# SAS® Viya™ 3.2 Universal Printing

SAS® Documentation

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**SAS® Viya™ 3.2 Universal Printing**

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# Details About Examples and Data Used in This Book

## About Examples and Sample Data Sets

This document includes examples that illustrate some of the features of a statement or system option. The output that is shown for the examples was generated from SAS Studio running in a Linux operating environment.

Many examples process sample data contained in a SAS data set stored in the Sashelp library. The documentation for each example provides the data set name used. To see a brief description of any SAS data set in the Sashelp library, as well as output displaying the first five observations in each data set, please refer to Sashelp Data Sets.

# Part 1

# Printing Output in LINUX Environments

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*Chapter 1*

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# Overview of Printing Output in LINUX Environments

When you print text or graphics, SAS needs to know where the output should go, how it should be written, and how the output should look. Universal Printing is the default printing mechanism in LINUX. Universal Printing enables you to create HTML files or PDF and RTF documents. For more information, see "Universal Printing" on page 15.

# Previewing Output in LINUX Environments

## *Previewing Output Using Universal Printing*

With Universal Printing, you can preview your output before you send it to a printer, plotter, or external file. To preview your output, you first need to define a previewer for your system. For more information, see "Universal Printing" on page 15.

# The Default Routings for the SAS Log and Procedure Output in LINUX Environments

For each SAS job or session, SAS automatically creates two types of output:

SAS log
: contains information about the processing of SAS statements. As each program step executes, notes are written to the SAS log along with any applicable error or warning messages.

SAS output
: is also called the procedure output file or print file. Whenever a SAS program executes a PROC step or a DATA step that produces printed output, SAS sends the output to the SAS output file. The default destination for SAS output is HTML.

The following table shows the default routings of the SAS log and output files.

***Table 1.1*** *Default Routings of the SAS Log and Output Files*

| Processing Mode | SAS Log File | SAS Output File |
|---|---|---|
| batch | *`filename`*`.log` | *`filename`*`.lst` |
| interactive line | terminal | terminal |

By default, both the log file and the output file are written to your current directory. Your system administrator might have changed these default routings.

# Changing the Default Routings in LINUX Environments

## *Techniques for Routing Output*

These are the primary methods for routing your output:

- Using the default HTML destination.
- Issuing batch mode or interactive line mode commands. The PRTFILE, PRINT, and FILE commands can be issued from a LINUX command line and can be used to send output to external files or to other devices defined with the FILENAME statement.
- Using the PRINTTO procedure. You can use the PRINTTO procedure in any mode. Using the FILENAME statement with the PRINTTO procedure is the most flexible way of routing your output.

  *Note:* In order to use this procedure in command line mode, XCMD must be in effect. XCMD or NOXCMD is set by your system administrator.
- Using SAS system options, such as PRINT, LOG, ALTPRINT, or ALTLOG, to specify alternate destinations.

## *Determining Which Technique to Use When Changing the Routing*

Use the following table to help you decide which method you should choose to change the routing.

*Note:* In order to use any technique in command line mode, XCMD must be in effect. XCMD or NOXCMD is set by your system administrator.

***Table 1.2*** *Decision Table: Changing the Default Destination*

| Output destination for your SAS log or procedure output | Processing mode | Method | See |
|---|---|---|---|
| a printer | any mode | FILENAME statement (UPRINTER or PRINTER device type) and PRINTTO procedure | "PRINTTO Procedure" in *SAS Viya Visual Data Management and Utility Procedures Guide* |
| an external file | any mode | PRINTTO procedure and FILENAME statement | "PRINTTO Procedure" in *SAS Viya Visual Data Management and Utility Procedures Guide* |
| | batch | LOG and PRINT system options | "Using SAS System Options to Route Output" on page 9 |
| a LINUX command (pipe) | any mode | FILENAME statement and PRINTTO procedure | "PRINTTO Procedure" in *SAS Viya Visual Data Management and Utility Procedures Guide* |

| Output destination for your SAS log or procedure output | Processing mode | Method | See |
|---|---|---|---|
| its usual location and to an external file | any mode | ALTLOG and ALTPRINT system options | "Using SAS System Options to Route Output" on page 9 |
| a terminal | batch | FILENAME statement and PRINTTO procedure | "PRINTTO Procedure" in *SAS Viya Visual Data Management and Utility Procedures Guide* |

