

Changes and Enhancements

Introduction

This section summarizes the features of SAS/GRAPH software that have been implemented or enhanced for all operating environments since Release 6.12. Version 8 changes and enhancements are preceded by **V8**. All other changes and enhancements described in this section were included in Version 7.

General Changes

Producing Graphics Output for the Web

SAS/GRAPH software provides several methods for generating graphics output that can be displayed on the World Wide Web. Most of these methods enable you to create graphs in which the user clicks on areas of the graph to "drill down" to additional graphs or reports.

- The ODS HTML statement enables several SAS/GRAPH procedures to produce GIF graphics and a variety of HTML files for creating Web pages with tables of contents, multiple frames, and drill-down functionality.
- New device drivers automatically generate various combinations of HTML and GIF files.
- The GANNO, GCHART, GMAP, GPLOT, and GSLIDE procedures have new options that provide drill-down functionality with Web output. If a graph is created with drill-down, the drill-down capability is retained any time the graph is replayed using the GREPLAY procedure. (See the individual procedures for details.) In addition, these procedures can generate a special data set that contains area and link information for creating custom HTML files with drill-down graphs.

Device Drivers

New device drivers automatically generate one or more HTML and GIF files that can be viewed with a Web browser. These drivers provide a quick and easy way to produce output for use on the Web:

- The GIF driver generates GIF graphics files from SAS/GRAPH procedures. These files can be referenced in an HTML file and viewed with a Web browser.
- The HTML driver creates a series of graphs in GIF format and an HTML file that displays them.
- The WEBFRAME driver also creates graphs in GIF format and HTML files, but it produces a Web page whose table of contents contains thumbnail depictions of each graph, plus links to the full-sized versions of the graphs.
- The GIFANIM driver enables you to use SAS/GRAPH procedures to create GIF animations for your Web pages.

∇**8** New in Version 8, you can also use the ACTIVEX and JAVA device drivers. Both drivers can only be used with procedures GCHART, GCONTOUR, GMAP, GPLOT, and G3D, and both must be used with the Output Delivery System (ODS). The ACTIVEX driver generates an HTML file that defines graphics output as ActiveX controls, and the JAVA driver generates an HTML file that defines graphics output as a Java applet. Both the ActiveX controls and the Java applets are interactive when displayed in a browser. For example, they let you change the chart type from a bar chart to a pie chart.

Output Delivery System

SAS/GRAPH procedures that generate graphics output support the Output Delivery System (ODS). You can use the ODS HTML statement or special SAS/GRAPH device drivers to produce ODS output. When used with SAS/GRAPH procedures, either method uses a default ODS template to produce HTML files and graphics output that can be viewed with a Web browser.

Long Variable Names

SAS/GRAPH supports long variable names in data sets. Catalog entry names are still limited to 8 characters. If longer names are specified, they are truncated.

SAS/GRAPH Fonts

SAS/GRAPH has added support for specifying long font names that appear in the Charrec window of the GDEVICE procedure.

SAS/GRAPH Colors

SAS/GRAPH has added support for CMYK and HSB (or HSV) color types.

Features That Are No Longer Supported

A few SAS/GRAPH windows are no longer supplied:

- PATTERN, AXIS, LEGEND, and SYMBOL windows
- GRAPH manager window

A new file requestor window is provided for the Graphics Editor and the Graph window.

SAS/GRAPH Procedures

GANNO Procedure

- The NAME= option accepts a long variable name. However, when a variable name is longer than 8 characters, the resulting entry name is truncated to 8 characters.
- The IMAGEMAP= option creates a data set that contains information about a graph and about areas in the graph. This information includes the shape and coordinates of the areas, and it is used to build an HTML file that links the graph areas to other files or images.

GCHART Procedure

The GCHART procedure includes the following new features:

- The HBAR3D, VBAR3D, and PIE3D statements generate 3-dimensional horizontal bar charts, vertical bar charts, and pie charts.
- The WOUTLINE= option controls the thickness of the outlines of chart elements (pie slices, bars, blocks, etc.).
- The HTML= and HTML_LEGEND= options use HTML functionality to create graphics output with "drill-down" capability.
- The IMAGEMAP= option creates a data set that contains information about a graph and about areas in the graph. This information includes the shape and coordinates of the areas, and it is used to build an HTML file that links the graph areas to other files or images.
- **V8** New in Version 8, the DESCRIPTION= option can include the #BYLINE, #BYVAL, and #BYVAR substitution options, which work as they do when used on TITLE, FOOTNOTE, and NOTE statements.

Additional enhancements enable you to

- format statistics and specify the label for statistic column heads in the table of statistics that is displayed with horizontal bar charts
- display statistic values inside bars in vertical bar charts
- draw a frame around the axis area by default. The V6COMP graphics option enables you to request Version 6 behavior instead of the new defaults.

