is trending. With Quick Trends, all you have to do is:

1. Position the cursor anywhere on the CimView screen.
2. Click the right mouse button to produce a drop down menu.
3. Select Point View. The Point View dialog box opens.
4. Highlight a point in the Point View dialog box.
5. Either:

   A. Click the right mouse button. A popup menu appears.

   In the popup menu:

   i. Select Point Tools.

   ii. Select Quick Trends.

   iii. Select Add Points.

   or

   B. Click the **Quick Trends** button on the Point View toolbar.

A Quick Trend window opens and instantly begins to display the current trend of the point you selected.

Using Variables

About Variables

A ***variable*** can be used in an expression to represent different types of values.

A Variable ID's chameleon-like functionality behaves as follows:

1. A screen designer enters text to identify a Variable ID (on the Variables tab) in CimEdit. The text may represent any of several types of values.
2. Any of several options can assign a value to the variable.

   Options include:

   - Scripts, which can include Variable IDs to which values are assigned.
   - Values assigned by a user during runtime.
   - Values assigned by a screen designer while configuring the screen.

   Values that a Variable ID can represent include a:

   - Full Point ID
   - Partial Point ID
   - Text string in an expression.
3. CimView substitutes the text into the appropriate expression.
4. CimView evaluates the expression.

Variables can streamline your configuration time. For example, when you create an object that uses Variable IDs, you can use the same object in several locations on a CimEdit screen, or on several different screens. You can then assign the variable a different value, for example different Point IDs, for each instance of the object.

This becomes a particularly powerful tool when you use a variable in linked objects.

Go to the next page for a summary example of variable behavior.

Variable Hierarchy Example

Example of Variable Behavior

Step 1. CimView substitutes specified values for the Variable ID's text.

Variable ID Expression	Variable Value	Resulting Expression
`{myvar} * 2`	`tank1_level`	`tank1_level * 2`
`tank{myvar}_level *`	`2`	`1      tank1_level * 2`
`{myvar}`	`tank1_level * 2`	`tank1_level * 2`

Step 2. CimView evaluates the substituted expression.

Resulting Expression	Evaluated Expression
`tank1_level * 2`	`50`
`tank1_level * 2`	`50`
`tank1_level * 2`	`50`

Variable Evaluation Hierarchy

A Variable ID can be created at any level of the CimEdit screen hierarchy. This includes:

- The screen
- A group
- A subgroup (nested groups)
- An object

If you define the same Variable ID at more than one level of the hierarchy CimEdit first looks for the Variable ID in the object you are configuring. If the Variable ID is not there, CimEdit goes to the next level up in the hierarchy, and, if necessary, continues to the next levels, to find an object that references that variable.

Example

For example, you have a CimEdit screen with two groups and two subgroups that contain text objects as follows:

Example of the Hierarchy when a Variable is Assigned

Variable ID {value_var} is assigned to:

- The screen
- Group 1
- Subgroup 1

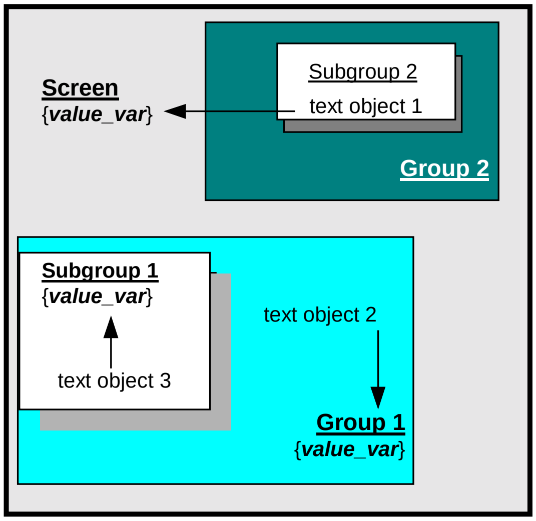
Variable ID {value_var} is referenced by:

- text object 1
- text object 2
- text object 3

text object 1 references Screen

text object 2 references Group 1

text object 3 references Subgroup 1



Variable Configuration

The process to create and use a variable includes:

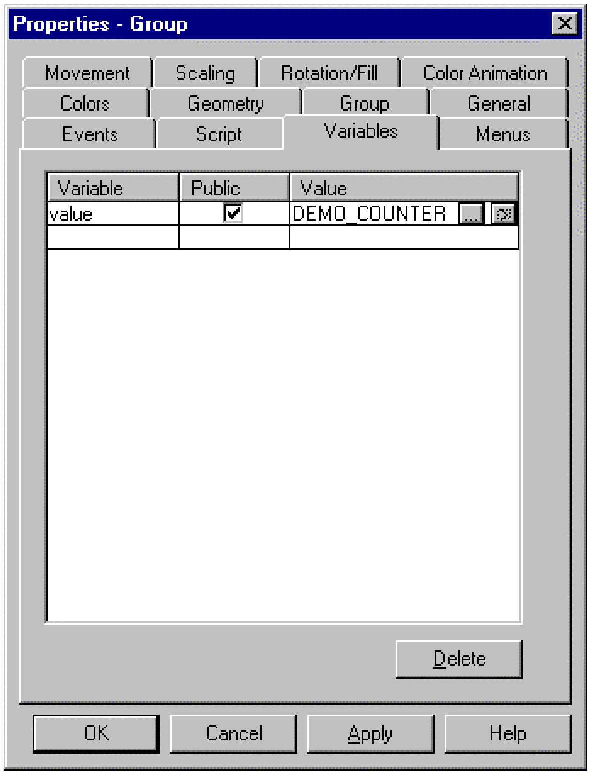
1. Name a new variable with a Point ID.
2. Select a Variable ID.
3. Set the value of the Variable ID.

You can then use the Variable ID in your configuration and set its value, if it is still open, either during configuration or runtime.

Naming a New Public or Private Variable

To name a new public or private variable:

1. Open the Properties dialog box for the object that is at the appropriate level for creating a variable.
2. Select the Variables tab.



Variable	Public	Value
value	☑	DEMO_COUNTER

3. Enter a unique name (Variable ID) in the Variable column.
4. To specify whether the variable for a linked object is public or private:
   - Check the Public column if the value of the variable can be entered at different locations. *See the "Choosing Public or Private Variables" section of the "Saving Time with Linked Objects" chapter in this manual for details about using public and private variables.*
   - Leave the Public column unchecked to specify a private variable–the value of the variable can not be changed at different locations. *See "Choosing Public or Private Variables" in this chapter for more information.*

5. (Optional at this time) Enter a value in the Value column.

   The … > buttons appear at the right of the **Value** field you are in. Use them to find existing or create new Point IDs and/or to open the Expression dialog box. The value you enter can be a:

   - Point
   - Partial point
   - Text String in an expression

5. Repeat Steps 3–4 (or 5) until you have completed your list of Point IDs.
6. Click **Apply**.

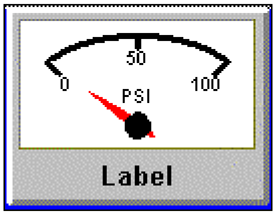
Result: You now have the Variable IDs available for the selected item and any item below it in the configuration hierarchy.

Tip: Take advantage of CIMPLICITY HMI's many graphic objects in the Symbols and Smart Objects Library that come with predefined ***Variable ID***s.

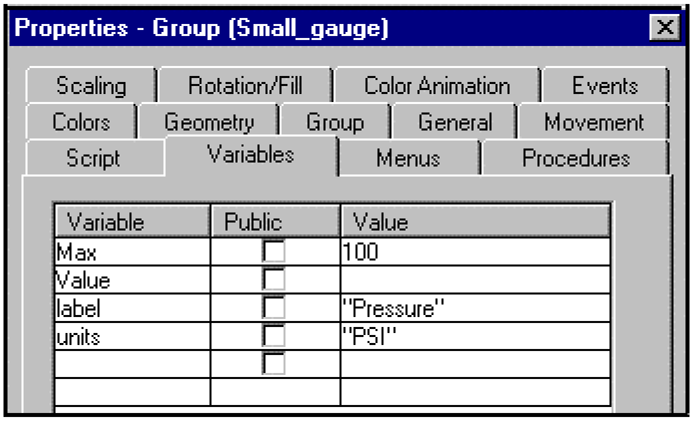
Example

Using a CIMPLICITY HMI Gauge with Predefined Variable IDs

You select a pressure gauge from the Smart Object Gauges library and place it on the CimEdit screen.



When you select the Variable tab in the gauge's Properties dialog box, you see the following predefined variables.


Properties - Group (Small_gauge)

Variable	Public	Value
Max	☐	100
Value	☐	
label	☐	"Pressure"
units	☐	"PSI"
	☐	

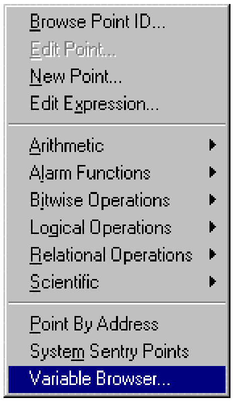
You can edit and / or set the values according to your needs.

Selecting a Variable ID

Wherever you can enter a Variable ID in a CimEdit Properties dialog box, you can browse through the list of Variable IDs that you defined in the Variables tab.

To browse through a list of defined Variable IDs:

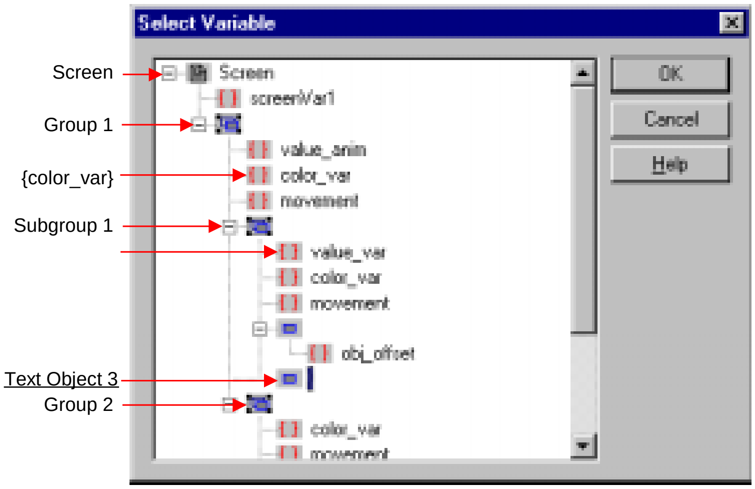
1. Click the **Popup menu** button > to the right of any field that allows **Variable ID**s to be entered.



2. Select Variable Browser…, from the popup menu that appears.

Result: The Select Variable dialog box opens.

Text Object 3 Referencing {value_var} in Subgroup 1



This dialog box shows you a list of all the defined variables contained within the screen. The following icons tell you which items are variables and the type of item associated with the variable.

Icon	**Item**
🗎	Screen in which the variable is defined
{ }	Variable ID
▣	Group in which the variable is defined
□	Object in which the variable is defined

When you select a Variable ID for an object from the tree, make sure that you select one that is above the object and in its path

Example

For Text Object 3 your Variable ID selections include:

- **`{value_var}`**, **`{color_var}`**, and **`{movement}`** from Subgroup 1
- **`{screenVar1}`** from Screen
- **`{value_anim}`** from Group 1

The Variable IDs for Group 2 or any other objects in Subgroup 1 are not above Text Object 3.

Setting the Value of a Variable ID

Once you select a Variable ID, there are several ways to set its value and several ways to use it.

Value Set for a Variable ID

One way is to assign values to the Variable IDs on the Variables tab of the object's Properties dialog box. In addition, you can create a:

- **`Variable Assign`** action and:
  - Assign values to the Variable IDs automatically when the user executes the action at runtime.
  - Let the user assign values to the Variable IDs when the user executes the action at runtime.
- **`Screen Open`** event that assigns values to the Variable IDs when a user opens the screen in CimView.
- **`Invoke Script`** procedure and have the script assign values to the Variable IDs. This procedure can be assigned to any event.

Variables in Setpoint Actions

When you use a Variable ID in a **`Setpoint`** action, the association between the **`Setpoint`** action and the Variable ID is made every time the action is executed.

A major benefit of using variables in setpoint actions is that the **`Setpoint`** action can be set to different values at different times.

Caution: If you do use Variable IDs in **`Setpoint`** actions, especially if you are using nested Variable IDs, make sure that the Variable ID is referencing the correct object and value.

See "Variable Evaluation Hierarchy" in this chapter for details about nested variables.

Tip: CimEdit provides you with several ways to configure setpoints. They include:

- Setpoint actions

  See the "Setpoint Actions" sections of the "Creating Procedures in CimEdit" chapter in this manual for a list of available setpoint actions.

- Slider action checkboxes on the Movement tab in the Properties dialog box.

  See "Creating a Slider Action" in the "Configuring Runtime Movement and Animation" chapter in this manual for details about configuring slider actions.

- Setpoint action checkboxes on the Text tab in the Properties dialog box.

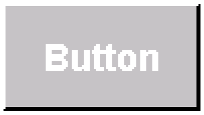
  See the "Using Text Objects to Display Point Values" section in the "Applying Inanimate Visual Features" chapter in this manual for the procedure to configure text objects including enabling setpoint actions.

See "Variable Evaluation Hierarchy" in this chapter for details about variable hierarchies.

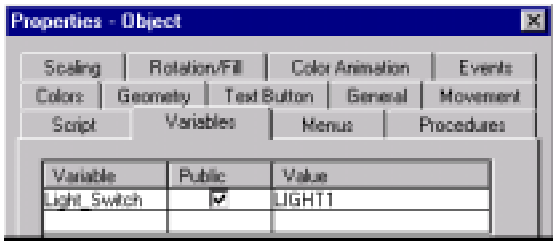
Example of a Variable ID in a Setpoint Action

To create an example Variable ID in a setpoint action:

1. Place a Text Button on a CimEdit screen.

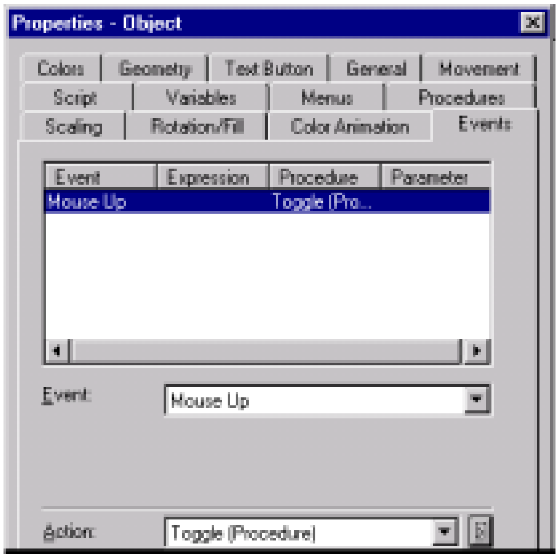


2. Open the button's Properties dialog box.
3. Enter a variable called **`{Light_Switch}`** in the Variable column on the Variables tab.
4. Assign a Point ID, e.g., **`Light1`**, to the variable in the Value column.



Variable	Public	Value
Light_Switch	☑	LIGHT1

5. Create a new **Mouse Up** event on the Events tab.



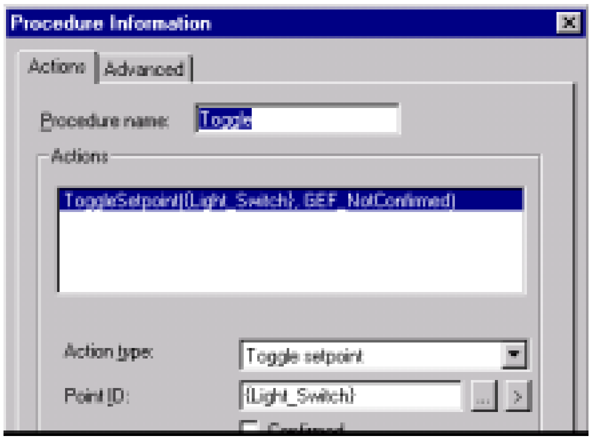
Event	Expression	Procedure	Parameter
Mouse Up		Toggle (Pro...	

Event: Mouse Up

Action: Toggle (Procedure)

6. Select **Toggle Setpoint** as the **Mouse Up** event's action on the Action tab.

7. Enter **{Light_Switch}**in the Point ID field for the **Toggle Setpoint** action.



Procedure name: Toggle

ToggleSetpoint({Light_Switch}, GEF_NotConfirmed)

Action type: Toggle setpoint

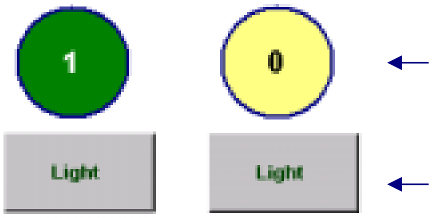
Point ID: {Light_Switch}

□ Confirmed

8. Click **OK**.

Result: When an operator clicks the button during runtime, the light is turned on or off.

Example: Light Turned On/Off using a Toggle Setpoint action and a Variable ID



Color animation and text, each with a Light1 Point ID assigned. (Configured to display if the light is on or off.)

Toggle Setpoint action:
- {Light_Switch} variable.
- Light1 Point ID value.

Light on

Light off.

Tip: In this example, two easy ways to increase the scope of the **`Toggle Setpoint`** action when using a variable are to:

A. Copy the button and change the value of the Variable ID, e.g., to Light2, on the Variables tab of the Text Button's Properties dialog box. An operator will have two or more buttons to toggle two or more Point ID's values during runtime.

Or

B. Add an event with a **`Variable Assign`** action that uses the Variable ID **`{Light_Switch}`** variable. An operator can then change the value of the Variable ID at runtime and control several points through the single button.

Example 1: Creating and Using Variables

This step by step example demonstrates how to create a variable whose value is:

- Manually set during runtime
- Automatically set during runtime

You can follow this example, which uses one of the points from the CimpDemo demo project.

In this example, you will

Step 1. Open the CimpDemo demo project.

Step 2. Insert a text object on a CimEdit screen

Step 3. Insert a rectangle object on a CimEdit screen

Step 4. Group the objects

Step 5. Configure Group 1

Step 6. Configure Group 2

Step 7. Test the CimView screen

Step 8. Assign a value to Group 1 on the CimView screen.

Step 1. Creating and Using Variables Example

Step 1. Open the *CimpDemo* demo project for this example:

1. Click CIMPLICITY HMI on the Windows Start menu
2. Select the Start Demo menu item to start the Demo Project.

   After the project starts, the CIMPLICITY HMI Demonstration Main Menu screen opens.
3. Select About CIMPLICITY in the CIMPLICITY HMI Demonstration Main Menu screen.
4. Select Other Stuff in the About screen..
5. Select Points in the Integration screen..
6. In the Demo Points screen, make sure the points are updating. If they are not, click the **Start demo points** button.
7. Close the CimView window.

At this point, the CimpDemo project is running, and the demo points have changing values.

You are now ready to create a CimEdit screen with Variables. This sample screen shows you how to create two objects, assign a variable name to them, and group them. It then shows you how to use the group to create another group.

The two groups demonstrate two ways of assigning Variables.

- For the first group, you create a Variable Assign action that lets you assign a point to the variable at runtime.
- For the second group, you assign a point to the variable in the Group properties, so that the group automatically displays that point at runtime.

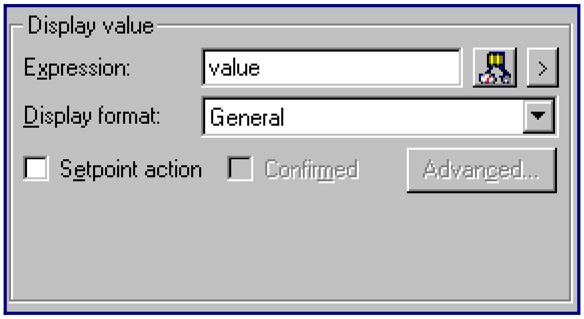
Step 2. Creating and Using Variables Example

Step 2. Insert a text object on a CimEdit screen:

1. Open a CimEdit screen from the Workbench for the Demo Project.
2. Create a text object on the screen.

Text Example

3. In the Expression field on the Text tab of the Properties dialog box, enter the word **`{value}`**. This tells CimEdit that you want to use a Variable for the point value to be displayed at runtime.

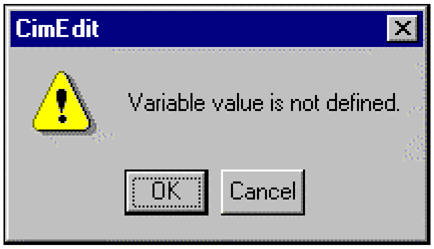


Display value

Expression: value

Display format: General

4. Click **OK** to close the Properties dialog box. You will see the following message:



CimEdit

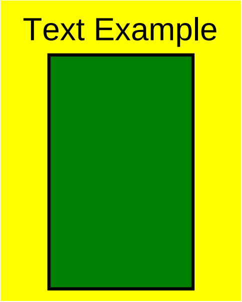
Variable value is not defined.

5. Click **OK** to close the message box. You can ignore this message for now.

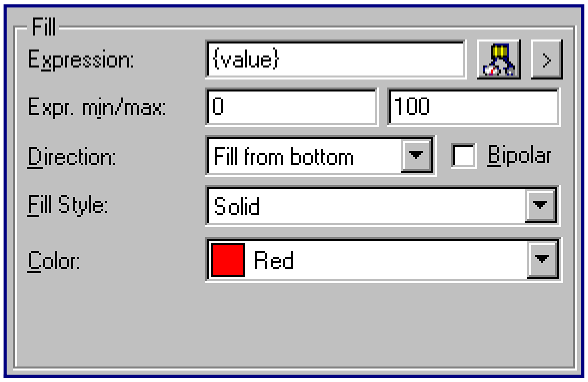
Step 3. Creating and Using Variables Example

Step 3. Insert a Rectangle Object .

1. Create the rectangle object below the text object on the screen.



2. Open the rectangle's Properties dialog box.
3. Select the Rotation/Fill tab.
4. Enter the word **`{value}`** in the Expression field in the Fill section. This tells CimEdit that you want to use the same variable for this object as you do for the text object.
5. Select the color that to fill the rectangle, reflecting the variable's value during runtime.



Fill

Expression: {value}

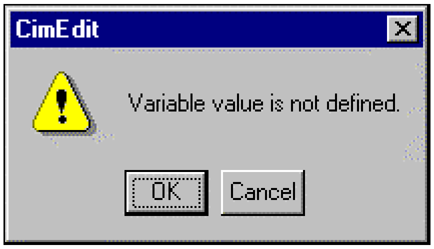
Expr. min/max: 0 100

Direction: Fill from bottom □ Bipolar

Fill Style: Solid

Color: 🟥 Red

6. Click **OK** to close the Properties dialog box. You will see the following message:



CimEdit

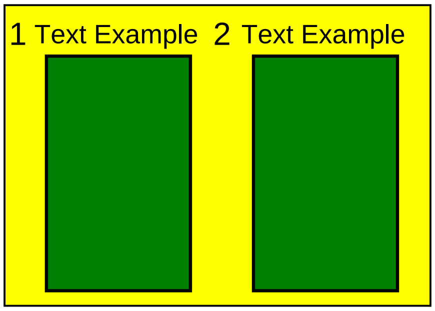
Variable value is not defined.

7. Click **OK** to close the message box. You can ignore this message for now.

Step 4. Creating and Using Variables Example

Step 4. Group the objects.

1. Select the text and rectangle and group them.
2. Place a duplicate copy of the group on the screen.



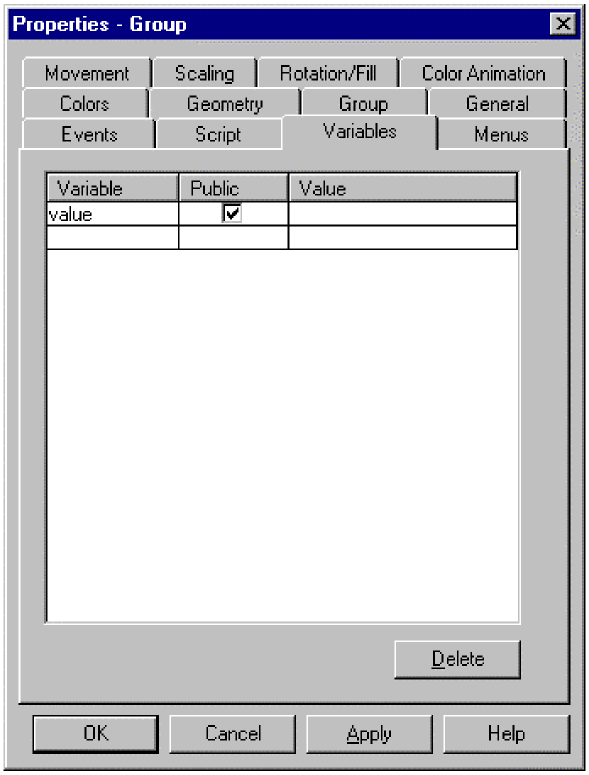
Step 5. Creating and Using Variables Example

Step 5. Configure Group 1 to be manually set during runtime.

For Group 1:

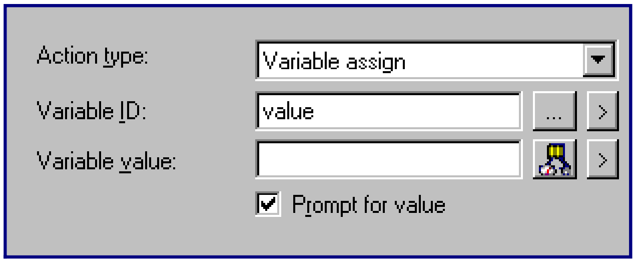
1. Open the Group Properties dialog box.
2. Select the Variables tab.
3. Enter **`value`** in the Variable column.
4. Check the Public column.

   The tab now looks like this:



Variable	Public	Value
value	☑	

5. Click **Apply**.
6. Select the Events tab.
7. Select **`Mouse up`** in the Event field.
8. Click the **Popup Menu** button > to the right of the Action field
9. Select New procedure.
10. In the Procedure Information dialog box:
    - A. Select **`Variable assign`** in the Action type field**.**
    - B. Select **`value`** in the Variable ID field from the recent variable section of the popup menu or through the Select Variable dialog box (note the lack of {} at this point).
    - C. Check Prompt for value.



Action type: Variable assign

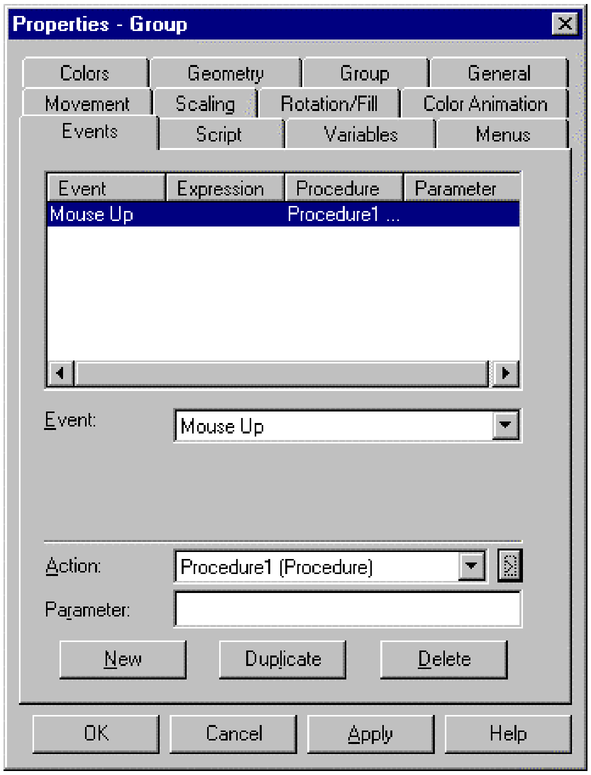
Variable ID: value

Variable value:

☑ Prompt for value

D. Click **OK.**

The Events tab for Group 1 now looks like this:



Properties - Group

Event	Expression	Procedure	Parameter
Mouse Up		Procedure1 ...	

Event: Mouse Up

Action: Procedure1 (Procedure)

Parameter:

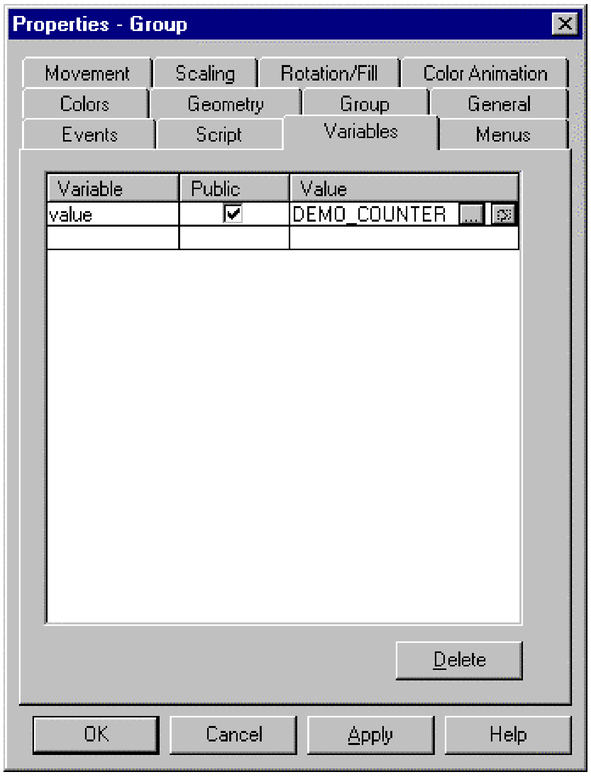
11. Click **OK**.

Step 6. Creating and Using Variables Example

Step 6. Configure Group 2 to automatically assign a value during runtime.

For Group 2:

1. Open the Group Properties dialog box.
2. Select the Variables tab.
   - A. Enter **`value`** in the Name field.
   - B. Enter **`DEMO_COUNTER`** in the Value field.



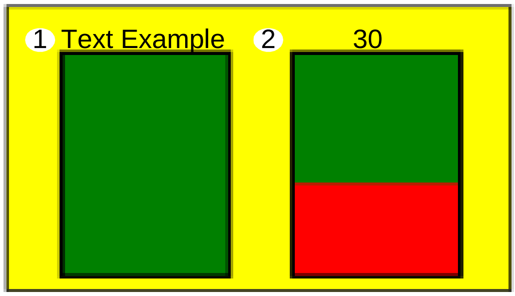
Variable	Public	Value
value	☑	DEMO_COUNTER

3. Do one of the following:
   - Click **Apply** and select another tab to continue configuration
   - Click **OK** to save your configuration and close the Properties dialog box.

Step 7. Creating and Using Variables Example

Step 7. Test the screen

You are now ready to test your screen. Click the **Test Screen** button. Your CimView screen will look something like this when it starts up:

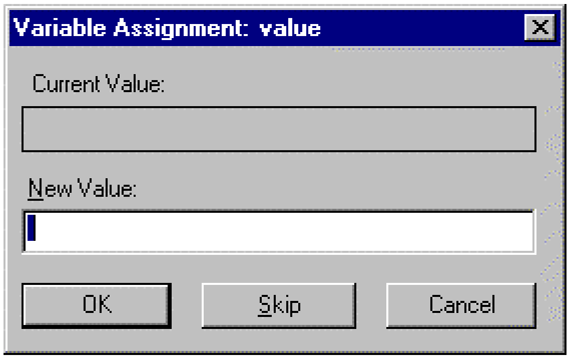


The second group immediately starts displaying the value for **DEMO_COUNTER**, but nothing is displaying for the first group.

Step 8. Creating and Using Variables Example

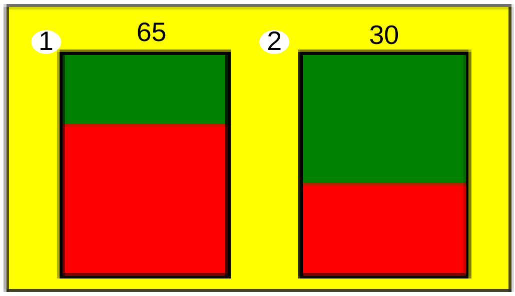
Step 8. Assign a value to Group 1 on the CimView screen

1. Move the mouse cursor over the group.
2. Click the left mouse button. The Variable Assignment dialog box for the **`value`** variable opens.



3. Enter one of the Point IDs on **`Demo_Points`** screen - for example, **`DEMO_SAWTOOTH`**.
4. Click **OK**.

The group immediately starts to display the point you selected.



You can view other demonstration points for Group 1 by repeating the above steps.

Example 2: Using Variables in Scripts

You can use and assign Variable IDs in CimEdit scripts.

The following example shows you how to use a Variable ID in a script.

```
Sub OnMouseUp(x As Long, y As Long, flags As Long)
   Dim var As CimObjectVariable
   Set var = CimGetScriptOwner().GetVariable("PointValue")
   i = PointGet(var.Value)
   PointSet var.Value, i+1
End Sub
```

The following example shows you how to assign a Variable ID in a script.

```
Sub OnMouseUp(x As Long, y As Long, flags As Long)
   Dim var As CimObjectVariable
   Set var = CimGetScriptOwner().GetVariable("PointValue")
   Var = "DEMO_SAWTOOTH"
   i = PointGet(var.Value)
   PointSet var.Value, i+1
End Sub
```

For more details about using scripts, see the "Using CimEdit Scripts" chapter in this manual.

Configuring Runtime Movement and Animation

About Runtime Movement and Animation

CimEdit provides several choices to create activity on your screens that makes it easy for a CimView user to quickly determine the status of a point or expression.

You can make objects:

- Move.
- Change in size.
- Rotate.
- Fill up or down.
- Change color and text through animation.

You can use one or all of the following objects for each activity.

- Groups
- Single objects
- Text objects
- Lines
- Shapes

CimEdit also provides you with frame containers, an efficient tool with which to create animation.

> ***Frames*** are based on the concept of frames that are created for a film. They can save you a lot of configuration time if you have a section of a screen that will change considerably during runtime, based on a predetermined set of conditions.

No matter what you choose to do, configuration involves a few simple arithmetic calculations. In addition, if you combine or nest any of the activities, you still only do the same simple configuration for each activity.

Your options depend only on the requirements for your project, your ingenuity, and system resources.

Object Movement

You can use movement on a CimEdit screen to:

- Reflect the change in a value
- Set a value

Movement is an effective way to alert an operator that the value of a point or expression changed.

The movement can be:

- Horizontal.
- Vertical.
- Both horizontal and vertical.

You can also configure a slider action so a user can set an analog point during runtime by sliding an object within a specified distance on the screen.

Making Objects Move Horizontally

It is easy to make an object move from left to right, or right to left, on the screen and it can be very effective. Because CimEdit provides you with the tools to precisely define your begin and end positions, you have complete control over how the object will move.

Horizontal movement involves the relative distance between beginning and ending positions. Therefore, if you use exact location numbers, as will be suggested to perform your calculations, you can still place the object anywhere on the screen and the movement will be the same.

To move an object horizontally on a screen:

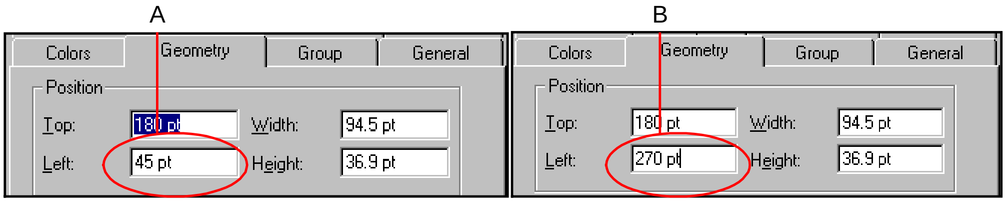
1. Select the object or group.
2. Specify a starting position (A). (A) can be on either the left or right.
3. Specify an end position (B).
4. (Suggested) Draw a temporary line the length of the distance you want the object to move.

5. Place the object in the (A) position.
6. Open the Properties dialog box.

To continue:

Method 1-Calculate the offset yourself

7. Select the Geometry tab.
8. Jot down the number in the Left field. That is the (A) position.
9. Increase the number until the object has moved to the (B) position. (Click **Apply** to make it move without closing the Properties dialog box.)
10. Jot down the number in the Left field.
11. Change the number back so the object will be in the (A) position.



A

Position

Top: 180 pt Width: 94.5 pt

Left: 45 pt Height: 36.9 pt

B

Position

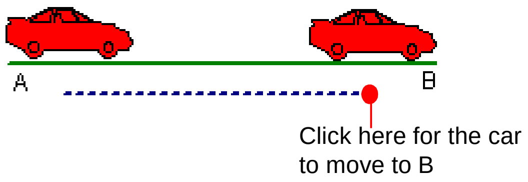
Top: 180 pt Width: 94.5 pt

Left: 270 pt Height: 36.9 pt

12. Select the Movement tab.
13. Subtract the (A) Geometry value from the (B) Geometry value. The difference is the distance you want the object to move on the screen.
14. Enter the difference in the Move offset field. Make the number negative if you want the object to go from right to left.

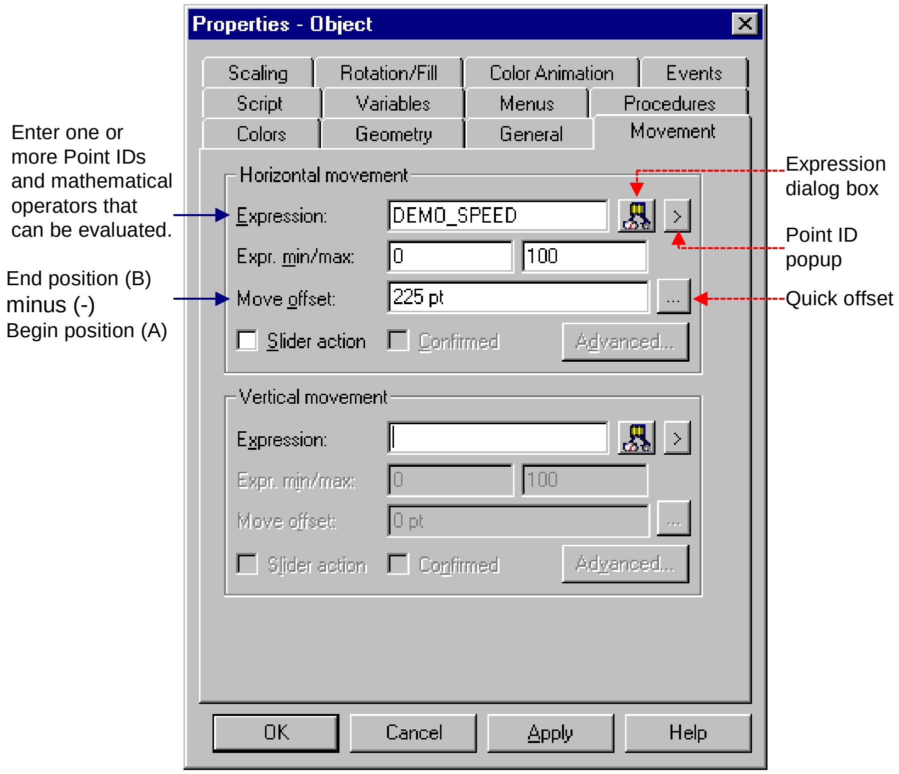
Method 2–Let CimEdit calculate the offset

7. (Suggested) Draw a line from the center of the object at (A) to the center of the object at (B).
8. Select the Movement tab.
9. Click the **Quick offset** button ... to the right of the Move offset field.
10. Click the maximum position to which the object can move (the end of the line).



CimEdit will enter the distance in the Move Offset field.

Horizontal Movement Example



Horizontal movement

- Expression: DEMO_SPEED
- Expr. min/max: 0 100
- Move offset: 225 pt
- □ Slider action □ Confirmed

Vertical movement

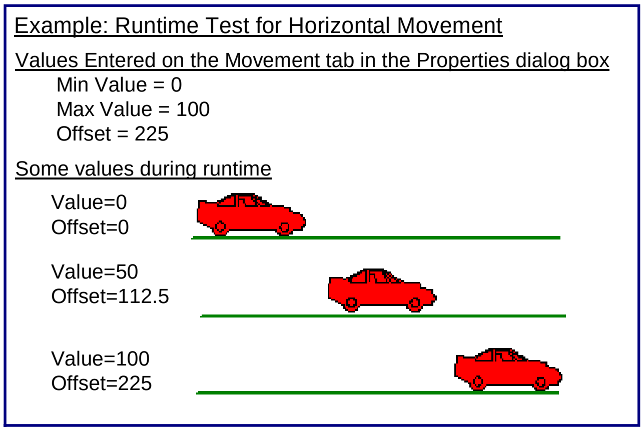
- Expression:
- Expr. min/max: 0 100
- Move offset: 0 pt
- □ Slider action □ Confirmed

Continue from Method 1 or 2

1. Enter the point ID or expression, on the Movement tab, that you want the movement to reflect.
2. Enter the minimum value of the point ID or expression. This value will cause the object to be in Position (A).
3. Enter the maximum value of the point ID or expression. This value will cause the object to be in Position (B).
4. Check Slider action box if you want the operator to set an analog point value by sliding the object. *See "Slider Action" in this chapter for more information about sliders.*
5. Click **Ok**.

Result: You can test your object in Runtime mode. You will see that CimEdit divides the difference between the minimum and maximum values by your B-A (offset calculation) to determine the object's position.

6. Delete the line, when you are finished and place the object anywhere you want on the screen.



Example: Runtime Test for Horizontal Movement

Values Entered on the Movement tab in the Properties dialog box

Min Value = 0
Max Value = 100
Offset = 225

Some values during runtime

Value=0
Offset=0

Value=50
Offset=112.5

Value=100
Offset=225

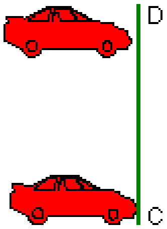
Note: The object will not begin to move until the minimum value has been exceeded.

Making Objects Move Vertically

Making an object move up or down is simple arithmetic

To move an object vertically on a screen:

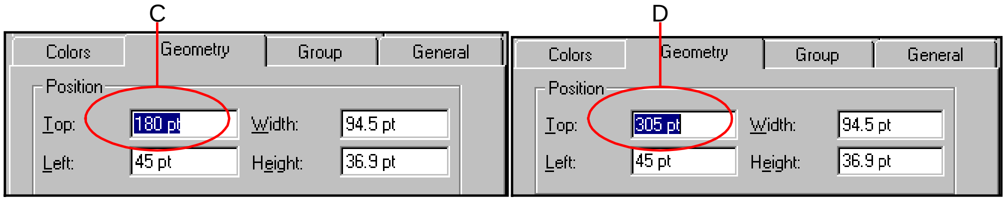
1. Select the object or group.
2. Specify a starting position (C). (C) can be top or bottom.
3. Specify an end position (D).
4. (Suggested) Draw a temporary line the length of the distance you want the object to move.



5. Place the object in the (C) position.
6. Open the Properties dialog box.

Method 1-Calculate the offset yourself

7. Select the Geometry tab.
8. Jot down the number in the Top field. That is the (C) position.
9. Increase the number until the object is positioned in the (D) position. (Click **Apply** to make it move without closing the Properties dialog box.)
10. Jot down the number in the Top field.
11. Change the number back so the object will be in the (C) position.



C: Top: 180 pt Width: 94.5 pt Left: 45 pt Height: 36.9 pt

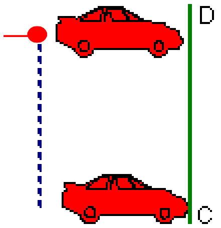
D: Top: 305 pt Width: 94.5 pt Left: 45 pt Height: 36.9 pt

12. Select the Movement tab.
13. Subtract the (C) Geometry value from the (D) Geometry value. The difference is the distance you want the object to move on the screen.
14. Enter the difference in the Move offset field. Make the number negative if you want the object to go from top to bottom.

Method 2–Let CimEdit calculate the offset

11. (Suggested) Draw a line from the center of the object at (C) to the center of the object at (D).
12. Select the Movement tab.
13. Click the **Quick Offset** button ... to the right of the Move offset field.

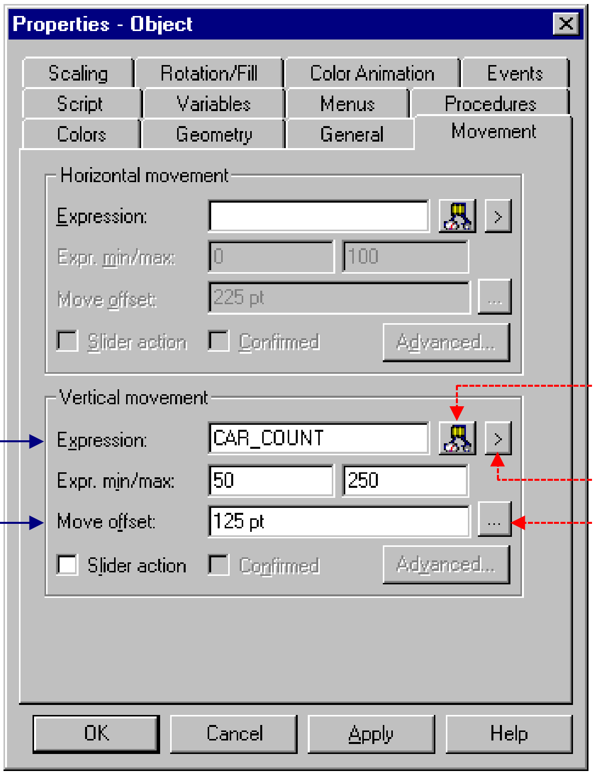
14. Click the maximum position to which the center of the object can move (the end of the line).



Click here for the car to move to D

CimEdit will enter the distance in the Move Offset field.

Vertical Movement Example



Properties - Object

Tabs: Scaling | Rotation/Fill | Color Animation | Events | Script | Variables | Menus | Procedures | Colors | Geometry | General | Movement

Horizontal movement
- Expression:
- Expr. min/max: 0 | 100
- Move offset: 225 pt
- □ Slider action □ Confirmed [Advanced...]

Vertical movement
- Expression: CAR_COUNT
- Expr. min/max: 50 | 250
- Move offset: 125 pt
- □ Slider action □ Confirmed [Advanced...]

[OK] [Cancel] [Apply] [Help]

Enter one or more Point IDs and mathematical operators that can be evaluated.

End position (D) minus (-) Begin position (C)

Expression dialog box

Point ID popup

Quick offset

Continue from Method 1 or 2

1. Enter the point ID or expression, on the Movement tab, that you want the movement to reflect.
2. Enter the minimum value of the point ID or expression. This value will cause the object to be in Position (C).
3. Enter the maximum value of the point ID or expression. This value will cause the object to be in Position (D).
4. Check Slider action if you want the operator to set an analog point value by sliding the object. *See "Slider Action" in this chapter for more information about sliders.*
5. Click **Ok**.

Result: You can test your object in Runtime mode. You will see that CimEdit divides the difference between the minimum and maximum values by your D-C (offset calculation) to determine the object's position.

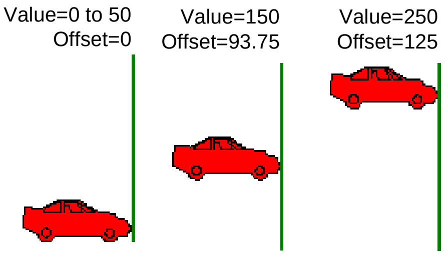
6. Delete the line, when you are finished and place the object anywhere you want on the screen.

Example: Runtime Test for Vertical Movement

Values Entered on the Movement tab in the Properties dialog box

Min Value = 50
Max Value = 250
Offset = 125

Some values during runtime



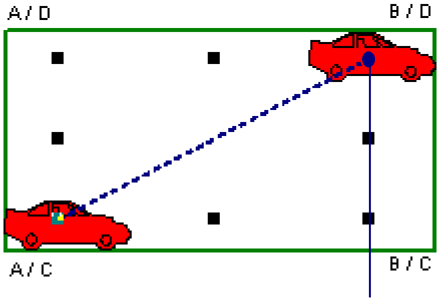
Note: The object will not begin to move until the minimum value has been exceeded.

Making Objects Move both Horizontally and Vertically

You can make an object move both horizontally and vertically during runtime by doing simple calculations for each movement in the object's Properties dialog box. Movement can reflect either the same point ID / expression or two different point IDs / or expressions.

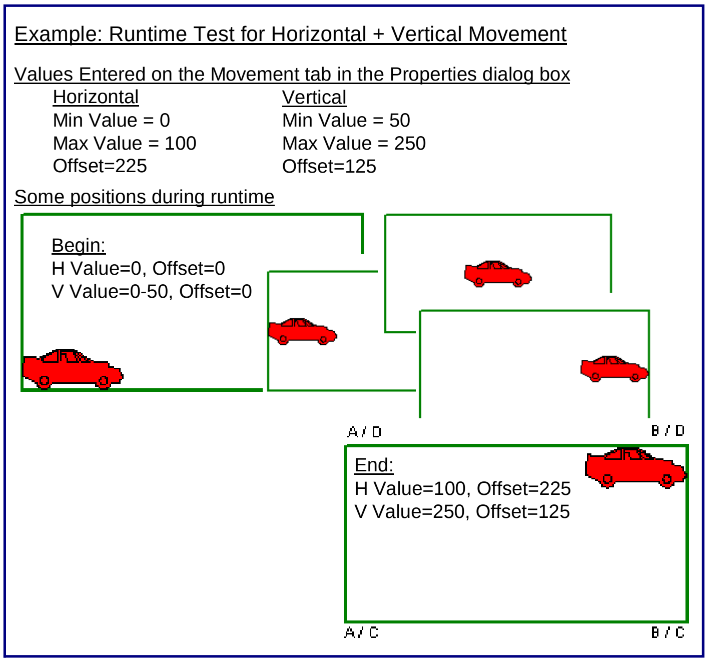
The Movement tab of the Properties dialog will reflect both entries. The object will move in a rectangle area. Its exact position will reflect both the horizontal and vertical entries.

Tip: Use either the horizontal or vertical **Quick Offset** button ... to let CimEdit compute the offset distance from A/C to B/D when you have horizontal and vertical entries. To set the distance, click where the middle of object would be when it is in the B / D position.