# Using Commands to Print in LINUX Environments

## Differences between the PRTFILE, PRINT, and FILE Commands

You can use the PRTFILE, PRINT, and FILE commands from the LINUX command line or in interactive line mode to send the contents of the active window to an output device.

The following table lists the results of each of these commands.

***Table 1.3*** *Routing Output Commands*

| Command | Action Performed |
|---|---|
| PRTFILE | specifies the filename or fileref for your output. |
| FILE | sends the contents of the active window to the filename or fileref that you specify. |
| PRINT | sends the contents of the active window either:<br>• to your default printer when issued from the command line of the window.<br>• to the location specified with the PRTFILE command. |

## Sending Output to a LINUX Command

If you want to send your output to a LINUX command, you can use the FILENAME statement. The FILENAME statement enables you to create filerefs that point to printers, plotters, or external files or filerefs that pipe to a LINUX command.

*Note:* In order to use this statement, XCMD must be in effect. XCMD is the front-end for starting programs in LINUX software. XCMD or NOXCMD is set by your system administrator.

## Specifying the Print File

When you issue the PRINT command, SAS sends your output to your default printer, unless you specify a print file. You can specify a print file by entering the PRTFILE

command (for example, **PRTFILE *file-spec* CLEAR | APPEND | REPLACE)**. The *file-spec* argument can be either a fileref or a filename.

### Using the FILE Command

You can use the FILE command to copy the contents of many different windows to external files. Issue the FILE command on the command line of the window whose contents you want to copy. For example, to copy the contents of the Log window to **/u/myid/log/app1**, issue the following command on the command line of the Log window:

```
file '/u/myid/log/app1'
```

If the file does not exist, SAS creates it. If the file already exists, a dialog box asks you whether you want to replace it or to append data to the existing data.

If you have already associated a fileref with your external file, you can use the fileref instead of the filename:

```
file myref
```

If you use the FILE command to save your output, carriage-control information is not saved (that is, page breaks are removed from the output). You might want to use the PRINT command with the FILE option instead:

PRINT FILE=*fileref* | '*pathname*'

## Using the PRINTTO Procedure in LINUX Environments

### Important Note about the PRINTTO Procedure

Anytime you use PROC PRINTTO to route output, you must close the output device before PROC PRINTTO will release the output or log and send it to the destination that you have specified. To close the output device, issue PROC PRINTTO without any parameters:

```
proc printto;
run;
```

Issuing PROC PRINTTO without any parameters closes the output device, generates output, and reroutes the log and procedure output to their default destinations. For a list of the default destinations, see Table 1.1 on page 4.

For more information, see "PRINTTO Procedure" in *SAS Viya Visual Data Management and Utility Procedures Guide*.

### Using the LOG= and PRINT= Options

When you use the PRINTTO procedure with its LOG= and PRINT= options, you can route the SAS log or SAS procedure output to an external file or a fileref from any mode. Specify the external file or the fileref in the PROC PRINTTO statement. The following example routes procedure output to **/u/myid/output/prog1**:

```
proc printto print='/u/myid/output/prog1' new;
run;
```

The NEW option causes any existing information in the file to be cleared. If you omit the NEW option from the PROC PRINTTO statement, the SAS log or procedure output is appended to the existing file.

If you plan to specify the same destination several times in your SAS program, you can assign a fileref to the file using a FILENAME statement. (For information and examples, see "Assigning Filerefs to External Files or Devices with the FILENAME Statement" in *Batch and Line Mode Processing in SAS Viya*.)