Changes in the default behavior of the PATTERN statement may affect GCHART procedure output.

GCONTOUR Procedure

Changes in the default behavior of the PATTERN statement may affect GCONTOUR procedure output.

GDEVICE Procedure

You can specify a color map for a device using either

- the new GDEVICE window, Colortable
- the CMAP= option in the ADD or MODIFY statement in the GDEVICE procedure. CMAP= can also be specified in the GOPTIONS statement.

GMAP Procedure

- The map data sets that are supplied by SAS Institute have more consistent structure and variables.
- The HTML= and HTML_LEGEND= options use HTML functionality to create graphics output with "drill-down" capability.
- The IMAGEMAP= option creates a data set that contains information about a graph and about areas in the graph. This information includes the shape and coordinates of the areas, and it is used to build an HTML file that links the graph areas to other files or images.
- Changes in the default behavior of the PATTERN statement may affect GMAP procedure output.

GOPTIONS Procedure

The OPTION= option requests information about the specified option only.

GPLOT Procedure

- The FRAME | NOFRAME option draws a frame around the axis area by default. The V6COMP graphics option enables you to request Version 6 behavior instead of the new defaults. (V6COMP also affects the default behavior of the PATTERN statement.)
- The HTML= and HTML_LEGEND= options use HTML functionality to create graphics output with "drill-down" capability.
- The IMAGEMAP= option creates a data set that contains information about a graph and about areas in the graph. This information includes the shape and coordinates of the areas, and it is used to build an HTML file that links the graph areas to other files or images.
- Changes in the default behavior of the PATTERN statement may affect GPLOT procedure output.
- **V8** New in Version 8, the DESCRIPTION= option can include the #BYLINE, #BYVAL, and #BYVAR substitution options, which work as they do when used on TITLE, FOOTNOTE, and NOTE statements.

GSLIDE Procedure

The IMAGEMAP= option creates a data set that contains information about a graph and about areas in the graph. This information includes the shape and coordinates of the areas, and it is used to build an HTML file that links the graph areas to other files or images.

SAS/GRAPH Statements

Points as Units of Size

The height of text can be specified using points as the unit. These statements have options that can use points as the unit:

- AXIS
- GOPTIONS
- LEGEND
- TITLE, FOOTNOTE and NOTE

AXIS Statement

- The SPLIT= option defines a split character so that axis labels automatically break to a new line when that character is encountered.
- Date handling has been improved so that default intervals are more logical.
- **V8** New in Version 8, the REFLINE= option specifies labels for one or more of the reference lines that are displayed on an axis.

LEGEND Statement

The ORDER=() option orders, includes, or excludes legend entries.

PATTERN Statement

The default pattern for all types of graphs changed from hatch patterns to solid fills. As a result, some default outlines and colors also changed. The V6COMP graphics option enables you to request Version 6 behavior instead of the new defaults.

SYMBOL Statement

- The BWIDTH= option controls the width of the box in box plots and the width of the bar in HILOB plots. Both types of plots are produced with the GPLOT procedure and are controlled by the INTERPOL= option of the SYMBOL statement.
- **V8** New in Version 8, the POINTLABEL= option specifies labels for one or more plot points.

GOPTIONS Statement

- These new options specify graphics commands:
 - PREGPILOG
 - PREGPROLOG
 - POSTGPILOG

- POSTGPROLOG
- These new options affect printing:
 - BINDING
 - COLLATE
 - DUPLEX
 - PAPERSOURCE
 - PAPERDEST
 - PAPERSIZE
 - PAPERTYPE
 - PPDFILE
 - REVERSE
- These options affect device drivers or host commands used during graph production:
 - CMAP
 - DRVINIT
 - DRVTERM
 - FILECLOSE
 - PREGRAPH
 - POSTGRAPH
 - UCC
- These new options affect GIF animation:
 - DELAY
 - DISPOSAL
 - ITERATION
 - INTERLACED
 - TRANSPARENCY
- These enhanced options control the size of images used for Web output:
 - AUTOSIZE
 - XMAX
 - XPIXELS
 - YMAX
 - YPIXELS
- The FILEONLY option specifies whether a file or a storage location is the default destination for graphics output.
- The V6COMP option enables programs that were developed in Version 6 to run but maintain certain Version 6 behaviors. V6COMP affects the default behavior of the PATTERN statement and of axis area frames.

The Annotate Facility

- The CBOX and CBORDER variables blank out a box behind text that is specified with the LABEL function. They also color the box and the border of the box.
- The HTML variable defines a link in the HTML file created for a drill-down graph. This link is associated with an area of the graph and contains valid HTML syntax that can point to a report or another graph that you want to display when the user drills down on the area.

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