Click here for the car to move to B / D when you use the Move offset button

Result: You can test your object in Runtime mode. You will see that CimEdit calculates the real value of each percentage point and scales the object accordingly.



Example: Runtime Test for Horizontal + Vertical Movement

Values Entered on the Movement tab in the Properties dialog box

Horizontal	Vertical
Min Value = 0	Min Value = 50
Max Value = 100	Max Value = 250
Offset=225	Offset=125

Some positions during runtime

Begin:
H Value=0, Offset=0
V Value=0-50, Offset=0

End:
H Value=100, Offset=225
V Value=250, Offset=125

Creating a Slider Action

Using the slider action, a CimView user can set an analog point during runtime by sliding an object within a specified distance on the screen:

- Horizontally
- Vertically
- Horizontally and vertically

During runtime when a slider object is released, its position between the beginning and end of the horizontal or vertical distance that you specify represents the value that will be written to the point or points.

You can use the slider action alone or combine it with other procedures. When you do, the order of execution is:

1. The **`Mouse down`** procedure, if defined, runs.
2. The **`Slider`** action runs.
3. The **`Mouse up`** procedure, if defined, runs.

Note: Normally you should not configure a Slider Action with Rotation animation. However, if you must, make sure the center of rotation is 0,0. Note that the outline of the object will *not* rotate as the slider is moved.

Tip: CimEdit provides you with several ways to configure setpoints. They include:

- Setpoint actions

  See the "Setpoint Actions" sections of the "Creating Procedures in CimEdit" chapter in this manual for a list of available setpoint actions.

- Slider action checkboxes on the Movement tab in the Properties dialog box described here.
- Setpoint action checkboxes on the Text tab in the Properties dialog box.

  See the "Using Text Objects to Display Point Values" section in the "applying Inanimate Visual Features" chapter in this manual for the procedure to configure text objects including enabling setpoint actions.

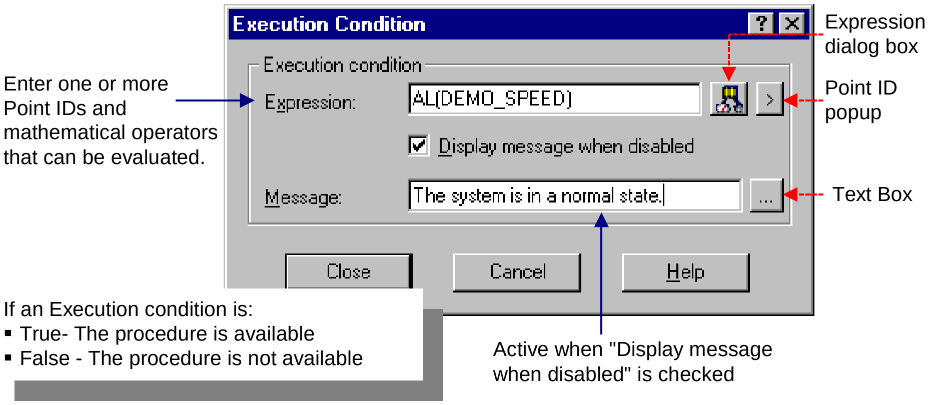
To create a slider action:

1. Open the object's Properties dialog box.
2. Configure horizontal or vertical movement for the object.

   See "Making Objects Move Horizontally" and "Making Objects Move Vertically" in this chapter.

3. Check Slider action.
4. Click **Advanced…** to define an execution condition for the Slider Action. When you do, the Execution Condition dialog box opens.

<u>Execute condition</u>



Execution Condition

Execution condition

Expression: AL(DEMO_SPEED)

☑ Display message when disabled

Message: The system is in a normal state.

Expression dialog box

Point ID popup

Text Box

Enter one or more Point IDs and mathematical operators that can be evaluated.

If an Execution condition is:
- True- The procedure is available
- False - The procedure is not available

Active when "Display message when disabled" is checked

5. Enter one or more point IDs and mathematical operators that can be evaluated during runtime.

<u>When an Execution Condition is evaluated as:</u>

True	The procedure behaves normally
False and no message is defined	The system behaves as if the procedure does not exist. **<u>Example</u>** If the procedure is assigned to a key, nothing will happen when the user presses the key.

False and a message is defined	A user may think the procedure exists. However, when the user selects the procedure, the message displays and the procedure will not run. If the expression contains unavailable points, a user may think a procedure exists. However, when the user selects the procedure, the following message displays. "The execution condition for this procedure contains unavailable points. Would you like to execute the procedure anyway?"

If the user selects:

Yes	The procedure can be performed
No	The procedure is not performed

Examples of how an Execution Condition is Used

If a custom application provides security information as a CIMPLICITY point, this feature can be used to provide security control for procedure execution.

If an application runs in modes, such as Manual and Automatic, this feature can be used to disable certain procedures while in Automatic mode.

Object Scaling

When you use CimEdit's scaling feature to configure an object, its horizontal and / or vertical dimensions will change during runtime based on the current value of one or two expressions. This is another way for a CimView user to be ably to glance quickly at a CimView screen and see when a change occurs.

If you define both horizontal and vertical scaling for an object, you may use different expressions, minimums, maximums, percent scales, and fixed locations for each scaling.

Note: In order to make sure text is legible:

Text objects will only change size when scaled vertically.

Text Button objects with Auto Size checked will not change size when scaled.

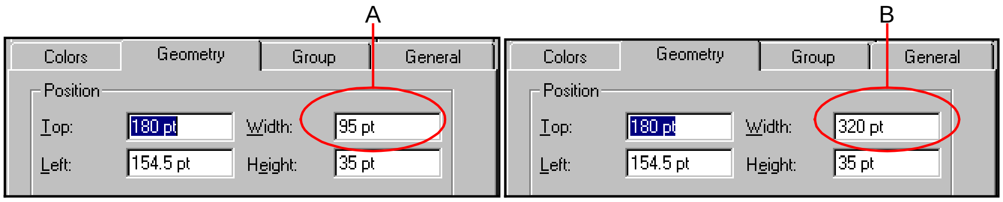
Making an Object Scale Horizontally

To make an object scale horizontally:

1. Select the object or group.
2. Determine the default size for the object.
3. Determine the length to which you want the object to expand.
4. (Suggested) Draw a temporary line the length of the distance you want the object to expand.

5. Open the Properties dialog box.
6. Select the Geometry tab.
7. Jot down number in the Width field. That is the default size.
8. Increase the number until the object has expanded to the maximum size. (Click **Apply** to make it expand without closing the Properties dialog box.)

9. Change the number back so the object will be the default size.

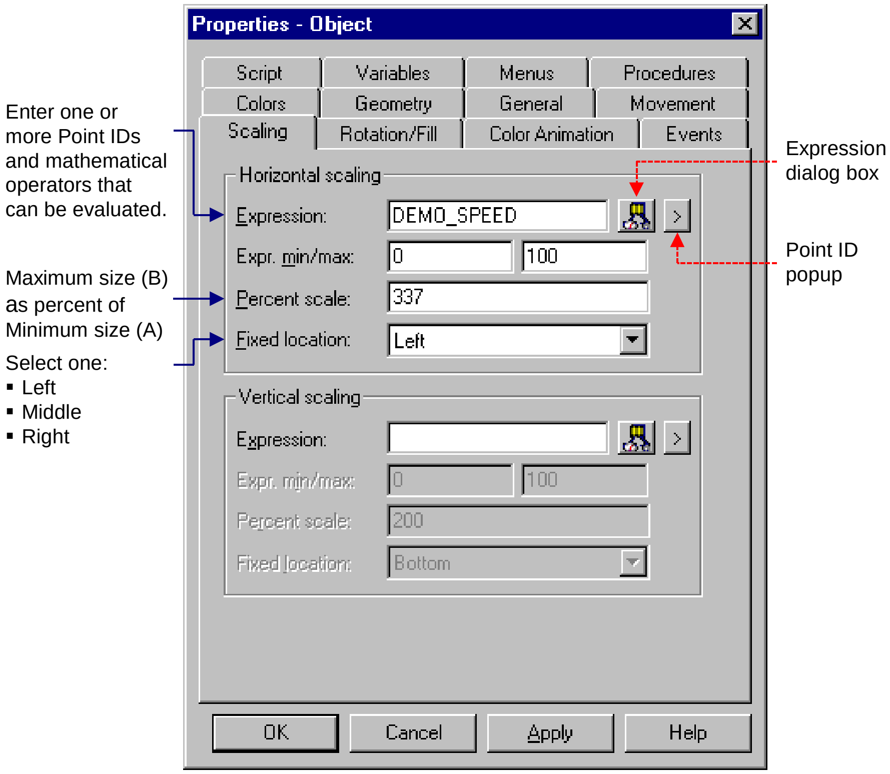


Top: 180 pt
Left: 154.5 pt
Width: 95 pt
Height: 35 pt

Top: 180 pt
Left: 154.5 pt
Width: 320 pt
Height: 35 pt

10. Select the Scaling tab.

Horizontal Scaling Example



Properties - Object

Horizontal scaling

Expression: DEMO_SPEED

Expr. min/max: 0 100

Percent scale: 337

Fixed location: Left

Vertical scaling

Expression:

Expr. min/max: 0 100

Percent scale: 200

Fixed location: Bottom

Enter one or more Point IDs and mathematical operators that can be evaluated.

Maximum size (B) as percent of Minimum size (A)

Select one:

- Left
- Middle
- Right

Expression dialog box

Point ID popup

11. Divide the Geometry value (B) by the Geometry value (A).

12. Enter the dividend as a percentage in the Percent scale field. For example, 320 / 95 = **3.368** Enter **337.**

13. Select the object's fixed location for expansion.

14. Enter the point ID or expression that you want the horizontal scaling to reflect.

15. Enter the minimum value of the point ID or expression. This value will cause the object to be the default size.

16. Enter the maximum value of the point ID or expression. This value will cause the object to expand to the specified length on the screen.

Result: You can test your object in Runtime mode. You will see that CimEdit calculates the real value of each percentage point and scales the object accordingly.

Example: Runtime Test for Horizontal Scaling

Values Entered on the Scaling tab in the Properties dialog box

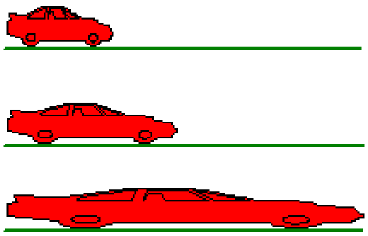
Min Value = 0
Max Value = 100
Scale = 337
Default width = 95 points

Some values during runtime

Value=0
Scale = 100%
Width=95

Value=25
Scale =185%
Width =176

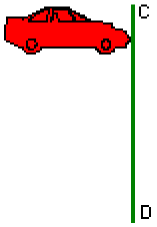
Value=100
Scale =337%
Width=320



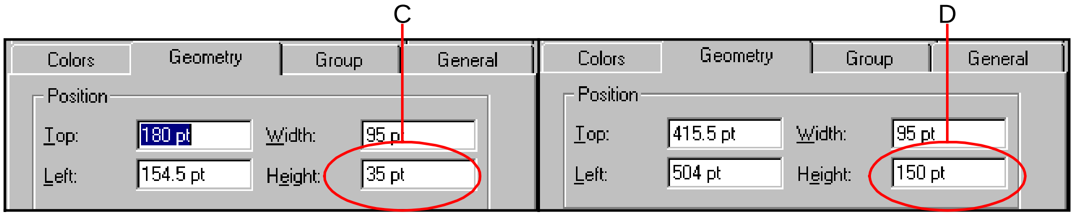
Making an Object Scale Vertically

To make an object scale vertically:

1. Select the object or group.
2. Determine the default size for the object.
3. Determine the length to which you want the object to expand.
4. (Suggested) Draw a temporary line the length of the distance you want the object to expand.



5. Open the Properties dialog box.
6. Select the Geometry tab.

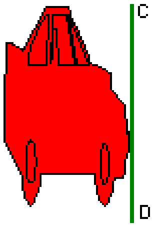


Top: 180 pt
Width: 95 pt
Left: 154.5 pt
Height: 35 pt

Top: 415.5 pt
Width: 95 pt
Left: 504 pt
Height: 150 pt

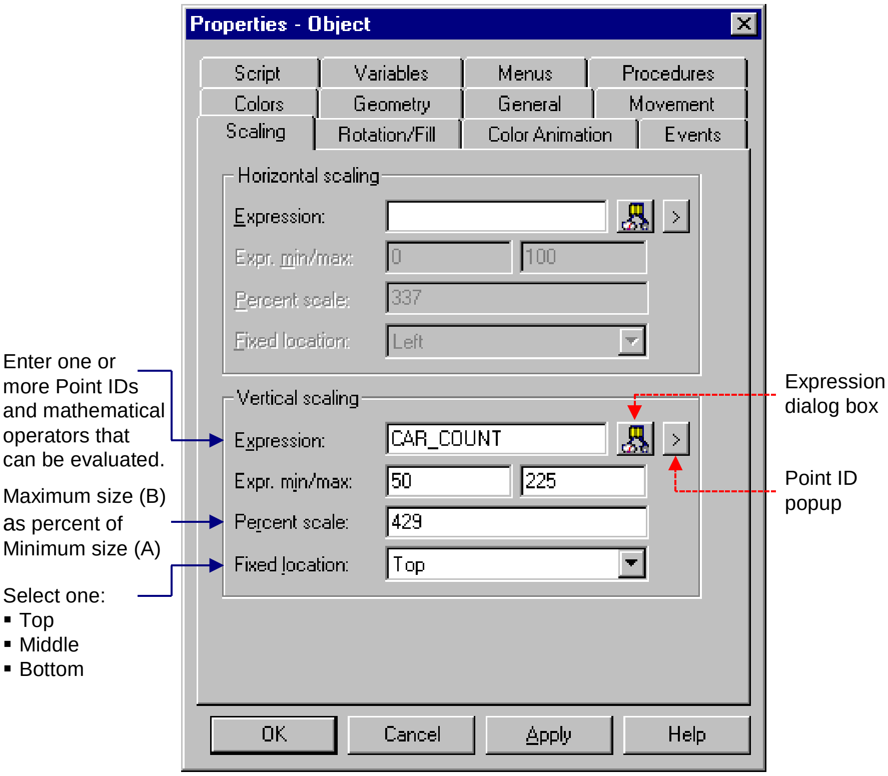
7. Jot down number in the Height field. That is the default size.

8. Increase the number until the object has expanded to the maximum size. (Click **Apply** to make it expand without closing the Properties dialog box.)



9. Change the number back so the object will be the default size.
10. Select the Scaling tab.
11. Divide the Geometry value (D) by the Geometry value (C).
12. Enter the dividend as a percentage in the Percent scale field. For example, 150 / 35 = **4.29** Enter **429**

Horizontal Scaling Example



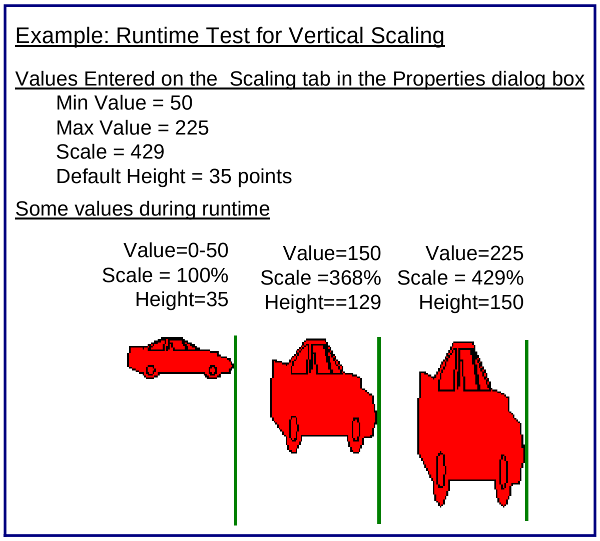
Properties - Object

Horizontal scaling
Expression:
Expr. min/max: 0 100
Percent scale: 337
Fixed location: Left

Vertical scaling
Expression: CAR_COUNT
Expr. min/max: 50 225
Percent scale: 429
Fixed location: Top

13. Select the object’s fixed location for expansion.
14. Enter the point ID or expression that you want the vertical scaling to reflect.
15. Enter the minimum value of the point ID or expression. This value will cause the object to be the default size.
16. Enter the maximum value of the point ID or expression. This value will cause the object to expand to the specified length on the screen.

Result: You can test your object in Runtime mode. You will see that CimEdit calculates the real value of each percentage point and scales the object accordingly.



Example: Runtime Test for Vertical Scaling

Values Entered on the Scaling tab in the Properties dialog box

Min Value = 50
Max Value = 225
Scale = 429
Default Height = 35 points

Some values during runtime

Value=0-50
Scale = 100%
Height=35

Value=150
Scale =368%
Height==129

Value=225
Scale = 429%
Height=150

Making an Object Scale Horizontally and Vertically

You can make an object scale both horizontally and vertically by doing the simple calculations for each scale in the objects Properties dialog box. Scaling can reflect either the same point ID / expression or two different point IDs / expressions.

The Scaling tab of the Properties dialog will reflect both entries. The object will scale in a rectangle area. Its exact size will reflect both the horizontal and vertical entries.

Object Rotation

You can make the following objects rotate during runtime based on the value of one or two expressions.

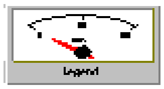
- Lines
- Shapes
- Text
- Buttons
- Groups
- Frames

One of the many useful applications for rotation is to place one or more gauges on the screen. The CimEdit Smart Object library provides you with gauges for which you only need to enter the expression they represent. During runtime, they will rotate to reflect the expression's value.

To rotate an object:

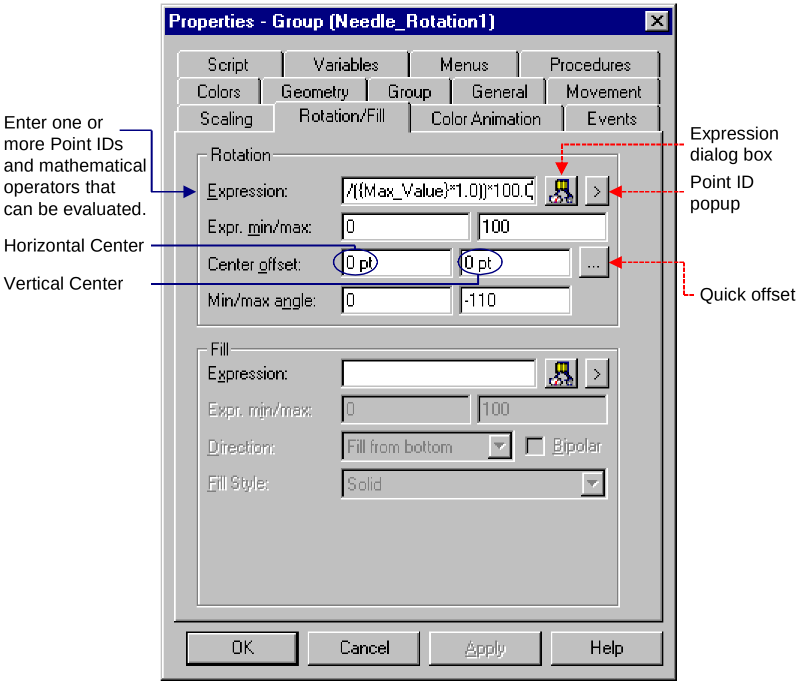
1. Select the object.
2. Determine the number of degrees the object should rotate.

   For example, the CimEdit gauge with a rotating needle rotates 100°.



3. Determine if the rotation should be clockwise or counter clockwise.
4. Determine where you want the center of the rotation to be.
5. Open the Properties dialog box.
6. Select the Rotation/Fill tab.

Rotation Example



Expression: /({Max_Value}*1.0)*100.0
Expr. min/max: 0 100
Center offset: 0 pt 0 pt
Min/max angle: 0 -110

Expression:
Expr. min/max: 0 100
Direction: Fill from bottom ☐ Bipolar
Fill Style: Solid

Enter one or more Point IDs and mathematical operators that can be evaluated.

Horizontal Center

Vertical Center

Expression dialog box

Point ID popup

Quick offset

7. Enter the Point ID or expression that you want the rotation to reflect.
8. Enter the Center Offset by Either Method 1 or Method 2

Method 1

A. Enter the minimum value of the point ID or expression. This value will cause the object to be at the beginning of the rotation.

B. Enter the maximum value of the point ID or expression. This value will cause the object to be at the end of the rotation.

Method 2

A. Click the **Quick Offset** button ... to the right of the Center Offset field.

B. Move the mouse to the where you want the center of rotation to be.

C. Click the left mouse button.

Continue from Method 1 or 2

9. Enter the angles of rotation that represent the minimum and maximum values for the expression that will cause movement to occur, in the min/max angle fields.

   The default angles (0, 360) will cause the object to perform one full counterclockwise rotation around the center offset as the expression value increases from its minimum value to its maximum value.

   You can specify counterclockwise or clockwise rotation.

10. Click **OK**.

Result: You can test your object in runtime mode.

Note: If the Expression field contains a single point ID with no operations performed on it and the point has Display Limits defined, you may leave the Expr. Min/Max fields blank. CimView will use the Display Limits configured for the point ID when the screen file opens for the expression minimum and maximum values.

Object Fill

Fills are a useful way to let a CimView user quickly see the level of a point or expression's value during runtime.

You can create fill animation for:

- Lines
- Shapes
- Groups

The CimEdit Smart Object library provides a large assortment of fill SmartObjects, including tanks and a large number of fill shapes for you to use.

CimEdit offers you several options for configuring where a flow begins and ends.

Flow can move from:

- One end of a shape to another
- In a bipolar direction

Movement can go from:

- Bottom to top
- Top to bottom
- Left to right
- Right to left

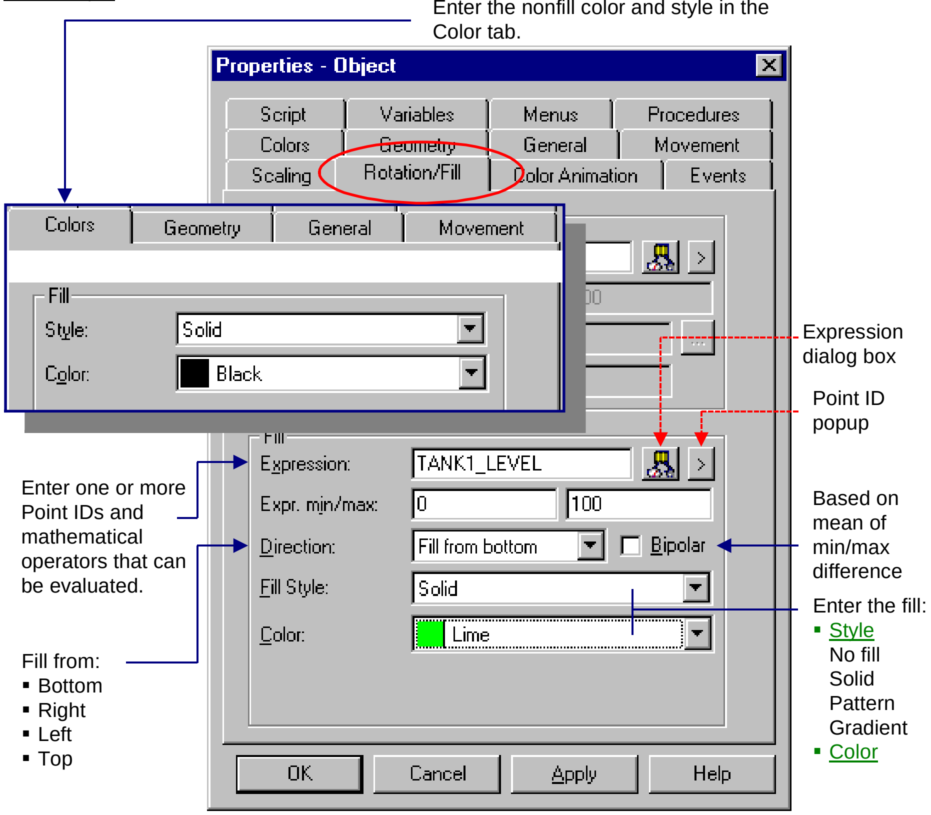
In ***Bipolar flow*** the midpoint of the object represents the mean calculated from a point or expression's minimum and maximum values.

When the point or expression's value is:	Filling occurs:
Greater than the mean value	From the midpoint in the fill direction you selected.
Equal to the mean value	No filling is displayed.
Less than the mean value	From the midpoint in the opposite direction of the fill direction you selected.

To create fill animation:

1. Select the object you want to fill.
2. Open the fill object's Properties dialog box.
3. Select the Colors tab.
4. Select a fill color or pattern in the Fill section. This color will be the default color when the object is empty.
5. Select the Rotation/Fill tab.
6. Enter the minimum value of the point ID or expression. This value will cause the object to have no fill (display only the default color).
7. Enter the maximum value of the Point ID or expression. This value will cause the object to be filled (display only the fill color).
8. Select from where the fill should start.
9. Check Bipolar if you want the fill to be based on the mean.
10. Select the fill.

Fill Example



Colors tab – Fill

Style: Solid

Color: Black

Rotation/Fill tab – Fill

Expression: TANK1_LEVEL

Expr. min/max: 0 100

Direction: Fill from bottom ☐ Bipolar

Fill Style: Solid

Color: 🟩 Lime

Enter the nonfill color and style in the Color tab.

Expression dialog box

Point ID popup

Enter one or more Point IDs and mathematical operators that can be evaluated.

Based on mean of min/max difference

Fill from:

- Bottom
- Right
- Left
- Top

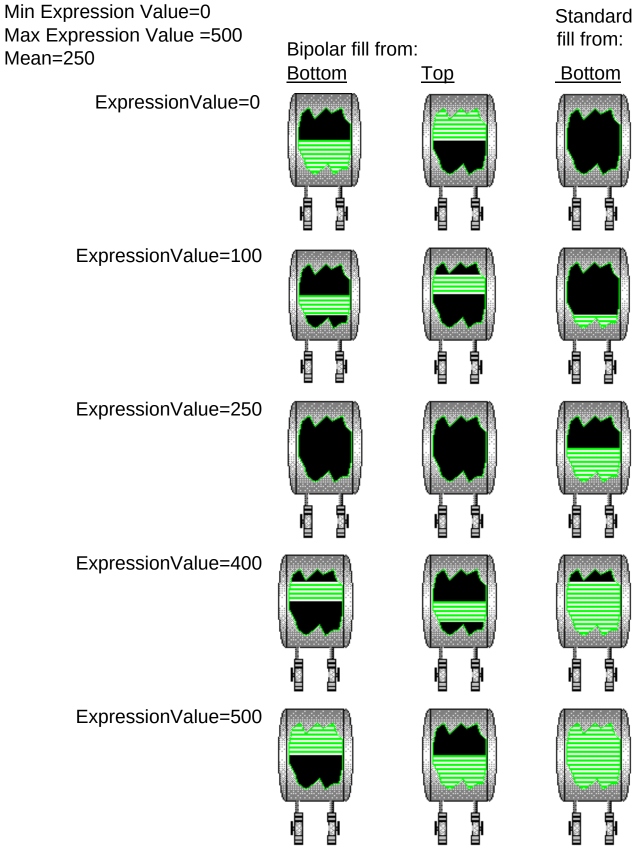
Enter the fill:

- Style
  No fill
  Solid
  Pattern
  Gradient
- Color

11. Enter the Point ID or expression that you want the fill to reflect.
12. Select the direction in which the flow should flow.
13. Check Bipolar for the flow to represent the deviation from the mean of the difference between the maximum and minimum value of the point or expression.
14. Enter the minimum value of the Point ID or expression. How the fill displays depends on whether you selected a standard or bipolar fill.
15. Enter the maximum value of the Point ID or expression. How the fill displays depends on whether you selected a standard or bipolar fill.
16. Click **Ok**.

Result: You can test your object in runtime mode.

Example of Two Bipolar and On Standard Fill



Note: If the Expression field contains a single point ID with no operations performed on it and the point has Display Limits defined, you may leave the Expr. Min/Max fields blank. CimView will use the Display Limits configured for the point ID at runtime.

Animation

There are several reasons to animate an object’s color or text. Two very common applications are to:

- Show that a switch is on or off
- Provide clear warning if a value is in an alarm state

Animation options include

- Changing an object’s color or pattern.
- Specifying when an object should be visible.
- Animate an expression.

You can easily create animation applications by writing expressions that specify when the color or text should change.

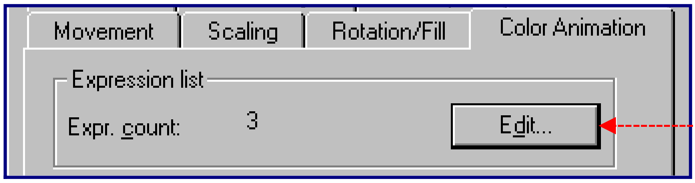
Animating the Color of an Object

If you can fill an object with a color or pattern that changes during runtime based on a condition that is specified by an expression.

The number of expressions you can define for an object is limited only by the amount of memory available.

To animate the color of an object:

1. Select the object.
2. Open the object’s Properties dialog box.
3. Select the Color Animation tab.
4. Click **Edit**.

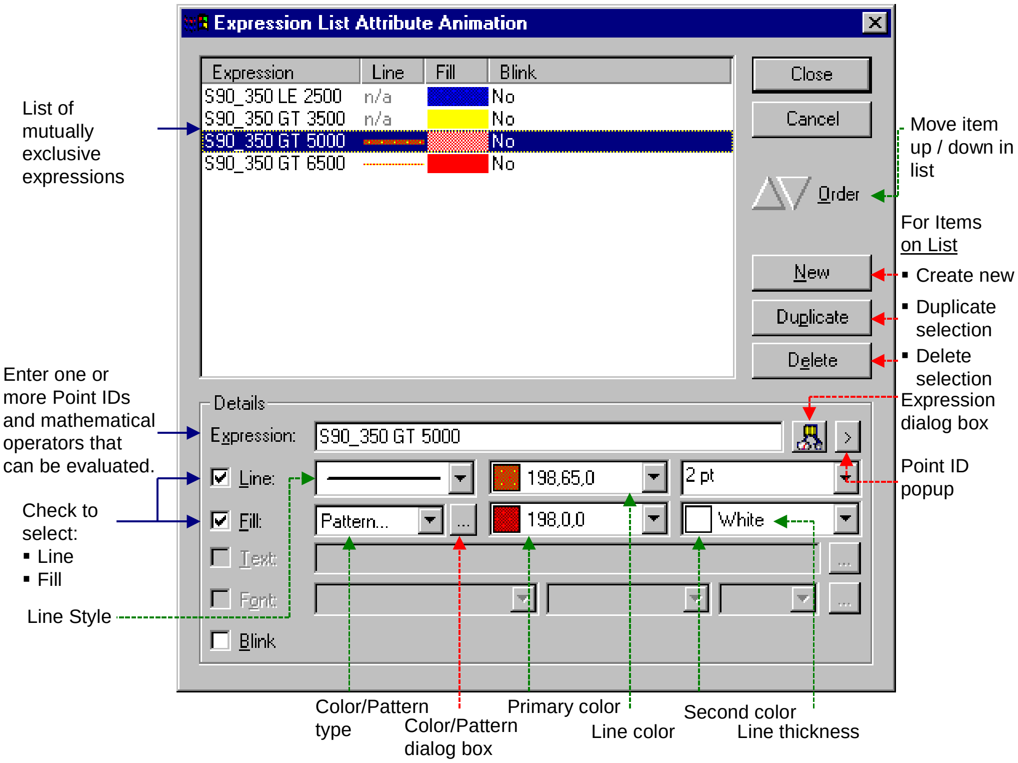


Expr. count: 3

Animation dialog box

The Expression List Attribute Animation dialog box appears.

Expression List Animation Dialog Box; Color Example



Expression	Line	Fill	Blink
S90_350 LE 2500	n/a	🟦	No
S90_350 GT 3500	n/a	🟨	No
S90_350 GT 5000	▬	▨	No
S90_350 GT 6500	┈	🟥	No

Expression: S90_350 GT 5000

☑ Line: 198,65,0 2 pt

☑ Fill: Pattern... 198,0,0 White

☐ Text:

☐ Font:

☐ Blink

List of mutually exclusive expressions

Enter one or more Point IDs and mathematical operators that can be evaluated.

Check to select:
- Line
- Fill

Line Style

Move item up / down in list

For Items on List
- Create new
- Duplicate selection
- Delete selection

Expression dialog box

Point ID popup

Color/Pattern type

Color/Pattern dialog box

Primary color

Line color

Second color

Line thickness

5. Enter an expression in a list of expressions in the **Expression** field.

   (At runtime, the expressions are evaluated in the order displayed on the Expression Annunciation screen. The first condition that evaluates as TRUE or unavailable determines the object's color or text string. If no conditions evaluate as True, the color of the object is the color assigned in the Colors Properties dialog box.)

6. Select a line style and/or color fill that will display when the expression evaluates to **True**. *See the "Color and Fill Selection" of "Applying Inanimate Visual Features" in this manual.*

7. Check **Blink** if you want the object to blink when the expression evaluates to TRUE.

8. Click:
   - **New** to create an entirely new configured expression for the list
   - **Duplicate** to duplicate an existing expression configuration and then modify it.

9. Repeat Steps 5–8 until the objects in the list represent all the conditions you need.

10. Move the objects up or down until the list is in the order you want.

    CimEdit evaluates the expressions in the order they appear on the list and displays the specified text for the first expression that evaluates to TRUE for as long as it remains true.

    If *no* conditions evaluate as TRUE the color of the object is the color assigned in the Colors properties.

11. Click **Close**.

12. The Expression Count on the Color Animation tab will equal the number of expressions configured on the list.
13. Click **OK**.

Result: You can test your object in runtime mode.

Note: The number of expressions you can define for an object is limited only by the amount of memory available.

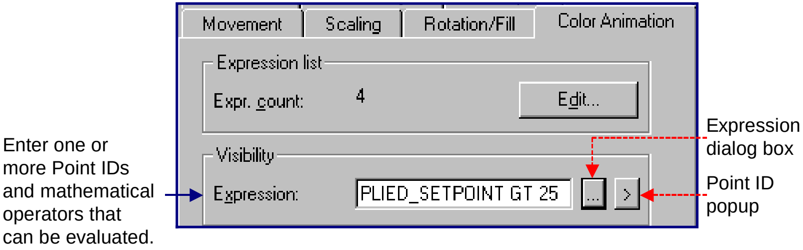
Visibility of an Object

Visibility animation lets you show or hide screen elements based on the evaluation of an expression.

To control when an animated object should be visible:

1. Select the object.
2. Open the object's Properties dialog box.
3. Select the Color Animation tab.
4. Select the Expression field in the Visibility section.
5. Enter an expression of one or more point IDs and mathematical operators that can be evaluated at runtime.
   - If the expression you enter evaluates to TRUE during runtime, the object is visible, and users can execute any procedures assigned to the object.
   - If the expression you enter evaluates to FALSE at runtime, the object is invisible, and users cannot access procedures associated with the object.

Visibility Expression



Expr. count: 4

Expression: PLIED_SETPOINT GT 25

Alarm State Animation

Alarm State animation provides shorthand for commonly used expression annunciation. When you specify a Digital or Analog point ID, the object will annunciate as follows

- For a digital point, the color of the object will change when the value of the point ID changes from 0 to 1.
- For an analog point, the color of the object will change when the value of the point ID is in one of the four alarm states (**`Alarm High`**, **`Warning High`**, **`Warning Low`**, or **`Alarm Low`**).

Enter the Point ID to associate with the object in the Alarm State Expression field of the Color Animation tab. You can configure the colors and blink codes for Default Annunciation in the global parameters file.

If no global parameters are defined, the following defaults are used:

For Digital Points

Color	Blink	Expression
7	No	**`<point id> EQ 1`**
6	No	**`<point id> EQ 0`**

For Analog Points

Color	Blink	Expression
15	No	**`ALARM_HIGH (<point id>)`**
14	No	**`WARNING_HIGH (<point id>)`**
10	No	**`WARNING_LOW (<point id>)`**
13	No	**`ALARM_LOW (<point id>)`**

The colors used for Alarm State color animation are those defined by the **`RGB.dat`** file.

Color Index for Animation

Color Index animation lets you change the color of an object or group of objects to represent the current value of an expression under the following conditions

- The color of the object will change as the value of the expression ranges from 0 to 255.
- If the expression value does not correspond to a value in the range of 0 to 255, the object will be displayed with the "unavailable" color (black).
- The colors displayed for the expression value will correspond to the 256 colors in the **`RGB.dat`** file.

Enter an expression that can be evaluated in the Color Index Expression field of the Color Animation tab. The expression can consist of one or more point IDs along with mathematical operators.

Animating an Expression

CimEdit lets you make the contents and/or appearance of a text string change during runtime based on conditions that are specified by an expression.

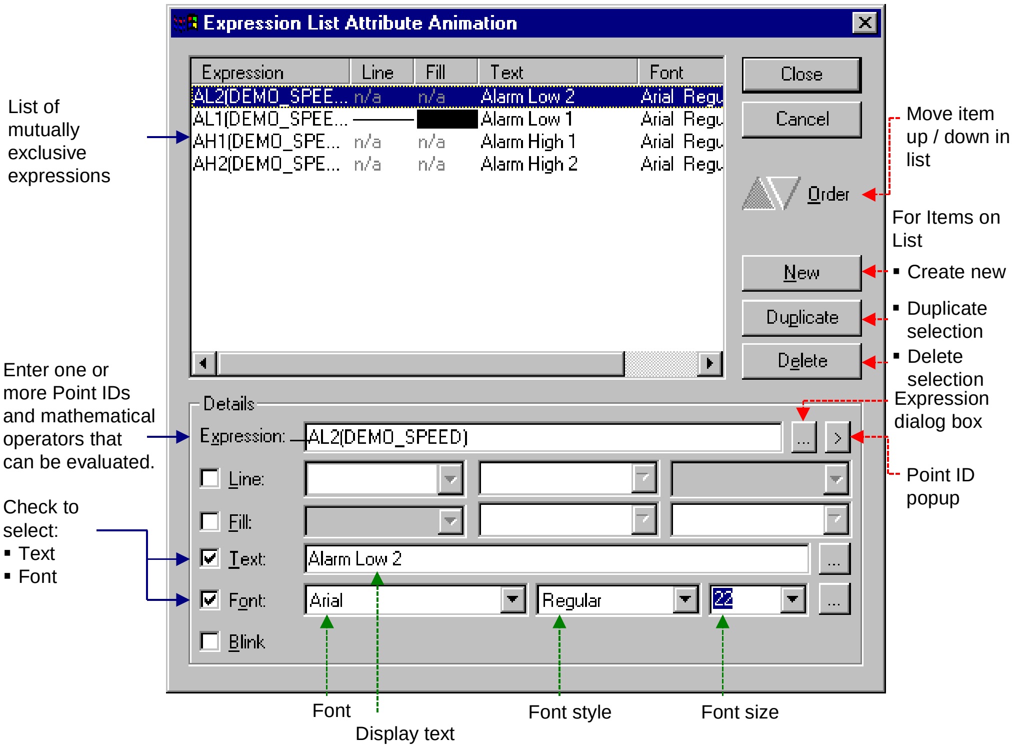
The number of expressions you can define for an object is limited only by the amount of memory available.

To animate the color of an object using expressions:

1. Place a text object on the screen.
2. Open the object's Properties dialog box.
3. Select the Color Animation tab.
4. Click **Edit**

   The Expression List Attribute Animation dialog box appears.

List Attribute Animation Dialog Box: Text Animation Example



Expression	Line	Fill	Text	Font
AL2(DEMO_SPEE...	n/a	n/a	Alarm Low 2	Arial Regu
AL1(DEMO_SPEE...	———	■	Alarm Low 1	Arial Regu
AH1(DEMO_SPE...	n/a	n/a	Alarm High 1	Arial Regu
AH2(DEMO_SPE...	n/a	n/a	Alarm High 2	Arial Regu

Expression: AL2(DEMO_SPEED)

☐ Line:

☐ Fill:

☑ Text: Alarm Low 2

☑ Font: Arial | Regular | 22

☐ Blink

5. Enter a Boolean expression in a list of expressions in the Expression field. (At runtime, the expressions are evaluated in the order displayed on the Expression Annunciation screen. The first condition that evaluates as **TRUE** or unavailable determines the object's color or text string. If no conditions evaluate as True, the color of the object is the color assigned in the Colors Properties dialog box.)

   A ***Boolean expression*** consists of one or more Boolean operations. These operations may be performed on point values or point alarm conditions.

6. Enter the text string you want to display in the Text field. There is no restriction on length.
7. Select the font, style and size that will display when the expression evaluates to TRUE.

8. Check Blink if you want the text string to blink when the expression evaluates to TRUE.
9. Click:
    - **New** to create an entirely new configured expression for the list
    - **Duplicate** to duplicate an existing expression configuration and then modify it.
10. Repeat Steps 5–9 until the objects on the list represent all the conditions you need.
11. Move the objects up or down until the list is in the order you want.

    CimEdit evaluates the expressions in the order they appear on the list and displays the specified text for the first expression that evaluates to TRUE for as long as it remains true.

    If no conditions evaluate as TRUE the color of the object is the color assigned in the Colors properties.
12. Click **Close**.
13. The Expression Count on the Color Animation tab will equal the number of expressions configured on the list.
14. Click **OK**.

Result: you can test your object in runtime mode.

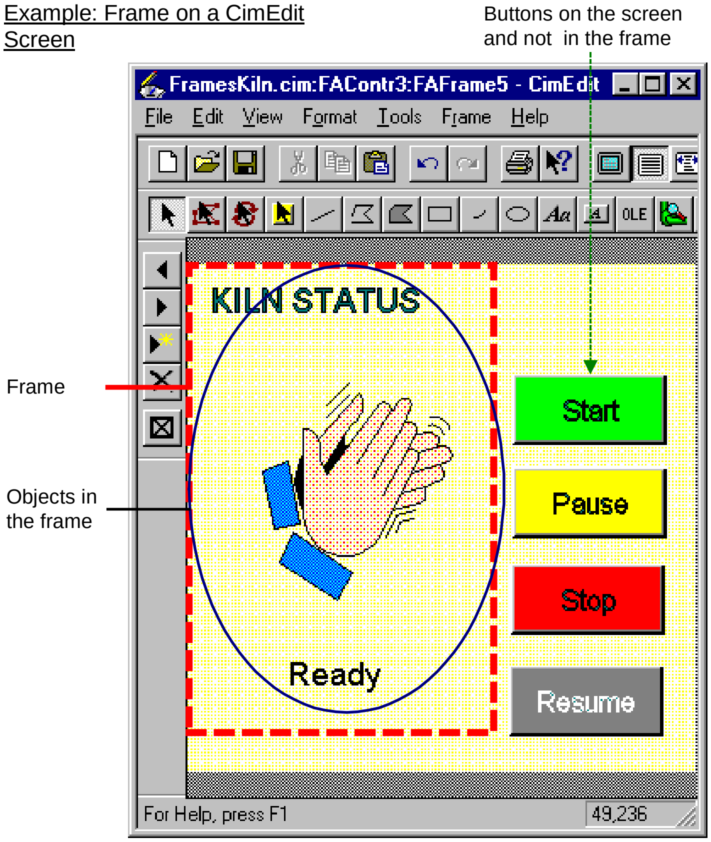
Note: If you select black for the expression color, blinking will not occur.

Frame Animation

Frames can be a time saving configuration choice if you have a section of a screen that will change considerably during runtime, based on a configured set of conditions.

The frame concept in CimEdit is based on frames that are created for a film. You create the frames in a frame container. While you work in an open Frame Container, you can select objects in the current frame, but you cannot select other objects on the screen.

Example: Frame on a CimEdit Screen



As you configure frames, you can move forward and backward to view and edit the different frames. During runtime, at any given moment, the frame with the conditions that are TRUE will display.

You may create any object in a Frame Container that you can create on your screen.

Creating a Frame Container

You keep the associated frames together in a frame container. Once the frame container is created, you can easily open it again:

To create a frame container

Method 1

Click the **Frame Container** button on the Tools toolbar.

Method 2

1. Click Frame on the CimEdit menu bar.
2. Select New Frame Container.

Result: The Frame Container opens; the first frame is displayed and the Frame Toolbar displays.

To open a frame container

Method 1

Click the **Frame Container** button on the Tools toolbar.

Method 2

1. Click Frame on the menu bar.
2. Select Open Frame Container.

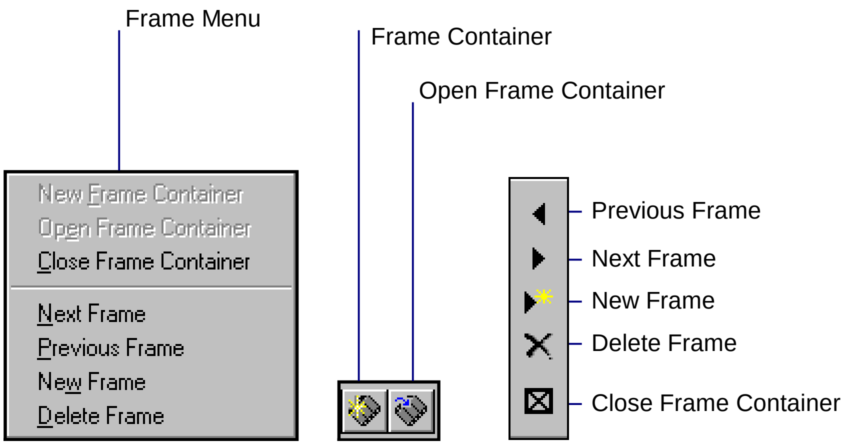
Result: The Frame Container opens. The first frame is displayed, and the Frame Toolbar displays.

Working with Frame Container Tools

Tip: If you want to use a small section of the screen for animation, try enclosing that section in a rectangle or polygon before you start frame animation. You can then use the object as a guide for positioning your animation objects.

Frame Menu and Toolbar

You can move through frames in the frame container by using either the Frame menu or Container toolbar.



You can go to the:

Previous Frame — If you are on the first frame, Previous Frame displays the last frame in the sequence.

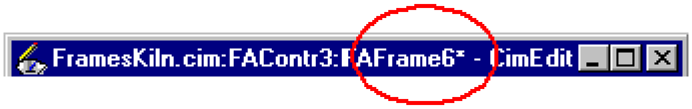
Next Frame — If you are on the last frame, Next Frame displays the first frame in the sequence.

New Frame — The new frame is created at the end of the current frame sequence. This order can be changed. *See "Frame Animation Configuration" in this section.*

Delete Frame

Close Frame Container

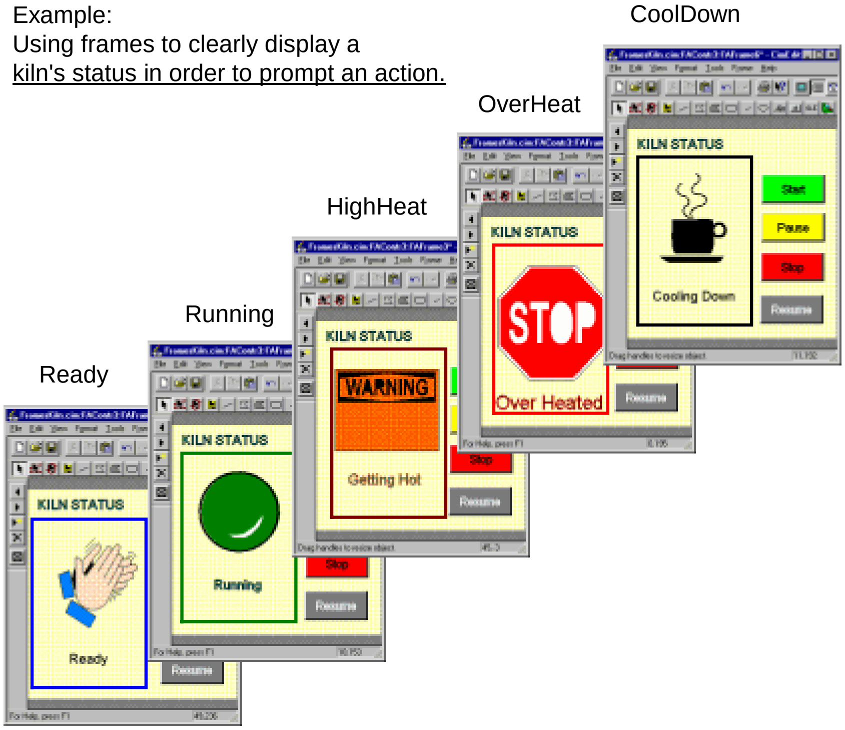
When the Frame Container is open, the number of the frame you are currently working on is displayed in the Title bar. It will look similar to this:



When you close the Frame Container, the last frame you were working in remains on the screen.

Configuring a Frame Container

You can place and configure anything in a frame that you place on a screen. The key is to create a logical rationale for causing one frame to replace another.



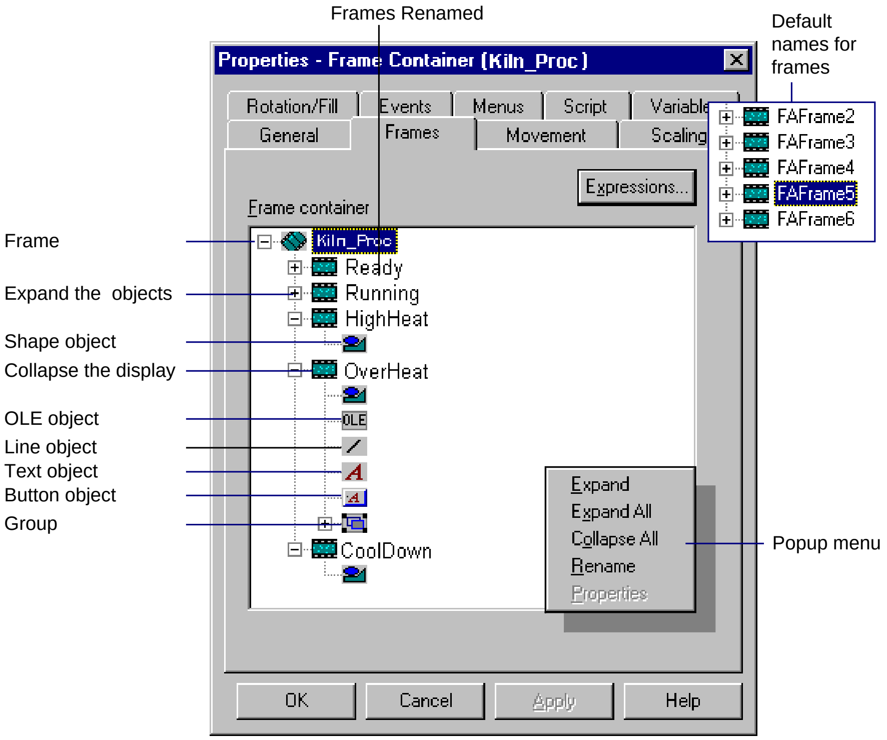
Example:
Using frames to clearly display a
kiln's status in order to prompt an action.