### Routing Output to a Universal Printer

You can direct output directly to your Universal Printer by using the UPRINTER device type:

```
filename myoutput uprinter;
proc printto print=myoutput;
run;
```

Output is sent to your default Universal Printer. This output is in PostScript or PCL format.

### Routing Output to a Printer

You can direct output directly to your system printer by using the PRINTER device type:

```
filename myoutput printer;
proc printto print=myoutput;
run;
```

Output is sent to your default system printer or, if you have specified the SYSPRINT system option, to the printer specified with that option. This method produces output in ASCII format.

### Piping Output to a LINUX Command

You can also use the PIPE device type to send output to a LINUX command. XCMD as the front-end for starting programs under LINUX software must be in effect. This is set by a system administrator. When you specify the print command, you might also want to specify a destination for any error messages that are produced by the print command. Enclose the LINUX command in either single or double quotation marks. The following example associates the fileref MyOutput with the print command **`lp`**, which sends output to the printer named myljet:

```
filename myoutput pipe 'lp -dmyljet';
proc printto print=myoutput;
run;
```

You can send the SAS log to the same printer by using the LOG= option:

```
filename mylog pipe 'lp -dmyljet';
proc printto log=mylog;
run;
```

The log and procedure output continue to be routed to the designated external file until another PROC PRINTTO statement reroutes them.

### *Routing Output to a Terminal*

In batch mode, you can direct output to a terminal by associating a fileref with a terminal and then using PROC PRINTTO to send output to that fileref. In the FILENAME statement, specify the TERMINAL device-type and the special file associated with the terminal. For example, the following statements send the SAS log to the terminal that is associated with the **/dev/tty3** special file:

```
filename term terminal '/dev/tty3';
proc printto log=term;
run;
```

## Using SAS System Options to Route Output

### *Changing the Output Destination Using the LOG, PRINT, ALTLOG, and ALTPRINT System Options*

You can use SAS system options to change the destination of the SAS log and procedure output. The options that you use depend on which task you want to accomplish:

- To route your SAS log or procedure output to an external file instead of to their default destinations, use the LOG and PRINT system options.
- To route the log or output to an external file in addition to their default destinations, use the ALTLOG and ALTPRINT system options. This method works in all modes of running SAS.

LOG and PRINT are normally used in batch and interactive line modes. These system options have no effect in the windowing environment. If you are running in the windowing environment, use the ALTLOG and ALTPRINT system options.

You can specify these options in the following locations:

- the SAS command in batch or interactive line mode
- a configuration file
- the SASV9_OPTIONS environment variable

For example, you could specify these options in the SAS command as follows:

```
sas -log '/u/myid/log' -print '/u/myid/prt'
sas -altlog '/u/myid/log' -altprint '/u/myid/prt'
```

For more information, see "Specify SAS System Options" in *Batch and Line Mode Processing in SAS Viya*.

## Printing Large Files with the PIPE Device Type in LINUX Environments

When you print a file with the **lp** command, a symbolic link is created from the file to the **/usr/spool** directory. When you pipe output to the **lp** command, the output is copied under the **/usr/spool** directory.

*Note:* In order to use this technique, XCMD must be in effect. XCMD is a front-end for starting programs in LINUX software. XCMD or NOXCMD is set by your system administrator

If you experience problems printing large files using the PIPE device type, you can circumvent the problem in either of the following ways:

- save the print file to a disk file and then print it with the **lp** command. Issue the PRINT command from the Output or Log window:

  ```
  print file='bigfile'
  ```

  Exit your SAS session and print the file, or use the SAS X command to print the file from within your SAS session:

  ```
  x 'lp -dmylsrjt bigfile'
  ```

- create a fileref using the PIPE device type that can handle large files. For example, the following fileref saves the print file to disk, prints the saved file, and then removes the file:

  ```
  filename myfile pipe 'cat >bigfile;lp -dmylsrlt bigfile;rm bigfile;';
  ```

## Changing the Default Print Destination in LINUX Environments

When you print a file, SAS looks in the following locations to determine where to send output. The locations are listed in order of precedence:

1. The destination specified in Universal Printing
2. The value specified in the SYSPRINT system option. You can use the SYSPRINT option to set your default print destination. Use the SYSPRINT system option to specify the destination option that is used with your print command. For example, if your print command is **lp**, you can set the default destination to the printer named myljet by entering the following OPTIONS statement:

   ```
   options sysprint='-dmyljet';
   ```

3. The value of the $LPDEST environment variable. For more information, see "Defining Environment Variables in Linux Environments" in *Batch and Line Mode Processing in SAS Viya*.

SAS uses the first destination that it finds. If you specify a destination in all three locations, SAS uses the destination specified by Universal Printing.

## Changing the Default Print Command in LINUX Environments

LINUX uses **lp** as the default print command. You can use the PRINTCMD system option to specify a different print command. For example, you can change your default print command to **lpr** by entering the following at SAS invocation:

```
sas -printcmd "lpr"
```

You can also customize your default print command in your SAS configuration file. If you use this method, then you will not have to change the default print command every time you invoke SAS. For more information, see "PRINTCMD System Option" in *SAS Viya System Options: Reference*.

# Controlling the Content and Appearance of Output in LINUX Environments

## Overview of Controlling the Content and Appearance of Output

Some of the attributes of the SAS log and procedure output depend on the destination to which they are being sent. For example, if the log and output are being sent to your display, the default line and page size are derived from your display. If one or both of these files are sent to the system printer or written to a file, the default line size and page size depend on your printer and page setup. The line size and page size for your current settings can be seen in the Print dialog box.

Some of the attributes of the SAS log and procedure output depend on the mode in which you are running. For example, if you are running in interactive line mode, SAS source statements are not echoed to the SAS log. If you are using the SAS windowing environment, all source statements are written to the log as they are submitted. In batch mode, the log and procedure output are formatted for a standard system printer.

For more information about specifying system options, see "Customizing Your SAS Session By Using System Options" in *Batch and Line Mode Processing in SAS Viya*.

## SAS Log Options

Use the following options to control the contents of the log. For more information about specifying options, see *SAS Viya System Options: Reference*.

FULLSTIMER
NOFULLSTIMER
: controls whether a list of resources (such as I/O performed, page faults, elapsed time, and CPU time) used for each PROC or DATA step is written to the log. NOFULLSTIMER is the default.

LINESIZE=*width*
: controls the line length used. *Width* can be any value from 64 to 256.

NEWS
NONEWS
: controls whether messages are written to the SAS log. NEWS is the default.

NOTES
NONOTES
: controls printing of NOTES on the log. NOTES is the default setting for all execution modes. Specify NOTES unless your SAS program is completely debugged.

PAGESIZE=*n*
: controls the number of lines that are printed on each page. *N* can be any number from 15 to 32767.

SOURCE
NOSOURCE
controls whether SAS source statements are written to the log. NOSOURCE is the default setting in interactive line mode. Otherwise, SOURCE is the default.

SOURCE2
NOSOURCE2
controls whether SAS statements that are included with %INCLUDE statements are written to the log. NOSOURCE2 is the default setting for all execution modes.

STIMER
NOSTIMER
controls whether user CPU time and elapsed time are written to the log. STIMER is the default.

### Procedure Output Options

Use these system options to control the contents of the procedure output for the LISTING destination:

CENTER
NOCENTER
controls whether the printed results are centered or left-aligned on the procedure output page. CENTER is the default.

DATE
NODATE
controls whether the date is written at the top of each procedure output page. DATE is the default.

LINESIZE=*width*
controls the line length used. *Width* can be any value from 64 to 256.

NUMBER
NONUMBER
controls whether the output page number is written on each procedure output page. NUMBER is the default.

PAGENO=*n*
resets the current page number in the print file. The default page number at the beginning of the SAS session is 1. The pages are numbered sequentially throughout the SAS session unless the PAGENO option is specified in an OPTIONS statement during the session.