You can look over the frames you have created and what they contain in the Frames tab of the Properties dialog box.

To view the Properties dialog box:

1. Click once on any object in the frame to see the extent of the frame.
2. Double-click on any object in the frame.

Result: The frame's Properties dialog box opens.



Note: If an object you select represents an object in a frame, the selected frame will display and the object will be highlighted.

View, select, edit and rename frames and their objects by using the Frame tree or the menu that pops up when you select an object and click the right mouse button.

To change the name of any object in a frame's tree:

Select the object, and then do one of the following.

Method 1

Click the left mouse button, enter the new name, and click **Enter**.

Method 2

1. Click the right mouse button.
2. Select Rename from the popup menu.
3. Enter the new name.
4. Click **Enter**.

To display the properties for an object in a frame's tree:

Method 1

Double-click its icon.

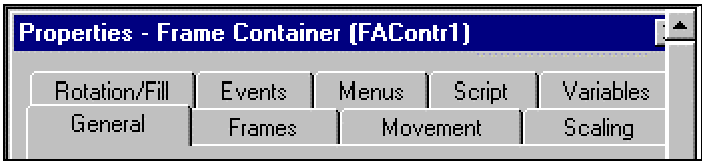
Method 2

1. Select the object.
2. Click the right mouse button.
3. Select Properties from the popup menu.

Result: The Properties dialog box associated with what you select appears.

Frame Container Configuration Options

The tabs in the Properties dialog box provide you with several options for determining how the frame container will behave.



Frame containers can be:

- Rotated/filled.
- Moved
- Scaled

You can also control their behavior through:

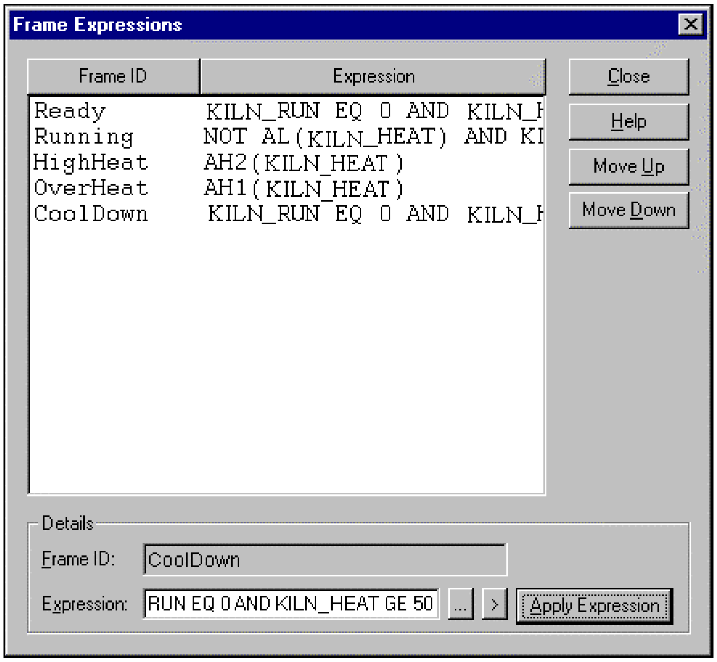
- Events
- Menus
- Scripts
- Variables

You configure when and why frames display relative to each other in the *Frames* tab.

Frame Animation Configuration

When you click **Expressions…**on the Frames tab the Frame Expressions dialog box opens. Use this dialog box to:

- Assign an expression to each frame in the container
- Specify the order in which the expressions should be evaluated



Frame ID	Expression
Ready	KILN_RUN EQ 0 AND KILN_H
Running	NOT AL(KILN_HEAT) AND KI
HighHeat	AH2(KILN_HEAT)
OverHeat	AH1(KILN_HEAT)
CoolDown	KILN_RUN EQ 0 AND KILN_H

Frame ID: CoolDown

Expression: RUN EQ 0 AND KILN_HEAT GE 50

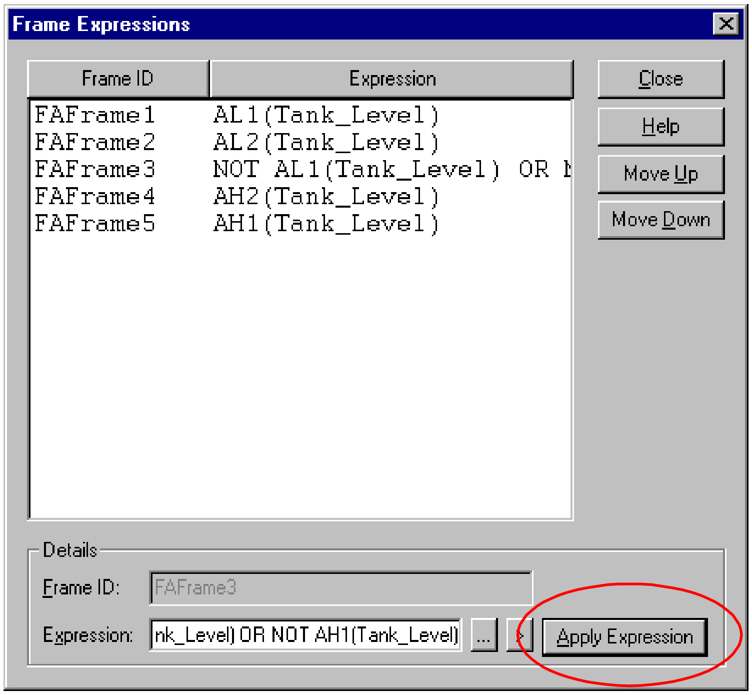
At runtime, expressions are evaluated in the order they appear in the Frame Expressions dialog box.

When a user displays the CimView screen at runtime, the expressions are evaluated. Whenever the source point for an expression in the list changes, the frame associated with the first expression that evaluates to TRUE is displayed.

To enter an expression for a frame:

1. Select a frame in the list of frames.
2. Enter a Boolean expression that can be evaluated in the Expression field. A Boolean expression consists of one or more Boolean operations. These operations may be performed on point values or point alarm conditions. You can also:
   - Click the **Expression** button to the right of the input field to display the Edit Expression dialog and use it to create your expression.
   - Click the **Popup Menu** button to browse for Point or variable IDs, edit the expression, or add elements to the expression.
3. Click **Apply Expression**.

Result: The expression appears in the list on the Frame Expression tab.



Frame ID	Expression
FAFrame1	AL1(Tank_Level)
FAFrame2	AL2(Tank_Level)
FAFrame3	NOT AL1(Tank_Level) OR N
FAFrame4	AH2(Tank_Level)
FAFrame5	AH1(Tank_Level)

Frame ID: FAFrame3

Expression: nk_Level) OR NOT AH1(Tank_Level)

To reorder frames in the list:

Select a Frame ID in the list.

1. Click **Move Up** to move the frame up one place in the list.
2. Click **Move Down** to move the frame down one place in the list.

Frame Container Placement

To move the frame container to a new location after you close it:

1. Hold down the left mouse button on any object in the frame. You will see the outlines of all objects in the frame container. While holding the button down,
2. Drag the frame container to a new location on the CimEdit screen.

Configuring a frame container.

Creating Events in CimEdit

About Events in CimEdit

CIMPLICITY HMI provides several tools to make things happen in CimEdit and in CimView. The tools can be categorized as triggers that are configured as events and results that can be configured through procedures or scripts.

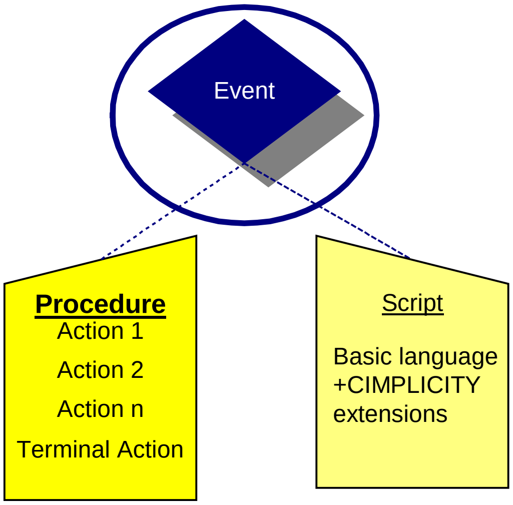
Trigger

An ***event*** triggers a procedure or calls a script. CimEdit provides a long list of events from which you can choose the best one for your requirements.

Result

A ***procedure*** contains one or more actions that are triggered in the specified order when an event occurs and while the screen is displayed in CimView. CimEdit provides several actions from which a screen designer can easily compile a meaningful list.

A ***script*** which is usually written by a system administrator, uses the same Editor and Basic language as the Basic Control Engine. Anything you can do in a normal script, you can do in a CimEdit script. CimEdit provides additional extensions to give you a wider range of screen development choices. However, CimEdit scripts are *only* accessible from the screen in which you create them.



This chapter describes the events that are available in CimEdit.

Available Events

In CimEdit, you use an event to trigger a procedure (which contains an action or series of actions). If you associate a specific event with more than one item on the screen, how the event triggers actions depends on the event.

Note: The following events are triggered in CimView only, except for:

Event	Triggered In
`Object Inserted`	CimEdit only
`Object Removed`	CimEdit only
`Smart Object`	CimEdit and CimView

Available Events Using:	CimEdit Event
ActiveX Controls	See the ActiveX control documentation for specific information for an **`ActiveX`** event. *See page 12-7*
Dialog Box	**`Dialog Close`** triggers actions: *When a user closes a screen that was opened using the GefApplication.DialogPopup or GefScreens.DialogPopup method in the CimEdit/CimView GefObject Model.* *See page 12-8.*
Expressions	**`Expression High`** and **`Expression Update`** *trigger actions: Whenever the criteria are met for an item with the expression event, no matter what object is highlighted.* *See page 12-10.*
Keystrokes	**`Key Down`** *and* **`Key Up`** *trigger actions: For all associated items, whenever a selected key is pressed (down or up), no matter what item is highlighted.* *See page 12-12.* **`While Key Down`** *triggers actions for all associated objects while the key is pressed and at the specified intervals, no matter what item is highlighted*
Mouse buttons	**`Highlight`** *and* **`Unhighlight`** *trigger actions when an object is highlighted or unhighlighted.* **`Mouse Down`** *and* **`Mouse Up`** *trigger actions for the item the cursor is over when the left mouse button is pressed (down or up).* *See page 12-16.* **`While Mouse Down`** *triggers actions for the selected item, while the left mouse button is down and at the specified intervals*
Periodic	**`Periodic`** *triggers actions for all associated items whenever the specified interval elapses, no matter what item is highlighted.*

Objects

`Object Inserted` *and* **`Object Removed`** *trigger actions (CimEdit only) for the associated SmartObject that is being inserted or removed.*

`Smart Object` *triggers actions (CimEdit and CimView) when the SmartObject is double-clicked, triggered from a CimEdit menu or from an associated popup menu*. (A SmartObject event is configured the same way as any other event.)

Note: The Object Explorer contains several SmartObjects. In addition, a developer can create new SmartObjects and use the **`Smart Object`**, **`Object Inserted,`** or **`Object Removed`** events to trigger procedures specific to the design project.

See page 12-23.

Screens

`Screen Close` *and* **`Screen Open`** *trigger actions when a user closes or opens the screen on which the event is configured.*

`Screen Close` *and* **`Screen Open`** t*rigger actions for all associated objects when the screen is open or closed.*

See page 12-30.

Example of Events Triggering Actions

You have a screen with one object and one group.

You create a procedure in each.

You assign the same event to each. However, the event triggers different actions.

The type of event you assign affects when each action is triggered.

1. In CimEdit:

   You assign a **`Key Up`** event for key “A” to each:

   - For the screen, the Key Up event for key "A" opens Screen A
   - For the group, the Key Up event for key "A" opens Screen B
   - For the object, the Key Up event for key "A" opens Screen C

   In CimView:

   When a user presses then releases key "A" in CimView, all the screens open.

2. In CimEdit:

   You assign a Mouse Up event to each:

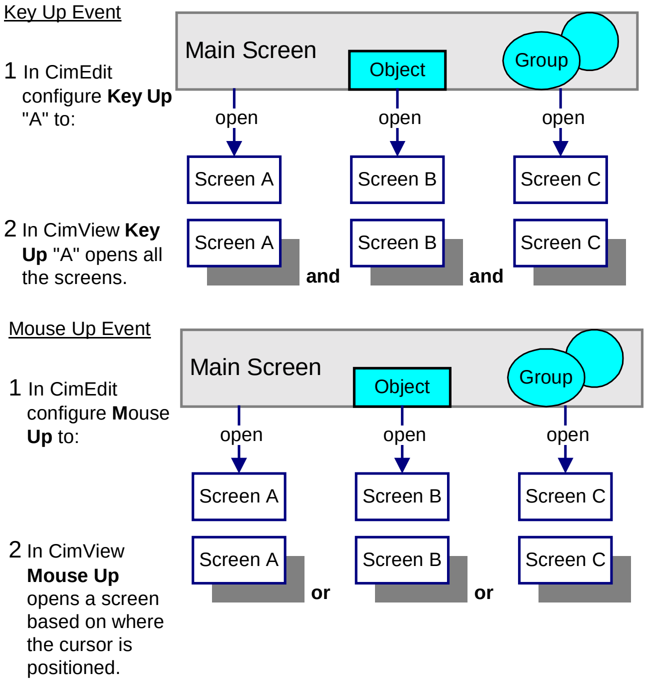
   - For the screen, the Mouse Up event opens Screen A.
   - For the group, the Mouse Up event opens Screen B.
   - For the object, the Mouse Up event opens Screen C.

   In CimView:

   - When a user moves the cursor over the screen and clicks the mouse, Screen A opens.

- When a user moves the cursor over the group and clicks the mouse, Screen B opens.
- When a user moves the cursor over the object and clicks the mouse, Screen C opens.

The Same Actions Executed in CimView for Two Events: Example



Key Up Event

1 In CimEdit configure **Key Up** "A" to:

2 In CimView **Key Up** "A" opens all the screens.

Mouse Up Event

1 In CimEdit configure **M**ouse **Up** to:

2 In CimView **Mouse Up** opens a screen based on where the cursor is positioned.

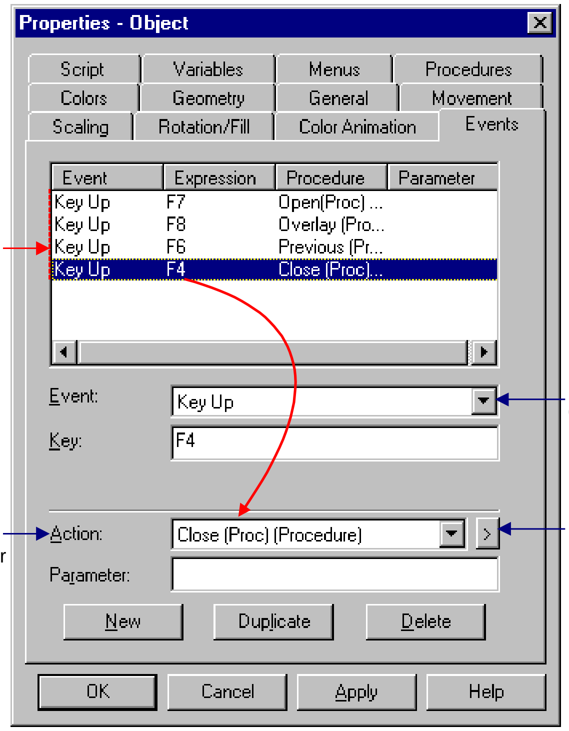
Event Creation

You begin to configure an event by creating it on the Event tab of an object's Properties dialog box.

To create a new event:

1. Select the group or object.
2. Click the right mouse button.
3. Select Properties from the popup menu.
4. Select the Events tab.
5. Click **New** to add a new event.
6. Select the type of event you want to define in the Event field.
7. Select or configure a procedure or script for the Action field.
8. Enter data in other input fields, as required.
9. Click **OK.**

Result: The event is added to the list of events on the Events tab.



Event	Expression	Procedure	Parameter
Key Up	F7	Open(Proc) ...	
Key Up	F8	Overlay (Pro...	
Key Up	F6	Previous (Pr...	
Key Up	F4	Close (Proc)...	

Event: Key Up

Key: F4

Action: Close (Proc) (Procedure)

Parameter:

Existing events

Events drop down list

Procedure associated with selected event. A script name can also appear in the Action field.

New / edit procedure or script popup

Event Configuration

Configuring an event is straightforward. Because an event is the trigger that initiates a procedure (which includes one or more actions) or a script, configuration involves simply selecting the event and if there is an element involved with the event specifying that element. For example, for a **Key Up** event, the key needs to be selected.

When an event fires in CimView, its associated procedure (or script) is placed in the procedure queue. When the procedure (or script) that is at the head of the queue runs and finishes, the next procedure (or script) starts. The sequence continues until all of the procedures (or scripts) have run.

When you configure a procedure, you determine the order or the actions.

The number of procedures (or scripts) you can include in the queue is limited only by the amount of memory on the computer.

Using Parameters for Events

For any event you select, the Events tab will display a Parameter field.

Parameter:

If the procedure invokes a script, you can use the Parameter field to pass a string to the script. The script must use the **CimGetEventContext().UserParameter** property to accept the parameter.

Using an ActiveX Control for an Event

CimEdit provides one ActiveX Control event that enables you to configure the numerous ActiveX controls that you may be using.

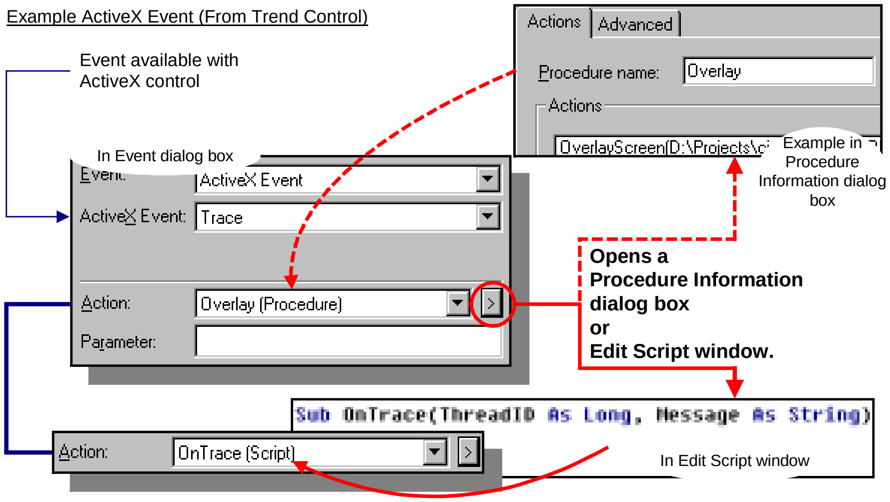
Because each ActiveX control contains its own rules, actions and scripting, you need to read its documentation to learn what you can configure.

The event is:

ActiveX event	*See the next section.*

ActiveX Event

Note: Each ActiveX control has its own set of events. See the documentation for the ActiveX control you plan to use.



Example ActiveX Event (From Trend Control)

Event available with ActiveX control

In Event dialog box

Event: ActiveX Event

ActiveX Event: Trace

Action: Overlay (Procedure)

Parameter:

Procedure name: Overlay

Actions

OverlayScreen(D:\Projects\c

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnTrace(ThreadID As Long, Message As String)
```

Action: OnTrace (Script)

In Edit Script window

`ActiveX` event fields include:

ActiveX Event Select an event that is available in the ActiveX control.

Action Following your ActiveX control documentation, either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Parameter Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Using Dialog Boxes for Events

CimEdit offers an event that, when the Object Model is used to open a screen, triggers a procedure or calls a script when a user closes a screen.

The event is

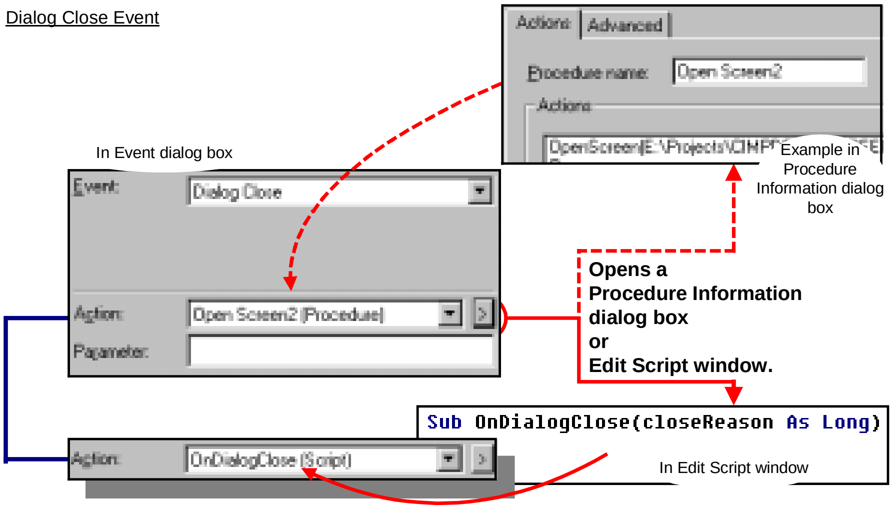
`Dialog Close` *See the next section.*

Dialog Close

Dialog Close triggers a procedure or calls a script when a user closes a screen that was opened using the **`GefApplication.DialogPopup`** or **`GefScreens.DialogPopup`** method in the CimEdit/CimView GefObject Model.

The event is triggered in the screen that was specified as the parent screen in the **`DialogPopup`** call.

Dialog Close Event



In Event dialog box

Event: Dialog Close

Action: Open Screen2 (Procedure)

Parameter:

Actions | Advanced

Procedure name: Open Screen2

Actions

OpenScreen(E:\Projects\CIMP

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

Action: OnDialogClose (Script)

```
Sub OnDialogClose(closeReason As Long)
```

In Edit Script window

`Dialog Close` event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnDialogClose`** (**`closeReason As Long`**) function parameters include:

CloseReason If the dialog popup is closed using the **`GefScreen.CloseEx`** method, *closeReason* will be the value passed to the **`CloseEx`** method. If the dialog popup was closed by any other method, *closeReason* will be 0.

Note: The following methods and event allow you to use CimView screens the way you would use dialog boxes:

- `GefApplication.DialogPopup` method,
- `GefScreen.CloseEx` method,
- `GefScreen.ObjectToEdit` property and
- `Dialog Close` event.

Using Expressions for Events

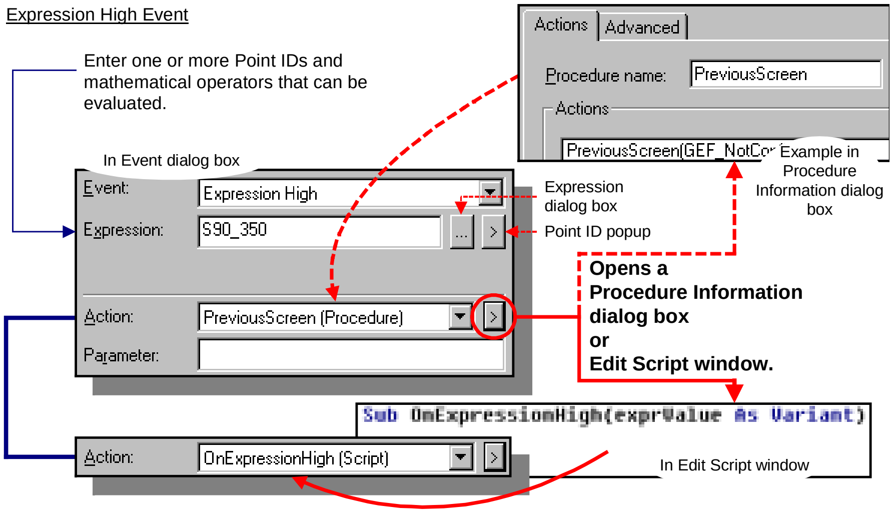
There are two ways to use expressions for events.

The events are:

`Expression High`	*See the next section.*
`Expression Update`	*See page 12-11.*

Expression High Event

`Expression High` triggers a procedure or calls a script when the value of the expression goes from "LOW" (zero) to "HIGH" (or non-zero) while the screen is being displayed in CimView.



Expression High Event

Enter one or more Point IDs and mathematical operators that can be evaluated.

In Event dialog box

Event: Expression High

Expression: S90_350

Action: PreviousScreen (Procedure)

Parameter:

Expression dialog box

Point ID popup

Actions | Advanced

Procedure name: PreviousScreen

Actions

PreviousScreen(GEF_NotCo

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnExpressionHigh(exprValue As Variant)
```

In Edit Script window

Action: OnExpressionHigh (Script)

`Expression High` event fields include:

Expression — Enter one or more Point IDs and mathematical operators that can be evaluated.

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnExpressionHigh`** (exprValue As Variant) function parameters include:

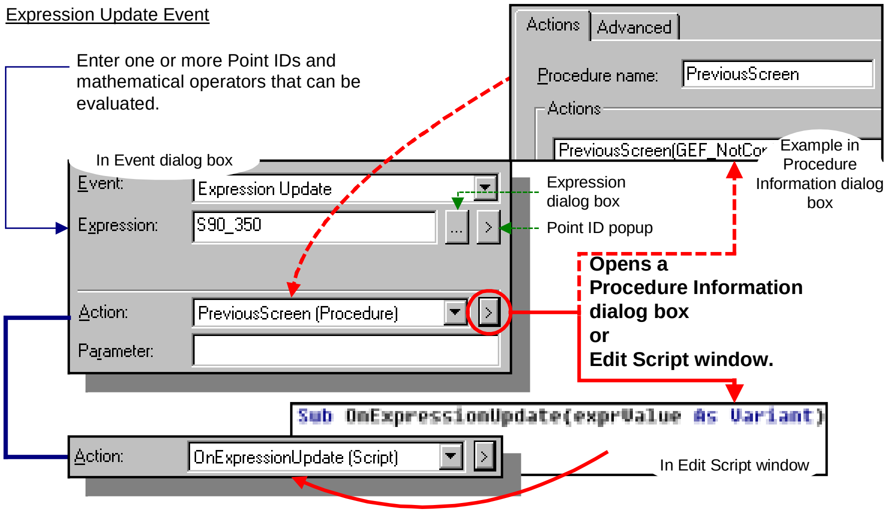
exprValue — The value of the expression at the time the event was triggered

Parameter — Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Expression Update Event

`Expression Update` triggers a procedure or calls a script when the value of the expression changes.

Expression Update Event



Actions | Advanced

Procedure name: PreviousScreen

Actions

PreviousScreen(GEF_NotCor

Event: Expression Update

Expression: S90_350

Action: PreviousScreen (Procedure)

Parameter:

```
Sub OnExpressionUpdate(exprValue As Variant)
```

Action: OnExpressionUpdate (Script)

Enter one or more Point IDs and mathematical operators that can be evaluated.
In Event dialog box
Expression dialog box
Point ID popup
Example in Procedure Information dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

`Expression Update` event fields include:

Expression — Enter one or more Point IDs and mathematical operators that can be evaluated.

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnExpressionUpdate`** (exprValue As Variant) function parameters include:

exprValue — The value of the expression at the time the event was triggered

Parameter — Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Using a Key for Events

CimEdit provides you with three events in which you can use keys.

The events are:

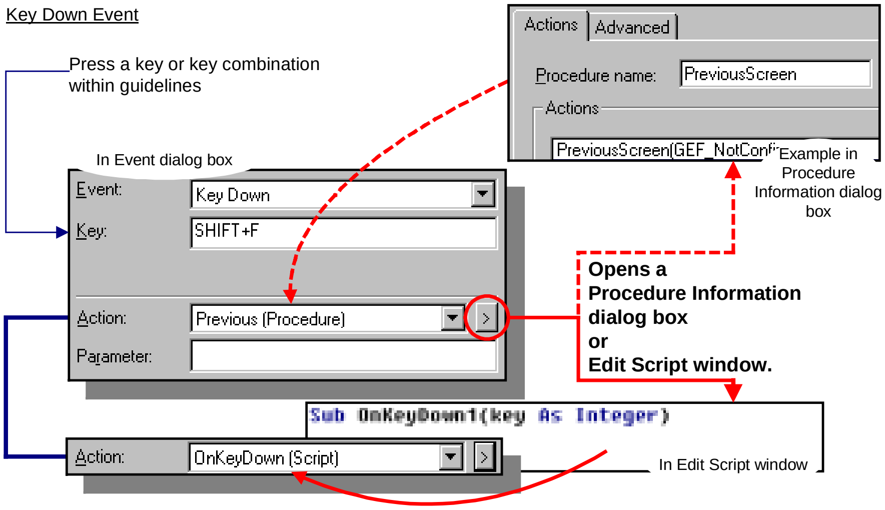
`Key Down`	*See the next section.*
`Key Up`	*See page 12-13.*
`While Key Down`	*See page 12-14.*

There are some guidelines to follow when you assign keys to the event. *See page 12-15 for the guidelines.*

Key Down Event

`Key Down` triggers a procedure or calls a script when a predefined key is pressed down.

Key Down Event



Press a key or key combination within guidelines

In Event dialog box

Event: Key Down

Key: SHIFT+F

Action: Previous (Procedure)

Parameter:

Example in Procedure Information dialog box

Procedure name: PreviousScreen

Actions

PreviousScreen(GEF_NotConf

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnKeyDown1(key As Integer)
```

In Edit Script window

Action: OnKeyDown (Script)

`Key Down` event fields include:

Key	Press one key or a combination of keys within guidelines.

The pressed key(s) will appear in the Key field. *See page12-15 for guidelines.*

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

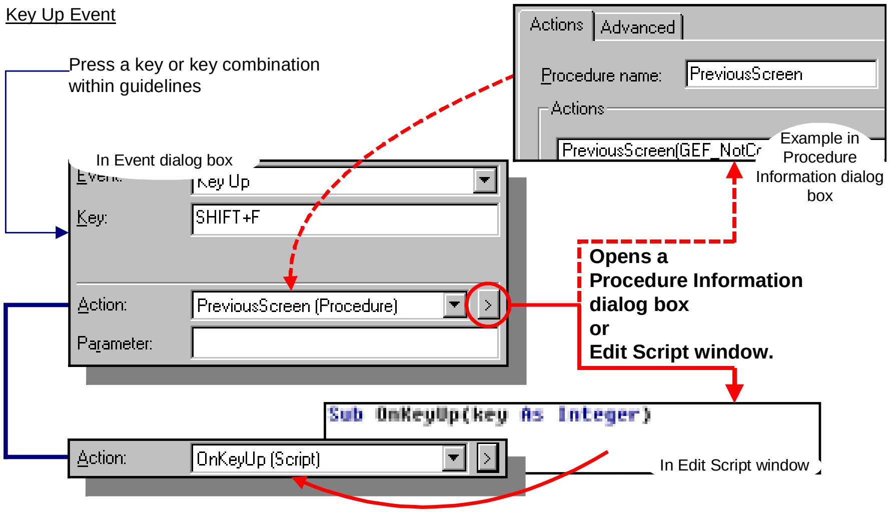
Script Note: Sub **`OnKeyDown`** (key As Integer**)** function parameters include:

key An integer representing the key value. *See page 12-15 for a detailed explanation.*

Parameter — Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page 12-6.*

Key Up Event

`Key Up` triggers a procedure or calls a script when a predefined key is pressed then released.



Key Up Event

Press a key or key combination within guidelines

In Event dialog box

Event: Key Up

Key: SHIFT+F

Action: PreviousScreen (Procedure)

Parameter:

Actions | Advanced

Procedure name: PreviousScreen

Actions

PreviousScreen(GEF_NotC

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnKeyUp(key As Integer)
```

Action: OnKeyUp (Script)

In Edit Script window

`Key Up` event fields include:

Key — Press one key or a combination of keys within guidelines.

The pressed key(s) will appear in the Key field. *See page12-15 for guidelines*.

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

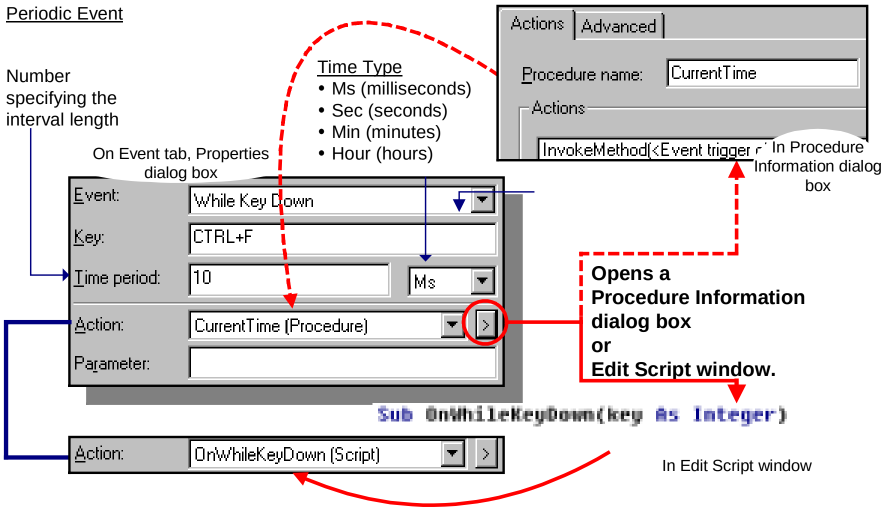
Script Note: Sub **`OnKeyUp`** (key As Integer) function parameters include:

key — An integer representing the key value. *See page 12-15 for a detailed explanation.*

Parameter — Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

While Key Down Event (Keystroke+Periodic)

`While Key Down` triggers a procedure or calls a script when a user presses the selected key and holds it down. The action is not invoked when the user presses the key, but it is invoked every Time period thereafter until the user releases the key.



Periodic Event

Number specifying the interval length

Time Type
- Ms (milliseconds)
- Sec (seconds)
- Min (minutes)
- Hour (hours)

On Event tab, Properties dialog box

Event: While Key Down

Key: CTRL+F

Time period: 10 Ms

Action: CurrentTime (Procedure)

Parameter:

Procedure name: CurrentTime

Actions: InvokeMethod(<Event trigger

In Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

`Sub OnWhileKeyDown(key As Integer)`

Action: OnWhileKeyDown (Script)

In Edit Script window

`While Key Down` event fields include:

Key — Press one key or a combination of keys within guidelines.

The pressed key(s) will appear in the Key field. *See page12-15 for guidelines.*

Time period — Enter the number of milliseconds, seconds, minutes or hours between the time the event's procedure ends and the time it is re-triggered.

Time Type — Select Ms (milliseconds), Sec (seconds), Min (minutes) or Hour (hours).

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnWhileKeyDown`** (key As Integer) function parameters include:

key — An integer representing the key value. *See page 12-15 for a detailed explanation.*

Parameter — Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Guidelines for Assigning Key Up or Key Down Keys

Guidelines for assigning keys:

- You may assign most keys as a **Key Down** or **Key Up** event. However, when you do, the triggered procedure overrides any other function the key may have performed.
- **Do not use:**
  - ➔ **Ctrl**, **Shift**, or **Alt** alone
  - ➔ **Esc**, **Tab**, **Enter**, or **Print Screen** either alone or in combination with other keys.
  - ➔ **Ctrl+Alt+Delete**
  - ➔ **Ctrl+Alt+Shift+Delete**
  - ➔ **Ctrl+Scroll Lock**
  - ➔ **Ctrl+Shift+Scroll Lock**
  - ➔ **Ctrl+Alt+Scroll Lock**
  - ➔ **Pause**
  - ➔ **Ctrl+Pause** (regardless of other modifiers like **Shift** and **Alt**)
  - ➔ **ALT+F6** (for Windows 98)
- You may assign a key that would normally invoke a menu or Help. If no procedure is assigned, the normal action is invoked. Keys that are affected are:

Key	Accelerator Action
Ctrl+O	File Open
Ctrl+P	File Print
F1	Help Contents
Shift+F1	Context Help
F10	Select Frame Menu
Alt+F4	Close Window (**Note:** The window will close after the procedure is done.)

Detailed Explanation for the Key Parameter

The low-order byte represents the Windows virtual keycode of the key that was pressed. For ASCII letters and numbers, this corresponds to the ASCII code for that character.

The high order byte has information about the state of the Alt, Control, and Shift keys. The other bits are currently reserved and should not be used. The values are:

`GefModAlt`	&h01
`GefModControl`	&h02
`GefModShift`	&h04

To extract just the high order byte containing the modifier states and the low order byte containing the key code, you can use the following sample code:

```
modifiers = key / 256
keycode = key mod 256
```

Since the modifiers are bit values, you must use the binary AND operator to test them.

Example

```
If modifiers And gefModAlt Then
  ' do something
End If
```

Using the Mouse for an Event

CimEdit provides you with five events in which you can use a mouse.

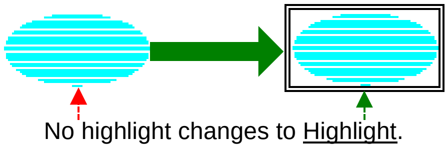
The events are:

`Highlight`	*See the next section.*
`Unhighlight`	*See page 12-17*
`Mouse Down`	*See page 12-18*
`Mouse Up`	*See page 12-19*
`While Mouse Down`	*See page12-21.*

Highlight Event

`Highlight` triggers a procedure or calls a script after an object in CimView changes from not highlighted to highlighted.

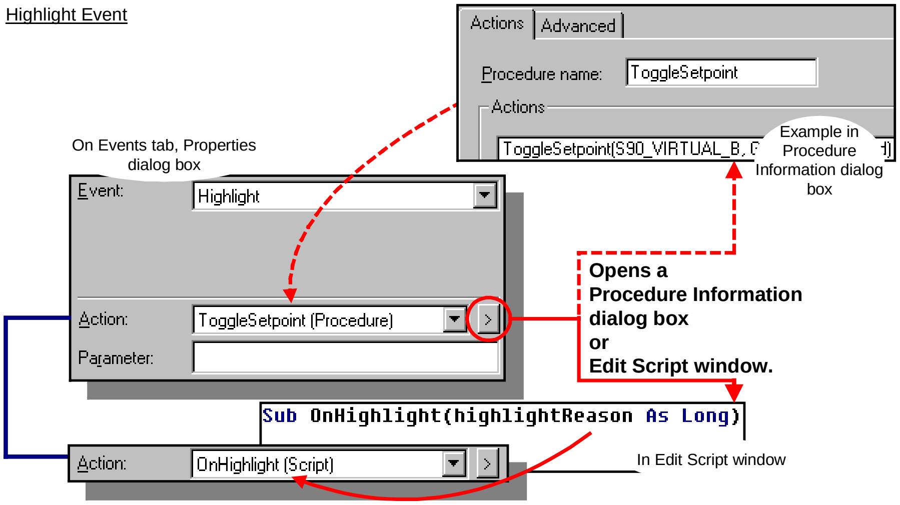
Object in CimView



When the **`Highlight`** event is configured for an object, a user can highlight the object by:

- Placing the mouse cursor on it.
- Tabbing to it.
- Using the arrow keys to select it.

Highlight Event



Actions
Advanced
Example in Procedure Information dialog box
On Events tab, Properties dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

Procedure name: ToggleSetpoint

Actions: ToggleSetpoint(S90_VIRTUAL_B, ...

Event: Highlight

Action: ToggleSetpoint (Procedure)

Parameter:

```
Sub OnHighlight(highlightReason As Long)
```

Action: OnHighlight (Script)

`Highlight` event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

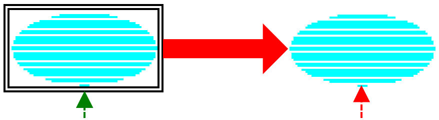
Script Note: Sub **`OnHighlight`** (highlightReason As Long) function parameters include:

highlightReason Indicates the reason the object was highlighted, e.g. mouse move or key press.

Unhighlight Event

`Unhighlight` triggers a procedure or calls a script after an object in CimView changes from highlight to unhighlight.

Object in CimView

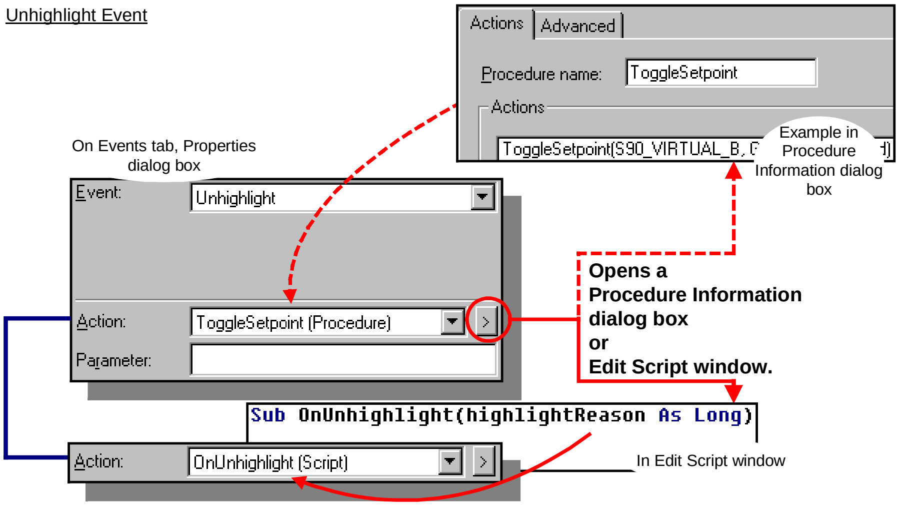


Highlight changes to Unhighlight.

When the **`Unhighlight`** event is configured for an object, if the object is highlighted, a user can remove the highlight (unhighlight) the object by:

- Removing the mouse cursor from it.
- Tabbing from it.
- Using arrow keys to leave it.

Unhighlight Event



Actions
Advanced
Actions
Example in Procedure Information dialog box
On Events tab, Properties dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

Procedure name: ToggleSetpoint

ToggleSetpoint(S90_VIRTUAL_B, F...)

Event: Unhighlight

Action: ToggleSetpoint (Procedure)

Parameter:

```
Sub OnUnhighlight(highlightReason As Long)
```

Action: OnUnhighlight (Script)

Unhighlight event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

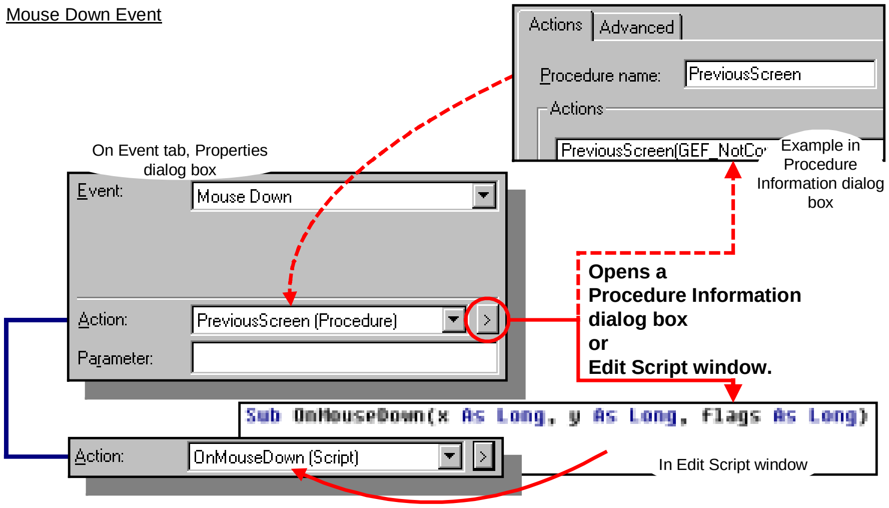
Script Note: Sub **OnUnhighlight** (highlightReason As Long) function parameters include:

highlightReason Indicates the reason the object changed from highlight to unhighlight, e.g. mouse move or key press.

Mouse Down Event

Mouse Down triggers a procedure or calls a script when the left mouse button is clicked down.

Mouse Down Event



Actions | Advanced

Procedure name: PreviousScreen

Actions

PreviousScreen(GEF_NotCo

Event: Mouse Down

Action: PreviousScreen (Procedure)

Parameter:

Sub OnMouseDown(x As Long, y As Long, flags As Long)

Action: OnMouseDown (Script)

Example in Procedure Information dialog box
On Event tab, Properties dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

Note: This event also occurs when a user presses **Enter** on the keyboard.

Mouse Down event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **OnMouseDown** (x As Long, y As Long, flags As Long) function parameters include:

x Indicates the horizontal position of the mouse.

y Indicates the vertical position of the mouse.

x and *y* are in TWIPS relative to the bottom left of the CimView screen. (TWIPS is an acronym for 1/20th of a point; in a Windows environment, there are exactly 72 points per inch.)

Note: These values are not relative to the window; they are relative to the CimView screen and are not affected by scrolling.

flags Has bits to indicate whether the **Ctrl** or **Shift** keys (or both) were pressed when the mouse event occurred. They are:

gefShift	&h04
gefControl	&h08

The other bits in the flags are currently reserved and should not be used.

To test if the **Ctrl** or **Shift** key was down when the event occurred you must use the binary AND operator in Basic.

Example

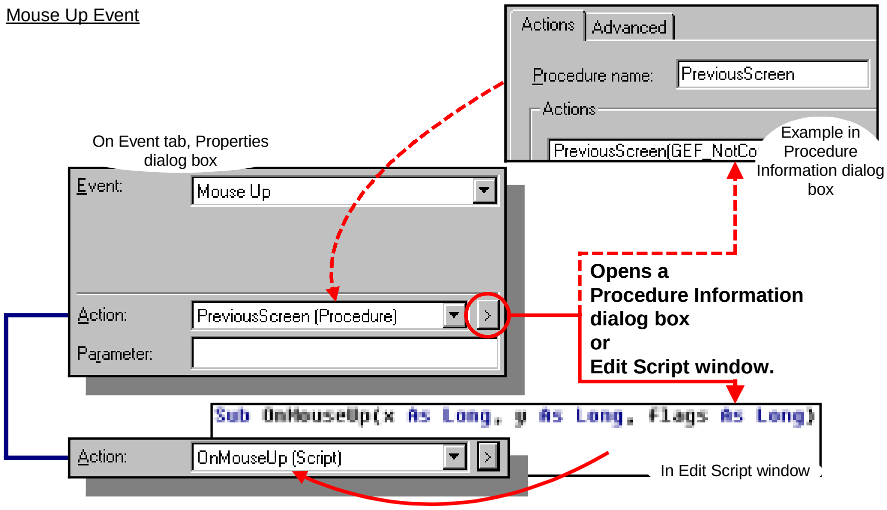
```
If flags And gefShift Then
    ' do something
End If
```

Parameter Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Mouse Up Event

Mouse Up triggers a procedure or calls a script when the left mouse button is clicked then released.

Mouse Up Event



Procedure name: PreviousScreen

PreviousScreen(GEF_NotCo

Event: Mouse Up

Action: PreviousScreen (Procedure)

Parameter:

```
Sub OnMouseUp(x As Long, y As Long, flags As Long)
```

Action: OnMouseUp (Script)

Actions
Advanced
Actions
Example in Procedure Information dialog box
On Event tab, Properties dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

Note: This event also occurs when a user releases the **Enter** key on the keyboard.

`Mouse Up` event fields include:

Action

Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnMouseUp`** (x As Long, y As Long, flags As Long) function parameters include:

x Indicates the horizontal position of the mouse.

y Indicates the vertical position of the mouse.

x and *y* are in TWIPS relative to the bottom left of the CimView screen. (TWIPS is an acronym for 1/20th of a point; in a Windows environment, there are exactly 72 points per inch.)

Note: These values are not relative to the window; they are relative to the CimView screen and are not affected by scrolling.

flags Has bits to indicate whether the **Ctrl** or **Shift** keys (or both) were pressed when the mouse event occurred. They are:

`gefShift`	&h04
`gefControl`	&h08

The other bits in the flags are currently reserved and should not be used.

To test if the **Ctrl** or **Shift** key was down when the event occurred you must use the binary AND operator in Basic.

<u>Example</u>

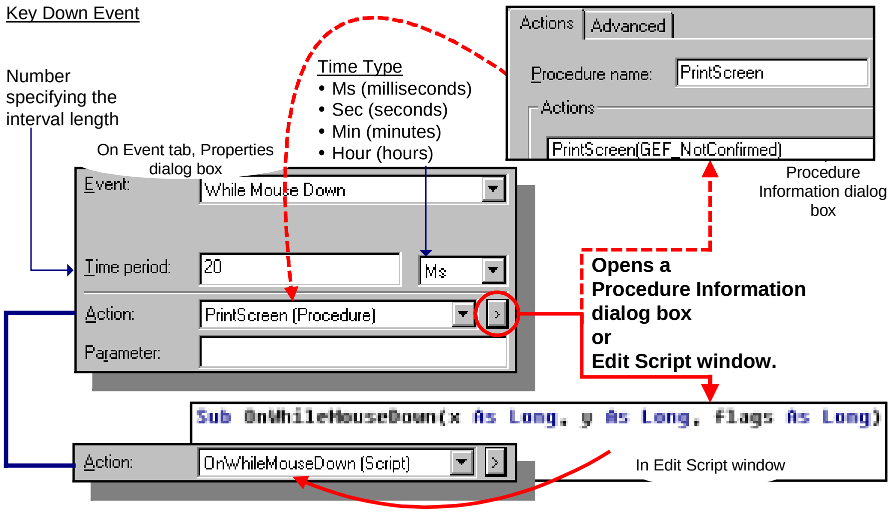
```
If flags And gefShift Then
    ‘ do something
End If
```

Parameter

Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page 12-6.*

While Mouse Down Event (Mouse Button + Periodic)

`While Mouse Down` triggers a procedure or calls a script when a user clicks the left mouse button and holds it down. The action is not invoked when the user clicks the button but is invoked every Time period thereafter until the user releases the key. :



Key Down Event

Number specifying the interval length

On Event tab, Properties dialog box

Time Type
- Ms (milliseconds)
- Sec (seconds)
- Min (minutes)
- Hour (hours)

Event: While Mouse Down

Time period: 20 Ms

Action: PrintScreen (Procedure)

Parameter:

Procedure name: PrintScreen

Actions

PrintScreen(GEF_NotConfirmed)

Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnWhileMouseDown(x As Long, y As Long, flags As Long)
```

In Edit Script window

Action: OnWhileMouseDown (Script)

Note: This event also occurs while a user holds **Enter** down on the keyboard.

`While Mouse Down` event fields include:

Time period — Enter the number of milliseconds, seconds, minutes or hours between the time the event's procedure ends and the time it is re-triggered.

Time Type — Select Ms (milliseconds), Sec (seconds), Min (minutes) or Hour (hours).

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: Sub **`OnWhile Mouse Down`** (x As Long, y As Long, flags As Long) function parameters include:

x — Indicates the horizontal position of the mouse.

y — Indicates the vertical position of the mouse.

x and *y* are in TWIPS relative to the bottom left of the CimView screen. (TWIPS is an acronym for 1/20th of a point; in a Windows environment, there are exactly 72 points per inch.)

Note: These values are not relative to the window; they are relative to the CimView screen and are not affected by scrolling.

flags Has bits to indicate whether the **Ctrl** or **Shift** keys (or both) were pressed when the mouse event occurred. They are:

gefShift	&h04
gefControl	&h08

The other bits in the flags are currently reserved and should not be used.

To test if the **Ctrl** or **Shift** key was down when the event occurred you must use the binary AND operator in Basic.

Example

```
If flags And gefShift Then
    ‘ do something
End If
```

Parameter Can be used if the event invokes a script. (The event can invoke a script directly or through a procedure. *See page12-6.*

Using Objects for Events

CimEdit provides two events in which you can use objects.

The events are:

`Object Inserted`	*.See the next section.*
`Object Removed`	*See page12-24.*
`Smart Object`	*See page 12-26.*

There are several notes and tips for using the **`Object Inserted`** and **`Object Removed`** events. *See page 12-25 for these notes and tips.*

Also, see page 12-32 for a detailed example of configuring and using Object Inserted and Smart Object events.

Important: Events based on inserting or removing objects are only available for the CimEdit screen. They do not apply to CimView or any other application.

Object Inserted Event

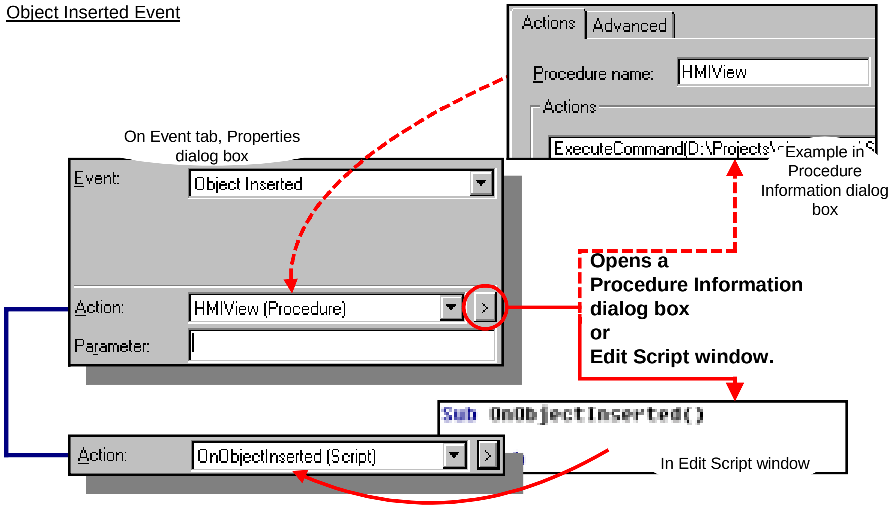
`Object Inserted` events enable you to create objects whose actions are triggered on a CimEdit, as opposed to a CimView, screen.

`Object Inserted` triggers a procedure or calls a script when an object is pasted, dragged, and dropped, inserted from the CimEdit SmartObject and Symbol Library.

Note: The Object Inserted event is not triggered if the object is:

- Inserted using the Object Model,
- Inserted again by using the CimEdit Undo or Redo feature, e.g. after it has been cut or deleted from or previously inserted in the screen.

Object Inserted Event



Actions
Advanced
On Event tab, Properties dialog box
Example in Procedure Information dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

Procedure name: HMIView

Actions

ExecuteCommand(D:\Projects\

Event: Object Inserted

Action: HMIView (Procedure)

Parameter:

```
Sub OnObjectInserted()
```

Action: OnObjectInserted (Script)

`Object Inserted` event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: There are no parameters for the Sub **`OnObjectInserted`** () function.

Parameter These entry points have no parameters.

Object Removed Event

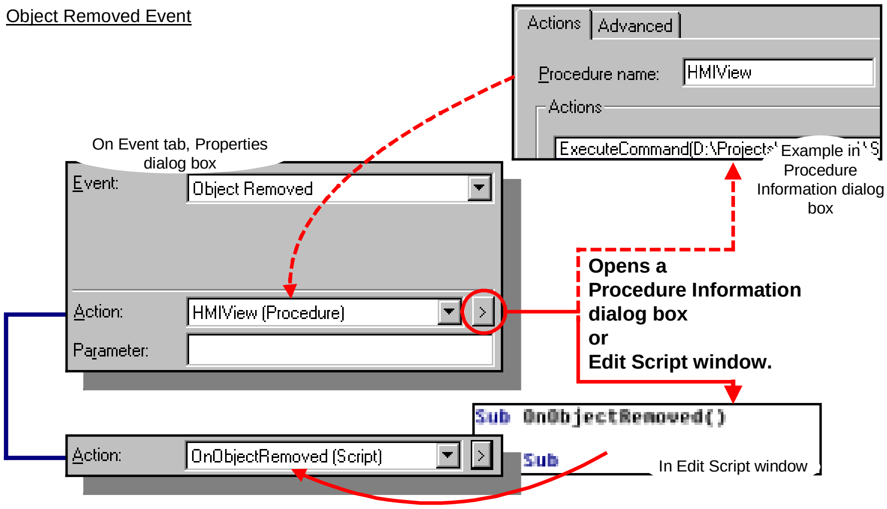
`Object Removed` events enable you to create objects whose actions are triggered on a CimEdit, as opposed to a CimView, screen.

`Object Removed` triggers a procedure or calls a script when an object is deleted or cut from a CimEdit screen.

Note: The Object Removed event is not triggered if the object is:

- Deleted using the Object Model,
- Removed again by using the CimEdit Undo or Redo feature, e.g. after it has been inserted in or previously deleted from the screen.

Object Removed Event



Actions | Advanced

Procedure name: HMIView

Actions

ExecuteCommand(D:\Projects'

Event: Object Removed

Action: HMIView (Procedure)

Parameter:

Action: OnObjectRemoved (Script)

```
Sub OnObjectRemoved()
Sub
```

On Event tab, Properties dialog box
Example in Procedure Information dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window

`Object Removed` event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: There are no parameters for the Sub **`OnObject Removed`** () function.

Parameter These entry points have no parameters.

Object Inserted, Object Removed Notes and Tips

Note: The object events are very useful if you want to trigger actions, that are as simple or as complex as you specify, by simply inserting or removing the SmartObject from a screen. The object can be a frame container, group or object.

All object events that are configured for objects in a frame container or group will trigger their accompanying procedures or scripts anytime the frame container or group is inserted (pasted, dragged).

You can make these objects trigger actions, for example, creating a point that goes beyond the scope of the CimEdit screen. Therefore, make sure you anticipate what will happen if you insert an object more than once, on either the same or different screens and then remove one from a screen.

Example of an Object Inserted and Object Removed Application

An object can be configured so that when it is:

- Inserted on a screen, an **`Object Inserted`** event triggers a procedure or calls a script that creates several variables for your CimEdit screen.
- Removed from the screen an **`Object Removed`** event triggers a procedure or calls a script that deletes the variables from the screen.

Whenever the object is inserted, the variables are created. When the object is removed, the variables are deleted.

Tip: Configure several objects with the **`ObjectInserted`** and / or **`ObjectRemoved`** event on one or more CimEdit screens. Create your own object library that will display in the Object Explorer. You can then easily find and insert them when you need them. *See "Object Libraries" in the Creating a Preliminary Layout" chapter in this manual for more information.*

Configure a SmartObject event with the same script as the **`Object Inserted`** event. This creates SmartObjects that a designer can trigger both when the object is inserted on a CimEdit screen and during the design process when the screen is open.

To protect your named SmartObject from being decomposed, you can save the CimEdit screen as a runtime-only screen (**`.cimrt`**). As a result, another designer will be able to link the protected SmartObject, but not copy it or view the code. *See "CimEdit Binary, Protected .cimrt Runtime-Only Screen" section in the "Configuring a CimEdit Screen" chapter in this manual for more details about the .cimrt format.*

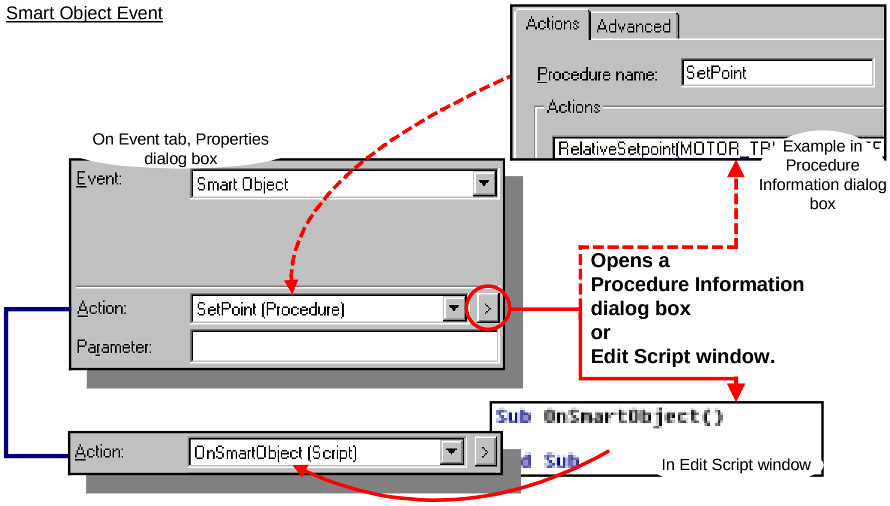
Go to page (See page 12-32 for a detailed example of an object made into a SmartObject with ObjectInserted and SmartObject events

Smart Object Event

The primary purpose of a **`Smart Object`** event is to create a SmartObject that a user can double-click in a CimEdit screen and display a simple SmartObject Configuration dialog box instead of the detailed Properties dialog box. The user enters one or more values, as determined by the **`Smart Object`** event configuration. The SmartObject is ready for runtime use with no more configuration.

You can protect your proprietary SmartObjects by preventing the interior logic from being examined. You do this by saving your CimEdit Screen as a runtime-only screen. *See "Runtime-only Screens" in the "Configuring a CimEdit Screen" chapter in this manual for details.*

Smart Object Event



Procedure name: SetPoint

Actions

RelativeSetpoint(MOTOR_TP'

Example in the Procedure Information dialog box

On Event tab, Properties dialog box

Event: Smart Object

Action: SetPoint (Procedure)

Parameter:

Opens a Procedure Information dialog box or Edit Script window.

```
Sub OnSmartObject()
End Sub
```

In Edit Script window

Action: OnSmartObject (Script)

`Smart Object` event fields include:

Action
: Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: There are no parameters for the Sub **`OnSmart Object`** () function.

Parameter
: These entry points have no parameters.

Tip: The Object Explorer library contains several pre-configured SmartObjects that you may want to review before you take the time to create a new SmartObject. You can also place any SmartObjects you create in the Object Explorer library so they will be available for frequent use.

To protect your named SmartObject from being decomposed, you can save the CimEdit screen as a runtime-only screen (**`.cimrt`**). As a result, another designer will be able to link the protected SmartObject, but not copy it or view the code. *See "CimEdit Binary, Protected .cimrt Runtime-Only Screen" section in the "Configuring a CimEdit Screen" chapter in this manual for more details about the .cimrt format.*

See "Object Explorer Libraries" in the "Creating a Preliminary Layout" chapter in this manual for details about placing objects in Object Explorer libraries.

Note: In order to provide developers with maximum flexibility when a developer configures SmartObject events, the CimView screen provides a Trigger SmartObject option on its popup menu when a SmartObject is right-clicked during runtime. As a result, a CimView operator might open and enter values in the:

1. Same SmartObject Configuration dialog box that the CimEdit screen designer uses or,
2. A dialog box that bypasses the CimEdit screen designer.

If you want to prohibit the CimView operator from opening the dialog box, you need to disable it through scripting.

After the SmartObject is created, a CimEdit screen designer can trigger the SmartObject by any of the following three methods.

To trigger the SmartObject:

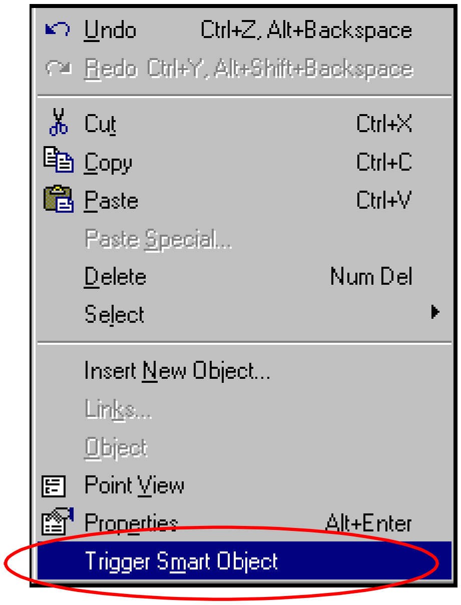
Method 1. Use the mouse

Double-click the SmartObject.

If the object is not a SmartObject, the Properties dialog box will open. If the object is a SmartObject whatever actions were configured for the SmartObject event (usually a customized dialog box opening) will occur.

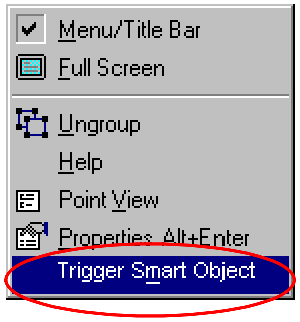
Method 2. Use the menu bar

1. Select the SmartObject
2. Click Edit on the CimEdit menu bar.
3. Select Trigger SmartObject.



Method 3. Use a popup menu

1. Select the SmartObject.
2. Click the right mouse button.
3. Select Trigger SmartObject on the popup menu.



Tip: Use the **`ObjectInserted`** and **`ObjectRemoved`** events to trigger a SmartObject when it is being placed or removed from the CimEdit screen.

Go to page (See page 12-32) for a detailed example of an object make into a SmartObject with ObjectInserted and SmartObject events

Using Time for Events

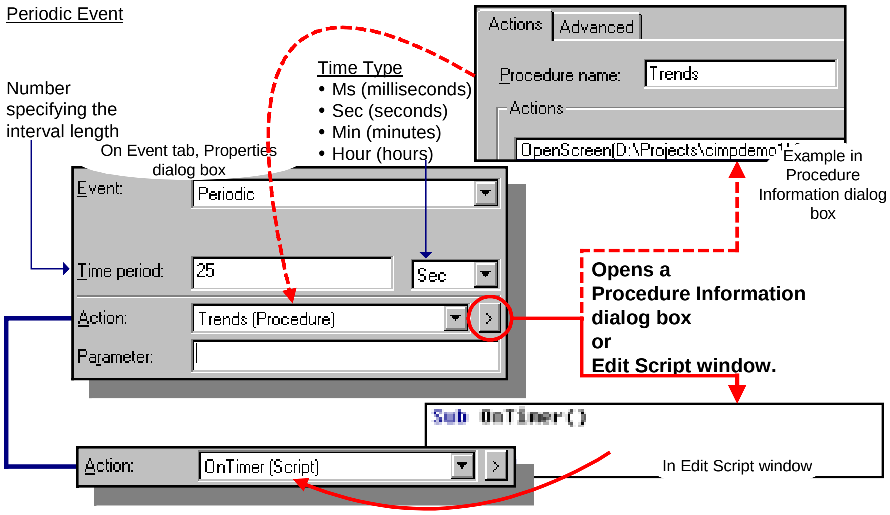
CimEdit offers three events in which you can use time.

The events are:

`Periodic`	*See the next section.*
`While Key Down`	*See page 12-14.*
`While Mouse Down`	*See page12-21.*

Periodic Event

`Periodic` triggers a procedure or calls a script periodically at the rate you specify in the Time Period.



Periodic Event

Number specifying the interval length

On Event tab, Properties dialog box

Time Type
- Ms (milliseconds)
- Sec (seconds)
- Min (minutes)
- Hour (hours)

Event: Periodic

Time period: 25 Sec

Action: Trends (Procedure)

Parameter:

Procedure name: Trends

Actions

OpenScreen(D:\Projects\cimpdemo1\

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

Sub OnTimer()

In Edit Script window

Action: OnTimer (Script)

`Periodic` event fields include:

Time period — Enter the number of milliseconds, seconds, minutes or hours between the time the event's procedure ends and the time it is re-triggered.

Time Type — Select Ms (milliseconds), Sec (seconds), Min (minutes) or Hour (hours).

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: There are no script parameters for the Sub **`OnTimer`** () function.

Parameter — These entry points have no parameters.

Using Screens in Events

CimEdit provides two events in which you can use screens.

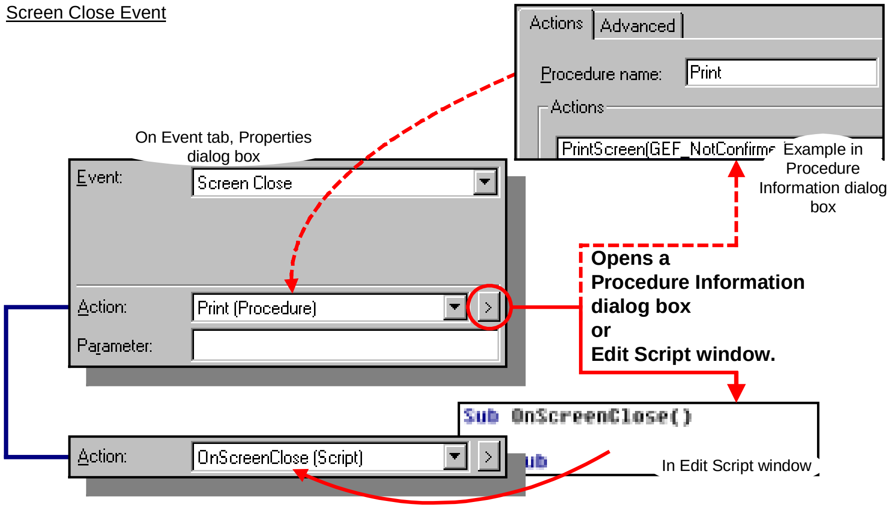
The events are:

`Screen Close`	*See the next section.*
`Screen Open`	*See page 12-31.*

Screen Close Event

`Screen Close` triggers a procedure or calls a script when a user closes the screen on which the event is configured.

Screen Close Event



On Event tab, Properties dialog box

Event: Screen Close

Action: Print (Procedure)

Parameter:

Procedure name: Print

Actions

PrintScreen(GEF_NotConfirm

Example in Procedure Information dialog box

Opens a Procedure Information dialog box or Edit Script window.

Action: OnScreenClose (Script)

```
Sub OnScreenClose()
```

In Edit Script window

`Screen Close` event fields include:

Action — Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

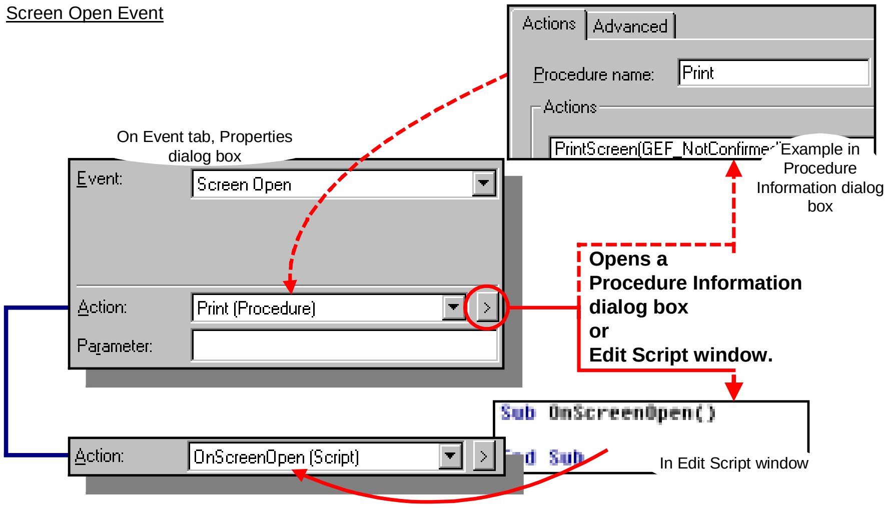
Script Note: There are no parameters for the Sub **`OnScreenClose`** () function.

Parameter — These entry points have no parameters.

Screen Open Event

`Screen Open` triggers a procedure or calls a script when a user opens the screen on which the event is configured.

Screen Open Event


On Event tab, Properties dialog box
Example in Procedure Information dialog box
Opens a Procedure Information dialog box or Edit Script window.
In Edit Script window
Actions
Advanced

Event: Screen Open

Action: Print (Procedure)

Parameter:

Procedure name: Print

Actions

PrintScreen(GEF_NotConfirme

```
Sub OnScreenOpen()
End Sub
```

Action: OnScreenOpen (Script)

`Screen Open` event fields include:

Action Either:

- Select an action from the drop down list or
- Create or edit either a:
  - ➔ Procedure in the Procedures dialog box, or
  - ➔ Script in the Edit Script window.

Script Note: There are no parameters for the Sub **`OnScreenOpen`** () function.

Parameter These entry points have no parameters.

Object Inserted and SmartObject Example

`Object Insert` and **`Smart Object`** events can create greatly increase the ability for a screen designer to create powerful CimView screens with a minimum of effort. This is because actions, including opening dialog boxes that ask for values can now be triggered on the CimEdit screen and used for design purposes.

Although the Object Explorer library contains several SmartObjects, a designer may request SmartObjects that more specific to their design. Following is a simple example showing how **`Smart Object`** and **`Object Inserted`** events interact with other object configuration and how they can be easily scripted.

This example creates a rectangle that will display a fill during runtime. The rectangle becomes a SmartObject with a SmartObject event because the fill will reflect the value of a point that can be specified when the SmartObject is placed in CimEdit, during a CimEdit session and then, in CimView.

Tip: To protect your named SmartObject from being decomposed, you can save the CimEdit screen as a runtime-only screen (**`.cimrt`**). As a result, another designer will be able to link the protected SmartObject, but not copy it or view the code. *See "CimEdit Binary, Protected .cimrt Runtime-Only Screen" section in the "Configuring a CimEdit Screen" chapter in this manual for more details about the .cimrt format.*

Procedures for the following steps will create the SmartObject with the **`Smart Object`** and **`Object Inserted`** events.

Step 1. Configure the basic object to fill during runtime. *(See page 12-32.)*

Step 2. Turn the object into a SmartObject with a **`SmartObject`** event. *(See page 12-34.)*

Step 3. Create an **`ObjectInsert`** event. *(See page 12-36)*

Step 4. Place the SmartObject in the Object Explorer Library. *(See page 12-37.)*

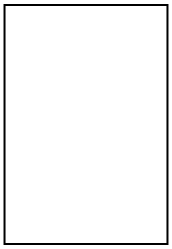
Step 5. Test using the **`Object Insert`** event. *(See page 12-37.)*

Step 6. Test using the SmartObject event in CimEdit. *(See page 12-39.)*

Step 7. Test using the SmartObject event in CimView. *(See page 12-40)*

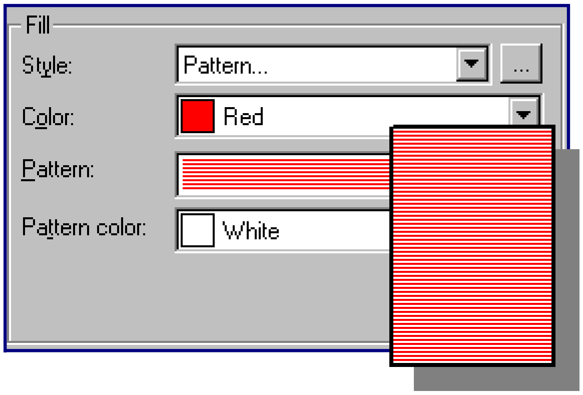
Step 1. Configure an Object to Fill

1. Place a rectangle on the CimEdit screen.



2. Open the rectangle's Properties dialog box.
3. Select the Colors tab.
4. Select a basic color or pattern in the Fill box.

Primary Color Selected for SmartObject Example



Fill

Style: Pattern...

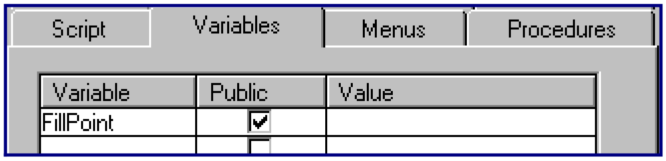
Color: 🟥 Red

Pattern: ▤

Pattern color: □ White

3. Select the Variables tab.
4. Create a **`FillPoint`** variable. Leave the Value field blank.

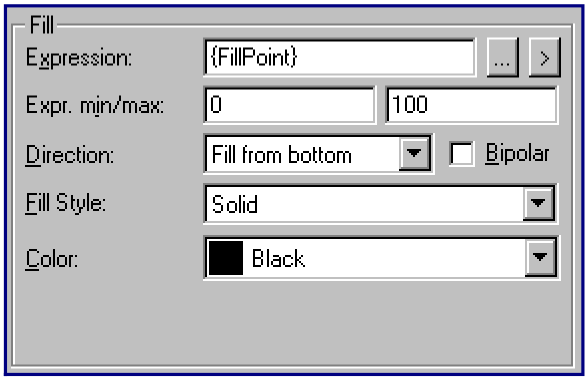
Variable for SmartObject Example on Variables Tab



Variable	Public	Value
FillPoint	☑	
	□	

5. Select the Rotation/Fill tab.
6. Enter **`{FillPoint}`**in the Expression field of the Fill box.
7. Configure the color you want to represent the fill.

Variable for SmartObject Example on Rotation/Fill Tab



Fill

Expression: {FillPoint}

Expr. min/max: 0 100

Direction: Fill from bottom □ Bipolar

Fill Style: Solid

Color: ■ Black

Result: The object is configured to fill during runtime, except that it needs a value in order to work.

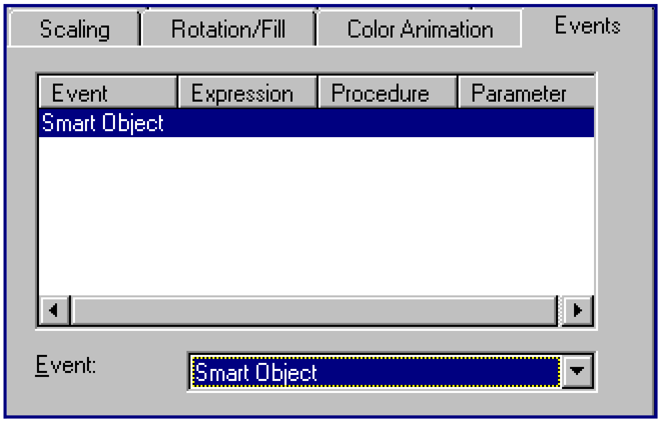
Step 2. Turn the Object into a SmartObject with a SmartObject Event

1. Select the Events tab.

   Note: You may see an error message telling you the Variable variable name is not defined. Click **OK**.

2. Select the **`Smart Object`** event.

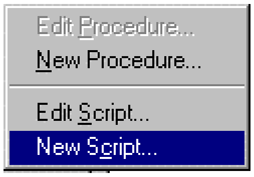
   SmartObject Event on the Events Tab

   Event: Smart Object

3. Click the Popup menu button > to the right of the Action field.

4. Select New Script from the popup menu.

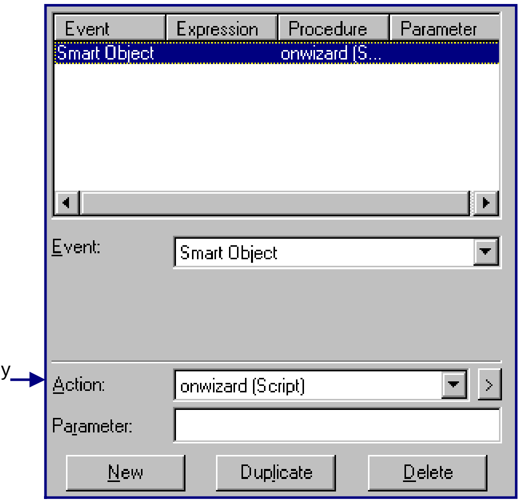
5. Create a script to display a dialog box with one field. The field requests a Point ID or expression for the **`FillPoint`** variable.

```
Begin Dialog UserDialog ,,194,84,"SmartObject
      Configuration",.DlgProc
      OKButton 100,66,40,14
      CancelButton 144,66,40,14
      TextBox 44,26,120,12,.PointBox
      Text 1,28,39,8,"Fill Point",.PointTxt
      PushButton 168,25,16,14,"...",.PointBrowse
End Dialog

Function DlgProc(ControlName$,Action%,SuppValue%)
      Dim browseObject As Object
      Dim entity As String
      If Action% = 2 And ControlName$ = "PointBrowse" Then
            Set browseObject = CreateObject("CimBrowse")
            browseObject.SetBrowserProperty 2
            browseObject.SetBrowserProperty 16
            browseObject.SetBrowseEntity  "POINT"
            res = browseObject.BrowseEntity(entity)
            DlgText "PointBox",entity
            Set browseObject = Nothing
            DlgProc = 1
      End If
End Function

Sub onwizard()
      Dim myvar As CimObjectVariable
      Dim obj As CimObject
      Dim configDlg As  UserDialog
      Set obj = CimGetScriptOwner()
      Set myvar = cimOwnerObj.GetVariable("FillPoint")
      configDlg.PointBox = myvar
      If Dialog(configDlg) = -1 Then
            myvar = configDlg.PointBox
            'MaxVariable = configDlg.MaxPoint
      End If
End Sub

Sub OnObjectInserted()
      Begin Dialog UserDialog ,,194,84,"SmartObject
      Configuration",.DlgProc
      OKButton 100,66,40,14
      CancelButton 144,66,40,14
      TextBox 44,26,120,12,.PointBox
      Text 1,28,39,8,"Array Point",.PointTxt
      PushButton 168,25,16,14,"...",.PointBrowse
      End Dialog