PAGESIZE=*n*
controls the number of lines that are printed on each page. *N* can be any number from 15 to 32,767.

# *Part 2*

# Universal Printing in SAS

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# Printing in SAS

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## Universal Printing

### *What Is Universal Printing?*

Universal Printing is a system that enables you to create a variety of document and graphic output formats programmatically. For example, you can use Universal Printing to create HTML files or PDF and RTF documents.

Universal Printing enables you to define printers and to set options to control the printed output. In addition to creating the various document and graphic output types, you can send output to a printer.

SAS routes all printing through Universal Printing services. All Universal Printing features are controlled by system options, thereby enabling you to control many print

features, even in batch mode. For more information about these system options, see "System Options That Control Universal Printing" on page 25.

In SAS Studio, printing is also available through a browser by selecting the print icon.

## Setting Up the Universal Printing Interface and the Default Printing Environment

### Universal Printing in Linux

Universal Printing is enabled when SAS starts in the Linux operating environment. No further action is required.

### Return to the Default Printer

When you use the PRINTERPATH= system option to specify a printer, the print job is controlled by Universal Printing. In SAS Studio, the PRINTERPATH= system option value is PDF.

```
options printerpath="";
```

## Universal Printing Output Formats

In addition to sending print jobs to a printer, you can also direct output to external files that are widely recognized by different types of printers and software programs. You can use Universal Printing to produce commonly recognized file types.

You set the value of the PRINTERPATH= system option to a Universal Printer or use ODS destination statements like PDF, RTF, and HTML to create output in a supported format. In batch or command line mode, when the PRINTERPATH= system option is set to a printer that prints to a file, the default filename is sasprt.*extension*. *extension* is the printer format type. An example is sasprt.pdf. The file is written to the current directory. In SAS Studio, you must specify the path and the filename where the output file is to be written.

You can use the PRINTERPATH= system option to change the location and the name of the file. Here is an example:

```
options printerpath=(pdf out);
filename out 'c:\myimages\graph1.pdf';
```

## Modifying Universal Printing Printer Settings

You modify printer settings by setting SAS system options. See "System Options That Control Universal Printing" on page 25.

## Universal Printing and ODS

The ODS PRINTER statement can use Universal Printing whether the UNIVERSALPRINT or NOUNIVERSALPRINT system option is set. The PRINTER destinations used by the ODS PRINTER statement are described in the "SAS Statements That Use ODS Printer Destinations" chapter.

The Output Delivery System (ODS) uses Universal Printing for the following ODS statements.

**Table 2.1** *ODS Statements That Use Universal Printing*

| ODS Statement | Description |
|---|---|
| Document Formats | |
| ODS PRINTER PRINTER= option | Uses the selected printer. |
| ODS PDF statement | Uses the Universal Printing PDF printer. |
| ODS HTML | Use with ODS Graphics. |
| ODS RTF | Use with ODS Graphics |

## Specifying the Page Orientation for Universal Printing Documents

You can specify the page orientation for each page of a multiple-page document that is created by a Universal Printer. You can also use page orientation for documents that are created for the ODS PDF destination.

The ORIENTATION= system option has four values: PORTRAIT, LANDSCAPE, REVERSEPORTRAIT, and REVERSELANDSCAPE. To change the orientation of a document page, specify the OPTIONS statement, using the ORIENTATION= system option, between the steps that create output to change the page orientation.

*Note:* The EMF, GIF, PNG, and TIFF Universal Printers do not support multiple-page documents. These printers also do not support the REVERSELANDSCAPE and the REVERSEPORTRAIT orientations.

For more information, see "ORIENTATION= System Option" on page 42.

## Color Support for Universal Printers

### Universal Printers and the Color Spaces They Support

All Universal Printers support 24-bit RGB colors. Most printers support 32-bit CMYK colors or 32-bit RGBA (transparency) colors. The following table lists the Universal Printers and their respective color support.