End Sub
```

6. Close the Script Editor.

   The Events tab displays the **`Smart Object`** event and the name of its script.

SmartObject Event on the Events Tab



Event	Expression	Procedure	Parameter
Smart Object		onwizard (S...	

Event: Smart Object

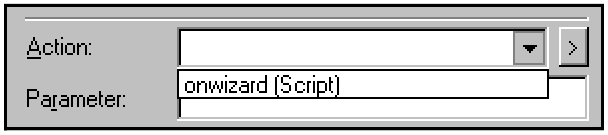
Action: onwizard (Script)

Parameter:

Script to be triggered by SmartObject event

Step 3. Create an Object Inserted Event

1. Click **New** on the Events tab.
2. Select **`Object Inserted`** in the Event field.
3. Click the down arrow in the Action field.
4. Select **`onwizard (Script)`**, which is the name given to the script written for the SmartObject event.



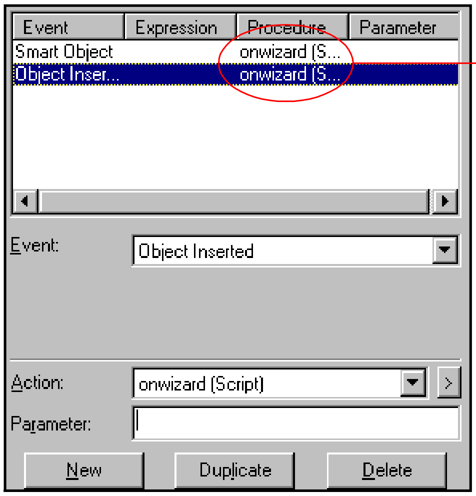
Action:

onwizard (Script)

Parameter:

Result: The Events tab displays the `Smart Object` and `Insert Object` events with the same script designated for the procedure.

SmartObject Event and ObjectInserted on the Events Tab



Event	Expression	Procedure	Parameter
Smart Object		onwizard (S...	
Object Inser...		onwizard (S...	

Event: Object Inserted

Action: onwizard (Script)

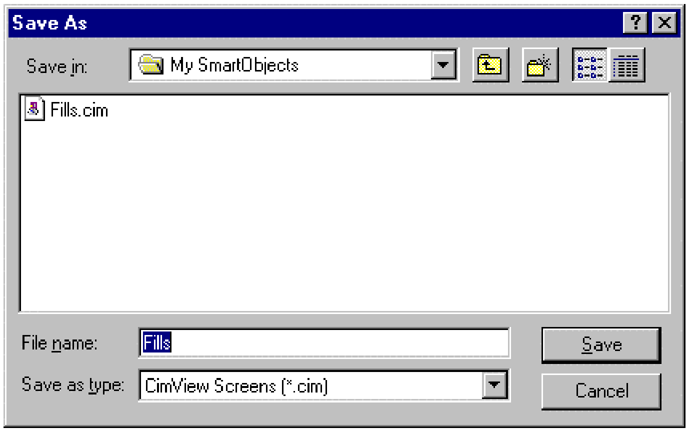
Parameter:

The same script

Step 4. Place the SmartObject in the Object Explorer Library

1. Click the File menu on the CimEdit menu bar.
2. Select Save As.

   The Save As dialog box opens.
3. Open the **`CIMPLICITY\HMI\Symbols`** folder.
4. Create and open a folder called My SmartObjects.
5. Enter Fills in the File name field.



Save As

Save in: My SmartObjects

Fills.cim

File name: Fills

Save as type: CimView Screens (*.cim)

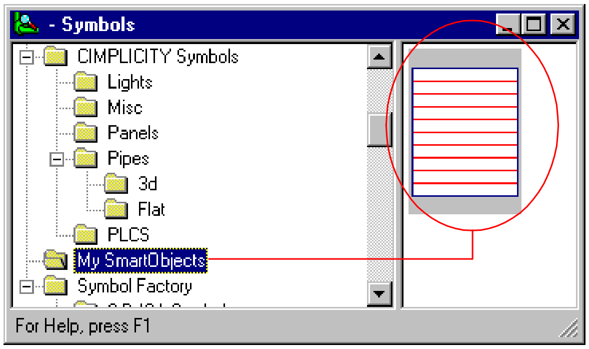
6. Click **Save**.
7. Close the Fills screen.

Result: You are now ready to test the SmartObject.

Step 5. Test using the Object Explorer Inserted Event

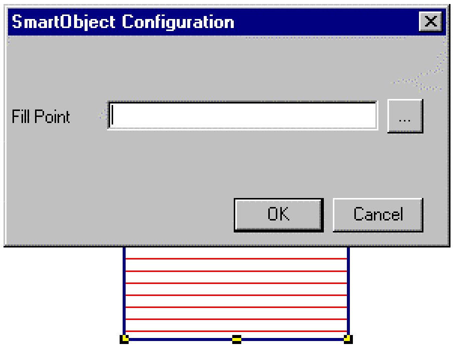
1. Start the CimEdit project if it is not already running.
2. Open a new CimEdit screen.
3. Click the **Object Explorer** icon.

   The Object Explorer opens.
4. Select the My SmartObjects folder.



5. Drag the Fill object onto the CimEdit screen.

The SmartObject Configuration dialog box that you created opens.



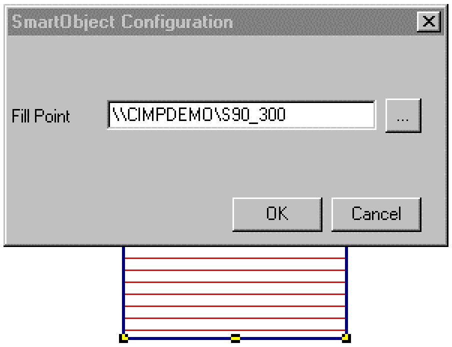
SmartObject Configuration

Fill Point

6. Click the **Browse** button ... to open the Select a Point browser.
7. Select a Point ID (e.g. an integer device point connected to a PLC) that will display values at runtime.

   You can enter any value that you can use for a variable. Therefore, you can also enter a number or expression (e.g. 25) as the value if you do not have an active Point ID.

   The value you select displays in the Fill Point field.

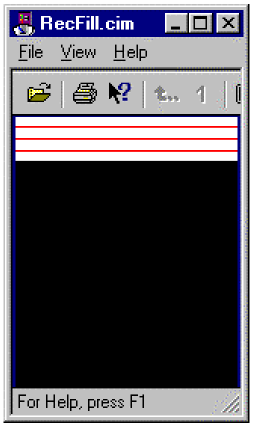


SmartObject Configuration

Fill Point \\CIMPDEMO\S90_300

8. Click **OK**.
9. Click the **Runtime** button .

   CimView opens. The SmartObject displays the value of the selected Point ID (value).



RecFill.cim

For Help, press F1

10. Close CimView and return to the CimEdit screen.

Step 6. Test using the Smart Object Event in CimEdit

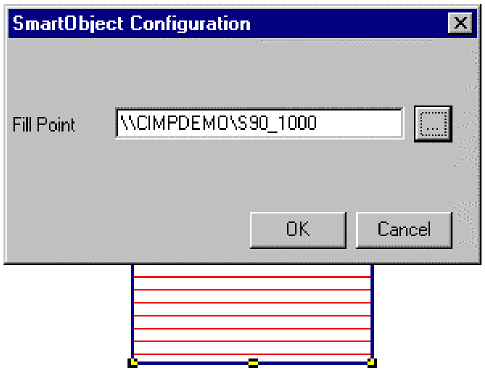
1. Double-click the SmartObject.

   The SmartObject Configuration dialog box appears displaying the last value that was entered. The line in the example script for displaying the last value is:

   ```
   configDlg.PointBox = myvar
   ```

   Note: It the object was not a SmartObject, the Properties dialog box would appear.

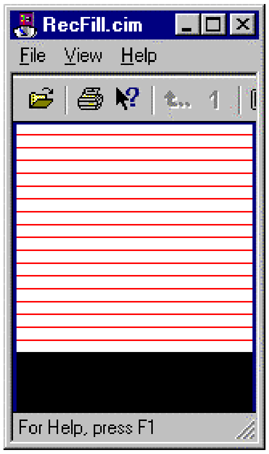
2. Enter a new value in the Fill Point field.



Fill Point \\CIMPDEMO\S90_1000

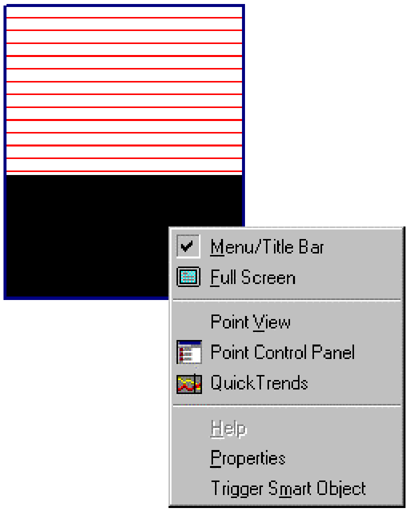
3. Click the **Runtime** button .

Result: CimView opens. The SmartObject displays the last selected value.



Step 7. Test using the Smart Object Event in CimView

1. Right-click the SmartObject in runtime mode (on a CimView screen).
2. Select Trigger SmartObject from the popup menu.



Result: The same SmartObject configuration dialog box that displayed in CimEdit displays in CimView.

This functionality is part of the SmartObject event. You can suppress the functionality in your script if you do not want an operator to open the SmartObject Configuration dialog box.

Creating Procedures in CimEdit

About Procedures in CimEdit

CIMPLICITY HMI provides several tools to make things happen in CimEdit and in CimView. The tools can be categorized as triggers that are configured as events and results that can be configured through procedures or scripts.

Trigger

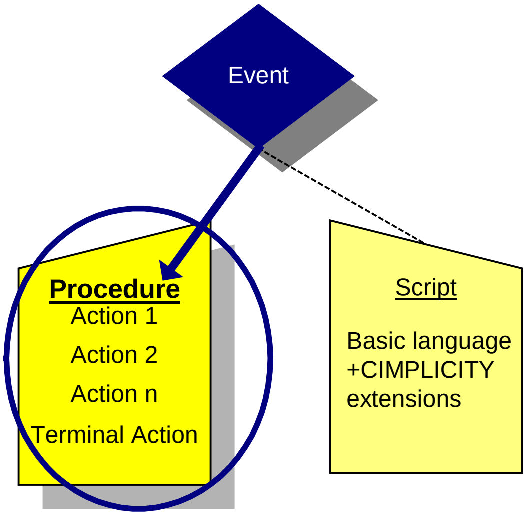
An ***event*** triggers a procedure or calls a script. CimEdit provides a long list of events from which you can choose the best one for your requirements.

Result

A ***procedure*** contains one or more actions that are triggered in the specified order when an event occurs and while the screen is displayed in CimView. CimEdit provides several actions from which a screen designer can easily compile a meaningful list.

A ***script,*** which is usually written by a system administrator, uses the same Editor and Basic language as the Basic Control Engine. Anything you can do in a normal script, you can do in a CimEdit script. CimEdit provides additional extensions to give you a wider range of screen development choices. However, CimEdit scripts are *only* accessible from the screen in which you create them.

This chapter describes the actions that are available for a procedure in CimEdit.



Actions Available to Build Procedures

CimEdit provides you with several choices of actions to build an appropriate procedure.

You can assign a procedure to be executed in response to events that you specify for a screen, frame container, group, or object. The actions that these events trigger affect different items in CimEdit, as follows:

Item	CimEdit Action
Command	**Execute Command**
Screen	**Close Screen**
	Home Screen
	Open Screen
	Overlay Screen
	Previous Screen
	Print Screen
Method / Script	**Invoke Method**
	Invoke Script
Setpoint	**Absolute Setpoint**
	Ramp Setpoint
	Relative Setpoint
	Toggle Setpoint
	Variable Setpoint
Variable	**Variable Assign**

Review of Procedures Available for an Object

CimEdit provides you with the tools for maximum efficiency when you configure procedures for an object.

- All the procedures that have been configured for a screen, frame, or group to which the object belongs are available to the object
- Procedures that you configure for an object supersede any procedure with the same name that is further up in the hierarchy.

Example of Two Procedures with the Same Name

You have created a procedure called **Switch_On** at the screen level.

You insert a new object on the screen that contains a **Switch_On** procedure. CimView recognizes the object's **Switch_On** procedure, not the screen's, for that object.

When you configure procedures for an object, you can easily review what procedures they have been created previously for the object or higher in the object's tree. You do this through the Procedures tab of the Properties dialog box. *See "Point View" in the "Using Points for Values" chapter in this manual for information about an object's tree.*

Procedure Configuration

Procedures are very useful for anyone who configures a CimEdit screen. In fact, if you are a screen designer without a lot of programming experience you will find working with procedures can be a welcome alternative to writing scripts.

The core of your configuration is in the Procedure Information dialog box that you access through the selected object's Properties dialog box.

In order to create a new procedure you:

1. Display either the Procedures or Events tab.
2. Open the Procedure Information dialog box through either the Procedures or Events tab.

Opening the Procedure or Events Tab to Create a New Procedure

Procedure to Display the Procedures Tab

To display the Procedures tab of the Properties dialog box:

1. Select the group or object.
2. Click the right mouse button.
3. Select Properties from the popup menu.
4. Either:

   For a group

   Select the Procedures tab.

   For an object

   A. Select the Group tab.
   B. Find the object you want to configure.
   C. Click the right mouse button.
   D. Select Properties.
   E. Select the Procedures tab from the newly opened Properties dialog box.

Note: If more than one procedure has the same name on a CimEdit screen, the procedure associated with the object you are configuring is the one that will be triggered for the object.

Procedure to Display the Events Tab

To create a new event:

1. Select the group or object.
2. Click the right mouse button.
3. Select Properties from the popup menu.
4. Either:

   For a group

   Select the Events tab.

   For an object

   A. Select the Group tab.

   B. Find the object you want to configure.

   C. Click the right mouse button.

   D. Select Properties.

   E. Select the Events tab from the newly opened Properties dialog box.
5. If this is the first event you are defining, go to Step 6. If there are other events defined, click **New** to add a new event.
6. In the Event field, select the type of event you want to define.
7. Select or configure a procedure for the Action field.
8. Enter data in other input fields, as required.
9. Click **OK**.

Creating a New Procedure

- Procedures tab: The procedure will be available for any events configured for a group or object.
- Events tab: The procedure will be associated with the event being configured.

New Procedure through the Procedures Tab

If you want to create a new procedure that will be available for any events configured for a group or object, but do not want to associate it immediately, you can–through the Procedures tab of the Properties dialog box.

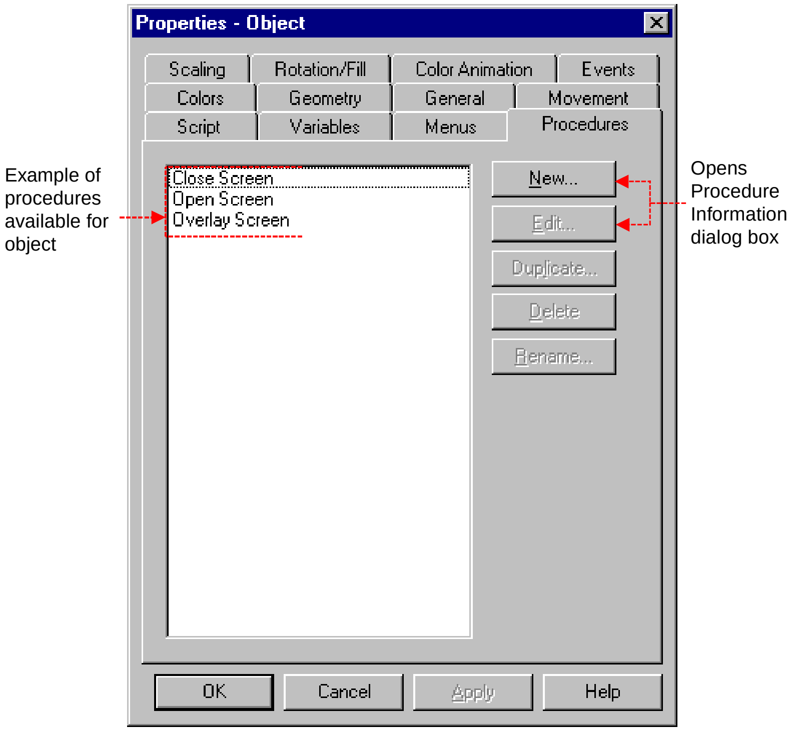
You can create a new procedure by opening the Procedure Information tab on the Properties dialog box either through the:

- Procedures tab
- Events tab

To create a new procedure through an object's Procedures tab:

1. Display the Procedures tab of an object's Properties dialog box.

Procedures Tab of Properties - Object Dialog Box



Example of procedures available for object

Opens Procedure Information dialog box

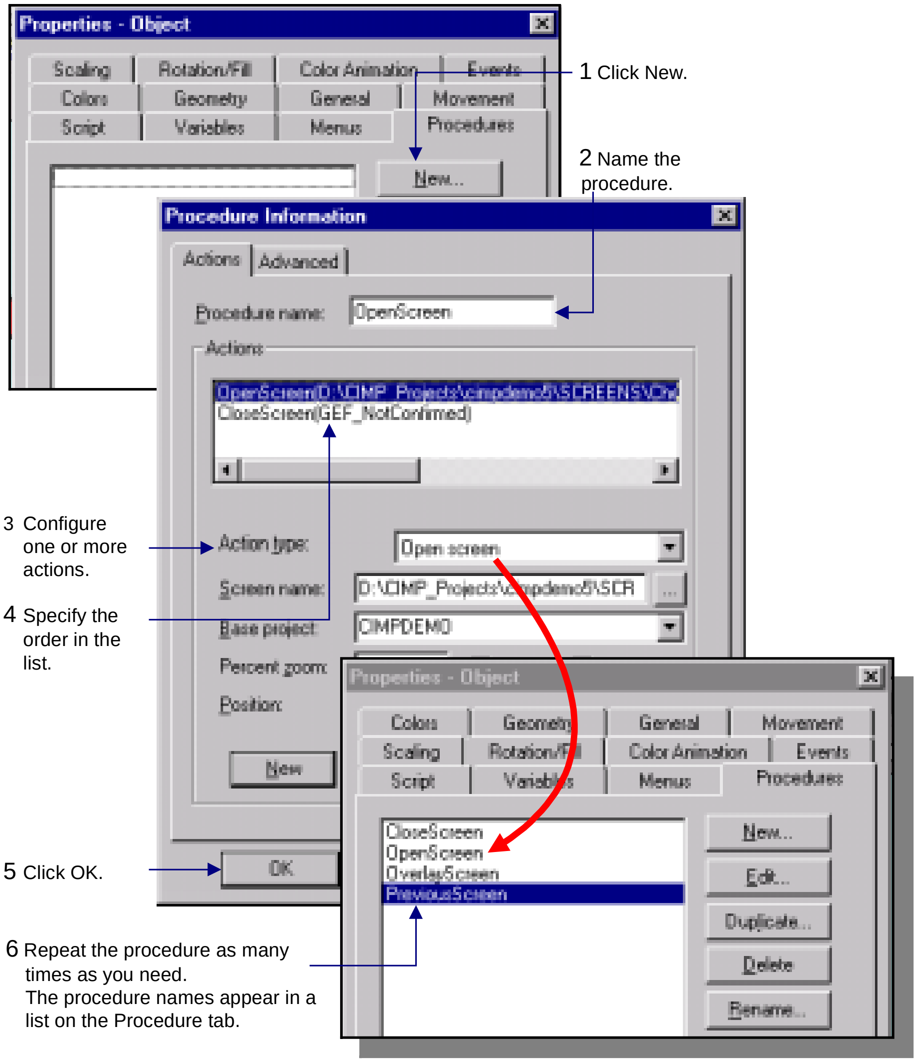
2. Click **New**.

   The Procedure Information dialog box appears.

3. Select the Actions tab.
4. Name the new procedure in the Procedure name field.
5. Configure as many actions as are needed to perform the procedure.
6. Make sure the actions are listed in the order that they should be executed.
7. Make sure the last action on the list is a terminal action.
8. Click **OK**.

Result: The Procedures tab appears with the new procedure on the list.

Creating a Procedure Overview



Procedure name: OpenScreen

OpenScreen(D:\CIMP_Projects\cimpdemo5\SCREENS\Ch
CloseScreen(GEF_NotConfirmed)

Action type: Open screen

Screen name: D:\CIMP_Projects\cimpdemo5\SCR

Base project: CIMPDEMO

CloseScreen
OpenScreen
OverlayScreen
PreviousScreen

1 Click New.

2 Name the procedure.

3 Configure one or more actions.

4 Specify the order in the list.

5 Click OK.

6 Repeat the procedure as many times as you need.
The procedure names appear in a list on the Procedure tab.

Note: Two tabs appear in the Procedure Information dialog box.

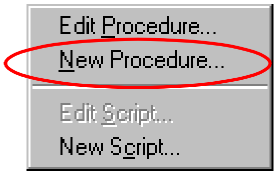
- The ***Actions tab*** lets you define the procedure name and all the actions that will be performed in the procedure.
- The ***Advanced tab*** lets you enter a description, and define procedure messages and execution conditions.

New Procedure through the Events Tab

When you create an event, you can select existing procedures to be triggered by that event. You can also create new procedures. The new procedures will be associated with the event. They will also be available for other events that you configure for the object or group of objects.

To create a new procedure through an object's Events tab:

1. Display the Events tab of a group or object's Properties dialog box.
2. Click the **Popup Menu** button > to the right of the Actions field.
3. Select New Procedure.

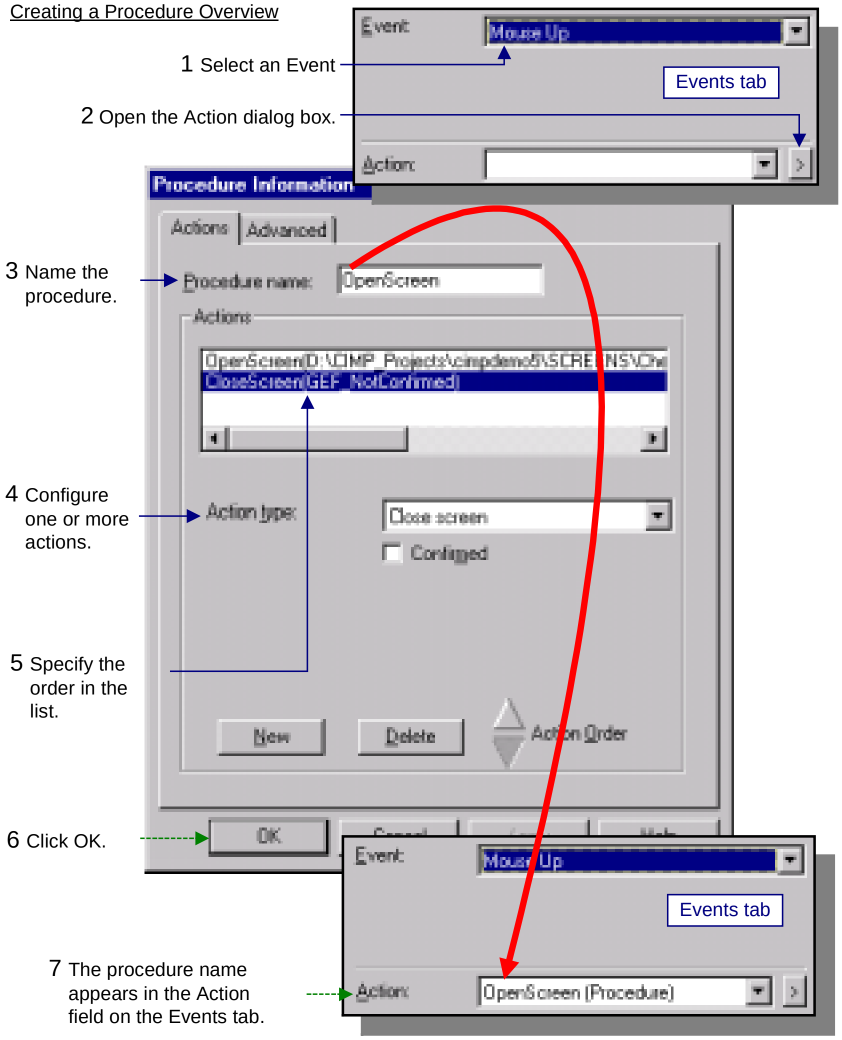
   The Procedure Information dialog box opens.
4. Select the Actions tab.
5. Name the new procedure in the Procedure name field.
6. Configure as many actions as are needed to perform the procedure.
7. Make sure the actions are listed in the order that they should be executed.
8. End the list of actions with a **`Terminal`** action. This is required.

   The following actions are terminal actions:

   - **`Close Screen`**
   - **`Home Screen`**
   - **`Overlay Screen`**
   - **`Previous Screen`**
9. Click **OK**.

   The Events tab of the Procedure Information dialog box appears with the procedure included in the list that will be triggered by the event.

Creating a Procedure Overview



1 Select an Event

2 Open the Action dialog box.

3 Name the procedure.

4 Configure one or more actions.

5 Specify the order in the list.

6 Click OK.

7 The procedure name appears in the Action field on the Events tab.

Event: Mouse Up

Action:

Procedure name: OpenScreen

Actions:

OpenScreen(D:\CIMP_Projects\cimpdemo5\SCREENS\Ove
CloseScreen(GEF_NotConfirmed)

Action type: Close screen

☐ Confirmed

Event: Mouse Up

Action: OpenScreen (Procedure)

10. Name the procedure in the Procedure Name field.
11. Enter as many new actions as are needed, as follows:
    A. Click **New**.
    B. Select the type of action you want from the Action type field drop down menu.
    C. Enter any additional information needed for the Action Type you selected.

    Your entries will appear in the Actions list as you enter them in the input fields. These actions will be executed in the order that they are listed on the Actions list.
12. Enter procedure messages, functions and an **Execute Condition**, when relevant, in the Advanced tab of the Procedure Information dialog box.
13. Make sure the actions are listed in the order you want them executed, as follows:
    A. Click on the action in the Action list on the Actions tab.
    B. Use the Action Order arrows in the dialog to move the action up and down in the list.
14. End the list of actions with a **Terminal** action. This is required.

    The following actions are terminal actions:

- **`Close Screen`**
- **`Home Screen`**
- **`Overlay Screen`**
- **`Previous Screen`**

15. Click **OK**.

Editing a Procedure

You can edit any existing procedure either through an object's:

- Procedures tab.
- Events tab.

The procedure will be edited wherever it exists for that object.

Edited Procedure through the Procedures Tab

You can edit any procedure associated with an object through the object's Procedures tab.

To edit a procedure through the Procedures tab:

1. Display the object's Procedure tab.
2. Select the procedure you want to edit.
3. Click **Edit**.

   The Procedure Information dialog box opens.
4. Select the Actions tab.

   The Actions tab displays the information for the selected procedure.
5. Make the required changes.
6. Click **OK**.

Edited Procedure through the Events Tab

You can edit any procedure through the Events tab. If you edit a procedure, it will be associated with the event if it currently is not associated.

To edit a procedure through the Events tab:

1. Display the object's Events tab.
2. Open the Procedure Information dialog box using either method:

   Method 1–Use a list of procedures

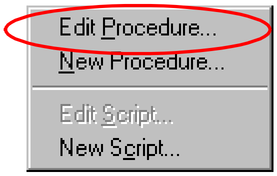
   A. Select a procedure in the list of procedures displayed for the event

   B. Click the right mouse button.

   Method 2–Use a popup menu

   A. Select a procedure from the list of procedures in the Action field.

   B. Click the **Popup Menu** button > to the right of the Action field.
3. Using either method, select Edit Procedure from the popup menu.



   The Procedure Information dialog box opens.
4. Select the Actions tab.

   The Actions tab displays the information for the selected procedure.
5. Make the required changes.
6. Click **OK**.

Renaming an Object’s Procedure

You can rename a procedure through the Procedures tab of the group or object’s Properties dialog box.

To rename a procedure:

1. Display the Procedure tab of the object’s Properties dialog box.
2. Select the procedure to rename.

Method 1–Use the Rename button

3. Click **Rename**.

Method 2–Use a popup menu

3. Click the right mouse button.
4. Select Rename from the popup menu.

Continue after Method 1 or 2

Type in the new name over the old.

Duplicating an Object’s Procedure

If you want to duplicate an object’s procedure, you can. This can be particularly useful if you want to configure two procedures that are almost alike. You simply configure one, duplicate it, and make the minor revisions to configure the second.

To duplicate a procedure:

1. Display the Procedures tab of the object’s Properties dialog box.
2. Click **Duplicate**.

Deleting an Object's Procedure

You can delete the association between any procedure and an object. You will not delete the procedure’s association with other objects or a group with which it is associated.

You can delete a procedure from an:

- Object.
- Event.

Procedure Deleted from the Object

You can delete a procedure’s association with an object through the Procedures tab of the object’s Properties dialog box.

To delete a procedure’s association with an object:

1. Display the Procedure tab of the object’s Properties dialog box.
2. Click **Delete**.

Procedure Deleted from an Event

You can delete a procedure from an event. This does not delete the procedure. It simply stops it from being triggered by the event.

To delete a procedure from an event:

1. Select the Events tab in the object's Properties dialog box.
2. Select the procedure you want to delete in the list of procedures.
3. Click **Delete**.

Defining Each Action

The specifications you enter to instruct CimView depend on what action you choose.

This section describes the basic information needed to configure each action.

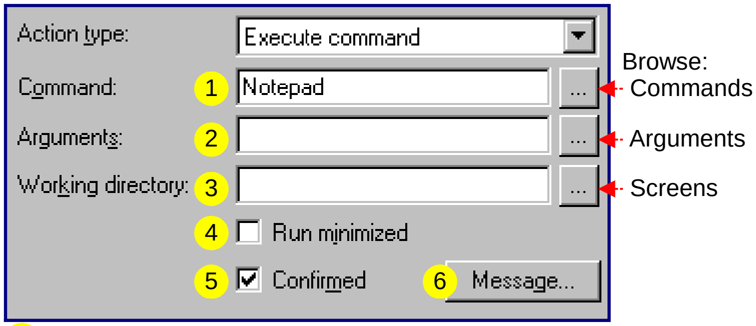
Execute Command Action

.

`Execute Command:`

Purpose: To execute a command in CimView

Fields:



Action type: Execute command

Command: 1 Notepad ...

Arguments: 2 ...

Working directory: 3 ...

4 ☐ Run minimized

5 ☑ Confirmed 6 Message...

1 Enter one:
- Command pathname–e.g. pointset.bat
- Folder name–e.g. C:\CIMPLICTY\docs
- Document name with a registered extension–e.g..HLP, .HTML or .PPT
- Web page reference–e.g. http://www.CIMPLICITY.com/

2 Additional information used by the program (usually blank)

3 Directory path to command if it is different from the screen file directory.

4 Checked–Minimizes window associated with command.

5 Checked–Requires confirmation at runtime.

6 Opens a Text Box to enter customized confirmation message.

Invoking a web page in this manner is especially effective since it will use whatever browser the user has configured.

Important: If the path name contains spaces, enclose it in double quotes.

Screen Actions

Actions triggered for the CimView screen include:

Action	Use in CimView to:
`Close Screen`	(Terminal) Close the current screen
`Home Screen`	(Terminal) Redisplay the first screen that was displayed when the user entered CimView
`Open Screen`	Display a designated screen in another window
`Overlay Screen`	(Terminal) Overlay the current screen with the designated screen
`Previous Screen`	(Terminal) Overlay the current screen with the previous screen that was displayed *in the current window*. The CimView stack records up to the last 100 screens that a user has displayed in a session.
`Print Screen`	Print the current screen through the default printer

Note: Both the **`Home Screen`** and **`Previous Screen`** features rely on actual files to work.

When you enter CimView by pressing the **Test Screen** button in CimEdit, CimView is not passed a file to work with. The screen is passed in memory. Therefore, because there are no available files for the previous or home screens, the **Previous Screen** and **Home Screen** buttons are disabled. (This is why you don't have to save the screen before you push the **Test Screen** button. Of course, it is recommended that you do.)

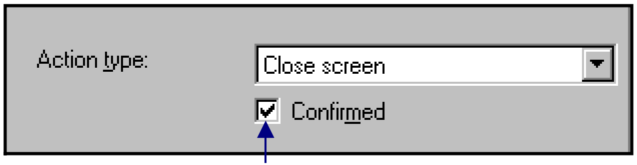
When you do an overlay from the test screen you have opened, the **Home Screen** button is enabled. The new screen file becomes the home screen–it is the first file opened. The **Previous Screen** button is disabled. There is next file for the previous screen.

.

`Close Screen` (Terminal):

Purpose: To close the current screen.

Fields:



Action type: Close screen

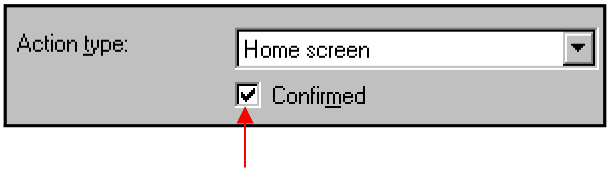
☑ Confirmed

Check to require confirmation at runtime

`Home Screen` (Terminal):

Purpose: To redisplay the first screen that was displayed when the user entered CimView.

Fields:



Action type: Home screen

☑ Confirmed

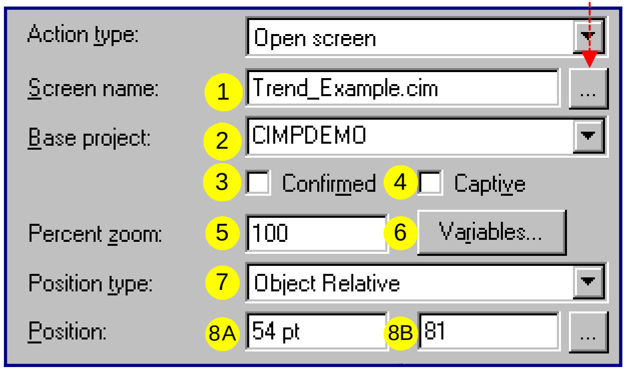
Check to require confirmation at runtime

`Open Screen`:

Purpose: To display a different CimView screen in another window.

Fields:

Browse for a screen



Action type: Open screen

Screen name: 1 Trend_Example.cim

Base project: 2 CIMPDEMO

3 □ Confirmed 4 □ Captive

Percent zoom: 5 100 6 Variables...

Position type: 7 Object Relative

Position: 8A 54 pt 8B 81

1 Screen name + path if different directory.
2 Project ID to qualify unqualified points
3 Checked–requires confirmation at runtime.
4 Checked–user cannot perform functions in CimView until the screen is closed.
5 Default screen size at runtime.
6 Opens Initial Variable Values dialog box.
7 Base criteria for position specifications.
8 Position of open screen top left corner.
A X-axis
B Y-axis

Open Screen enables you to specify precisely what screen should open, at what zoom relative to the current screen, in what location; you can also define variables with initial values that the open screen will assume. However, your entries are optional. The following procedure describes what you can enter in each field and the defaults if you do not make an entry.

To configure an Open Screen action:

1. Select the screen to open in the Screen name field.

   Default: Blank–Users who invoke this procedure in CimView specify a screen to open.

2. Select or enter a project name in the Base project field to qualify unqualified points.

   Default: Blank–Points are not associated with a project.

3. Check Confirmed to require confirmation at runtime.

   A message box will display before the action occurs requesting confirmation to proceed.

   Default: Not checked.

4. Check Captive to prohibit the CimView user from performing functions in CimView until the current screen is closed.

   Default: Not checked.

5. Enter the percent you want the open screen to zoom to when it opens.

   Default: 100

   Example

   If you enter 100 the screen will open at 100% zoom. The open screen will open to size specified on the Geometry tab in that screen's Properties dialog box. CimView will size the window to the zoom.

6. Create initial variables for the open screen.

   Default: No variables.

   A. Click **Variables**.

   The Initial Variable Values dialog box opens.

   B. Enter a variable in the Variable column first row.

   The variable may be qualified or unqualified.

   A ***qualified variable*** is a variable that is attached to an object.

   Example

   `\Button1\Tank` is a qualified variable

   Where

   `Button1` is the object name.

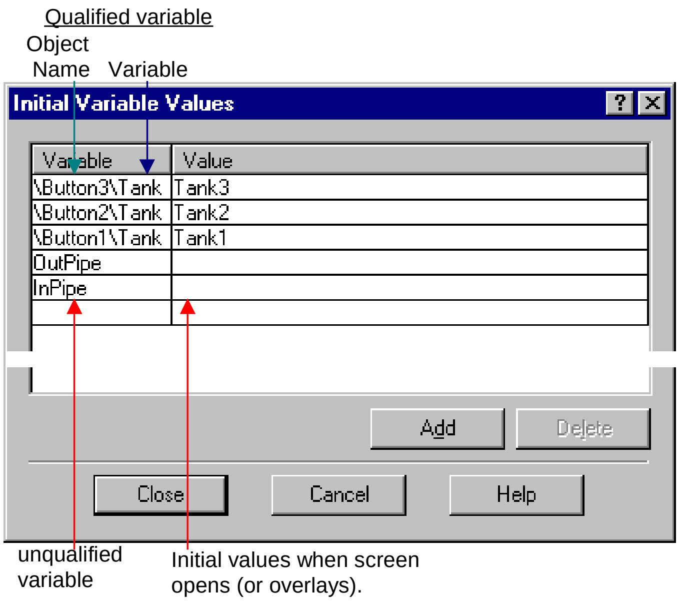
   `Tank` is the variable.

   `InPipe` is an unqualified variable.

   C. Continue until you have entered all of the variables that you want the open screen to assume.

   D. Click **Close**.

Result: When the screen opens, it assigns the qualified variables with the objects that have the specified names; it takes ownership of unqualified variables. If there are no objects with names that match a qualified variable object name, that variable is disregarded.



Variable	Value
\Button3\Tank	Tank3
\Button2\Tank	Tank2
\Button1\Tank	Tank1
OutPipe	
InPipe	

7. Specify the initial position for the top left corner of the open screen as follows.

   A. Select one of the three Position types.

Type	Positions the Top Left Corner at the Specified x,y Location from the
Absolute	Top left corner (0, 0) of the monitor screen. (**Default)** Positive y values move down the screen; positive x values move right.
CimView screen relative	Bottom left corner (0, 0) of the current CimEdit screen. Positive y values move up the screen; positive x values move to the right.
Object Relative	Top left corner (0, 0) of the "event trigger object." Positive y values move up the screen; positive x values move to the right.

   Note: The "event trigger object" is the object on which the event is triggered. It is not necessarily the object through which you are configuring the procedure.

   B. Specify the x and y positions in the Position fields.

   - Absolute positions are in pixels.
   - Relative positions are in points.

   Default: 0, 0 for the Absolute position type.

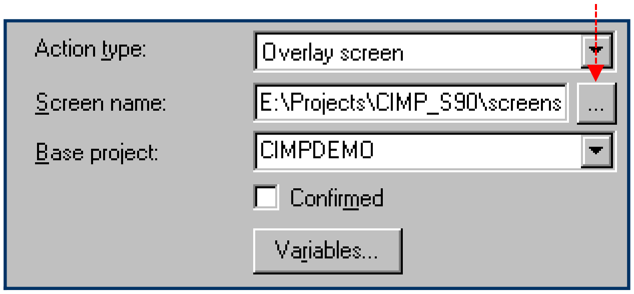
   Tip: If you choose Object Relative, use the geometry tab of the "event trigger" object to calculate your entries in the Position fields.

Result: The specified screen will open at the zoom, in the position, with the initial variables you specify when the action is triggered and, if required, confirmed.

`Overlay Screen` (Terminal):

Purpose: To overlay the current screen with the designated screen.

Fields:



Action type: Overlay screen

Screen name: E:\Projects\CIMP_S90\screens

Base project: CIMPDEMO

□ Confirmed

1 Screen name + path if directory is different from current screen.

2 Project ID to qualify unqualified points

3 Checked–requires confirmation at runtime.

4 Opens Initial Variable Values dialog box.

Overlay screen enables you to specify precisely what screen should overlay; you can also define variables with initial values that the overlay screen will assume. However, your entries are optional. The following procedure describes what you can enter in each field and the defaults if you do not make an entry.

To configure an overlay screen action:

1. Select the screen to open in the Screen name field.

   Default: Blank–Users who invoke this procedure in CimView specify a screen to overlay.

2. Select or enter a project name in the Base project field to qualify unqualified points.

   Default: Blank–Points are not associated with a project.

3. Check Confirmed to require confirmation at runtime.

   A message box will display before the action occurs requesting confirmation to proceed.

   Default: Not checked.

4. Create initial variables for the overlay screen.

   Default: No variables.

   A. Click **Variables**.

      The Initial Variable Values dialog box opens.

B. Enter a variable in the Variable column first row.

The variable may be qualified or unqualified.

A ***qualified variable*** is a variable that is attached to an object.

Example

`\Button1\Tank` is a qualified variable

Where

`Button1` is the object name.

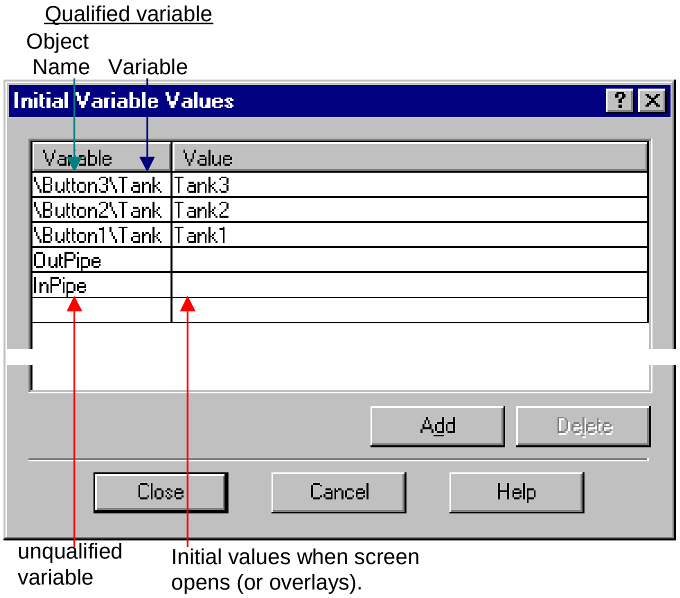
`Tank` is the variable.

`OutPipe` is an unqualified variable.

C. Continue until you have entered all of the variables that you want the open screen to assume.

D. Click **Close**.

Result: When the screen overlays, it assigns the qualified variables with the objects that have the specified names; it takes ownership of unqualified variables. If there are no objects with names that match a qualified variable object name, that variable is disregarded.

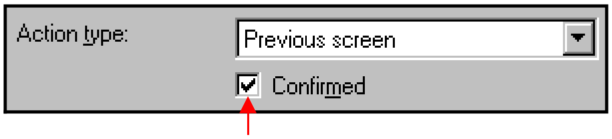


Variable	Value
\Button3\Tank	Tank3
\Button2\Tank	Tank2
\Button1\Tank	Tank1
OutPipe	
InPipe	

`Previous Screen` (Terminal):

Purpose: To overlay the current screen with the previous screen that was displayed *in the current window*. The CimView stack records up to the last 100 screens that a user has displayed in a session.

Fields:



Action type: Previous screen

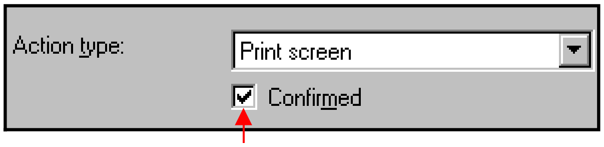
☑ Confirmed

Check to require confirmation at runtime

`Print Screen`:

Purpose: To print the current screen through the default printer.

Fields:



Action type: Print screen

☑ Confirmed

Check to require confirmation at runtime

Invoke a Method or Script Action

Actions triggered for the CimView screen include:

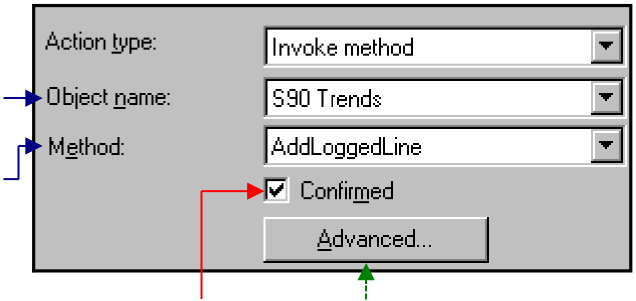
Action	Use in CimView to:
`Invoke Method`	Invoke a designated method.
`Invoke Script`	Execute a designated script.

`Invoke Method`:

Purpose: To invoke a designated method.

Fields:

Example: Trending Method



Action type: Invoke method

Object name: S90 Trends

Method: AddLoggedLine

☑ Confirmed

Select the object to which the method will be assigned

Select the method to implement

Check to require confirmation at runtime

Open the Edit Method dialog box box

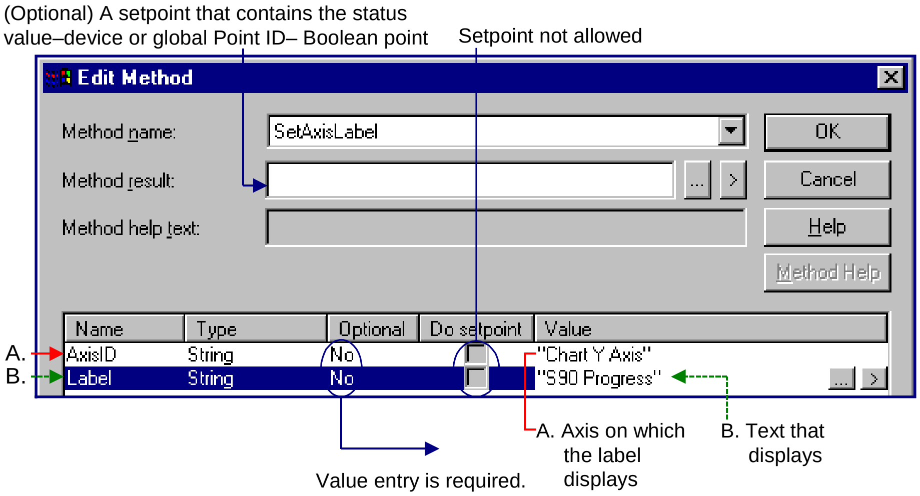
Certain automated objects support methods. When supported, the **Invoke method** action is an efficient way to carry out or customize one or more results when it is triggered by an event. CimEdit frequently needs more than basic information to carry out a method. When it does, the **Advanced…** button will be enabled.

Currently, methods are supported for CIMPLICITY HMI Trends, SPC Charts, Recipes, and Alarm Viewer controls.

To configure an Invoke method method that requires advanced configuration:

1. Select the object.
2. Open the Properties dialog box.
3. Select the General tab.
4. Enter a name for the object in the Object Name field.
5. Select the Events tab.
6. Follow the same procedure that you follow for any action up through selecting the **Invoke method** action.
7. Select the object in the Object name field.
8. Select the method in the Method field.
9. Click **Advanced…** if it is enabled.

   The Edit Method dialog box for that method opens. The information and format that you enter in the Edit Method dialog depends on the method you select.



(Optional) A setpoint that contains the status value–device or global Point ID– Boolean point

Setpoint not allowed

Edit Method

Method name: SetAxisLabel

Method result:

Method help text:

Name	Type	Optional	Do setpoint	Value
AxisID	String	No	☐	"Chart Y Axis"
Label	String	No	☐	"S90 Progress"

A. Axis on which the label displays

B. Text that displays

Value entry is required.

10. Enter an expression in the Value column that will pass as the argument for each argument in the Name column. Your options are:

    A. You must make an entry for each parameter that has a No in the Optional field. If the argument is optional, you will see Yes in the Optional field.

    Choose one of the following to pass argument values to a method:

Type	Enter
Integer	An expression using the Edit Expression dialog box or the popup menu. The results of the expression evaluation at runtime are passed to the method A Point ID: The contents of the Point ID are passed to the method

String

Choose one or a combination of the following:

- Point ID that refers to a text point
- Constant string enclosed in double quotes
- **`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`**

B. If the argument can be used as an output argument, the Do Setpoint checkbox will be enabled. To assign the output value of the argument to a CIMPLICITY Point when the function exits, enter the Point ID in the Expression field.

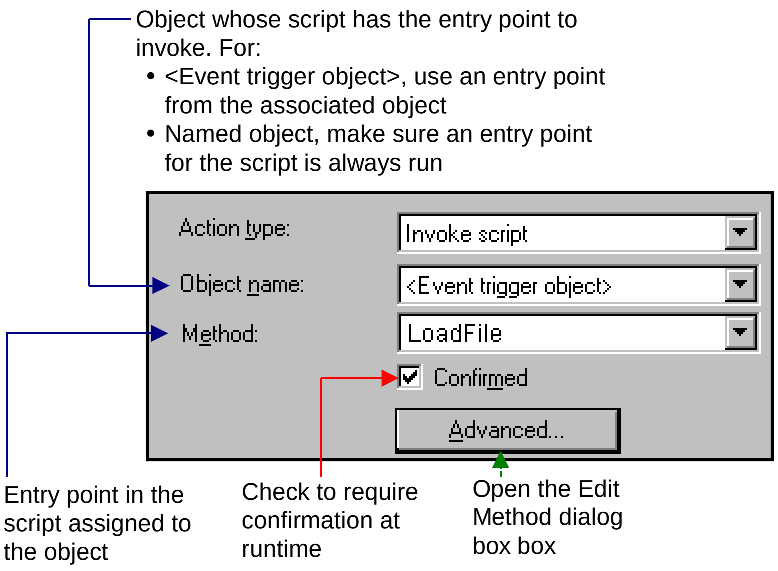
10. (Optional) Enter a Setpoint in the Method result field if the function returns a value. You can use a device or global Point ID with the correct Point Type for the status value.
11. Click **OK** to save your changes and return to the Actions property page.
12. Click **OK** to save the procedure information and return to the Events property page.
13. Click **OK** to save the event.

See the documentation for Trends, SPC Charts, Recipes and Alarm Viewer for more information.

Invoke Script:

Purpose: To execute the designated script in CimView.

Fields:



Object whose script has the entry point to invoke. For:
- <Event trigger object>, use an entry point from the associated object
- Named object, make sure an entry point for the script is always run

Action type: Invoke script

Object name: <Event trigger object>

Method: LoadFile

☑ Confirmed

Entry point in the script assigned to the object

Check to require confirmation at runtime

Open the Edit Method dialog box box

To create an invoke script action with an <Event trigger object> (recommended):

1. Create a prototype script with the appropriate entry points in an object.
2. Display the Events tab for the object.
3. Select the type of event, in the Event field, that will invoke the script.
4. Create a new procedure, or edit an existing procedure, in the Procedure field.
5. Select **`Invoke Script`** in the Action field.
6. Select the method that occurs when **`Invoke Script`** is triggered.

If the entry point you selected returns a value or contains output arguments, the **Advanced...** button will be activated after you select the method.

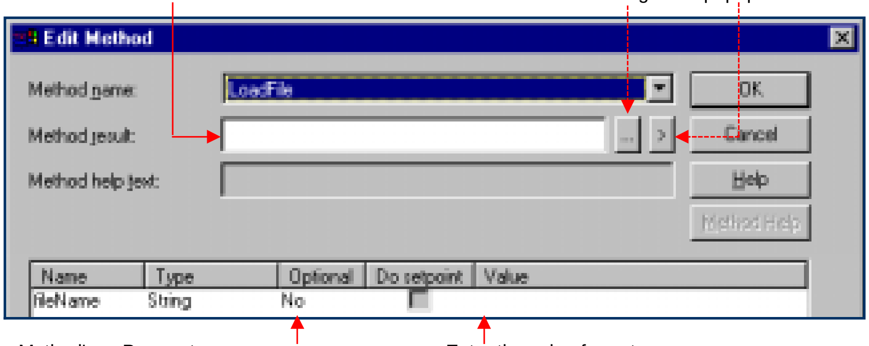
7. Click **Advanced...** to open the Edit Method dialog and define this information.

Example: Entry in Edit Method Dialog Box for an Invoke Script Action

(Optional) A setpoint that contains the status value–device or global Point ID– Boolean point

Expresion dialog box

Point ID popup



Method name: LoadFile

Method result:

Method help text:

Name	Type	Optional	Do setpoint	Value
fileName	String	No	□	

Method's procedure

Parameter type

Entry is required

Enter the value format specified in the Type column

8. Enter an expression in the Value column that will pass as the argument for each argument in the Name column. Your options are:

A. You must make an entry for each parameter that has a NO in the Optional field. If the argument is optional, you will see YES in the Optional field.

Choose one of the following to pass argument values to a method:

Type — Enter

`ByRef Integer` — Choose either:

- An expression using the Edit Expression dialog box or the popup menu

  The results of the expression evaluation at runtime are passed to the method
- A Point ID

  The contents of the Point ID are passed to the method

`ByRefString` — Choose one or a combination of the following:

- Point ID that refers to a text point
- Constant string enclosed in double quotes
- **`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`**

B. If the argument can be used as an output argument, the Setpoint checkbox will be enabled. To assign the output value of the argument to a CIMPLICITY Point when the function exits, enter the Point ID in the Expression field.

9. (Optional) Enter a Setpoint in the Method result field if the function returns a value. You can use a :
   - Device or global Point ID with the correct Point Type for the status value.
   - Variable ID that evaluates to a Point ID. If you use a Variable ID that does not evaluate to a Point ID, nothing happens.
10. Click **OK** to save your changes and return to the Actions property tab.
11. Click **OK** to save the procedure information and return to the Events tab.
12. Click **OK** to save the event.

Guideline: Runtime Behavior

When the script is invoked at runtime:

- If you select an object name in the Object name field, then the action looks first in the script for that object.
- If you select **`<Event trigger object>`** in the Object name field, then the action looks first in the script for the object whose event triggered the procedure.

In either case, if the entry point does not exist in that object's script, then the action looks for it in the script for that object's container, and so on, until it reaches the screen's script. If the entry point is not found, the action is skipped.

See "Using Scripts" in this manual for more information about scripts.

Setpoint Actions

Actions using a Setpoint include:

Action	Use in CimView to:
`Absolute Setpoint`	To identify a Point ID and a value to associate with the object. When the procedure is invoked in CimView, the value will be downloaded to the Point ID.
`Ramp Setpoint`	To let users add or subtract the standard and alternate values from the current value of a point, then perform a Setpoint on the point using the modified value.
`Relative Setpoint`	To add the offset value to the current value of the point. The result is downloaded to the point.
`Toggle Setpoint`	To toggle the current value of a *Boolean* point. The result is downloaded to the point.
`Variable Setpoint`	To display a dialog box that prompts users for a value to download to the point.

Tip: CimEdit provides you with several ways to configure setpoints. They include:

- Setpoint actions described here.
- Slider action checkboxes on the Movement tab in the Properties dialog box.

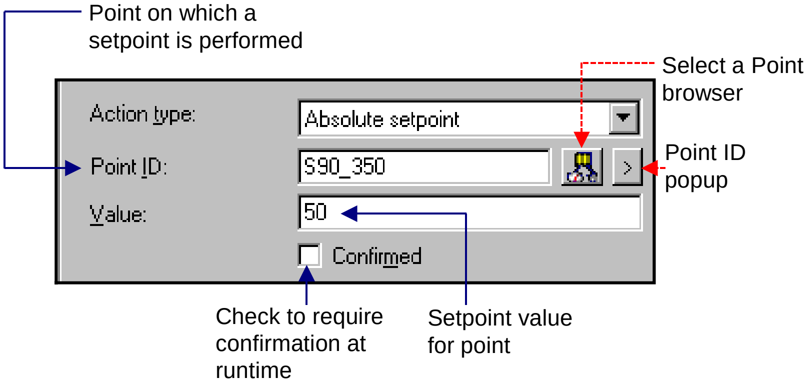
  See "Creating a Slider Action" in the "Configuring Runtime Movement and Animation" chapter in this manual for details about configuring slider actions.
- Setpoint action checkboxes on the Text tab in the Properties dialog box.

  See the "Using Text Objects to Display Point Values" section in the "applying Inanimate Visual Features" chapter in this manual for the procedure to configure text objects including enabling setpoint actions.

Absolute Setpoint:

Purpose: To identify a Point ID and a value to associate with the object. When the procedure is invoked in CimView, the value will be downloaded to the Point ID.

Fields:



Action type: Absolute setpoint

Point ID: S90_350

Value: 50

□ Confirmed

Point on which a setpoint is performed
Select a Point browser
Point ID popup
Check to require confirmation at runtime
Setpoint value for point

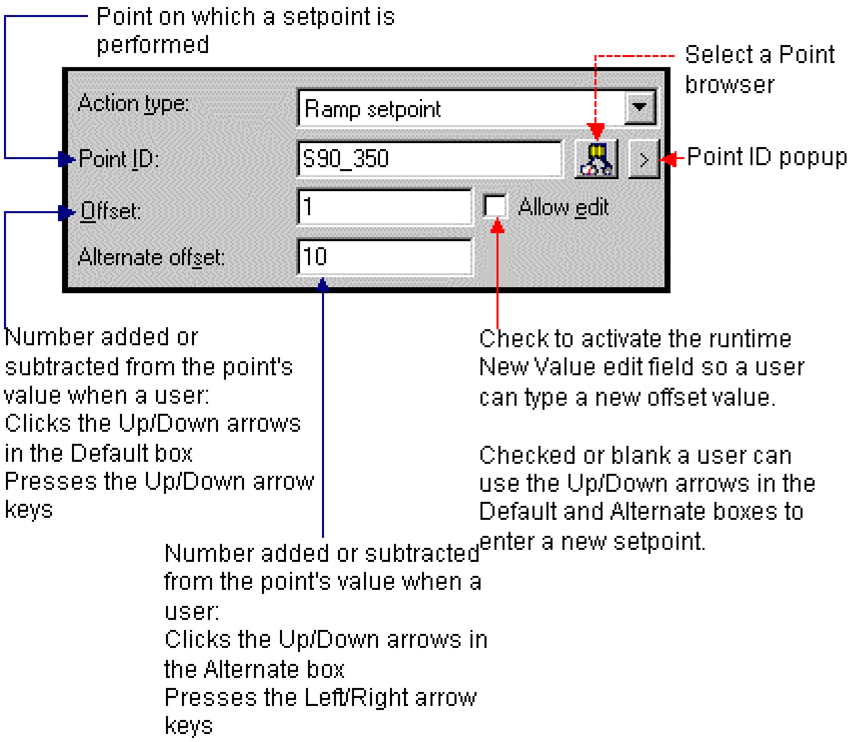
Important: The following restrictions apply when specifying the absolute Setpoint. The:

- Value you select must be compatible with the point's type.
- Point must be a Read/Write point.

Ramp Setpoint:

Purpose: To let users add or subtract the standard and alternate values from the current value of a point, then perform a Setpoint on the point using the modified value.

Fields:



Action type: Ramp setpoint

Point ID: S90_350

Offset: 1 □ Allow edit

Alternate offset: 10

Point on which a setpoint is performed

Select a Point browser

Point ID popup

Number added or subtracted from the point's value when a user:
Clicks the Up/Down arrows in the Default box
Presses the Up/Down arrow keys

Check to activate the runtime New Value edit field so a user can type a new offset value.

Checked or blank a user can use the Up/Down arrows in the Default and Alternate boxes to enter a new setpoint.

Number added or subtracted from the point's value when a user:
Clicks the Up/Down arrows in the Alternate box
Presses the Left/Right arrow keys

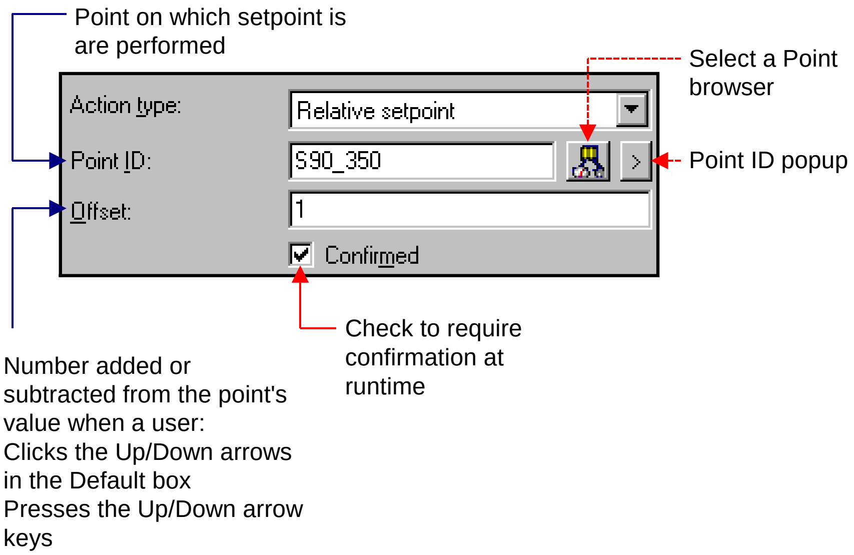
Important: The following restrictions apply when using Ramp Setpoint. The:

- Offset values must be integers or real numbers.
- Point must be a Read/Write point.

Relative Setpoint:

Purpose: To add the offset value to the current value of the point. The result is downloaded to the point.

Fields:



Point on which setpoint is are performed

Select a Point browser

Point ID popup

Action type: Relative setpoint

Point ID: S90_350

Offset: 1

☑ Confirmed

Check to require confirmation at runtime

Number added or subtracted from the point's value when a user:
Clicks the Up/Down arrows in the Default box
Presses the Up/Down arrow keys

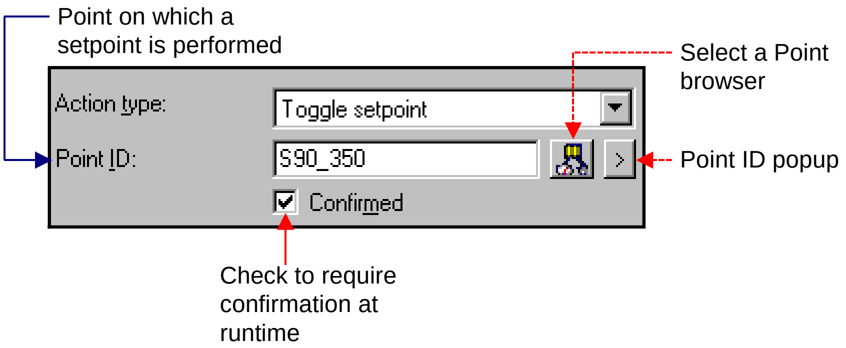
Important: The following restrictions apply when using Relative Setpoint. The:

- Offset values must be integers or real numbers.
- Point must be a Read/Write point.

Toggle Setpoint:

Purpose: To toggle the current value of a Boolean point. The result is downloaded to the point.

Fields:



Point on which a setpoint is performed

Select a Point browser

Point ID popup

Action type: Toggle setpoint

Point ID: S90_350

☑ Confirmed

Check to require confirmation at runtime

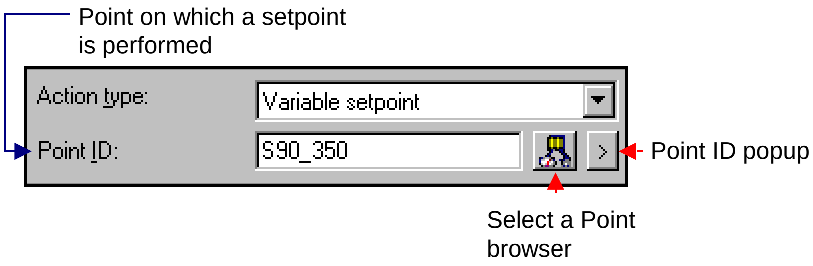
Important: This action has the following restrictions. The:

- Point must be a Boolean point.
- Point must be a Read/Write point.

Variable Setpoint:

Purpose: To display a dialog box that prompts users for a value to download to the point.

Fields:



Action type: Variable setpoint

Point ID: S90_350

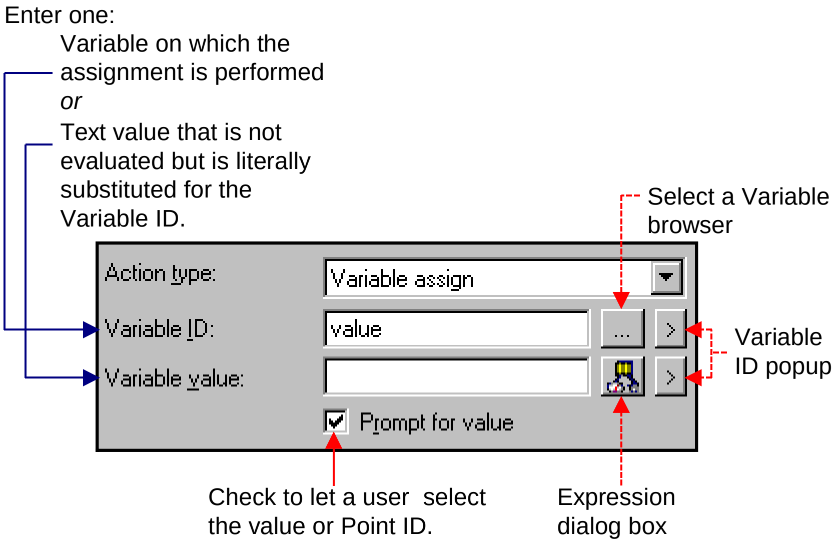
Important: This action has the following restrictions:

- The point must be a Read/Write point.

Variable assign:

Purpose: To assign a Variable ID to a value or Point ID.

Fields:



Action type: Variable assign

Variable ID: value

Variable value:

☑ Prompt for value

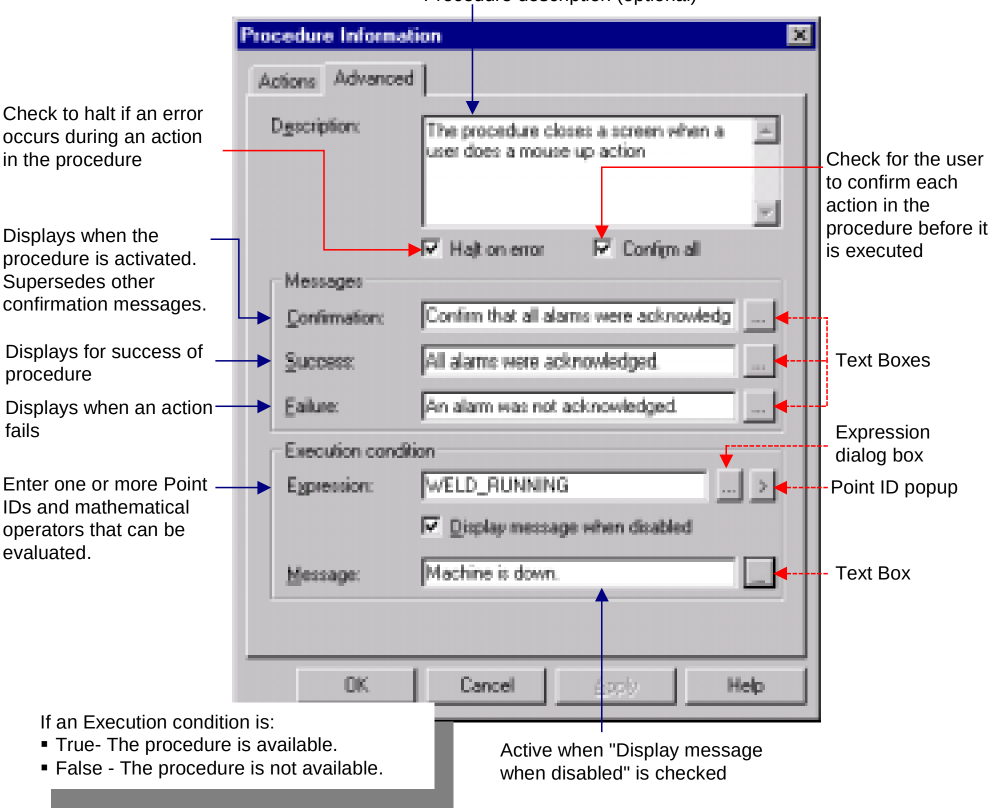
Enter one:
Variable on which the assignment is performed
or
Text value that is not evaluated but is literally substituted for the Variable ID.
Select a Variable browser
Variable ID popup
...
Check to let a user select the value or Point ID.
Expression dialog box

Configuring Advanced Properties for Procedures

When configuring a procedure, use the Advanced tab of the Procedure Information dialog box to:

- Enter a description for the procedure.
- Define procedure functions.
- Define procedure messages.
- Specify an Execution condition for the procedure.

Advanced Procedure Information



Procedure Information

Actions | Advanced

Description: The procedure closes a screen when a user does a mouse up action

☑ Halt on error ☑ Confirm all

Messages

Confirmation: Confirm that all alarms were acknowledg

Success: All alarms were acknowledged.

Failure: An alarm was not acknowledged.

Execution condition

Expression: WELD_RUNNING

☑ Display message when disabled

Message: Machine is down.

Procedure description (optional)

Check to halt if an error occurs during an action in the procedure

Check for the user to confirm each action in the procedure before it is executed

Displays when the procedure is activated. Supersedes other confirmation messages.

Displays for success of procedure

Displays when an action fails

Text Boxes

Expression dialog box

Point ID popup

Enter one or more Point IDs and mathematical operators that can be evaluated.

Text Box

If an Execution condition is:

- True- The procedure is available.
- False - The procedure is not available.

Active when "Display message when disabled" is checked

When an Execution Condition is evaluated as:

TRUE	The procedure behaves normally
FALSE and no message is defined	The system behaves as if the procedure does not exist. **Example** If the procedure is assigned to a key, nothing will happen when the user presses the key.
FALSE and a message is defined	A user may think the procedure exists. However, when the user selects the procedure, the message displays and the procedure will not run.

If the expression contains unavailable points, a user may think a procedure exists. However, when the user selects the procedure, the following message displays.

> **"The execution condition for this procedure contains unavailable points. Would you like to execute the procedure anyway?"**

If the user selects:

Yes	The procedure can be performed
No	The procedure is not performed

Examples of how an Execution Condition is Used

If a custom application provides security information as a CIMPLICITY point, this feature can be used to provide security control for procedure execution.

If an application runs in modes, such as Manual and Automatic, this feature can be used to disable certain procedures while in Automatic mode.

Using CimEdit Scripts

About CimEdit Scripts

CIMPLICITY HMI provides several tools to make things happen in CimEdit and in CimView. The tools can be categorized as triggers that are configured as events and results that can be configured through procedures or scripts.

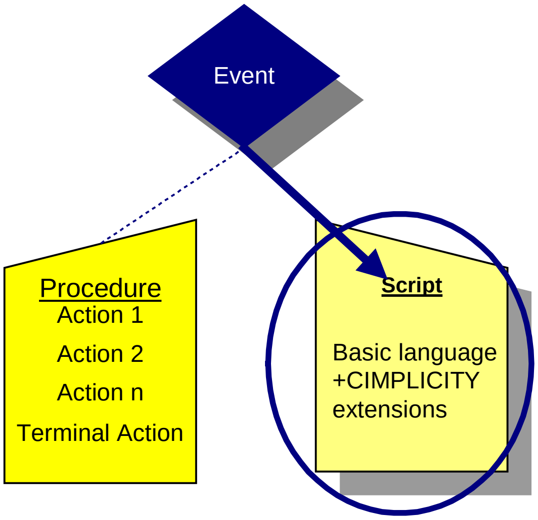
Trigger

An ***event*** triggers a procedure or calls a script. CimEdit provides a long list of events from which you can choose the best one for your requirements.

Result

A ***procedure*** contains one or more actions that are triggered in the specified order when an event occurs and while the screen is displayed in CimView. CimEdit provides several actions from which a screen designer can easily compile a meaningful list.

A ***script***, which is usually written by more advanced users, uses the same Editor and Basic language as the Basic Control Engine. Anything you can do in a normal script, you can do in a **CimEdit** script. CimEdit provides additional extensions to give you a wider range of screen development choices. However, **CimEdit** scripts are *only* accessible from the screen in which you create them.



This chapter describes how to invoke a script in CimEdit. It also defines basic extensions that you may have used previously and provides you with the new automated alternatives.

See "Basic Extensions for CimEdit" for the numerous Basic extensions that have been created for CimEdit.

In addition, CimEdit scripting has implemented several automated objects. These automated objects can only be used by CimEdit scripts. You can create a script for any object, group, or frame container on your CimEdit screen. You can also create a script for the screen itself.

CimEdit scripting uses the same Editor and Basic language as the Basic Control Engine. Anything you can do in a normal script, you can do in a CimEdit script.

Tip: If you want to use objects with the same scripts on different screens, link them.

For unlinked objects, CimEdit scripts are *only* accessible from the screen in which you create them. If you have any questions on how to use the Editor or the Basic language, consult the following documents:

- *For details on how to create and edit a script, see the CIMPLICITY HMI Basic Control Engine Program Editor Operation Manual (GFK-1305).*
- *For details on the Basic language, see the CIMPLICITY HMI Basic Control Engine Language Reference Manual (GFK-1283).*

  Both of these manuals are included in the CIMPLICITY Base System library.

Script Configuration

You configure a script through an object's Properties dialog box. (An object can be the screen, a frame, group, or object.)

Basic choices for scripting include:

- CIMPLICITY Basic Control Engine Language Reference
- CIMPLICITY basic extension functions, operators and statements. These extensions can be used in scripts created in the CIMPLICITY script window.
- Basic Extensions for CimEdit Scripts–Replacements to obsolete CimEdit basic extensions and current basic extensions. These extensions can be used in scripts created in the CimEdit script window.
- CimEdit/CimView
- Object Model–CimEdit and CimView object model, listing the properties, methods, objects and enums, which can be used in CIMPLICITY and other applications, such as C++, that have the capability to create OLE based objects.
- CIMPLICITY HMI Configuration Object Model

Note: There is a notion in CimEdit of "static" objects. These are objects that have no animations, no actions, no help text and no name. The objects are compiled into very small representations that cannot be manipulated by the object model. In fact, they won't even show up in the GefObjects collection.

To make a static object accessible from the object model:

For a single object

1. Open the object's Properties dialog box.
2. Select the General tab.
3. Enter a name in the Object name field.

For an object in a group

If any object in a group has an:

- Animation,
- Action,
- Help, or
- Name,

then every object in that group will be accessible from the object model.

Creating a CimEdit Script

To create a new script:

1. Select the object to which the script will be attached.
2. Open the object's Properties dialog box.

Method 1

3. Select the Script tab.
4. Click **Edit.**

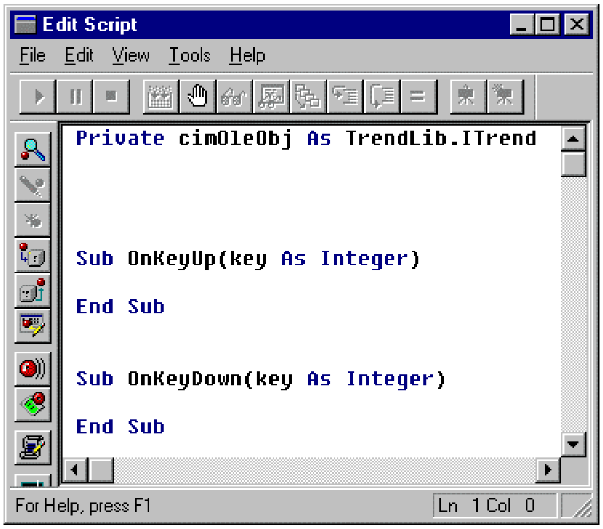
A blank Edit Script dialog box appears.

Method 2

3. Select the Events tab.
4. Select an event.
5. Click the **Popup Menu** button at the right of the Action field.
6. Select **New Script**.

Result: An Edit Script dialog box appears with an entry for the event's subroutine.

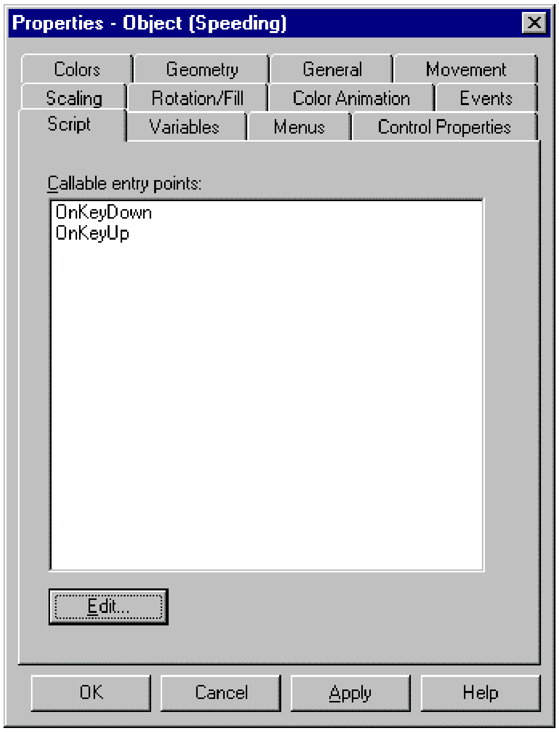
When you click **Edit** in the Script tab, the Edit Script dialog box opens.



```
Private cimOleObj As TrendLib.ITrend



Sub OnKeyUp(key As Integer)

End Sub


Sub OnKeyDown(key As Integer)

End Sub
```

This window is similar to the window used by the Basic Control Engine Program Editor. Consult the Basic Control Engine documentation if you have any operational questions.

As you create entry points in the script, they are displayed in the Script tab of the Properties dialog box.



Callable entry points:

OnKeyDown
OnKeyUp

To test a script after you have created it:

Method 1

Set at least one breakpoint in the entry point you want to test.

Method 2

Create a procedure that invokes the entry point you want to test.

Method 3

Create an event that invokes the procedure.

Method 4

Run the screen in Test Mode and trigger the event.

Accessing Script Entry Points

There are several ways that a script can access its entry points.

An ***entry point*** can be a function or a subroutine.

Overall: A script can access entry points in its own script or any of its container's scripts.

Example

You have an object with a script that is looking for entry point **`xyz`**.

The entry point is defined in the script for the group that contains the object.

Basic will execute the group's **`xyz`** entry point at run-time.

If: You define an entry point (in the scripts) for more than one of the object's containers

Then: The entry point in the closest container to the object is executed.

Example

You have an object with a script that is looking for entry point **`abc.`**

The entry point is defined in the script for the group that contains the object and in the script for the screen.

Basic will execute the group's **`abc`** entry point at run-time.

If: You name an object that has a script

Then: Entry points in that script can be accessed as follows:

A. Any object on the screen triggers an event.

B. The event invokes a procedure that has an Invoke Script action with the name of the object.

C. The script is accessed.

If: You configure a procedure to execute an **`Invoke script`** action for a particular entry point and use the <*Event trigger object*> as the object to look for entry points.

Then: Any object that implements the entry point in its script *with the same parameters* can use that procedure.

Example

You have two objects.

Each object has its own script with an entry point **`alpha.`**

`alpha` uses one input argument and returns a status

Each **`alpha`** procedure does something different.

If you create procedure **`XYZ`** to invoke **`alpha`**, you can assign it to events for both objects. When the event for the:

A. First object occurs, the **`alpha`** in the first object's script is executed.

B. Second object occurs, the **`alpha`** in the second object's script is executed.

If: Option 1: You configure the global parameter GSM_GLOBAL_SCRIPT to specify the file(s) be loaded at startup. Multiple script files can be specified by separating them with ";".

The syntax is:

```
GSM_GLOBAL_SCRIPT|1|c:\scriptpath\script1.bcl;c:\scriptpath\script2.bcl
```

Where

`GSM_GLOBAL_SCRIPT|1|` is the global parameter that specifies the file(s) to be loaded at startup.

`C:\scriptpath\script1.bcl` is the name of the path and script that will be opened..

Option 2: You run CimView with the command line option:

`/LoadScript scriptFileName`

where

`scriptFileName` is a file specification) to specify a common script file. (Multiple **`/LoadScript`** options can be given on the command line.)

Then: A common script file can be shared among all screens loaded in CimView. Functions that are included in this common file will be loaded when CimView is first run, and will be callable as if they were included in the Basic code for the local screen.

If you utilize both options, CimView will load the contents of both files into memory. The functions specified in the **`GSM_GLOBAL_SCRIPT`** file will take precedence over those referenced by the **`/LoadScript`** option.

If you specify the **`/LoadScript`** argument for a file after CimView is already running, its contents will be appended to the list of common functions with the lowest precedence.

Invoking a CimEdit Script

You can invoke a CimEdit script from an **`Invoke script`** action in a procedure that is triggered by an event.

You follow either one or two procedures to invoke a script:

Basic procedure	Always required–Enter information in the Events tab of the object’s Properties dialog box
Advanced procedure	Sometimes required–Enter information in the Edit Method dialog box.

Basic Procedure for Invoking a Script

To create an event and procedure to invoke a script:

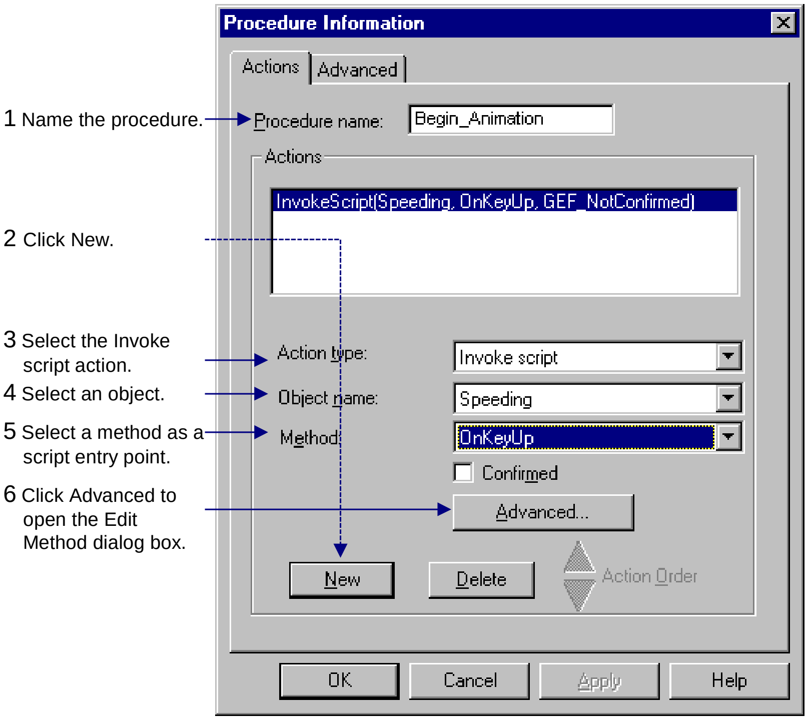
1. Select the object to which the script will be attached.
2. Open the object’s Properties dialog box.
3. Select the Events tab.
4. Click **New** to create a new event, if there are already other events configured. If there are no other events configured, go to Step 5.
5. Select the type of event, in the Event field, that will invoke the script.
6. Click the **Popup Menu** button at the right of the Action field.

7. Click **New Procedure**.

   The Procedure Information dialog box opens.

8. Select the Actions tab.

Invoke a Script Basic Configuration



Procedure Information

Procedure name: Begin_Animation

InvokeScript(Speeding, OnKeyUp, GEF_NotConfirmed)

Action type: Invoke script

Object name: Speeding

Method: OnKeyUp

☐ Confirmed

1 Name the procedure.

2 Click New.

3 Select the Invoke script action.

4 Select an object.

5 Select a method as a script entry point.

6 Click Advanced to open the Edit Method dialog box.

9. Click **New**.

10. Select **Invoke script**. in the Action type field, The Object name is automatically set to Event trigger object.

11. Select the entry point in the script that you want to assign to the object in the Method field.

12. Click **Advanced…** if the button is enabled. This means the function returns a value that contains output arguments.

    The Edit Method dialog box opens.

13. Click **OK** when you have completed configuration to save the event.

Advanced Entries for Invoking a Script

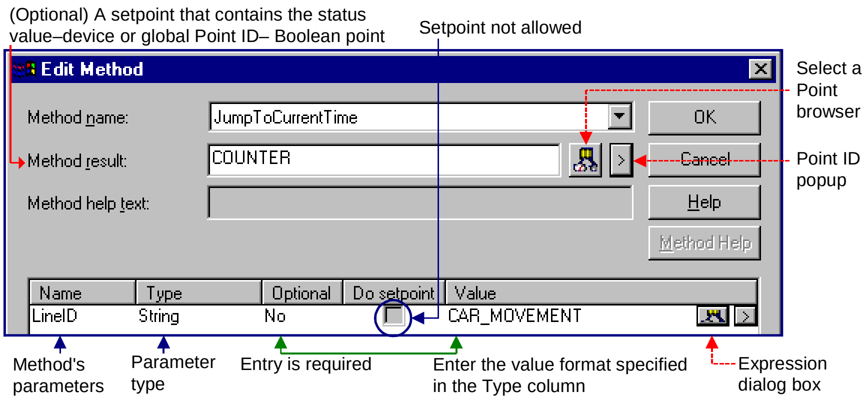
If you select a function to invoke a script and the function returns a value that contains arguments, you will have to do some easy, but advanced, configuration. In these instances, the *Advanced* button on the Edit tab of the Properties dialog box will be enabled.

To do advanced configuration for invoking a script:

1. Click an enabled **Advanced…** button in the Actions tab of the Properties dialog box.

   The Edit Method dialog box opens.

Example: Entry in Edit Method Dialog Box for an Invoke Script Action



Edit Method

Method name: JumpToCurrentTime

Method result: COUNTER

Method help text:

Name	Type	Optional	Do setpoint	Value
LineID	String	No	□	CAR_MOVEMENT

2. Enter an expression in the Value column that will pass as the argument for each argument in the Name column. Your options are:

   A. You must make an entry for each parameter that has a NO in the Optional field. If the argument is optional, you will see YES in the Optional field.

   Choose one of the following to pass argument values to a method:

Type	Enter
`ByRef Integer`	An expression using the Edit Expression dialog box or the Popup menu. The results of the expression evaluation at run-time are passed to the method A Point ID. The contents of the point ID are passed to the method
`ByRef String`	An expression enclosed in double quotes. The contents of the expression are passed to the method The point ID of a text point A point ID for a non-text point enclosed in double quotes

   B. If the argument can be used as an output argument, the Setpoint checkbox will be enabled. To assign the output value of the argument to a CIMPLICITY Point when the function exits, enter the point ID in the expression field.

3. (Optional) Enter a setpoint in the Method result field if the function returns a value. You can use a :
    - Device or global point ID with the correct Point Type for the status value.
    - Variable ID that evaluates to a point ID. If you use a variable ID that does not evaluate to a point ID, nothing happens.
4. Click **OK** to save your changes and return to the Actions tab.
5. Click **OK** to save the procedure information and return to the Events tab.
6. Click **OK** to save the event.

Result: You are now ready to test your script.

Guidelines: Runtime Behavior

When the script is invoked at run-time:

- If you select an object name in the Object name field, then the action looks first in the script of that object.
- If you select Event trigger object in the Object name field, then the action looks first in the script of the object whose event triggered the procedure.

In either case, if the entry point does not exist in that object's script, then the action looks for it in the script of that object's container, and so on, until it reaches the screen's script. If the entry point is not found, the action is skipped.

Testing a CimEdit Script

Once you create, in CimEdit, a**:**

1. Script,
2. Procedure that invokes an entry point in the script and
3. Event that invokes the procedure.

you can use the Test feature of CimEdit to debug the procedure.

Note: You cannot debug a script during a regular CimView session.

To test (and make changes to) a CimEdit script:

1. Click the **Test Screen** button on the Standard Toolbar. The CimView screen displays.
2. Invoke the event that will start the script you want to test.

   When Basic comes to the first breakpoint in the script, it opens the Debug Script window.
3. At this point, you can:
   - Edit the code, change break points, recompile, restart, step into functions etc. in the Debug Script window. However, if you change the entry point that was called from the procedure, you will not be able to restart the script.
   - Open the Properties dialog box of an object and make changes to the script. However, you can not execute the script from this editor.
4. Save the changed script in CimView to send the updated script back to CimEdit immediately. This does not save the script to the screen file.
5. Return to CimEdit.
6. Save the screen in order to save the screen file.

Important: It is recommended that you close the Debug Script window before exiting Test Screen mode, or before going back to CimEdit and using the **Test Screen** button again.

Basic Extensions for CimEdit Scripts

Following is a descriptive list of Basic Extensions that may appear in scripts that were written for existing CimEdit screens.

Some of the Basic Extensions, which are listed first, can be used in addition to the new powerful OLE automated extensions that should be used in current and future scripts. *See CimEdit's online documentation for a detailed listing.*

Several of these Basic Extensions are obsolete. If they exist in previous scripts they can be left in them. It is not recommended that you use them for new development. The obsolete Basic Extensions are listed here, in case you find one in older scripts and need information about it.

Following is a list of the obsolete Basic Extensions and their replacements:

Obsolete Basic Extension	Replaced By
cimEvent (constant)	**CimGetEventContext** (function)
CimEvent (object)	**GefEventContext** (automation object)
CimGetEvent (function	**CimGetEventContext** (function)
CimGetRootObject (function)	**CimGetScreen** (function)
CimGetScriptOwner (function)	**CimGetObject** (function)
CimObject (object)	**GefObject** (automation object)
CimObjectVariable (object)	**GefObjectVariable** (automation object)
cimOwnerObject (constant)	**CimGetObject** (function)
CimAutoUpdateScreen (function)	**GefScreen.Refresh** (automation method)

Basic Extensions

Basic extensions include:

- CimCreateSafeArray (function)
- CimEdit (function)
- CimGetEventContext (function)
- CimGetObject (function)
- CimGetScreen (function)
- cimOleObj (constant)
- CimView (function)

CimCreateSafeArray (function)

Syntax **CimSafeArray = CimCreateSafeArray()**

Description Returns an Automation object that can create and manipulate an array that be used with Automation methods and properties that require arrays.

Status The extension can be used.

Comments Native arrays created in Basic cannot be passed to Automation methods that require array parameters. Similarly, Automation methods that return arrays, return Automation arrays – not Basic arrays. The **CimSafeArray** Automation object allows you to manipulate Automation arrays in Basic.

Example

```
Dim vtx As CimSafeArrayLib.COCimSafeArray
Dim obj As GefObjectModel.GefObject
Dim bdr As GefObjectModel.GefObject
Set vtx = CimCreateSafeArray()
vtx.CreateVector cimVLong, 0, 8
Set obj = CimGetObject()
‘Create a red line around the object
vtx.SetVectorElement 0, obj.Left
vtx.SetVectorElement 1, obj.Top
vtx.SetVectorElement 2, obj.Left + obj.Width
vtx.SetVectorElement 3, obj.Top
vtx.SetVectorElement 4, obj.Left + obj.Width
vtx.SetVectorElement 5, obj.Top - obj.Height
vtx.SetVectorElement 6, obj.Left
vtx.SetVectorElement 7, obj.Top - obj.Height
Set bdr = obj.Parent.AddPolyline(vtx, True)
bdr.Line.ForeColor.RGB = &hFF
bdr.Fill.None
CimGetScreen().Refresh False
```

CimEdit (function)

Syntax **GefApplication = CimEdit ()**

Description Returns the **GefApplication** Automation object representing the CimEdit application.

Status The extension can be used.

Example

```
Dim EditApp As GefObjectModel.GefApplication
Dim EditScreen As GefObjectModel.GefScreen
Set EditApp = CimEdit()
Set EditScreen = ViewApp.Screens.Add(TRUE)
```

CimGetEventContext (function)

Syntax **GefEventContext = CimGetEventContext ( )**

Description Returns the **GefEventContext** Automation object representing the event that caused this script to run.

Status The extension can be used.

Example

```
Dim ev As GefObjectModel.GefEventContext
Dim x As Long
Dim y As Long
Dim flags As Long
Set ev = CimGetEventContext()
If ev.GetMouseEvent(x, y, flags) Then
 'Center Object on mouse coordinates
 x = x - ev.TriggerObject.Width / 2
 y = y + ev.TriggerObject.Height / 2
 ev.TriggerObject.Left = x
 ev.TriggerObject.Top = y
 ev.Parent.Refresh False
End If
```

CimGetObject (function)

Syntax **GefObject = CimGetObject ( )**

Description Returns the **GefObject** Automation object representing the object owning this script.

Status The extension can be used.

Example

```
Dim led As GefObjectModel.GefObject
Dim var As GefObjectModel.GefObjectVariable
Set led = CimGetObject()
Set var = led.GetVariable("on")
var = Not var.GetValueAsNumber()
CimGetScreen.Refresh False
```

CimGetScreen (function)

Syntax `GefScreen = CimGetScreen ( )`

Description Returns the **`GefScreen`** Automation object representing the screen that the script is running in.

Status The extension can be used.

Example `CimGetScreen().Refresh True`

cimOleObj (constant)

Syntax `cimOleObj`

Description This is a private constant object that represents the OLE Automation interface to the ActiveX control that contains the script. Note a declaration will often be seen at the top of a script contained in an ActiveX control.

It will appear as:

```
 Private cimOleObj As Object
```

or as:

```
Private cimOleObj As ObjTypeLib.ObjType
```

Where **`ObjTypeLib`** is the name of the objects type library and **`ObjectType`** is the name of the object in the type library.

Status The extension can be used.

Type **`Object`**

Example `cimOleObj.Value = 10`

CimView (function)

Syntax `GefApplication = CimView ( )`

Description Returns the **`GefApplication`** Automation object representing the CimView application.

Status The extension can be used.

Example

```
Dim ViewApp As GefObjectModel.GefApplication
Dim currentScreen As GefObjectModel.GefScreen
Set ViewApp = CimView()
Set currentScreen = ViewApp.ActiveScreen
```

Obsolete Basic Extensions

CimAutoUpdateScreen (function)

Obsolete Replaced by a **`GefScreen.Refresh`**

Syntax **`Boolean = CimAutoUpdateScreen (`***AutoUpdate***`)`**

Description Turns *AutoUpdate* on when set to TRUE and off when set to FALSE.

Returns a Boolean representing the previous state of the Auto Update flag.

Comments The *AutoUpdate* parameter is a Boolean specifying the new state of the Auto Update flag.

AutoUpdate is set to TRUE by default when a script starts running. While Auto Update is `True`, if the value of a **`CimObjectVariable`** changes, the screen is synchronously updated, and any **`CimObjects`** that are animated by the variable are changed before the value set returns.

If *AutoUpdate* is set to FALSE, the screen is not updated as **`CimObjectVariables`** change, but if the screen is updated for another reason, the correct value will be shown. This is useful for setting many variables that you want to appear to change at the same time.

When *AutoUpdate* is set back to TRUE, the screen is immediately updated.

Example

```
Dim xposVar As CimObjectVariable
Dim yposVar As CimObjectVariable
Dim Obj As CimObject
Dim PrevState As Boolean
Set Obj = CimGetScriptOwner()
Set xposVar = Obj.GetVariable("xpos")
Set yposVar = Obj.GetVariable("ypos")
PrevState = CimAutoUpdateScreen(False)
xposVar = 10
yposVar = 20
PrevState = CimAutoUpdateScreen(PrevState)
```

CimEvent (object)

Obsolete Replaced by a **`GefEventContext`**

Overview Represents the event in CimView that caused the script to be run.

Example

```
Dim event As CimEvent
Set event = CimGetEvent()
```

CimEvent.GetMouseEvent (function)

Obsolete

Replaced by a **`GefEventContext`**

Syntax

`CimEvent.GetMouseEvent(`*xPos, yPos, mouseFlags***`)`**

Description

Retrieves information about the mouse. Returns a Boolean indicating if the mouse parameters retrieved are valid. This will only return TRUE if the event type is **`CIM_ET_MOUSE_DOWN`** or **`CIM_ET_MOUSE_UP`** or **`CIM_ET_WHILE_MOUSE_DOWN.`**

Comments

The *xPos* parameter is a **`Long`** passed **`ByRef`** that receives the x position of the mouse.

The *yPos* parameter is a **`Long`** passed **`ByRef`** that receives the y position of the mouse.

The *mouseFlags* parameter is a **`Long`** passed **`ByRef`** that receives the flags indicating which mouse button are down and the states of the shift and control keys. These states are indicated by using the **`And`** operator and the following constants.

For the left mouse button **`CIM_MF_LBUTTON.`**

For the right mouse button **`CIM_MF_RBUTTON.`**

For the shift key **`CIM_MF_SHIFT`**.

For the control key **`CIM_MF_CONTROL`**.

For the middle mouse button **`CIM_MF_MBUTTON.`**

Note the units for the coordinates of the mouse are 1/20 of a point. These coordinates are scaled by the zoom factor of the view, and the origin of the coordinate system is the lower left corner of the CimView document. The effect of this coordinate mapping is to supply coordinates that are constant relative to the objects in the document. For example, if there is a square in the document with its top left corner at *xPos* = 1000 and *yPos* = 3000 and the user clicks on the top left corner of the square the coordinates of the mouse will be reported as *xPos* = 1000 and *yPos* = 3000 regardless of the zoom factor and scrolled position of the view.

Example

```
Dim xVar As CimObjectVariable
Dim yVar As CimObjectVariable
Set xVar = cimOwnerObj.GetVariable("xVar")
Set yVar = cimOwnerObj.GetVariable("yVar")
Dim pState As Boolean
Dim x As Long
Dim y As Long
Dim f As Long
If cimEvent.GetMouseEvent(x, y, f) Then
  pState = CimAutoUpdateScreen(FALSE)
  xVar = x
  yVar = y
pState = CimAutoUpdateScreen(pState)
  If f And CIM_MF_CONTROL Then
    'The control key is down
    'So do some other stuff…
  End If
End If
```

CimEvent.GetOleParmName (function)

Obsolete

Replaced by a **`GefEventContext`**

Syntax

`CimEvent.GetOleParmName(`_parmIndex%_**`)`**

Description

Returns a String representing the name of a parameter from an ActiveX control event. This is only valid if the event type is **`CIM_ET_OLE_EVENT.`**

Comments

The *parmIndex%* parameter is an Integer specifying the index of the parameter as it was passed from the ActiveX control event. For example, if the control fires the event **`MouseDown(`**_xPos As Integer, yPos As Integer_**`)`** then *xPos* can be retrieved using a *parmIndex%* with the value 0, and *yPos* with the value 1.

Example

```
Dim Ev As CimEvent
Dim Var As Variant
Set Ev = CimGetEvent()
If Ev.Type = CIM_ET_OLE_EVENT Then
  Count% = Ev.OleParmsCount
  i% = 0
  xPosIndex% = -1
  While i% < Count% And xPosIndex = -1
    If Ev.GetOleParmName(i%) = "xPos" Then
      XposIndex% = Index%
    End If.
    i% = i% + 1
  Wend
End If
```

CimEvent.GetOleParm (function)

Obsolete Replaced by a **`GefEventContext`**

Syntax **`CimEvent.GetOleParm(`***parmIndex%***`)`**

`CimEvent.GetOleParm(`*parmName$***`)`**

Description Returns a Variant representing the value of a parameter from an ActiveX control event. This is only valid if the event type is **`CIM_ET_OLE_EVENT.`**

Comments The *parmIndex%* parameter is an **`Integer`** specifying the index of the parameter as it was passed from the ActiveX control event.

The *parmName$* parameter is a **`String`** specifying the name of the parameter as it was passed from the ActiveX control event. For example if the control fires the event **`MouseDown(`***xPos As Integer, yPos As Integer***`)`** then *xPos* will have the name xPos, and *yPos* will have the name yPos.

Example

```
Dim Ev As CimEvent
Dim Var As Variant
Set Ev = CimGetEvent()
If Ev.Type = CIM_ET_OLE_EVENT Then
  Count% = Ev.OleParmsCount
  Index% = 0
  While Index% < Count%
    Var = Ev.GetOleParm(Index%)
    'Do Stuff with the parameter.
    Index% = Index% + 1
  Wend
  x% = Ev.GetOleParm("xPos")
  y% = Ev.GetOleParm("yPos")
End If
```

CimEvent.OleParmsCount (read-only property)

Obsolete Replaced by a **`GefEventContext`**

Syntax **`CimEvent.OleParmsCount`**

Description Returns an Integer representing the number of parameters from an event fired from an ActiveX control. This is only valid if the event type is **`CIM_ET_OLE_EVENT.`**

Example

```
Dim Ev As CimEvent
Dim var As Variant
Set Ev = CimGetEvent()
If Ev.Type = CIM_ET_OLE_EVENT Then
  Count% = Ev.OleParmsCount
  Index% = 0
  While Index% < Count%
    var = Ev.GetOleParm(Index)
    'Do Stuff with the parameter.
  Wend
End If
```

CimEvent.TriggerObject (read-only property

Obsolete Replaced by a **GefEventContext**

Syntax **CimEvent.TriggerObject**

Description s the **CimObject** object for which the event was configured.

Example

```
Dim Obj As CimObject
Set Obj = CimGetEvent().TriggerObject
```

CimEvent.Type (read-only property)

Obsolete Replaced by a **GefEventContext**

Syntax **CimEvent.Type**

Description Returns an Integer representing the type of event.

Comments The type is one of the following values:

```
CIM_ET_NONE
CIM_ET_MOUSE_DOWN
CIM_ET_MOUSE_UP
CIM_ET_KEY_DOWN
CIM_ET_KEY_UP
CIM_ET_WHILE_MOUSE_DOWN
CIM_ET_WHILE_KEY_DOWN
CIM_ET_TIMED
CIM_ET_EXPRESSION_HIGH
CIM_ET_EXPRESSION_UPDATE
CIM_ET_SCREEN_OPEN
CIM_ET_SCREEN_CLOSE
CIM_ET_OLE_EVENT
```

Example

```
Dim Ev As CimEvent
Set Ev = CimGetEvent()
If Ev.Type = CIM_ET_SCREEN_OPEN Then
...
```

CimEvent.UserParameter (read-only property)

Obsolete Replaced by a **GefEventContext**

Syntax **CimEvent.UserParameter**)

Description Returns a String representing the parameter specified in the event during configuration.

Example

```
Dim UserVar As CimObjectVariable
Dim Obj As CimObject
Set Obj = CimGetScriptOwner()
userStr = cimEvent.UserParameter
Set UserVar = Obj.GetVariable(userStr)
```

CimGetEvent (function)

Obsolete Replaced by a **`GefEventContext`**

Syntax **`CimGetEvent()`**

Description Returns the **`CimEvent`** that caused the script to be run.

<u>**Example**</u>

```
Dim Ev As CimEvent
Set Ev = CimGetEvent()
```

CimGetRootObject (function)

Obsolete Replaced by **`CimGetScreen`**

Syntax **`CimGetRootObject()`**

Description Returns the **`CimObject`** representing the screen.

<u>**Example**</u>

```
Dim Obj As CimObject
Set Obj = CimGetRootObject()
```

CimGetScriptOwner (function)

Obsolete Replaced by **`CimGetObject`**

Syntax **`CimGetScriptOwner()`**

Description Returns the **`CimObject`** that owns the script.

<u>**Example**</u>

```
Dim Obj As CimObject
Set Obj = CimGetScriptOwner()
```

CimObject (object)

Obsolete Replaced by a **`GefObject`**

Description Represents a visual object on the screen.

<u>**Example**</u>

```
Dim Obj As CimObject
Set obj = CimGetEvent().TriggerObject
```

CimObject.Container (read-only property)

Obsolete Replaced by a **`GefObject`**

Syntax **`CimObject.Container`**

Description Returns a **`CimObject`** representing the container of this object.

<u>**Example**</u>

```
Sub ShowContainers
  Dim obj As CimObject
  Set obj = CimGetEvent().TriggerObject
  mymsg$ = ""
  While (Not obj Is Nothing)
    mymsg$ = obj.Name + " " + mymsg$
    Set obj = obj.Container
  Wend
  MsgBox mymsg$
End Sub
```

CimObject.GetObject (method)

Obsolete — Replaced by a **GefObject**

Syntax — **CimObject.GetObject(***index***)**

CimObject.GetObject(*name$***)**

Description — Returns a **CimObject** object representing the child object with the specified index or name.

Comments — The *index* parameter is an Integer specifying the index of the child object.

The *name$* parameter is a String specifying the name of the child object.

Example — This example loops through all the children of an object.

```
Dim Obj As CimObject
Dim Child As CimObject
Set Obj = CimGetScriptOwner()
Max% = Obj.ObjectCount - 1
For Index% = 0 To Max%
  Set Child = Obj.GetObject(Index%)
Next Index
```

This example gets the child object named "Tank10".

```
Dim Obj As CimObject
Dim Tank As CimObject
Set Obj = cimEvent.TriggerObject
Set Tank = Obj.GetObject("Tank10")
```

CimObject.GetVariable (method)

Obsolete Replaced by a `GefObject`

Syntax `CimObject.GetVariable(`*name$*`)`)

Description Returns a `CimObjectVariable` representing the named variable in the object or one of the object's containers.

Comments The *name$* parameter is a String containing the name of the variable. You can then set the variable to display a value or the current value of a Point ID.

Example

```
Dim xposVar As CimObjectVariable
Dim Obj as CimObject
Set Obj = CimGetScriptOwner
Set xposVar = Obj.GetVariable ("xvar")
xposVar = "TANK1"
```

CimObject.Name (read-only property)

Obsolete Replaced by a `GefObject`

Syntax `CimObject.Name`)

Description Returns a String representing the name of the object.

Example

```
Dim Obj As CimObject
Set Obj = CimGetScriptOwner()
If Obj.Name = "Tank1" Then
...
```

CimObject.ObjectCount (read-only property)

Obsolete Replaced by a `GefObject`

Syntax `CimObject.ObjectCount`

Description Returns an Integer representing the number of `CimObjects` this object contains.

Example

```
Dim Obj As CimObject
Dim Child As CimObject
Set Obj = CimGetScriptOwner()
Dim Max As Integer
Max = Obj.ObjectCount - 1
Dim Index As Integer
For Index = 0 To Max
  Set Child = Obj.GetObject(Index)
Next Index
```

CimObject.OleObject (read-only property)

Obsolete Replaced by a **GefObject**

Syntax **CimObject.OleObject**

Description Returns an Object representing the OLE Automation interface to an ActiveX control.

Example

```
Dim Gauge As CimObject
Dim RootObj As CimObject
Set RootObj = CimGetRootObject()
Set Gauge = RootObj.GetObject("FuelGauge")
Gauge.OleObject.NeedleValue = 10
```

CimObjectVariable (object)

Obsolete Replaced by a **GefObjectVariable**

Description Represents an object variable on a CimView screen.

Example

```
Dim rotorVar As CimObjectVariable
Dim Obj As CimObject
Set Obj = CimGetScriptOwner()
Set rotorVar = Obj.GetVariable("RotorNum")
```

CimObjectVariable.GetValueAsNumber (method)

Obsolete Replaced by a **GefObjectVariable**

Syntax **CimObjectVariable.GetValueAsNumber()**

Description Returns a Double representing the value of the variable.

Comments This method is more efficient than using the **Value** property, if you know the value is a number.

CimObjectVariable.GetValueAsString (method)

Obsolete Replaced by a **GefObjectVariable**

Syntax **CimObjectVariable.GetValueAsString()**

Description Returns a String representing the value of the variable.

CimObjectVariable.ID (read-only property)

Obsolete Replaced by a **GefObjectVariable**

Syntax **CimObjectVariable.ID**

Description Returns a String representing the name of the variable.

Example