**Table 2.2** *Color Support for Universal Printers*

| Universal Printer | Color Support | Supports Transparency |
|---|---|---|
| PDF | CMYK and RGBA | Yes, for RGBA colors |

For information about colors, see "CMYK Colors" on page 18 and "RGB and RGBA Colors" on page 19.

### CMYK Colors

CMYK colors setting specify eight hexadecimal characters with a value of 0–255 to specify the amount of cyan, magenta, yellow, and black ink. Use your printer's Pantone Color Lookup table to find the CMYK values for your printer. If you specify an unsupported color, such as a CMYK color with an EMF printer, the color is converted to a color that is supported.

You can specify CMYK colors where ever colors can be set (for example, in the PROC PRINT statement STYLE option or in the TITLE statement).

Preface the hexadecimal number with a CMYK or a K. Here are some examples of CMYK colors that you can set in SAS:

***Table 2.3*** *Example CMYK Colors*

| Hexadecimal Representation | Color |
|---|---|
| cmykFF000000 | cyan |
| k00FF0000 | magenta |
| cmyk0000FF00 | yellow |
| kFFFF0000 | blue |
| cmykFF00FF00 | green |
| k00FFFF00 | red |
| cmykFFFFFF00 | process black, using cyan, magenta, and yellow |
| k000000FF | black |

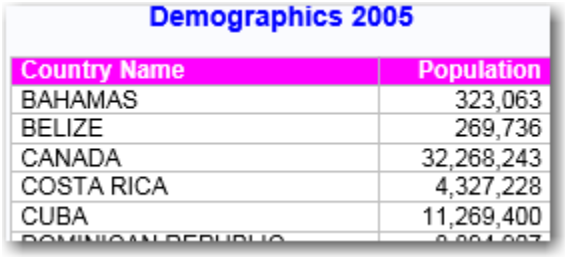
The first byte of the hexadecimal number represents cyan. The second byte represents magenta. The third byte represents yellow. The fourth byte represents black.

This example uses the STYLE option to set the column header background color to magenta and sets the foreground color to white. The TITLE statement sets the output title to blue. Specify the path to where the PDF file is written.

```
options obs=5 nodate;
filename output='path-to-pdf-output';
ods pdf file=output;
proc print data=sashelp.demographics label
           style(header)={background=cmyk00ff0000 foreground=k00000000} noobs;
   var name pop;
   label name=Country Name pop=Population;
   title color=kffff0000 'Demographics 2005';
run;
```

This is the output as displayed in the Results tab of SAS Studio.

***Figure 2.1*** *CMYK Color Specified in the STYLE Option*



Demographics 2005

| Country Name | Population |
|---|---|
| BAHAMAS | 323,063 |
| BELIZE | 269,736 |
| CANADA | 32,268,243 |
| COSTA RICA | 4,327,228 |
| CUBA | 11,269,400 |

## *RGB and RGBA Colors*

RGB and RGBA colors combine red, green, and blue colors in different ratios to create colors. The A is the alpha channel, which represents a percentage of opacity.

You specify RGB colors as a triple of hexadecimal numbers, ranging from 00–FF. Each hexadecimal number indicates how much of the red, green, or blue is included in the color. RGBA color includes an additional hexadecimal number for the alpha channel indicating the amount of transparency the color possesses. FF is opaque and 00 is transparent. In both RGB and RGBA color specifications, the first hexadecimal number is red, the second is green, and the third is blue. In RGBA colors, the fourth hexadecimal number is the alpha channel specification.