```
...
If xposVar.ID = "TankSelector" Then
...
```

CimObjectVariable.Value (read/write property)

Obsolete	Replaced by a **`GefObjectVariable`**
Syntax	**`CimObjectVariable.Value`**
Description	Returns a Variant representing the value of the variable. However, the value is most commonly returned as a string.
Comments	This is the default property

Example	**`Dim oldValue As String`**
	`oldValue = xposVar.Value`
	`xposVar.Value = "TANK_LEVEL1"`
	Since this is the default property, the above can also be written as:
	`Dim oldValue As String`
	`oldValue = xposVar`
	`xposVar = "TANK_LEVEL1"`

CimOwnerObj (constant)

Obsolete	Replaced by **`CimGetObject`**
Syntax	**`cimOwnerObj`**
Description	This a constant object that represents the same CimObject as the object returned by **`CimGetScriptOwner()`**
Type	**`CimObject`**

Example	**`Dim var1 As CimObjectVariable`**
	`Set var1 = cimOwnerObj.GetVariable("var1")`

Taking Advantage of ActiveX Controls and OLE Objects

About ActiveX Controls

The ActiveX control, originally developed by Microsoft to support the creation of Internet-enabled applications, provides interactive controls within an application, on or off the Internet. ActiveX controls are at the forefront of software technology. Many vendors develop these controls.

As a CIMPLICITY HMI user, you now have access to this vast library of controls to use in CimView screens, and to supplement the CIMPLICITY HMI Symbol and SmartObject Library. When you incorporate ActiveX controls into a CimEdit screen, you greatly enhance the functionality and ease-of-use of your CimView screens. When you use ActiveX controls in conjunction with the CIMPLICITY HMI Web Gateway option, you have a powerful tool that allows users to interact with your CIMPLICITY HMI project across the Internet.

> ***ActiveX Controls*** allow different types of software objects to communicate, using standard interfaces. Developers create ActiveX controls, and you incorporate them into any software application that supports ActiveX controls. The software application acts as a container to "hold" an ActiveX control. It is up to you to configure the ActiveX control into the software application so that it provides the end-user with an easy, meaningful way to view or manipulate data.

ActiveX controls can be gauges, charts, displays, graphs, or any other object that allows a user to access the particular functionality of the object. There are literally hundreds, if not thousands, of ActiveX developers who have created thousands of different ActiveX controls. Some ActiveX controls are distributed at no cost, while others must be purchased. Once you acquire them, they are at your disposal when creating your CimEdit screens.

ActiveX Control Installation

Before you can use ActiveX controls in your CimEdit screen, they must be installed on your computer. Typically, when you download or purchase an ActiveX control from a vendor, you receive a setup or install file that must be run to install the ActiveX control. This executable program will take you through the steps necessary to successfully install the ActiveX control files on your hard drive and register the new control with your operating system.

As each vendor has its way of installing ActiveX controls, installation procedures will vary. Follow your vendor's installation instructions.

ActiveX Control Insertion on a CimEdit Screen

You can easily insert an ActiveX Control anywhere on a CimEdit screen.

To insert an ActiveX control on a CimEdit screen:

Method 1–Use the toolbar

Click the **OLE** button OLE on the toolbar.

Method 2–Use the menu bar

1. Click Tools on the menu bar.
2. Select OLE Object.

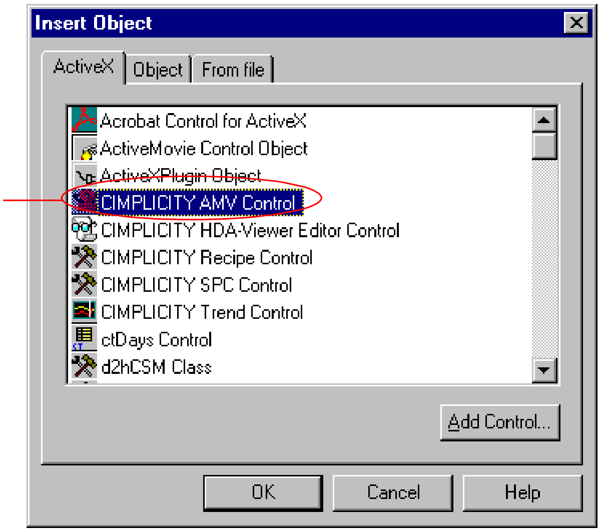
Your mouse pointer changes to into a bracket when you use either method.

┌

Continue from method 1 and 2

1. Move the bracket to the area of the screen where you want to place the control and click the mouse. The Insert Object dialog box opens.
2. Select the ActiveX tab to see the list of all ActiveX controls installed on your computer.

Select an ActiveX Control



3. Select an ActiveX control from the list.
4. Click **OK**. The selected ActiveX control is placed on your CimEdit screen.

Object Properties vs. ActiveX Control Properties

Every object, including ActiveX controls, used on a CimEdit screen has a set of Object Properties that tell CIMPLICITY HMI software how that particular object behaves in a CimView screen. ActiveX controls also have ActiveX control properties.

ActiveX control properties are custom properties that an ActiveX control may also have and that are unique to ActiveX controls.

This section describes the object and ActiveX control properties when they are applied to an ActiveX control.

Viewing an ActiveX Control's Standard Object Properties

You can view an ActiveX control's standard properties the same way you do with any object.

To view an ActiveX control's standard properties:

Method 1–Use the popup menu

1. Move the cursor over the object.
2. Click the right mouse button.
3. Select Properties from the popup menu.

Method 2–Use the menu bar

1. Select the control.
2. Click Edit on the menu bar.
3. Select Properties.

Method 3–Use the keyboard

1. Select the control.
2. Press **Alt+Enter**.

Result: The Object Properties dialog box opens when you use any method.

Note: The Object Properties dialog box that opens is the same dialog box you use for all standard CIMPLICITY objects.

The CIMPLICITY Object Properties dialog box lets you integrate the ActiveX control with a CIMPLICITY HMI project. This means that by changing CIMPLICITY object properties, you can make this ActiveX control *interact* with a CIMPLICITY project by displaying values, or by allowing a user to set points, open screens, etc.

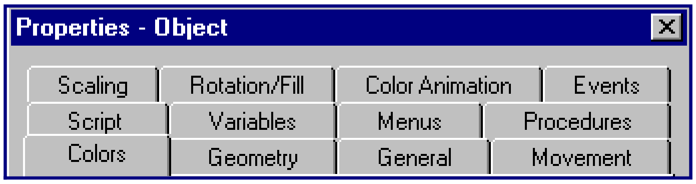
Viewing the ActiveX Control Properties

There are two possible ways to view an ActiveX control’s properties. Depending on the ActiveX control, one or both of these methods will work.

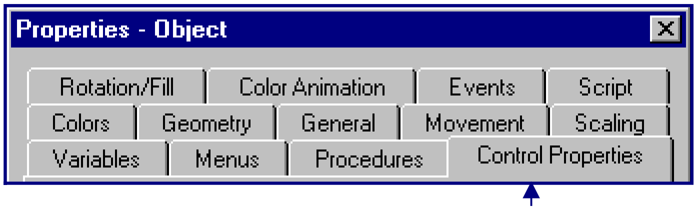
The properties for an ActiveX control can be viewed in one of two ways:

- On a separate Control Properties dialog box–basically separating ActiveX control properties from the standard object properties
- On a Control Properties tab in the Object Properties dialog box–usually allowing some integration of ActiveX control and object properties

If the ActiveX control's custom properties are available only in a separate dialog box, the menu tabs that appear in the Object Properties dialog box are the same as the tabs for any object.



If the ActiveX control's custom properties *are* available through the Object Properties dialog box, the Control Properties tab appears:



Tab for ActiveX control

Separate ActiveX Control Properties Dialog Box

If an ActiveX control has a separate Control Properties dialog box, the name of the ActiveX control appears on the windows popup menu or the Edit menu.

To open an ActiveX control Properties dialog box:

Method 1–Use the mouse

1. Move the mouse cursor over the object.
2. Click the right mouse button.

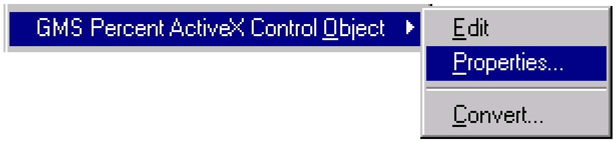
Method 2–Use the menu bar

1. Select the object.
2. Display the Edit menu.

Continue from Method 1 and 2

1. Move the mouse cursor over the ActiveX control name.
2. If the ActiveX control has a submenu, move the mouse cursor to the right to display the submenu.

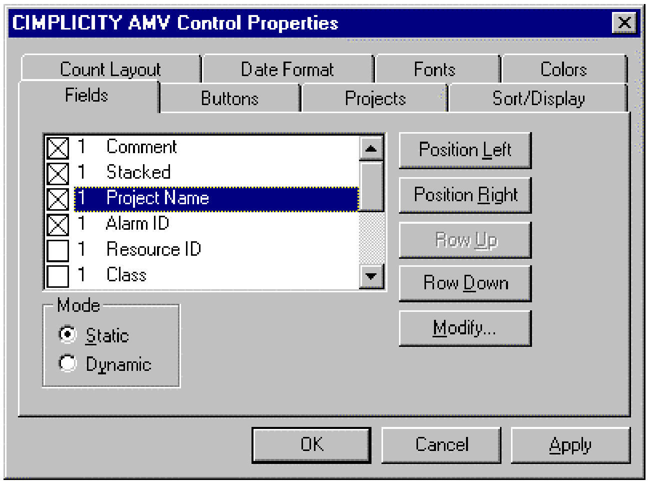
The menu item looks similar to this:



If the ActiveX control supports an independent properties dialog box, Properties... appears on the submenu.

3. Select Properties… to open the ActiveX Control Properties dialog box for this ActiveX control.

Note: Remember that the ActiveX Control Properties dialog box for each ActiveX control is different. The following shows you the dialog box for a CIMPLICITY AMV ActiveX control.



☒ 1 Comment
☒ 1 Stacked
☒ 1 Project Name
☒ 1 Alarm ID
□ 1 Resource ID
□ 1 Class

Mode
● Static
○ Dynamic

Use the ActiveX Control Properties dialog box to change the look and feel of the control. Depending on what options the developer of the control has allowed, you may be able to change a wide variety of properties for an ActiveX control, including colors, depth, fonts, sizes, and other properties. See the documentation that comes with the ActiveX control for detailed configuration information.

Control Properties Tab

If the ActiveX control properties can be integrated with the object's properties a Control Properties tab will appear on the Object Properties dialog box.

To view ActiveX properties in the object's standard Properties dialog box:

Method 1–Use the popup menu

1. Move the cursor over the object.
2. Press the right mouse button.
3. Select Properties from the windows popup menu.

Method 2–Use the menu bar

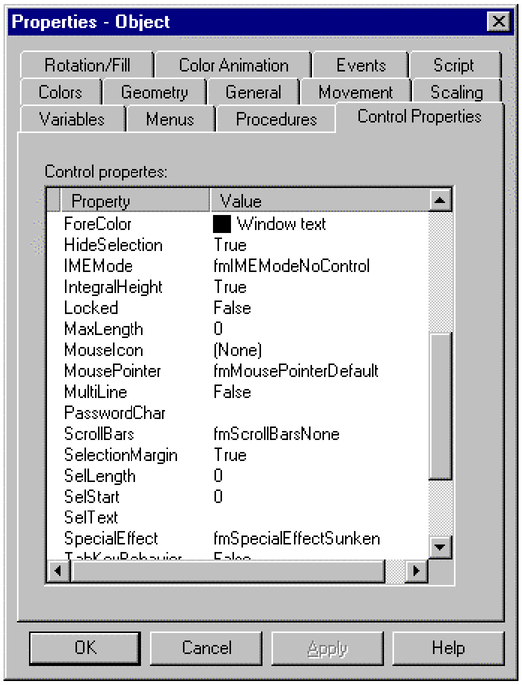
1. Select the control.
2. Click Edit on the menu bar.
3. Select Properties.

Method 3–Use the keyboard

1. Select the control.
2. Press **Alt+Enter**.

Result: If the control allows it, you will see a Control Properties tab in the Object Properties dialog box.

You can use the Control Properties tab in the control's Properties dialog box to change the appearance of the control. For example, the Control Properties for the Microsoft Forms 2.0 Textbox Control looks like this:



Control propertes:

Property	Value
ForeColor	■ Window text
HideSelection	True
IMEMode	fmIMEModeNoControl
IntegralHeight	True
Locked	False
MaxLength	0
MouseIcon	(None)
MousePointer	fmMousePointerDefault
MultiLine	False
PasswordChar	
ScrollBars	fmScrollBarsNone
SelectionMargin	True
SelLength	0
SelStart	0
SelText	
SpecialEffect	fmSpecialEffectSunken
TabKeyBehavior	False

ActiveX Controls and CIMPLICITY HMI Project Data

Given that there are thousands of ActiveX controls, there are several ways to use these controls to display and transmit CIMPLICITY HMI project information and point data.

CIMPLICITY HMI provides you with ActiveX controls that enable you to track and analyze detailed data pertaining to a project's points and alarms. CIMPLICITY HMI ActiveX controls that may be included with your CIMPLICITY HMI configuration include CIMPLICITY:

- AMV Control.
- HAD-Viewer Editor Control.
- Recipe Control.
- SPC Control.
- Trend Control.
- XY Plot Control.

Tip: Also take advantage of CIMPLICITY HMI's many SmartObjects, such as gauges, that enable you to quickly create and use tools for tracking project data, such as current point values. *See "SmartObject Inserted from the Object Explorer" in the "Creating a Preliminary Layout" chapter in this manual for details about inserting CIMPLICITY SmartObjects on a CimEdit screen.*

Configuring an ActiveX Trend Control: Example

This example displays how you can quickly configure a CIMPLICITY Trend chart using the CIMPLICITY Trend Control. The Trend chart will display the value of the **`TANK1`** point in the CimpDemo project. .

Note: The CIMPLICITY Trend control provides you with the tools to configure Trend charts that display detailed expression, logged and reference data. *See the CIMPLICITY Trend and XY Chart Operation Manual for detailed information about configuring the CIMPLICITY Trend Control.*

The steps for creating a simple Trend chart are:

Step 1. Insert the CIMPLICITY Trend Control in your CimEdit screen.

Step 2. Name the CIMPLICITY Trend control.

Step 3. Create a trend line.

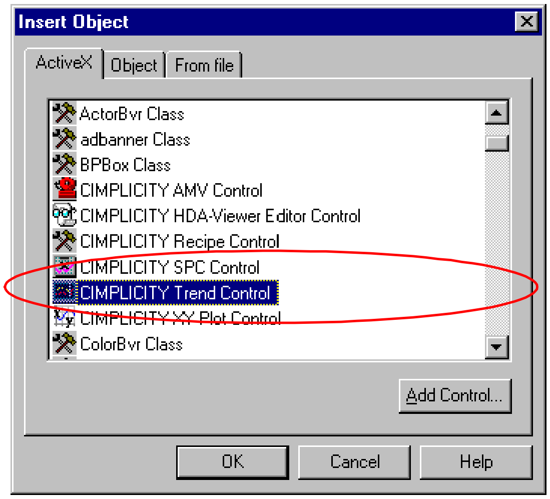
Step 4. Configure the Axes colors and font size.

Step 5. Configure the Legend font size.

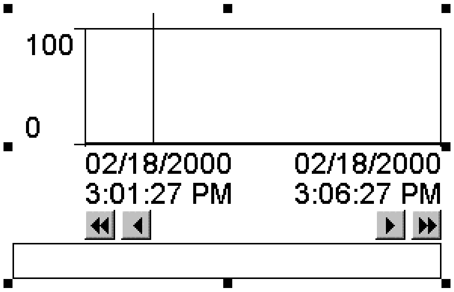
Step 6. Test the Trend control in CimView.

Step 1. Insert the CIMPLICITY Trend control in your CimEdit screen:

1. Click the **OLE** button OLE on the Toolbar.
2. Move the cursor to the spot on the CimEdit screen where you want to place the control and click the left mouse button.
3. Select the ActiveX tab in the Insert Object dialog box.
4. Select CIMPLICITY Trend Control from the list of controls.

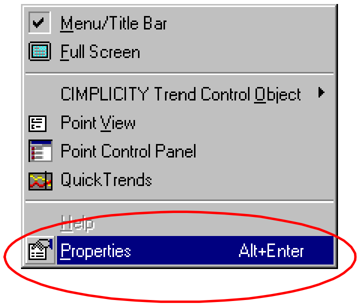


5. Click **OK** to install the control.



Step 2. Name the CIMPLICITY Trend control:

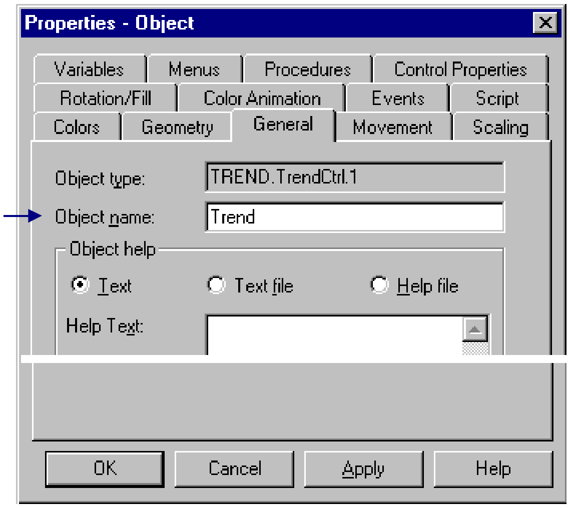
1. Click the right mouse button on the Trend chart.
2. Select Properties from the popup menu.



The Properties - Object dialog box opens.

3. Select the General tab.

4. Enter Trend in the Object name field.


Name the ActiveX control

Properties - Object

Object type: TREND.TrendCtrl.1

Object name: Trend

Object help: ● Text ○ Text file ○ Help file

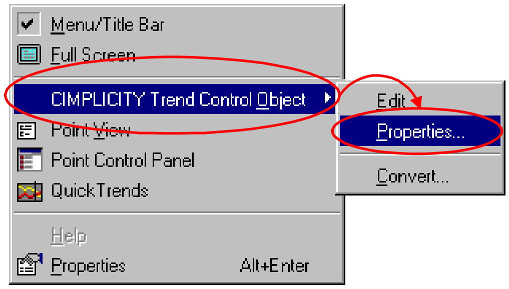
Help Text:

5. Click **OK**.

Result: The Properties – Object dialog box closes. The Trend control is named Trend.

Step 3. Create a trend line:

1. Click the right mouse button on the Trend chart.
2. Select CIMPLICITY Trend Control Object from the popup menu.
3. Select Properties from the extended menu.

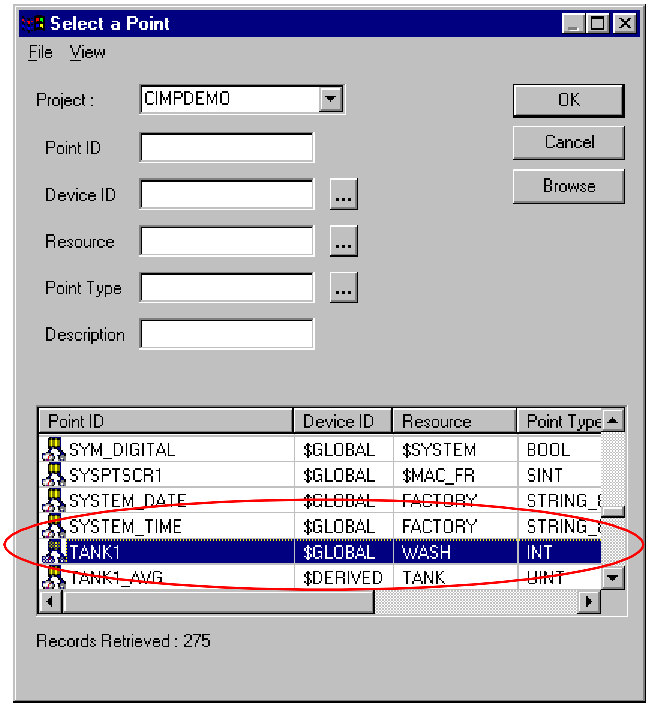


The CIMPLICITY Trend Control Properties dialog box opens.

4. Select the Lines tab.
5. Click the **Quick Lines** button .

The Select a Point browser opens.

6. Select Tank1.



Project : CIMPDEMO

Point ID

Device ID

Resource

Point Type

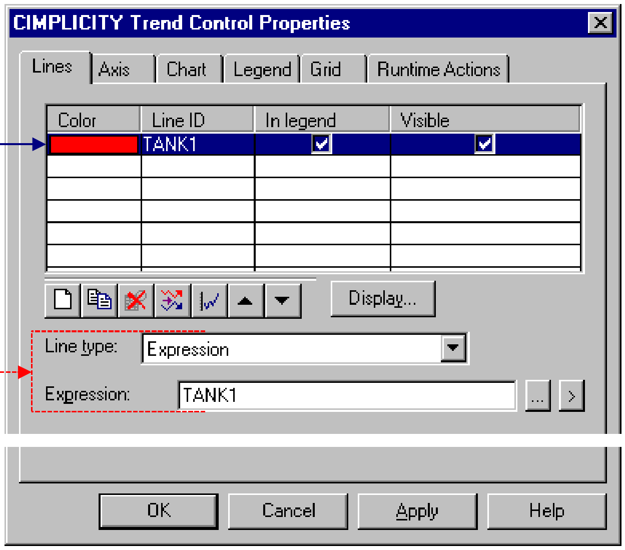
Description

Point ID	Device ID	Resource	Point Type
SYM_DIGITAL	$GLOBAL	$SYSTEM	BOOL
SYSPTSCR1	$GLOBAL	$MAC_FR	SINT
SYSTEM_DATE	$GLOBAL	FACTORY	STRING_
SYSTEM_TIME	$GLOBAL	FACTORY	STRING_
TANK1	$GLOBAL	WASH	INT
TANK1_AVG	$DERIVED	TANK	UINT

Records Retrieved : 275

7. Click **OK**.

The Lines tab displays the default configuration for the Quick Line.



Color	Line ID	In legend	Visible
🟥	TANK1	☑	☑

Line type: Expression

Expression: TANK1

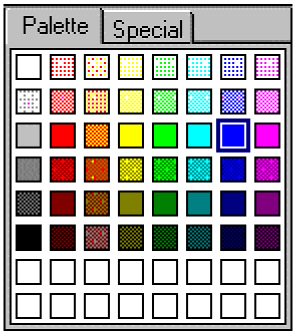
Line color

Tank 1 using Quick Line default Expression line type.

Step 4. Configure the Axes colors and font size:

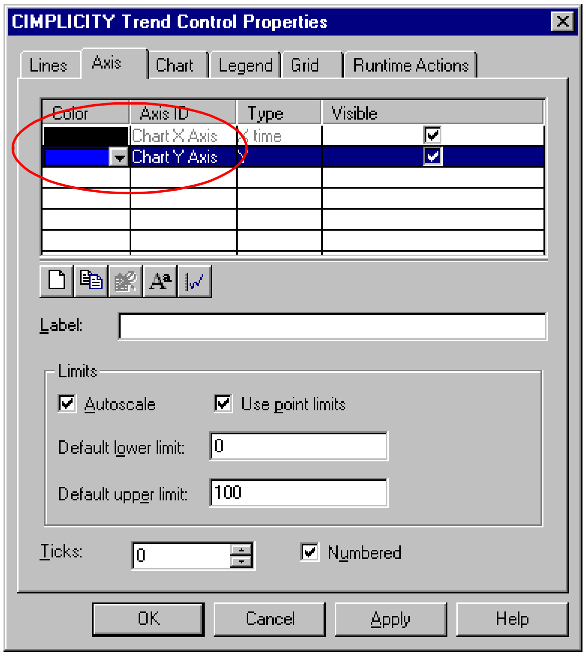
1. Select the Axis tab.
2. Select the Chart Y-axis.
3. Click the **Color Palette** button ▼.

   A Color palette appears.
4. Select the blue color.



The Axis tab appears with the:

- Chart X axis designated as black.
- Chart Y axis designated as blue.



Color	Axis ID	Type	Visible
■	Chart X Axis	X time	☑
■	Chart Y Axis	Y	☑

Label:

Limits

☑ Autoscale ☑ Use point limits

Default lower limit: 0

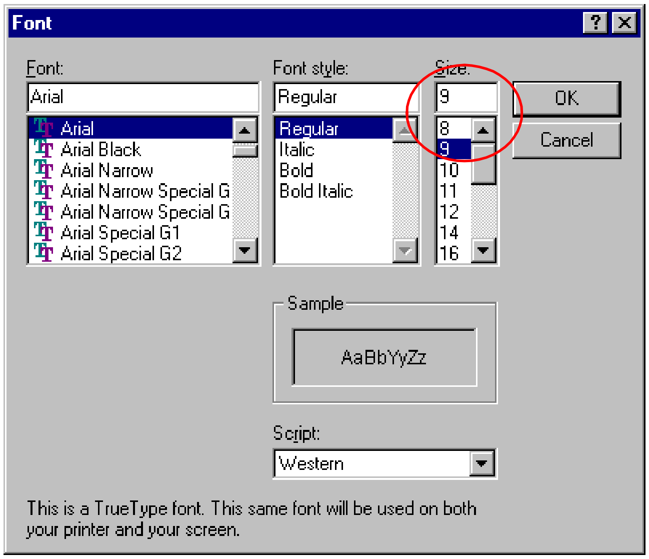
Default upper limit: 100

Ticks: 0 ☑ Numbered

2. Click the **Axes Font** button Aª.

   The Font dialog box opens.

3. Select 9 for the font size.



Font: Arial

Font style: Regular

Size: 9

Script: Western

This is a TrueType font. This same font will be used on both your printer and your screen.

4. Click **OK**.

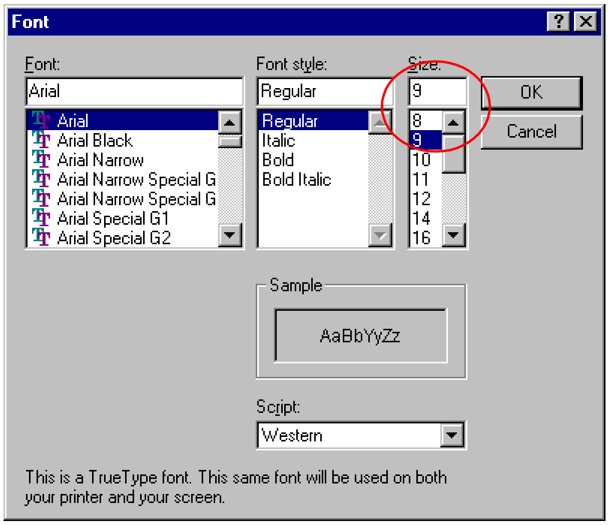
Result: The axes are configured, using the defaults for all other settings.

Step 5. Configure the Legend font size:

1. Select the Legend tab.
2. Click **Font**.

   The Font dialog box opens.

3. Select 9 for the font size.



Font: Arial

Font style: Regular

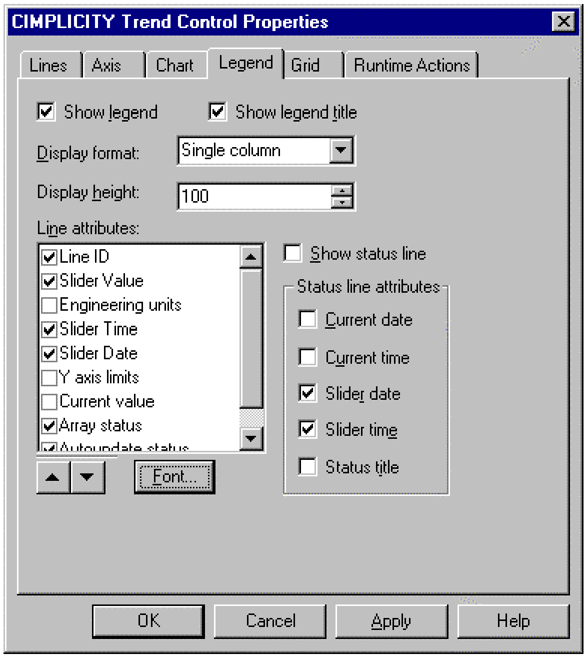
Size: 9

Script: Western

This is a TrueType font. This same font will be used on both your printer and your screen.

4. Click **OK**.

   The Legend is configured, using the defaults for all other settings.



CIMPLICITY Trend Control Properties

Lines | Axis | Chart | Legend | Grid | Runtime Actions

☑ Show legend ☑ Show legend title

Display format: Single column

Display height: 100

Line attributes:

- ☑ Line ID
- ☑ Slider Value
- ☐ Engineering units
- ☑ Slider Time
- ☑ Slider Date
- ☐ Y axis limits
- ☐ Current value
- ☑ Array status
- ☑ Autoupdate status

☐ Show status line

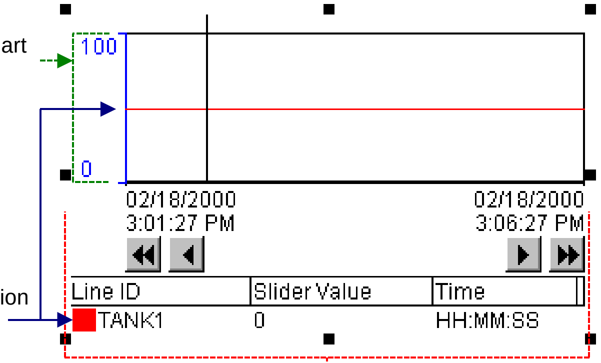
Status line attributes

- ☐ Current date
- ☐ Current time
- ☑ Slider date
- ☑ Slider time
- ☐ Status title

5. Click **OK** OK.

Result: The Trend chart appears reflecting your configuration.

CIMPLICITY Trend Control Displayed in CimEdit



Blue Chart Y axis

Red expression line

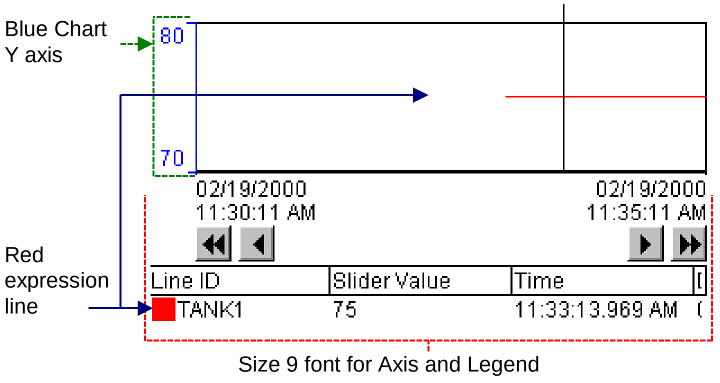
Size 9 font for Axis and Legend

Step 6. Test the Trend control in CimView:

Click the **Run** button .

Result: The Trend chart displays the Tank1 expression line in CimView.

CIMPLICITY Trend Control Displayed in CimView



Line ID	Slider Value	Time	[
🟥 TANK1	75	11:33:13.969 AM	(

Blue Chart Y axis

Red expression line

Size 9 font for Axis and Legend

Other OLE Objects

Exactly how you manipulate OLE Objects that you place in CimEdit depends on the object.

You can see what options are available through both CimEdit's Edit menu and the object's popup menu.

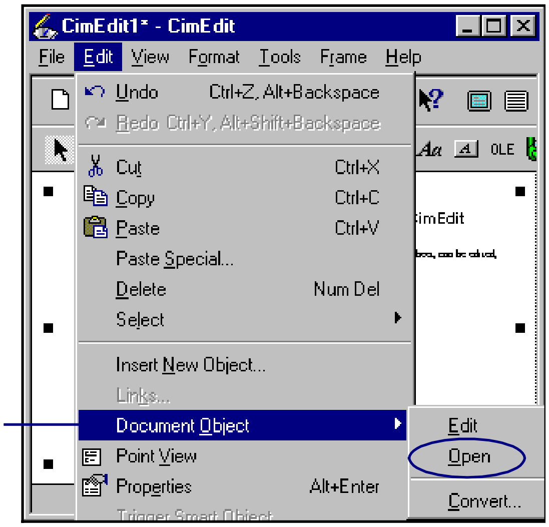
Opening an OLE Object that is inserted in a CimEdit Screen

If a placed object, for example, a Word document, can be opened, you can open it through CimEdit.

To open a selected special placed object:

Method 1: Use the menu bar

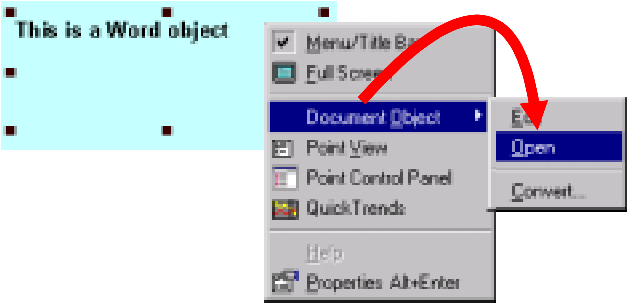
1. Click Edit on the CimEdit menu bar.
2. Select the object that appears on the menu.
3. Select Open from the extended menu.



Listing depends on the selected object

Method 2: Use the object's popup menu

1. Click the right mouse button over the selected object.
2. Select the object that appears on the popup menu.
3. Select Open from the extended menu.



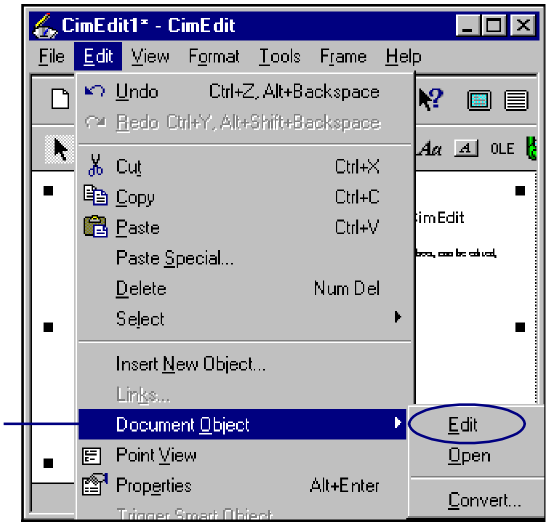
Editing an OLE Object that is inserted in a CimEdit Screen

If a placed object, for example, an Excel spreadsheet, can be edited, you can edit it in CimEdit.

To edit a selected special placed object:

Method 1: Use the menu bar

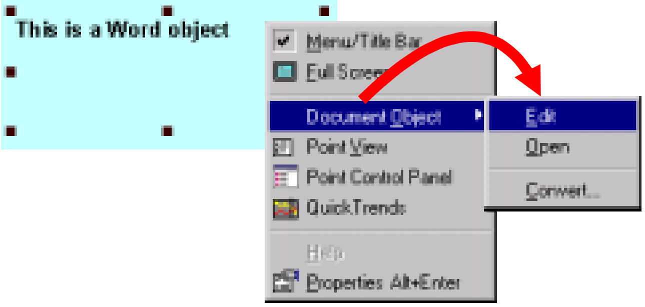
1. Click Edit on the CimEdit menu bar.
2. Select the object that appears on the menu.
3. Select Edit from the extended menu.



Listing depends on the selected object

Method 2: Use the object's popup menu

1. Click the right mouse button over the selected object.
2. Select the object that appears on the popup menu.
3. Select Edit from the extended menu.



Converting an OLE Object that is Inserted in a CimEdit Screen

You can convert many OLE Objects into types that are different from the original.

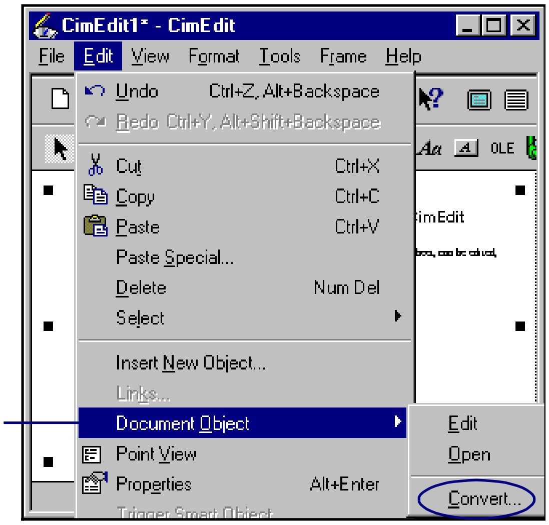
A common use of this feature is to take a dynamic object, for example a Word Document and convert the display into a graphic. When you do, you will no longer be able to edit it as text.

The types that are available depend on the selected object.

To convert a selected OLE Object that is placed in CimEdit:

Method 1: Use the menu bar

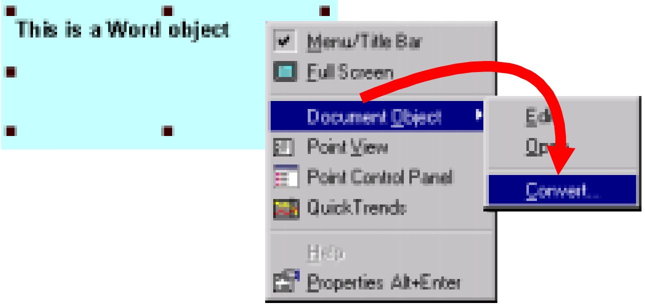
1. Click Edit on the CimEdit menu bar.
2. Select the object that appears on the menu.
3. Select Convert from the extended menu.



Listing depends on the selected object

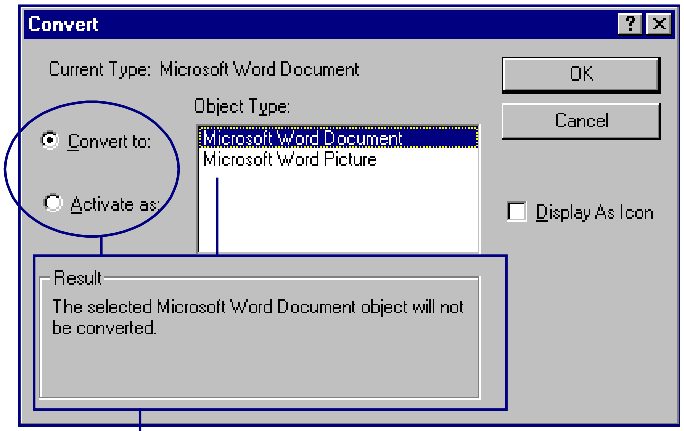
Method 2: Use the object's popup menu

1. Click the right mouse button over the selected object.
2. Select the object that appears on the popup menu.
3. Select Convert from the extended menu.



The Convert dialog box appears.

Convert (Object) Dialog Box: Word Document Example



Convert

Current Type: Microsoft Word Document

○ Convert to:

○ Activate as:

Object Type:

Microsoft Word Document
Microsoft Word Picture

Result
The selected Microsoft Word Document object will not be converted.

CimEdit provides you with the result of your decision

4. Select either:

Convert to	Convert the object to the selected type
Activate as	Activate the object as the selected type, but do not convert it

5. Select the type from the available options in the Object Type box. The options depend on the selected object.

6. Click **OK**.

Result: The object is converted according to your specifications.

Using Point by Address

About Point by Address in CimEdit

You can use points to reference data in CIMPLICITY HMI software. CimEdit and CimView support both fully qualified and unqualified point addressing..

In many circumstances, you may want to view raw device information without the overhead of configuring a CIMPLICITY HMI point. For example, you may want to view low-level diagnostic information, which is seldom used. You can do this through the use of Point by Address descriptions specified within a CimView screen file.

Point by Address descriptions provide a mechanism for storing the configuration for a CIMPLICITY HMI point as an inline macro within a CimView document. When a user opens the document in CimView, the point is dynamically created in memory. When the user closes the document, the point is dynamically removed from memory.

Point by Address Restrictions

Because Point by Address descriptions only exist while they are being viewed, they have the following restrictions:

- They may only be used in applications, like **CimView,** which directly display point data.
- They cannot be alarmed.
- They cannot be logged.
- They cannot be used in the configuration of another point.
- They cannot have engineering units conversion.
- In deciding whether to use a Point by Address description, also consider the following:
  - ➔ Because they are created and destroyed dynamically, Point by Address descriptions do not take up memory while they are not in use. However, there is a small delay during startup for these points to be created.
  - ➔ Because the configuration of a Point by Address is specified in the CimView document rather than the CIMPLICITY HMI project, changes to Point by Address configuration will be more complex.

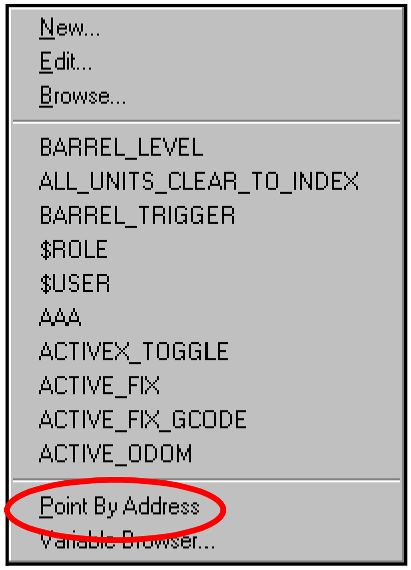
In general, a point that is frequently used or is referenced by multiple CimView screens should be configured as a CIMPLICITY HMI point. For diagnostic information, which is seldom used and is included in only one screen, a Point by Address is appropriate.

Point by Address Description Configuration

To simplify the configuration of Point by Address descriptions, a Point by Address dialog box has been added to the CIMPLICITY HMI base system.

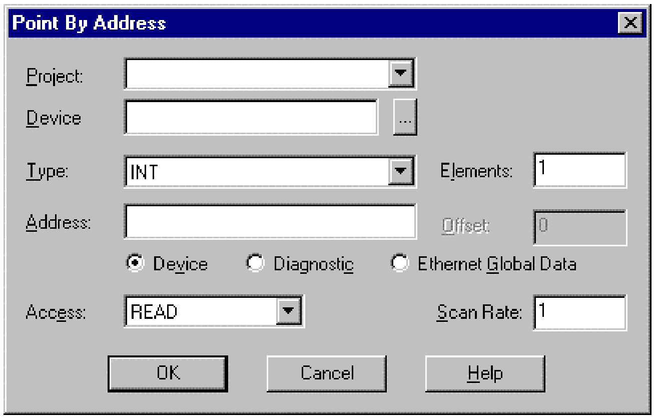
To use the Point by Address browser:

1. Display the Point ID popup menu in any CimEdit Point or Expression Edit fields.



2. Select **Point by Address**.

The Point by Address dialog box opens.



Project:

Device

Type: INT

Elements: 1

Address:

Offset: 0

● Device ○ Diagnostic ○ Ethernet Global Data

Access: READ

Scan Rate: 1

2. (Optional) Enter a remote Project name for fully qualified projects in the Project field.

3. Enter the CIMPLICITY HMI Device from which the data will be collected.

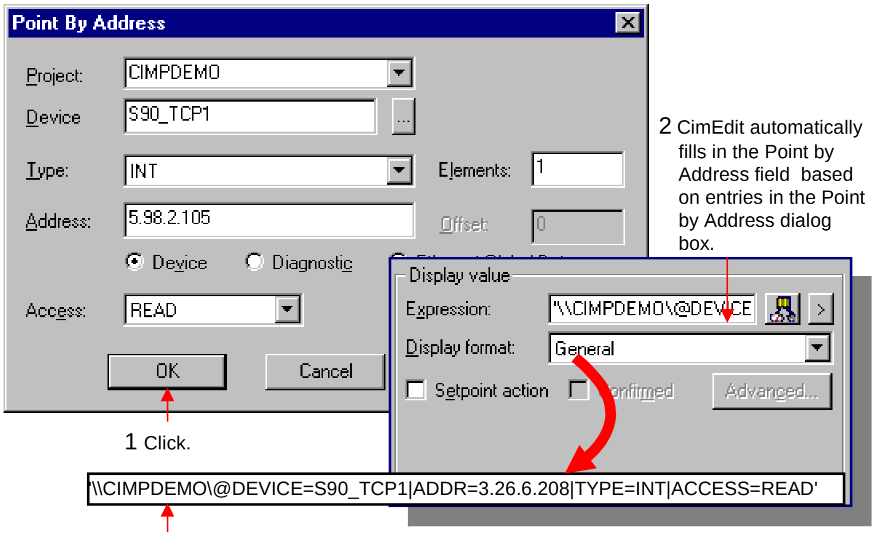
4. Enter the Type of CIMPLICITY HMI data to be collected (e.g., INT, BOOL, or REAL).

5. Enter the number of Elements to be retrieved. The default is one (1).

6. Enter a valid Device Address for the specified device

7. Check the appropriate radio button to select the data associated with the address:
   - Device
   - Diagnostic
   - Ethernet Global Data
8. Enter the bit Offset for the address if the point is a BOOL, BYTE, or WORD point. The default is 0.
9. Select for Access:
   - WRITE in the Access field if you plan to perform a setpoint.
   - READ, the default, for read only.
10. Enter the multiple of the device Scan rate at which the data will be collected. The default is 1.
11. Click **OK**.

Point by Address Dialog Box Entries appearing in a Properties Dialog Box Example



Point By Address

Project: CIMPDEMO

Device: S90_TCP1

Type: INT

Elements: 1

Address: 5.98.2.105

Offset: 0

● Device ○ Diagnostic

Access: READ

Display value

Expression: '\\CIMPDEMO\@DEVICE

Display format: General

□ Setpoint action □ Confirmed

2 CimEdit automatically fills in the Point by Address field based on entries in the Point by Address dialog box.

1 Click.

'\\CIMPDEMO\@DEVICE=S90_TCP1|ADDR=3.26.6.208|TYPE=INT|ACCESS=READ'

Entry in Expression field

Note: If the Point by Address entry is dimmed on the popup menu, it is not supported.

Point by Address Syntax

After you specify a Point by Address description using the Point by Address dialog box, a completed description will be returned to the Edit field. This description is specified as a string of keywords and values, proceeded by the at sign (@) and delimited by the vertical bar character (|). Point by Address descriptions may be fully qualified with a project name before the @ sign. The following are some sample Point by Address descriptions:

```
@DEVICE=MY_DEVICE|ADDR=%R100
\\MYPROJECT\DEVICE=DEV1|ADDR=%M100|TYPE=BOOL
```

The following keywords are supported for Point by Address descriptions:

DEVICE (required) — Any valid CIMPLICITY HMI device identifier

ADDR (required) — A valid device address for the specified device

TYPE (optional) — Any valid CIMPLICITY HMI point type. If you do not use this keyword, the default is INT.

SCAN (optional) — Multiple of the device scan rate at which the data will be collected. If you do not use this keyword, the default is one (1).

OFFSET (optional) — Bit offset for the address of BOOL, BYTE, or WORD points. If you do not use this keyword, the default is zero (0).

ACCESS (optional) — Either READ or WRITE. If you do not use this keyword, the default is READ.

ELEM (optional) — The number of elements (for an array). If you do not use this keyword, the default is one (1).

ORIGIN (optional) — The point's origin - use one of the following:

- DEV for a device point
- DIA for a diagnostic point
- ALW for an Ethernet Global Data point

If you do not use this keyword, the default is DEV.

The keywords may be specified in any order, but the required keywords must be included. Thus, the following are acceptable Point by Address descriptions:

```
@TYPE=BOOL|DEVICE=DEV03|ADDR=%R100|OFFSET=3|ELEM=4

@ADDR=%R100|DEVICE=DEV04|TYPE=REAL|SCAN=4|ACCESS=WRITE

@DEVICE=DEV05|ADDR=%M100
```

However, the following are *not* acceptable Point by Address descriptions:

@ADDR=%R100|TYPE=INT	(no device specified)
@DEVICE=MYDEV	(no device address specified)
DEVICE=MYDEV|ADDR=%R100	(missing @ sign)
@DEVICE=DEV99|ADDR=%R1|OFFSET=4	(integer point types cannot have a device address offset)

Within a point expression, Point by Address descriptors must be quoted; thus, you could display the sum of two registers in CimView:

```
'@DEVICE=MYDEV|ADDR=%R10' + '@DEVICE=MYDEV|ADDR=%R11'
```

Point by Address Security

Because the Point by Address feature could potentially give users complete access to any portion of your device memory, this feature is protected by a special privilege. Users who are assigned roles that have the Point by Address privilege disabled will be unable to read or write Point by Address data.

You may also use the CIMPLICITY HMI Setpoint Security feature to enforce read access on Point by Address data. For this purpose, the resource used will be the resource of the CIMPLICITY HMI device from which the Point by Address is collected.

Monitoring Point Attributes

About Point Attributes

The Point Attributes feature lets a user monitor attributes of configured points through CimView. Configuring point attributes is as easy as configuring any expression in CimEdit.

To configure a point attribute in CimEdit:

1. Select or create an object to which the point attribute will be applied.
2. Open the object's Properties dialog box.
3. Click the **Edit Expression** button ... next to the Expression field that applies to the object's runtime behavior.

   The Edit Expression dialog box opens.
4. Enter the Point ID and attribute you want to display using the following syntax.

   Review

   '<*POINT_ID***>.<***ATTRIBUTE_ID***>'**

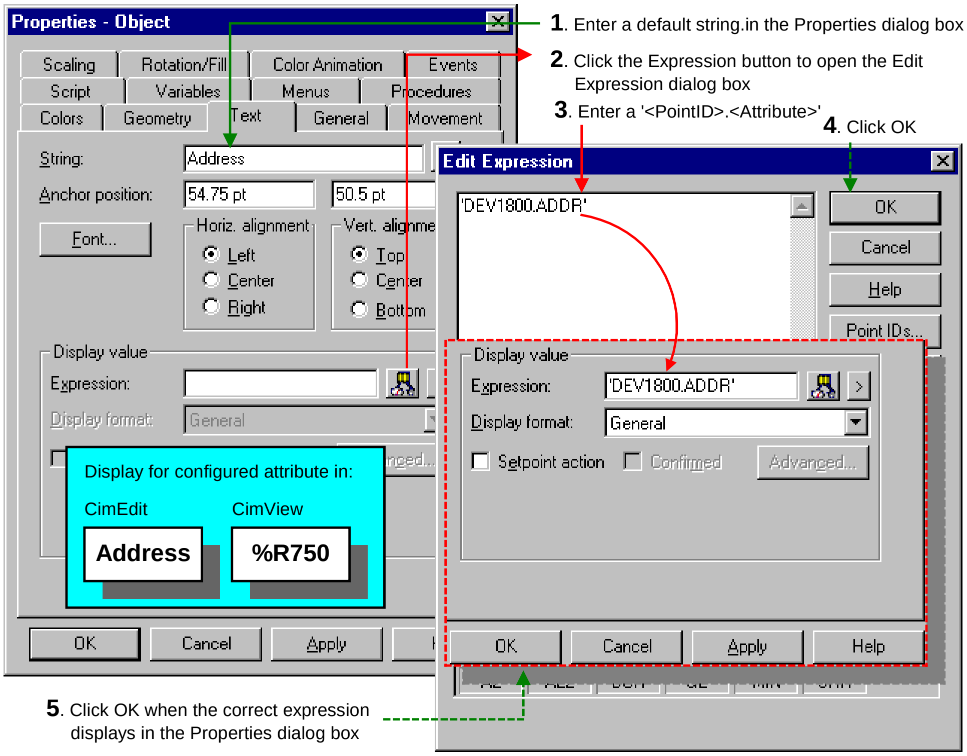
   where

   <*POINT_ID***>** is the Point ID of any configured point

   <*ATTRIBUTE_ID***>** is one of the attributes given in the table below.

Important: You *must* enclose the syntax in single quotes, because the '.' character is a special character.

Example: Point Attribute in an Expression for CimView



String: Address

Anchor position: 54.75 pt 50.5 pt

Horiz. alignment: ● Left ○ Center ○ Right

Vert. alignment: ● Top ○ Center ○ Bottom

Display value — Expression: (empty); Display format: General

Display for configured attribute in:

CimEdit	CimView
Address	%R750

Edit Expression: 'DEV1800.ADDR'

Display value — Expression: 'DEV1800.ADDR'; Display format: General; □ Setpoint action □ Confirmed Advanced...

1. Enter a default string.in the Properties dialog box
2. Click the Expression button to open the Edit Expression dialog box
3. Enter a '<PointID>.<Attribute>'
4. Click OK
5. Click OK when the correct expression displays in the Properties dialog box

Guidelines for point attribute configuration:

- The list of attributes in this chapter specifies the type of value that each attribute returns, e.g. integer, character. Use the basic syntax to return the value, as specified.

  Examples

  `'GEF_DEMO_PT.DESCRIPTION'`

  `'GEF_DEMO_PT.ALARM_HIGH'`

- You can force an expression to return a numeric value, if the value is a number but the attribute is listed as returning a character. You use the operator **VAL** to do this.

  Example

  `VAL('DEV1750.ALARM_HIGH')+VAL(DEV1900.ALARM_HIGH')`

- Some of the attributes are specific to points of a particular type. Valid point types, which are specified in the attribute list, are:

  ➔ All (point types)

  ➔ Device

  ➔ Derived (Virtual)

  ➔ Global (Virtual)

- All field names and enumerated data are case insensitive.

Appendix A - CimEdit Text File Syntax

Text File Format Syntax

The text file you create with the **/converttoctx** command line option has a defined syntax. When the text file is created, the file begins with <TextFileFormat>. Tokens, except for **"("** and **")"** should be delimited by whitespace.

Special notations used in the BNF Description include:

- <*non-terminals*> are displayed in italic type and enclosed with angle brackets
- **Terminals** are displayed in bold face type. Terminals are case insensitive. Terminals consisting of a single character are enclosed in quotation marks.
- <alternative> | <items> are separated by a vertical bar
- [<optional-items>] are displayed in square brackets.
- {<repetitive-items>}* are displayed in curly brackets. An asterisk (*) following the brackets indicates the item may appear 0 or more times. A plus sign (+) following the brackets indicates the item may appear 1 or more times.

BNF Syntax

The following elements define the BNF syntax.

```
<AnyAction> ::=                    <GmmiFileOpenAction>
                                   | <GmmiPrevScreenAction>
                                   | <GmmiHomeScreenAction>
                                   | <GmmiFileCloseAction>
                                   | <GmmiExecAction>
                                   | <GmmiAbsoluteSetpointAction>
                                   | <GmmiInvokeDispMethodAction>
                                   | <GmmiRelativeSetpointAction>
                                   | <GmmiRampSetpointAction>
                                   | <GmmiVariableSetpointAction>
                                   | <GmmiToggleSetpointAction>
                                   | <GmmiInvokeScriptAction>
                                   | <GmmiVariableAssignAction>
                                   | <GmmiPrintScreenAction>

<AnyAttributeAnim> ::=              <GmmiFillAnim>
                                   | <GmmiExprValueAnnun>
                                   | <GmmiDefaultAnnun>
                                   | <GmmiExprAnnun>
                                   | <GmmiValueAnim>
                                   | <GmmiVisibilityAnim>

<AnyEventList> ::=                 <KeyDownEventList>
                                   | <KeyUpEventList>
                                   | <OleEventList>
                                   | <WhileKeyDownEventList>
                                   | <TimedEventList>
                                   | <ExprEventList>

<AnyObject> ::=                    <GmmiLineObject>
                                   | <GmmiRectShapeObject>
                                   | <GmmiEllipseShapeObject>
                                   | <GmmiTextObject>
                                   | <GmmiGroupObject>
                                   | <GmmiOleObject>
                                   | <GmmiTextButtonObject>
                                   | <GmmiArcObject>
                                   | <GmmiFAContainerObject>
                                   | <GmmiFAFrameObject>
```

Note: a <*GmmiFAFrameObject*> can only appear in a <*GmmiFAContainerObject*>

<AnyPositionAnim> ::= *<GmmiHorizMoveAnim>*
| *<GmmiVertMoveAnim>*
| *<GmmiRotateAnim>*
| *<GmmiHorizScaleAnim>*
| *<GmmiVertScaleAnim>*

<AnySingleEvent> ::= *<GmmiMouseUpEvent>*
| *<GmmiMouseDownEvent>*
| *<GmmiWhileMouseDownEvent>*
| *<GmmiScreenOpenEvent>*
| *<GmmiScreenCloseEvent>*

<AttributeAnimationTable> ::= **"(" GmmiOptionTable**
{*<AnyAttributeAnim>*}+ **")"**

<Bool> ::= *<number>*

. Zero means false; non-zero means true

<Empty> ::=

This non-terminal is used for emphasis to designate that nothing should appear.

<EventOptionTable> ::= **"(" GmmiOptionTable**
{*<AnySingleEvent>*}*
{*<AnyEventList>*}* **")"**

<ExecCond> ::= **"(" ExecCond** *<expression.string>*
<message.string> **")"**

<ExprEventList> ::= **"(" GmmiOptionTable**
{*<GmmiExprHighEvent>* |
<GmmiExprUpdateEvent> }+ **")"**

<FillMode> ::= *<mode.number>*

Where *mode* is one of:

0	NoFill
1	From Bottom
2	From Top
3	From Left
4	From Right

<*GmmiAbsoluteSetpointAction*> ::= **"(" GmmiAbsoluteSetpointAction** <*GmmiSetpointAction*> <*PointValue*> **")"**

<*GmmiAction*> ::= <*flags.number*>

Valid *flags* are:

0x01	Confirm

<*GmmiActionAnim*> ::= <*GmmiExprAnim*> <*flags.number*> <*ExecCond*>

Valid *flags* are:

0x02	Has Action (slider setpoint or in-place edit setpoint)
0x04	Confirmed

<*GmmiActionList*> ::= **"(" GmmiActionList** {<*AnyAction*>*} **")"**

<*GmmiAnnunOptionTable*> ::= **"(" GmmiOptionTable** [<*GmmiColorAnnunAttr*>] [<*GmmiTextAnnunAttr*>] [<*GmmiBlinkAnnunAttr*>] [<*GmmiInteriorAnnunAttr*>] [<*GmmiBorderAnnunAttr*>] [<*GmmiFontAnnunAttr*>]**")"**

<*GmmiArcObject*> ::= **"(" GmmiArcObject** <*GmmiGraphicObject*> <*GRArc*> **")"**

<*GmmiBackdrop*> ::= **"(" GmmiBackdrop** <*border.GRBorderAttr*> <*interior.GRInteriorAttr*> **")"**

<*GmmiBlink*> ::= **"(" GmmiBlink** <*rate.number*> <*interior.GRInteriorAttr*> <*fillInterior.GRInteriorAttr*> <*border.GRBorderAttr*> **")"**

<*GmmiBlinkAnnunAttr*> ::= **"(" GmmiBlinkAnnunAttr ")"**

<*GmmiBorderAnnunAttr*> ::= **"(" GmmiBorderAnnunAttr** <*flags.number*> <*line.GRBorderAttr*> **")"**

Valid *flags* are:

0x0001	Ignore line style
0x0002	Ignore line color
0x0004	Ignore line width

<*GmmiButtonObject*> ::= <*GmmiGraphicObject*>

<*GmmiColorAnnunAttr*> ::= **"(" GmmiColorAnnunAttr** <*color.GRColorAttr*> **")"**

<*GmmiContainer*> ::= **"(" GmmiContainerObject** <*GmmiObject*> **"(" GmmiObjectPtrList** {<*AnyObject*>}* **")"** <*flags.number*> [<*overrideInterior.GRInteriorAttr*>] [<*overrideBorder.GRBorderAttr*>] [<*overrideFont.GRFontAttr*>] <*GmmiBackdrop*> **")"**

<*GmmiDefaultAnnun*> ::= **"(" GmmiDefaultAnnun** <*pointID.string*> <*element.number*> <*type.number*> **")"**

Where *type* is 0 for Boolean points and 1 for numeric points.

<*GmmiDocument*> ::= **"(" GmmiDocumentObject** <*GmmiContainer*> **")"**

<*GmmiEllipseShapeObject*> ::= **"(" GmmiEllipseShapeObject** <*GmmiGraphicObject*> <*GRSimpleRect*> **")"**

<GmmiEvent> ::= **"(" GmmiEvent** <*actionFlags.number*> <*procedureName.string*> | <*GmmiInvokeScriptAction*> <*userParameter.string*> **")"**

Valid *actionFlags* are:

1	Call procedure name
2	Invoke script

<*GmmiExecAction*> ::= **"(" GmmiExecAction** <*GmmiAction*>
<*flags.number*> <*command.string*>
<*directory.string*> <*arguments.string*>
<*confirmMsg.string*> **")"**

Valid *flags* are:

0x01	Minimize

<*GmmiExpr*> ::= **"(" GmmiExpr** <*expression.string*> **")"**

<*GmmiExprAnim*> ::= **"(" GmmiExprAnim** <*flags.number*>
[<*expr.string*>] [<*minValue.number*>
<*maxValue.number*>] **")"**

Valid *flags* are:

0x01	Use configured limits (determines if limits appear)
0x02	Has expression (determines if expression appears)

<*GmmiExprAnnun*> ::= **"(" GmmiExprAnnun**
<*count.number*>
{<*GmmiExprAnnunElement*> }* **")"**

There must be exactly *count* <*GmmiExprAnnunElement*> entries.

<*GmmiExprAnnunElement*> ::= **"(" GmmiExprAnnunElement**
<*GmmiExprAnim*>
<*GmmiAnnunOptionTable*> **")"**

<*GmmiExprEvent*> ::= **"(" GmmiExprEvent** <*GmmiEvent*>
<*expr.GmmiExpr*> **")"**

<*GmmiExprHighEvent*> ::= **"(" GmmiExprHightEvent**
<*GmmiExprEvent*> **")"**

<*GmmiExprUpdateEvent*> ::= **"(" GmmiExprUpdateEvent**
<*GmmiExprEvent*> **")"**

<*GmmiExprValueAnnun*> ::= **"(" GmmiExprValueAnnun**
<*GmmiExprAnim*> **")"**

<*GmmiFAContainerObject*> ::= **"(" GmmiFAContainerObject**
<*GmmiContainer*> <*FillMode*>
<*fillInterior.GRInteriorAttr*> **")"**

Note: A *GmmiFAContainerObject* only contains *GmmiFAFrameObjects*

<GmmiFAFrameObject> ::= **"(" GmmiFAFrameObject** *<GmmiContainer> <frameSelector.GmmiExpr> <FillMode> <fillInterior.GRInteriorAttr>* **")"**

<GmmiFileCloseAction> ::= **"(" GmmiFileCloseAction** *<GmmiAction>* **")"**

<GmmiFileOpenAction> ::= **"(" GmmiFileOpenAction** *<GmmiAction> <pathname.string> <flags.number> <position.Point> <zoom.number> <project.string>* **")"**

Valid *flags* are

0x01	Open screen action (rather than overlay screen action)
0x02	Captive

<GmmiFillAnim> ::= **"(" GmmiFillAnim** *<GmmiExprAnim>* **")"**

<GmmiFontAnnunAttr> ::= **"(" GmmiFontAnnunAttr***<flags.number> <font.GRFontAttr>***")"**

Valid *flags* are:

0x0001	Ignore font name
0x0002	Ignore font style
0x0004	Ignore font size
0x0008	Ignore font strikeout
0x0010	Ignore font underline
0x0020	Ignore font script

<GmmiGraphicObject> ::= *<GmmiObject>*

<GmmiGroupObject> ::= **"(" GmmiGroupObject** *<GmmiContainer> <FillMode> <fillInterior.GRInteriorAttr>* **")"**

<GmmiHomeScreenAction> ::= **"(" GmmiHomeScreenAction** *<GmmiAction>* **")"**

<GmmiHorizMoveAnim> ::= **"(" GmmiHorizMoveAnim** *<GmmiMoveAnim>* **")"**

<GmmiHorizScaleAnim> ::= **"(" GmmiHorizScaleAnim** *<GmmiScaleAnim>* **")"**

<GmmiInteriorAnnunAttr> ::= **"(" GmmiInteriorAnnunAttr** *<flags.number> <fill.GRInteriorAttr>* **")"**

Valid *flags* are:

0x0001	Ignore fill style
0x0002	Ignore fill color1
0x0004	Ignore fill color2
0x0008	Ignore fill pattern
0x0010	Ignore whether one color or two color gradient shading
0x0020	Ignore number of gradient shades
0x0040	Ignore gradient shade style
0x0080	Ignore gradient shade variant

<GmmiInvokeDispMethodAction> ::= **"(" GmmiInvokeDispMethodAction** *<GmmiAction> <objectName.string> <methodName.string> <GmmiParameterBlock>* **")"**

<GmmiInvokeScriptAction> ::= **"(" GmmiInvokeScriptAction** *<GmmiAction> <objectName.string> <scriptEntryPointName.string> <GmmiParameterBlock>* **")"**

<GmmiKeyDownEvent> ::= **"(" GmmiKeyDownEvent** *<GmmiKeyEvent>***")"**

<GmmiKeyEvent> ::= **"(" GmmiKeyEvent** *<GmmiEvent> <keyCode.number>* **")"**

<GmmiKeyUpEvent> ::= **"(" GmmiKeyUpEvent** *<GmmiKeyEvent>* **")"**

<GmmiLineObject> ::= **"(" GmmiLineObject** *<GmmiGraphicObject> <GRPolyLine>* **")"**

<*GmmiMethodParam*> ::= <*paramType.number*> <*GmmiExpr*>

Where *paramType* is one of:

0 Empty parameter

1 Input parameter

2 Output parameter: A set-point will be performed on a point.

3 Method result: A set-point will be performed on a point.

<*GmmiMouseDownEvent*> ::= **"(" GmmiMouseDownEvent** <*GmmiEvent*> **")"**

<*GmmiMouseUpEvent*> ::= **"(" GmmiMouseUpEvent** <*GmmiEvent*> **")"**

<*GmmiMoveAnim*> ::= <*GmmiActionAnim*> <*offset.number*>

Valid *flags* are:

0x02	Slider Animation
0x04	Confirm Silder

<*GmmiObject*> ::= **"(" GmmiObject** <*name.string*> <*flags.number*> [<*GmmiBlink*>] <*Help*> [<*ToplevelDocumentPO*>] <*RootOptionTable*> <*GmmiTabOrder*>**")"**

The *ToplevelDocumentPO* data must be present if and only if this object is a toplevel document.

<GmmiOleEvent> ::= **"(" GmmiOleEvent** <*GmmiEvent*> <*eventName.string*> **")"**

<*GmmiOleObject*> ::= **"(" GmmiOleObject** <*GmmiGraphicObject*> <*GROleGraphic*> **")"**

<GmmiParameterBlock>::= **"(" GmmiParameterBlock** <*countParams.number*> {<*GmmiMethodParam*>}* **")"**

<*GmmiPoint*> ::= **"(" GmmiPoint** <pointID.*string*> <*PointAttr*> **")"**

<*GmmiPointMap*> ::= **"(" GmmiPointMap** {<*GmmiPoint*>}* **")"**

<GmmiPrevScreenAction> ::= **"(" GmmiPrevScreenAction** *<GmmiAction>* **")"**

<GmmiPrintScreenAction> ::= **"(" GmmiPrintScreenAction** *<GmmiAction>* **")"**

<GmmiProcedure> ::= **"(" GmmiProcedure** *<name.string> <description.string> <procFlags.number> <confMsg.string> <successMsg.string> <failureMsg.string> <execFlags.number> <GmmiActionList>* **")"**

Where *procFlags* is:

0x01	Halt On Error

Where *execFlags* is one of:

0x01	Always Confirm
0x02	Never Confirm

<GmmiProcedureMap> ::= **"(" GmmiProcedureMap** *{<GmmiProcedure>}** **")"**

<GmmiRampSetpointAction> ::= **"(" GmmiRampSetpointAction** *<GmmiRelativeSetpointAction> <altValue.number> <flags.number>* **")"**

Valid *flags* are:

0x01	Allow direct edit of value

<GmmiRectShapeObject> ::= **"(" GmmiRectShapeObject** *<GmmiGraphicObject> <GRSimpleRect>* **")"**

<GmmiRelativeSetpointAction> ::= **"(" GmmiRelativeSetpointAction** *<GmmiSetpointAction> <value.number>* **")"**

<GmmiRotateAnim> ::= **"(" GmmiRotateAnim** *<GmmiExprAnim> <centerOffset.Point> <minAngle.number> <maxAngle.number>* **")"**

<*GmmiScaleAnim*> ::= <*GmmiExprAnim*> <*scaleOrigin.number*> <*scaleFactor.number*>

Where *ScaleOrigin* is one of:

0	bottom for vertical, left for horizontal
1	center
2	top for vertical, right for horizontal

<*GmmiScreenOpenEvent*> ::= **"(" GmmiScreenOpenEvent** <*GmmiEvent*> **")"**

<*GmmiScreenCloseEvent*> ::= **"(" GmmiScreenCloseEvent** <*GmmiEvent*> **")"**

<*GmmiScript*> ::= **"(" GmmiScript** <*string*> **")"**

<*GmmiSetpointAction*> ::= **"(" GmmiSetpointAction** <*GmmiAction*> <*pointID.string*> <*element.number*> <*flags.number*> **")"**

Valid *flags* are:

0x01	Point not validated

Valid *element* numbers are:

-1	Non -array points and text strings
0 through n-1	Index of an array element to be set, where the array has n elements. 0 is the first element and n-1 is the last element of the array.

<*GmmiTabOrder*> ::= **"(" GmmiTabOrder** <*number*> **")"**

<*GmmiTextAnnunAttr*> ::= **"(" GmmiTextAnnunAttr** <*text.string*> **")"**

<*GmmiTextButtonObject*> ::= **"(" GmmiTextButtonObject** <*GmmiButtonObject*><*GRTextButton*> **")"**

<*GmmiTextObject*> ::= **"(" GmmiTextObject** <*GmmiGraphicObject*> <*GRText*> **")"**

<*GmmiTimedEvent*> ::= **"(" GmmiTimedEvent** <*GmmiEvent*> <*eventFrequencyMS.number*> **")"**

<GmmiToggleSetpointAction> ::= **"(" GmmiToggleSetpointAction**
<GmmiSetpointAction> **")"**

<GmmiValueAnim> ::= **"(" GmmiValueAnim**
<GmmiExprAnim> <format.string>
<formatType.number> **")"**

Where *format* is a **`printf()`** style format string and *formatType* is one of:

1	No format
2	Configured
3	Custom
4	General
5	Integer
6	Text
7	Real

<GmmiVariableAssignAction> ::= **"(" GmmiVariableAssignAction**
<GmmiAction> <variableID.string>
<value.string> <flags.number> **")"**

Valid *flags* are

0x01	Prompt for the variable value.

< GmmiVariableMap > ::= **"(" GmmiVariables**
{*<GmmiVariables>*}* **")"**

<GmmiVariables> ::= **"(" GmmiVariables**
<variableID.string> <value.string> **")"**

<GmmiVariableSetpointAction> ::= **"(" GmmiVariableSetpointAction**
<GmmiSetpointAction> **")"**

<GmmiVertMoveAnim> ::= **"(" GmmiVertMoveAnim**
<GmmiMoveAnim> **")"**

<GmmiVertScaleAnim> ::= **"(" GmmiVertScaleAnim**
<GmmiScaleAnim> **")"**

<GmmiVisibilityAnim> ::= **"(" GmmiVisibilityAnim**
<GmmiExprAnim> **")"**

<GmmiWhileKeyDownEvent> ::= **"(" GmmiWhileKeyDownEvent**
<GmmiKeyEvent>
<eventFrequencyMS.number> **")"**

<GmmiWhileMouseDownEvent> ::=	**"(" GmmiWhileMouseDownEvent** *<GmmiEvent>* *<eventFrequencyMS.number>* **")"**
<GRArc> ::=	*<GRShape> <GRArcDim>*
<GRArcDim> ::=	*<GRRectShapeDim>* *<startAngle.number>* *<endAngle.number>*
<GRAttrib> ::=	*<Empty>*
<GRBitmapButton> ::=	*<GRButton>* *<bitmapButtonFlags.number>* *<bitmapSize.size>*
<GRBorderAttr> ::=	**"(" Border** *<GRColorObjAttr>* *<width.number> <lineType.number>* *<lineEndStyle.number>* **")"**
<GRBorderRes> ::=	*<GRObjRes> <GRBorderAttr>*
<GRBoundGraphic> ::=	*<GRGraphic>*
<GRButton> ::=	*<GRBoundGraphic>* *<face.GRInteriorRes>* *<buttonFlags.number>*
<GRColorAttr> ::=	**"(" Color** "**0**" **")"** | **"(" Color** "**1**" *<rgb.number>* **")"** | **"(" Color** "**2**" *<index.number>* **")"** | **"(" Color** "**3**" *<systemColor.number>* **")"**
<GRColorObjAttr> ::=	*<GRObjAttr> <GRColorAttr>*
<GRFontAttr> ::=	**"(" Font** *<GRObjAttr>* *<fontName.string> <angle.number>* *<height.number> <weight.number>* *<fontAttr.number>* **")"**

<GRFontRes> ::= *<GRObjRes> <GRFontAttr>*

<GRGraphic> ::= **"(" Extents** *<extent.Rect> <rawExtent.Rect>* **")"**

<GRInteriorAttr> ::= **"(" Interior** *<GRColorObjAttr> <color2.GRColorAttr> <fillStyle.number>* [*<gradientColors.number> <gradientShades.number>*] **")"**

The *GRColorAttr* contained in the *GRColorObjAttr* is used by the solid, patterned and gradient fill styles.

color2 is used only by the patterned and gradient fill styles.

<GRInteriorRes> ::= *<GRObjRes> <GRInteriorAttr>*

<GRObjAttr> ::= *<Empty>*

<GRObjRes> ::= *<Empty>*

<GROleClientItem> ::= **"("GROleClientItem** *<itemNumber.number>* **")"**

<GROleControl> ::= **"("GROleControl** *<OlePropBag>* **")"**

<GROleGraphic> ::= *<GRShape> <itemScale.Scaler> <Rect>* **"("GROleClientItem** *<itemNumber.number>* **")"**

<GROleGraphicData> ::= *<GROleControl>* | *<GROleClientItem>*

<GRPolyLine> ::= *<GRShape> <PointArray> <lineFlags.number>* **"("Arrow** *<arrowWidth0.number> <arrowLength0.number> <arrowStyle0.number>* **")" "("Arrow** *<arrowWidth1.number> <arrowLength1.number> <arrowStyle1.number>* **")"**

<GRRectShapeDim> ::= **"(" Size** *<aDim.number> <bDim.number>* **")"** *<center.Point> <angle.number> <xShear.number> <yShear.number>*

<GRResource> ::=	*<Empty>*
<GRShape> ::=	*<GRBoundGraphic>* *<GRShapeResources>*
<GRShapeResources> ::=	*<GRBorderRes>* *<interior.GRInteriorRes>* *<fillInterior.GRInteriorRes>* *<fillMode.number>* *<percentFill.number>*
<GRSimpeRect> ::=	*<GRShape>* *<GRRectShapeDim>*
<GRText> ::=	*<GRGraphic>* *<GRTextAttributes>*
<GRTextAttributes> ::=	*<GRFontAttr>* *<GRInteriorRes>* *<GRBorderRes>* *<textAlign.number>* *<textAnchor.Point>* *<text.string>*
<GRTextButton> ::=	*<GRButton>* *<GRText>*
<Help> ::=	**"(" Help** *<contextIDExpr.string>* *<text.string>* *<file.string>* **")"**
<HexBlob> ::=	**"(" HexBlob** { *<string>* }* **")"**
<KeyDownEventList> ::=	**"(" GmmiOptionArray** { *<GmmiKeyDownEvent>* }+ **")"**
<KeyUpEventList> ::=	**"(" GmmiOptionArray** { *<GmmiKeyUpEvent>* }+ **")"**
<OleCurrency> ::=	**"(" OleCurrency** *<currencyValue.string>* **")"**
<OleDate> ::=	**"(" OleDate** *<dateValue.string>* **")"**
<OleEventList> ::=	**"(" GmmiOptionArray** { *<GmmiOleEvent>* }+ **")"**
<OleI64> ::=	**"(" OleI64** *<I64Value.string>* **")"**
<OleItemData> ::=	**"(" GROleClientItem** *<itemNumber.number>* *<HexBlob>* **")"**

<OlePropBag> ::= **"(" OlePropBag** *<objectCLSID.guid>* {*<PropElement>*}* **")"**

<OlePropStream> ::= **"(" OlePropStream** *<objectCLSID.guid> <HexBlob>* **")"**

<OleSafeAray> ::= **"(" OleSafeArray** *<elementType.number> <dimensionCount.number>* {**"(" OleArrayBound** *<lowerBound.number> <elementCount.number>* **")"** }+ { *<PropElementData>* }+ **")"**

<OleU64> ::= **"(" OleU64** *<U64Value.string>* **")"**

<*Point*> ::= **"(" Point** <x.*number*> <y.*number*> **")"**

<*PointArray*> ::= **"(" PointArray** {<*Point*>}* **")"**

<*PointAttr*> ::= **255**
| <*type.number*>
<*length.number*><*elements.number*>

<*PointValue*> ::= <*value.number*> | <*value.string*>

<*PositionAnimationTable*> ::= **"(" GmmiOptionTable** {<*AnyPositionAnim*>}+ **")"**

<PropElement> ::= *<propName.string> <PropElementData>*

<PropElementData> ::= *<numValue.number>*
| *<strValue.string>*
| *<OlePropBag>*
|*<OlePropStream>*
|*<OleCurrency>*
|*<OleDate>*
|*<OleI64>*
|*<OleU64>*
|*<OleSafeArray>*

<Rect> ::= **"(" Rect** *<left.number> <top.number> <right.number> <bottom.number>* **")"**

<RootOptionTabet> ::= **"("Empty")"** | **"(" GmmiOptionTable** [*<PositionAnimationTable>*] [*<AttributeAnimationTable>*] [*<EventOptionTable>*] [*<GmmiScript>*] [*<GmmiVariableMap>*]
")"

<Scaler> ::= *<xNum.number> <yNum.number> <xDen.number> <yDen.number>*

<Size> ::= **"(" Size** *<width.number> <height.number>* **")"**

<TextFileFormat> ::= **"(" Version** *<number>* **")" "(" DocumentSummary ")"** *<ToplevelDocument>* "**{Newline}(**" **OleItems** { *<OleItemData>* **")"**

<TimedEventList> ::= **"(" GmmiOptionTable** {*<GmmiTimedEvent>*}+ **")"**

<ToplevelDocument> ::= **"(" GmmiToplevelDocument** *<GmmiDocument> <initialPosition.Point> <Size> <zoom.number>* **")"**

<ToplevelDocumentPO> ::= *<GmmiPointMap> <ambientForeground.GRColorAttr> <ambientBackground.GRColorAttr> <ambientFont.GRFontAttr> <GmmiProcedureMap>*

<WhileKeyDownEventList> ::= **"(" GmmiOptionArray** { *<GmmiWhileKeyDownEvent>* }+ **")"**

Token Syntax

Here is the modified BNF syntax for tokens. Tokens (except for <*string*>) may not contain embedded whitespace.

<*alpha-char*> ::=	"**A**" through "**Z**" and "**a**" through "**z**"
<*digit*> ::=	"**0**" | "**1**" | "**2**" | "**3**" | "**4**" | "**5**" | "**6**" | "**7**" | "**8**" | "**9**"
<*exponent-char*> ::=	"**e**" | "**E**" | "**d**" | "**D**"
<guid> ::=	"**{**"*xxxxxxxx*"**-**"*xxxx*"**-**"*xxxx*"**-**"*xxxx*"**-**" *xxxxxxxxxxxx*"**}**" where *x* == <*hex-digit*>
<*hex-digit*> ::=	<*digit*> | "**A**" | "**B**" | "**C**" | "**D**" | "**E**" | "**F**" | "**a**" | "**b**" | "**c**" | "**d**" | "**e**" | "**f**"
<*mantissa*> ::=	{<*digit*> }+ ["**.**" {<*digit*> }*] | {<*digit*> }* "**.**" {<*digit*> }+
<*named-char*> ::=	One of the following characters: **Null** (&h00) **Bell** (&h07) **Backspace** (&h08) **CharacterTabulation** or **Tab** (&h09) **LineFeed** or **NewLine** (&h0A) **LineTabulation** (&h0B) **FormFeed** (&h0C) **CarriageReturn** or **Return** (&h0D) **Escape** (&h1B) **QuotationMark** (&h3F) **LeftCurlyBracket** or **LeftBrace** (&h7B**)** **RightCurlyBracket** or **RightBrace** (&h7D**)** **Delete** (&h7F)

Named characters use the ISO 1064 naming convention for characters. Convenience names for some characters are also defined.

```
<non-negative-integer> ::=    {<digit> }+
                              | "&H" {<hex-digit>}+
                              | "&h" {<hex-digit>}+
                              | "&O" {<octal-digit>}+
                              | "&o" {<octal-digit>}+

<number> ::=                  [<sign>] <non-negative-integer>
                              | [<sign>] <mantissa> [<exponent-char> [<sign>]
                              {<digit> }+]

<octal-digit> ::=            "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7"

<sign> ::=                   "+" | "-"

<string> ::=                 """ {<string-char>}* """
                             | <string> {"&"  <string>}*

<string-char> ::=            any character except LineFeed (&h0A), "{", or """
                             | "{" <non-negative-integer> "}"
                             | "{" <named-char> "}"

<symbol> ::=                 <alpha-char> {<symbol-char>}*

<symbol-char> ::=            <alpha-char> <digit> "_"

<token> ::=                  "("
                             | ")"
                             | <guid>
                             | <number>
                             | <symbol>
                             | <string>
```

Appendix B - Managing CimEdit Screens

About Managing CimEdit Screens

This chapter covers topics for use by the system administrator:

- Screen performance issues, including memory size and screen cache size
- Screen installation.
- Command line options that are available for installed screens and for interactive use.
- Command line arguments.
- CimEdit/CimView screen locating sequence.

Screen Performance Issues

If your runtime requirements are such that your users need to be able to quickly access screens in CimView, consider the following.

- Size memory.
- Size the screen cache.
- Preload the screen cache.
- Prevent swaps to the pagefile.
- Adjust the touch interval.

Tip: You can use the Windows Performance Monitor to review HMI CimView performance counters to monitor the performance of CimView during any single session.

See the "Reviewing CIMPLICITY HMI Counters" chapter in the System Sentry Operation Manual, GFK1632, for details.

Sizing Memory

For best performance on screen transfers, make sure that you have at least 60 MB of RAM on the computer that is displaying CimView screens.'

Sizing the Screen Cache

The default cache size for CimView is eight (8) screens. You may use the GSM_CACHE_SIZE global parameter to change the default.

Note: All screens in the cache, whether being displayed or not, continue to have their points updated from the Point Manager. If you have many screens in the cache with rapidly changing points, this may affect your system performance.

Screens are put in the cache as they are displayed by the users. If space is needed for a new screen and the cache is full, the oldest screen in the cache is removed to make space for the new screen.

Preloading the Screen Cache

For faster screen access, you can install your initial CimView screen with the **`/loadcache`** <*cachefile*> argument. The screens that you specify in the <*cachefile*> file will be pre-loaded into the screen cache. In addition, you can specify which screens you want to lock into the cache.

Screens that are locked into the cache are never removed, no matter how old they are.

The default screen cache size is eight (8). You can use the **`GSM_CACHE_SIZE`** global parameter to change this default.

The screen cache size used by CimView is the larger of the default screen cache size or the number of files you specify in the <*cachefile*> file. For example, if **`GSM_CACHE_SIZE`** is set to 10 and you list three screens in the <*cachefile*> file, the screen cache size is set to 10. However, if you list 12 screens in the <*cachefile*> file, the screen cache size is set to 12.

The <*cachefile*> file is a text file. Each line of the text file contains the name of a screen to be preloaded in the cache when the primary CimView screen opens. Add a "Lock" parameter after those screens that you want CimView to keep in the cache. Screens that do not have a "Lock" parameter will be removed from the cache to make room for a more recently used screens.

An example of a <*cachefile*> file is:

```
"screen1.cim" Lock
"screen2.cim"
"screen3.cim" Lock
"screen4.cim"
"screen5.cim" Lock
"screen6.cim" Lock
"screen7.cim" Lock
"screen8.cim" Lock
```

If the <*cachefile*> name is not fully qualified, its location depends on how users start CimView:

- When starting CimView from a shortcut, the working directory for the <*cachefile*> is determined by the Start in field of the Properties dialog.
- When starting CimView from the command prompt, the working directory for the <*cachefile*> is relative to where the user is in the Command Prompt.

Preventing Swaps to the Pagefile

When a user attempts to transfer from one screen to another in the cache after a long period of inactivity, the transfer may be slow because the cache has been swapped out to the pagefile. In addition, if the current screen has no animation, it can also be swapped out to the pagefile.

If you need an immediate response, no matter how long the screen has been displayed, install your initial CimView screen with the **/TouchActive**, **/TouchDyn**, and **/TouchStat** arguments. These options keep the screens from being swapped out.

The first time a user invokes a CimView screen with one of the **/Touch…** arguments, the Touch Documents Interval is created in the Registry under

HKEY_CURRENT_USER\Software\GE Fanuc Automation\CIMPLICITY\HMI\<version>\CimView\Touch Documents Interval

Its value is in milliseconds, and defaults to 420000 (7 minutes).

Adjusting the Touch Interval

If you are having still having problems with cached screens transferring slowly after a long period of inactivity, you can adjust the rate that CimView touches the screens to a value below 60000 (1 minute).

- Run regedit.exe.
- Enter a new value in **HKEY_CURRENT_USER\Software\GE Fanuc Automation\CIMPLICITY\HMI\<version>\CimView\Touch Documents Interval.**

Important: Adjusting this value too low will slow animation on the screens.

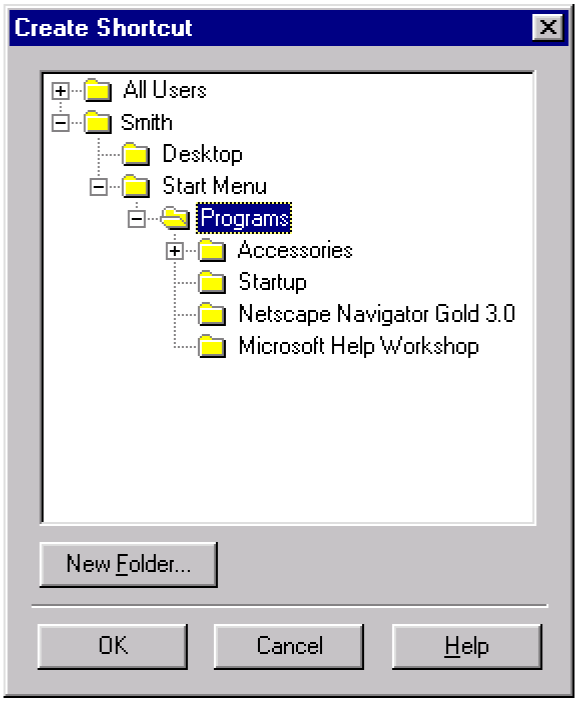
CimView Screen Installation

Once you have saved a screen in CimEdit, you can create a shortcut for the screen in the Start menu or on the desktop. Users can then display the screen by clicking on the shortcut.

Installing A Screen from CimEdit

To install a screen from CimEdit:

1. Open the screen in CimEdit.
2. Click File on the menu bar.
3. Select Install. The Create Shortcut dialog opens.



Menus in the Start menu are represented as folders.

4. Select the folder where you want to place the shortcut.
5. Click **OK**. The shortcut is placed in the selected folder.

Opening a Screen from your Desktop

Choose one of the following methods to create a shortcut for a screen.

To install a screen from your desktop:

Method 1

1. Display the Windows Start menu.
2. Select Settings.
3. Select Taskbar on the popup menu.
4. Select the Start Menu Programs tab.
5. Click **Add…** The Create Shortcut dialog box opens.
6. Select the folder where you want to place the shortcut.

Method 2

1. Click the right mouse button on the folder or desktop where you want to install the screen.
2. Select New on the popup menu.
3. Click **Shortcut**. The Create Shortcut dialog box opens.
4. Enter the path and file name of the screen.

Method 3

1. Open the folder containing the CimView screen.
2. Select the screen.
3. Click the right mouse button.
4. Drag the screen to another folder or the desktop.
5. When you release the right mouse button, click on Create Shortcut(s) Here.

Command Line Options

There are currently three types of command line options available for CimEdit and CimView screens:

They are:

- Options that can be added to the command line for an installed CimView icon.
- Options that can be added to the command line for an installed CimEdit icon.
- Options that can be executed from an interactive MS DOS prompt.

Adding Arguments to the Command Line for a CimView Shortcut

Once you have created a shortcut for a CimView screen, you can add arguments to its command line to control user access.

To add arguments to the command line for a CimView shortcut:

1. Right-click the CimView shortcut to display its menu.
2. Select Properties... from the shortcut's menu. The Shortcut to <*screen_name*> Properties dialog opens.
3. Select the Shortcut properties.
4. At the start of the Target field, insert **`cimview.exe`** followed by the option (or options) you want.

   Example

   If you have created a primary screen for a project, your initial screen is **`ini.cim`**, and you do not want users to exit that screen, you can change the command line for the screen's CimView icon:

   From

   ```
   C:\cimplicity\myproj\ini.cim
   ```

   to

   ```
   cimview.exe /noexit C:\cimplicity\myproj\ini.cim
   ```

5. Click **OK** to save your changes and exit the dialog.

You can also use the command line to start multiple CimView screens from a single shortcut. When you do this and use a command line option that affects the primary window, the first file in the list is designated as the primary window. For example, if you use **`/alwaysmaximized,`** the first screen in the list is maximized, and all other screens are displayed in their normal windows.

Command Line Arguments

Command line arguments include:

- `/alwaysmaximized`
- `/captive`
- `/geometry <width>x<height><±xoff><±yoff>`
- `/keypad`
- `/loadcache <cachefile>`
- `/loadpassword`
- `/LoadScript`
- `/maximized`
- `/minimized`
- `/noexit`
- `/nomenutitle`
- `/noopen`
- `/noPointTargets`
- `/noresize`
- `/project <name>`
- `/setvar`
- `/TouchActive`
- `/TouchDyn`
- `/TouchStat`
- `/wait [<time>]`
- `/waitforproject <name>`
- `/zoomtobestfit`
- Options for CimEdit shortcuts.
- Options that can be executed interactively.

/alwaysmaximized

For: CimView only

Displays the primary CimView window in a maximized state. The user will not be allowed to resize the primary window. The window will not rise to the top when the user clicks on it (this prevents it from obscuring other windows on the user's terminal screen

This option is only applied if it is used with the first CimView window opened. This window is known as the primary window. If used with subsequent open commands, it is equivalent to **`/maximize`**.

<u>Example</u>

```
cimview.exe /alwaysmaximized C:\myproj\scr.cim
```

/captive

For: CimView only

Displays the primary CimView window in captive state. When the user opens this window, the Explorer shuts down. Other screens are displayed on top of the primary window, and the user will not be able to go below (see anything below) the primary window.

`/captive` requires the following configuration in order to override Windows Explorer and the Task Manager. This is necessary for the option to function correctly in the Windows environment.

To configure Windows for the /captive option:

1. Prevent Windows from restarting Windows Explorer as soon as **`/captive`** stops it, as follows:

   A. Run **`regedt32.exe`** and open

   ```
   HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows
   NT\CurrentVersion\Winlogon.
   ```

   B. For the AutoRestartShell value, change the Data value to 0 (zero).

2. Disable the Windows Task Manager, as follows:

   Rename **`taskmgr.exe`** in your Windows directory to **`taskmgr.save.`**

3. Use the **`/captive`** option.

   Example *(for a shortcut)*

   ```
   cimview.exe /captive /noexit C:\myproj\scr.cim
   ```

Result: When the CimView screen is open:

- The user can use **Alt+Tab** to navigate through all opened CimView Windows.
- The **Alt+Esc** and **Ctrl+Esc** sequences are disabled.
- The **Ctrl+Alt+Esc** sequence works as normal

You can use any other command line options in conjunction with **`/captive`**. In particular, note the following:

- Use **`/alwaysmaximized`** if you want to display the initial window in the maximized state.
- Use **`/noexit`** if you do not want users to exit from CimView.

  If you do not use **`/noexit`**, when a user exits CimView, the Explorer restarts, and any processes in the Startup program group are restarted.

/geometry <width>x<height><±xoff><±yoff

For: CimEdit and CimView

Sizes and positions the CimView window when it opens. The screen is sized to fit the window. All fields are in pixels.>

The arguments for this command line option are:

Argument	Specifies the:
<*width***>**	Window width
<*height***>**	Window height
<*+xoff***>**	Offset from the left edge of the terminal screen and **<***-xoff***>** specifies the offset from the right edge of the terminal screen.
<+*yoff***>**	Offset from the top edge of the terminal screen and **<***-yoff***>** specifies the offset from the bottom of the terminal screen.

Example

```
cimview.exe /geometry 200x200+100+200 C:\myproj\scr.cim
```

opens the screen in a 200x200 window that is 100 pixels from the left side of the terminal screen and 200 pixels from the top edge of the terminal screen.

/keypad

For: CimView only

Displays a keypad window on the user's screen whenever the user has to perform a Variable Setpoint action in a procedure. To enter a new setpoint value, the user clicks on the appropriate keys in the keypad window rather than entering them from a keyboard.

This option is only applied if it is used with the first CimView window opened. This window is known as the primary window. If used with subsequent open commands, it will be ignored.

Example

```
cimview.exe /keypad C:\myproj\scr.cim
```

/loadcache <cachefile>

For: CimView only

Pre-loads the CimView screen cache with the files contained in **<***cachefile***>.** If the number of files in the **<***cachefile***>** is greater than the default cache size, this number overrides the default.

See "Preloading the Screen Cache" for more information.

/loadpassword <password configuration file name>

Alerts CimView to a text file that contains a list of projects, user IDs and passwords that CimView will use to grant or deny access when a user attempts to view a screen.

If CIMPLICITY is configured to prompt a user for login, CimView looks in this file for the correct user ID-password combination when the user attempts to login.

If the user is already logged in, CimView ignores values in the file.

The file format is:

```
PROJECT NAME|USER ID|PASSWORD.
```

The entries must be in upper case letters.

If the project name is omitted the user ID-password combination is used for all CIMPLICITY HMI Plant Edition projects.

Important: The password configuration file must be located in the data subdirectory of the CIMPLICITY installation directory (e.g. **`CIMPLICITY\HMI\Data`**).

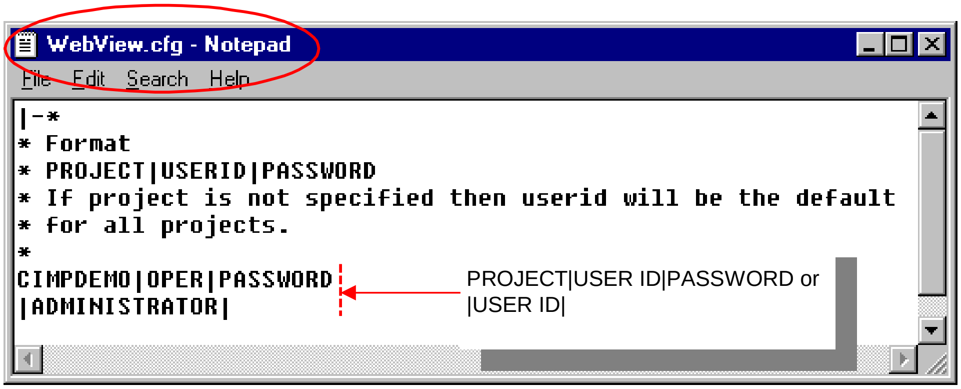
Example

Your CIMPLICITY Plant Edition Web site server uses the **`WebView.cfg`** file.

/**`loadpassword WebView.cfg`**

Where

`WebView.cfg` is the specification for a file that requires user passwords to open CimView/WebView screens either through your CIMPLICITY HMI Plant Edition Web site or at a specific URL for a single WebView screen.



```
|-*
* Format
* PROJECT|USERID|PASSWORD
* If project is not specified then userid will be the default
* for all projects.
*
CIMPDEMO|OPER|PASSWORD
|ADMINISTRATOR|
```

PROJECT|USER ID|PASSWORD or
|USER ID|

/LoadScript

For: CimEdit and CimView

Enables a common script file to be shared among all screens loaded in CimView. Functions that are included in this common file will be loaded when CimView is first run, and will be callable as if they were included in the Basic code for the local screen.

If the **`/LoadScript`** argument is specified for a file after CimView is already running, its contents will be appended to the list of common functions with the lowest precedence.

Example

`/LoadScript scriptFileName`

Where

`scriptFileName` is a file specification to specify a common script file.

Important: The **`/LoadScript`** command line option, which is a counterpart to the global parameter **`GSM_GLOBAL_SCRIPT`**, is an essential command line option for CimEdit if you are going to use it for CimView. This is because you can only configure a call directly in the global scripts if the call is also loaded into CimEdit and, as a result, CimEdit knows what script entry points are available.

/maximized

For: CimEdit and CimView

Opens the screen at its maximum size. The screen takes up the entire terminal screen.

The user will be able to resize the window after it opens.

Example

```
cimview.exe /maximized C:\myproj\scr.cim
```

/minimized

For: CimEdit and CimView

Opens the screen at its minimum size. The screen appears on the Taskbar only.

The user can click on the screen in the Taskbar to open it.

Example

```
cimview.exe /minimized C:\myproj\scr.cim
```

/noexit

For: CimView only

Will not let the user exit the primary CimView window.

The Exit menu item is removed from the File menu, and the Close menu item and its **Alt+F4** shortcut key are removed from the Control menu. **`Close Screen`** actions are ignored in the primary window.

This option is only applied if it is used with the first CimView window opened. This window is known as the primary window. If used with subsequent open commands, it will be ignored.

Example

```
cimview.exe /noexit C:\myproj\scr.cim
```

/nomenutitle

For: CimView only

Removes the menu bar and title bar from the primary CimView window and all subsequent windows that you open.

This option is applied to the new windows and to any windows that are opened from within CimView. If a later CimView command is executed without the option, the option is disabled for those windows and any new windows opened from within CimView.

Example

```
cimview.exe /nomenutitle C:\myproj\scr.cim
```

/noopen

For: CimView only

Lets a user open only the CimView screens that are explicitly mentioned in Open Screen and Overlay Screen actions. Open Screen and Overlay Screen actions that do not specify a screen are ignored.

In addition, the Open and Open Window menu items and the file list are removed from the File menu, and the File Open Toolbar button is disabled.

This option is applied to the new windows and to any windows that are opened from within CimView. If a later CimView command is executed without the option, the option is disabled for those windows and any new windows opened from within CimView.

Example

```
cimview.exe /noopen C:\myproj\scr.cim
```

/noPointTargets

For: CimView only

Prevents the point targets, e.g. Point Control Panel and quick trends, from being available from Point View or the right mouse menu.

/noresize

For: CimView only

Prevents a user from resizing any CimView windows that the user displays.

This option is applied to the new windows and to any windows that are opened from within CimView. If a later CimView command is executed without the option, the option is disabled for those windows and any new windows opened from within CimView.

Example

```
cimview.exe /noresize C:\myproj\scr.cim
```

/project <name>

For: CimEdit and CimView

Sets the base project to **<***name***>**.

The data for all *unqualified* points on the CimView screens will be requested from the named project.

This option is applied to the new windows and to any windows that are opened from within CimView. If a later CimView command is executed without the option, the previous value for the default project continues to be used.

Example

```
cimview.exe /project myproj C:\myproj\scr.cim
```

/setvar

For: CimView

(*Configured on the current screen*), sets variables and their initial values that a CimView screen uses when it opens from or overlays the current screen.

The arguments for this command line option are:

Argument	Specifies the:
<*variable name***>**	Variable name, which can be qualified
<*Initial value***>**	Initial value of the variable the open screen uses.

You can use the **`/setvar`** command line option multiple times to set multiple variables.

Example

```
/setvar "Button1\Tank" "0" /setvar "Button2\Tank" "0" /setvar
"Value" ""
```

sets the qualified variable **`Button1\Tank`** to the initial value 0; the qualified variable **`Button2\Tank`** to the initial value 0 and the unqualified variable, **`Value`** to no specified initial value.

/TouchActive

For: CimView only

Keeps the documents currently being displayed swapped into memory. Without this flag, only documents in the cache are touched periodically to keep them swapped into memory.

See "Screen Performance Issues" for more information.

Example

```
cimview.exe /TouchActive myproj C:\myproj\scr.cim
```

/TouchDyn

For: CimView only

Keeps documents with many dynamic objects swapped into memory.

See "Screen Performance Issues" for more information.

Example

```
cimview.exe /TouchDyn myproj C:\myproj\scr.cim
```

/TouchStat

For: CimView only

Keeps documents with many static objects swapped into memory.

This is faster than **`/TouchDyn`**, but dynamic parts of a screen may be swapped out.

See "Screen Performance Issues" for more information.

Example

```
cimview.exe /TouchStat myproj C:\myproj\scr.cim
```

/wait [<time>]

For: CimView only

Makes CimView wait for the Router to start before opening the screen. Note that CimView does not try to start the Router. The Router must be started by another method. Typically, this option is used when configuring CimView to start at boot or when the user logs in to Windows.

You can specify a time, in seconds, to wait. The screen opens at the end of the time, regardless of the state of the router. If you do not specify a time, CimView waits forever.

Example

```
cimview.exe /wait 60 C:\myproj\scr.cim
```

/waitforproject <name>

For: CimView only

Makes CimView wait for the project to start before opening the window.

The project is considered started after CIMPLICITY Program Control terminates normally. Note that individual programs in the project may be in the Running or Failed state.

Example

```
cimview.exe /waitforproj myproj C:\myproj\scr.cim
```

Important: Use **`/waitforproject`** on a local computer only.

/zoomtobestfit

For: CimEdit and CimView

Initially places the primary CimView window in Zoom To Best Fit mode. All subsequent windows are also displayed in this mode.

This option is applied to the new windows and to any windows that are opened from within CimView.

Example

```
cimview.exe /zoomtobestfit C:\myproj\scr.cim
```

Reviewing Options for CimEdit Shortcuts

You cannot modify the command line for the CimEdit icon in a project Configuration cabinet. You can only add options to a shortcut.

The format for entering an option to the command line is:

<pathname> <option>

For example, if you want to force CimEdit to work offline, even if a CIMPLICITY project is running, the command line would be:

```
c:\cimplicity\exe\CimEdit.exe /offline
```

Command line arguments include:

- `/offline`
- `/project <name>`

/offline

For: CimEdit and CimView

Forces CimEdit to work offline, even if a CIMPLICITY project is running.

Example

```
cimedit.exe /offline
```

/project <name>

For: CimEdit and CimView

Sets the base project to **<***name***>**.

The base project is the project that will be used to fully qualify any unqualified Point IDs. This does *not* affect the Point IDs stored in the file. Point IDs that are entered as unqualified will be stored unqualified.

The option is only recognized when it is used with the first CimEdit window, and is applied to all subsequent windows until they are closed.

Example

```
cimedit.exe /project myproj
```

Reviewing Options that can be Executed Interactively

Currently, there are three utilities available in CimEdit that you can access from the command prompt launched from your Configuration Cabinet. These utilities let you:

- Convert `.asc` files to `.cim` or `.cimrt` files, or upgrade `.cim` files from an earlier release.
- Display a dialog listing the Point IDs used in the screen file.
- Convert `.cim` files to text file format.

To access any of these utilities on an MMI or Server:

1. Make sure that CimEdit is not running on your terminal.
2. Open the project in the Configuration cabinet.
3. Click Tools on the menu bar.
4. Select Command Prompt. This ensures that all project pointers are correct.
5. Enter the command that will start the utility.

If you are on a Viewer, launch the Command Prompt from the Start menu.

You can execute each utility for one file, or a list of files. The command line format is:

```
cimedit.exe <option> <filename> [<filename> ...]
```

Command line arguments include:

- /convert
- /converttoctx
- /converttocimrt
- /dumppoints

/convert

For: CimEdit only

Reads each of the files on the command line and writes them out again, changing the extension to `.cim`.

This utility can be used to

- Convert `.asc` or `.ctx` files to `.cim` files, or
- Upgrade `.cim` files from an older release.

Note: When upgrading files from an older release, you should save a copy of the `.cim` files in another directory before executing this utility since this option will overwrite the original files.

No CimEdit window is displayed, and CimEdit exits when done. When the conversion is complete, check the Status Log for error messages. Messages longer than 79 characters are in multiple log entries, and the continuation lines begin with "… ".

Example

```
cimedit.exe /convert C:\MyProj\scr1.asc C:\MyProj\scr2.ctx
```

/converttoctx

For: CimEdit only

Reads each of the files on the command line and writes them out again in text format, changing the extension to **`.ctx`**.

You can use the text format to make modifications to the screen file with a text editor.

Note: Do not use text files as the primary file format in a production environment, as they take longer to read and process.

See the text file format syntax for details. The text file format syntax is documented in Appendix A.

Example

```
cimedit.exe /converttoctx C:\Proj\scr1.cim C:\Proj\scr2.cim
```

/convertocimrt

For: CimEdit only

Reads each of the files on the command line and writes them out again as a runtime-only screen file, changing the extension to **`.cimrt`**

See "Runtime-only Screens" in the "Configuring a CimEdit Screen" chapter in this manual for more information about runtime-only screens.

Example

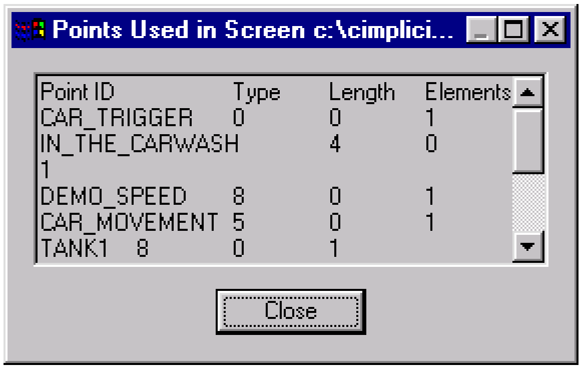
```
cimedit.exe /converttocimrt C:\Proj\scr1.cim C:\Proj\scr2.cim
```

/dumppoints

For: CimEdit only

Loads each file and displays a dialog listing the points used in the file.

The dialog looks like this:



Points Used in Screen c:\cimplici...

```
Point ID          Type      Length    Elements
CAR_TRIGGER       0         0         1
IN_THE_CARWASH              4         0
1
DEMO_SPEED        8         0         1
CAR_MOVEMENT      5         0         1
TANK1    8        0         1
```

No CimEdit window is displayed, and CimEdit exits when done.

You can also use the Point View tab in the Screen Properties dialog to display the points currently used on a screen. In addition to displaying the list of points, the Point View tab will show you where they are used, and let you edit the Point IDs.

Example

```
cimedit.exe /dumppoints C:\myproj\myscreen.cim
```

CimEdit/CimView GMMI_SCREENS Libraries

As the default, CimEdit and CimView look in the following directories to find a file when instructed to open a screen:

1. First relative to the directory of the current screen,
2. Then relative to the project's Screens directory.

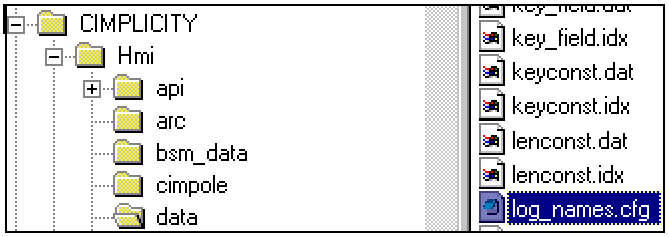
You can not change the first search location (relative to the directory of the current screen) and, in most cases, you will want to leave the default second location (relative to the project's Screens directory) intact. However, if you need to change the second location you can by editing the **GMMI_SCREENS** logical name. *See "Understanding the CimEdit/CimView Screen Search Sequence" in the "Configuring a CimEdit Screen" chapter in this manual for more information about how CimEdit and CimView locate a screen.*

Editing GMMI_SCREENS Logical Name

Logical names are configured in the Log_Names.cfg files located in the:

- BSM_Root:\Data (i.e., the Data directory in the installation directory)

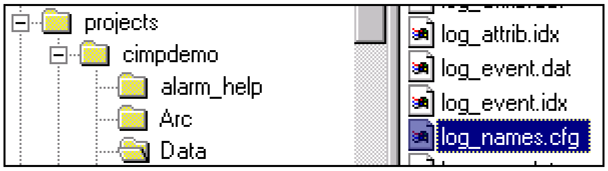
  Example



  and

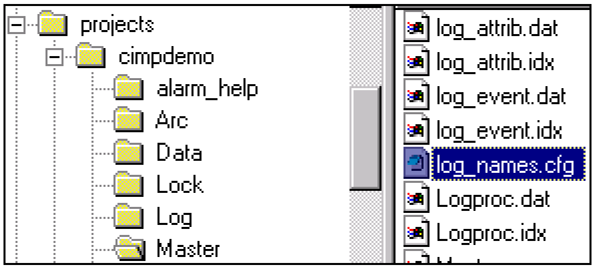
- Site_Root:\Data (i.e., the Data directory in the project directory)

  Example



  and

- Site_Root:\Master (i.e., the Master directory in the project directory)



Because a Viewer does not have directories for projects, the only Log_Names.cfg file is in the Bsm_Root:\Data directory.

Caution: It is recommended that you keep the **GMMI_SCREENS** entries in all the Log_Names.cfg files are in sync with each other. Care should be used when editing these files.

When you open either Log_Names.cfg file, you will find two lines that refer to the screen location. These entries should be identical.

```
GMMI_SCREENS|S|default|30|SITE_ROOT:\screens
GMMI_SCREENS|P|default|30|SITE_ROOT:\screens
```

Where

GMMI_SCREENS is the CimEdit and CimView screens logical name.

SITE_ROOT:\SCREENS is the default directory for those files. This directory can be changed. In fact, the logical path can actually be a list of directories to be searched, separated by semicolons.

|*30***|** is the maximum length of the logical value. You need to change this if you change the value of the logical.

See the example below.

The default **GMMI_SCREENS** entry ensures that CimEdit and CimView will always look in the project screens directory.

On a Viewer, Site_Root defaults to Bsm_Root, so if you create a Screens directory in the installation directory of Viewers, they will look there.

Important: Changes will take affect only after all CIMPLICITY processes on the computer you are configuring are entirely shut down and restarted. The best way to ensure this is to reboot.

Example of an Edited GMMI_SCREENS Logical Name

The following example entry for **GMMI_SCREENS** will make CimEdit and CimView look

1. First relative to the current directory,
2. Then in the project screens directory (or installation screens directory on viewers),
3. Then in C:\Screens, and
4. Finally in D:\Screens.

Note that the length was increased to 60 to account for the extra space.

```
GMMI_SCREENS|S|default|60|SITE_ROOT:\screens;C:\SCREENS;D:\SCREENS
GMMI_SCREENS|P|default|60|SITE_ROOT:\screens;C:\SCREENS;D:\SCREENS
```

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