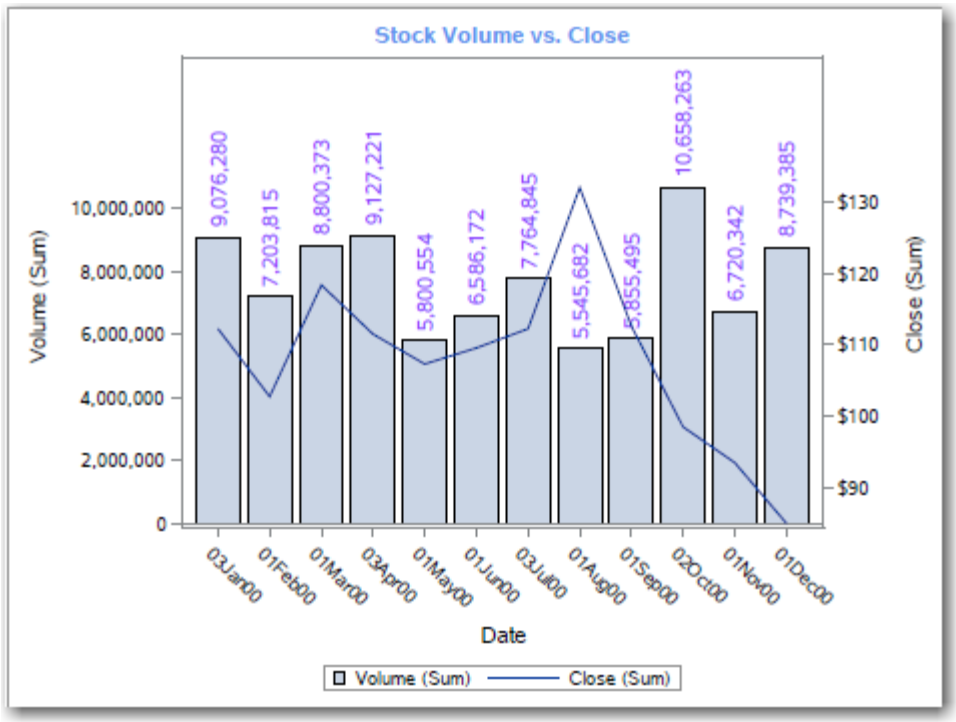
You can specify RGB and RGBA colors where ever colors can be set. For example, set an option in the VBAR statement in the SGPLOT procedure or in the TITLE statement. For RGB colors, preface the hexadecimal number with a CX. For RGBA colors, preface the hexadecimal number with RGBA or A.

The following SGPLOT procedure uses an RGBA color to create the bar labels:

```
options printerpath=pdf;
filename output='path-to-pdf-output';
ods printer file=output;
proc sgplot data=sashelp.stocks (where=(date >= "01jan2000"d
                                 and date <= "01jan2001"d
                                 and stock = "IBM"));
   title color=a6495edff "Stock Volume vs. Close";
   vbar date / response=volume
               datalabel
               datalabelattrs=(color=a8a44ff8a size=10);
   vline date / response=close y2axis;
run;
title;
ods printer close;
```

Here is the default PDF output file with bar labels:

***Figure 2.2*** *RGBA Color Specified for the Bar Labels*




### *Example: Static and Varying Background Color in a Table Using RGBA Colors*

This example program does the following:

- Creates the format PCT. using a DATA _NULL_ statement. The DATA step defines salary ranges of $3,000.00 and calculates an RGBA color value for each salary range. The CALL EXECUTE statement is used to output the FORMAT procedure code as it is generated.
- Creates a data set.
- The PRINT procedure uses an RGBA color value for the background of the table header and formats the salary variable using the PCT. format.

```
options nodate;

/* Create the PCT format.                                  */
/* The color variable is a concatenation of calculated   */
/* hexadecimal values.                                    */

data _null_ ;
   call execute('proc format fmtlib ; value pct');
   max=10000;
   maxloop=255;
   do i=1 to maxloop by 10;
      color='RGBA'||put(((maxloop)/(maxloop+i)*200),hex2.)
                  ||put(((maxloop)/(maxloop+i)*235),hex2.)
                  ||put(((maxloop)/(maxloop+i)*255),hex2.)||'95';
      from=max;
      to=(max+3000);
      max=max+3000;
      /* Create salary ranges of $3000.00 equal to the calculated RGBA color value.*/
```

```
      call execute(put(from,best.)||'-'||put(to,best.)||'='||quote(color));
   end;


   /* Create RGBA values for missing values and values outside the salary ranges.  */
   call execute('.="RGBAF7F5F0480" other="RGBAFF2A2A88"; run;');
 run;

data staff;
   infile datalines dlm='#';
   input Name $16. IdNumber $ Salary
         Site $ HireDate date7.;
   format hiredate date7.;
   datalines;
Capalleti, Jimmy# 2355# 21163# BR1# 30JAN09
Chen, Len#        5889# 20976# BR1# 18JUN06
Davis, Brad#      3878# 19571# BR2# 20MAR84
Leung, Brenda#    4409# 34321# BR2# 18SEP94
Martinez, Maria#  3985# 49056# US2# 10JAN93
Orfali, Philip#   0740# 50092# US2# 16FEB03
Patel, Mary#      2398# 35182# BR3# 02FEB90
Smith, Robert#    5162# 40100# BR5# 15APR66
Sorrell, Joseph#  4421# 38760# US1# 19JUN11
Zook, Carla#      7385# 22988# BR3# 18DEC10
;
run;

     /* Format the header background using an RGBA color.       */
     /* Use the PCT. format to format the salary variable.      */
     /* Specify the pathname where the output will be written   */
ods pdf file='pathname\outpdf.pdf';
proc print data=staff noobs label
           style(HEADER)={background=rgbac7eafe95  fontstyle=italic}
           style(DATA)={foreground=black};
   var name IdNumber ;
   var salary /style(DATA)={background=pct.};
     label IdNumber='Employee Number' salary='Salary in U.S. Dollars';
   format salary dollar7.;
   title 'Generated Colors for the Variable Salary';
run;
```

***Log 2.1*** *Static and Varying Background Color in a Table Using RGBA Colors*

```
 1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
 NOTE: ODS statements in the SAS Studio environment may disable some output
features.
 57
 58         options nodate;
 59
 60         /* Create the PCT format.                                  */
 61         /* The color variable is a concatenation of calculated   */
 62         /* hexadecimal values.                                    */
 63
 64         data _null_ ;
 65            call execute("proc format fmtlib ; value pct");
 66            max=10000;
 67            maxloop=255;
 68            do i=1 to maxloop by 10;
 69               color="RGBA"||put(((maxloop)/(maxloop+i)*200),hex2.)
 70                           ||put(((maxloop)/(maxloop+i)*235),hex2.)
 71                           ||put(((maxloop)/(maxloop+i)*255),hex2.)||"95";
 72               from=max;
 73               to=(max+3000);
 74               max=max+3000;
 75               /* Create salary ranges of $3000.00 equal to the calculated
RGBA color value.*/
 76               call execute(put(from,best.)||"-"||put(to,best.)||"="||
quote(color));
 77            end;
 78
 79
 80            /* Create RGBA values for missing values and values outside the
salary ranges.  */
 81            call execute('.="RGBAF7F5F0480" other="RGBAFF2A2A88"; run;');
 82          run;

 NOTE: DATA statement used (Total process time):
       real time           0.00 seconds
       cpu time            0.01 seconds
```

```
NOTE: CALL EXECUTE generated line.
 1         + proc format fmtlib ;
 1         +                      value pct
 2         +        10000-       13000="RGBAC7EAFE95"
 3         +        13000-       16000="RGBABFE1F495"
 4         +        16000-       19000="RGBAB8D9EB95"
 5         +        19000-       22000="RGBAB2D1E395"
 6         +        22000-       25000="RGBAACCADB95"
 7         +        25000-       28000="RGBAA6C3D495"
 8         +        28000-       31000="RGBAA1BDCD95"
 9         +        31000-       34000="RGBA9CB7C795"
 10        +        34000-       37000="RGBA97B2C195"
 11        +        37000-       40000="RGBA93ADBB95"
 12        +        40000-       43000="RGBA8FA8B695"
 13        +        43000-       46000="RGBA8BA3B195"
 14        +        46000-       49000="RGBA879FAC95"
 15        +        49000-       52000="RGBA849BA895"
 16        +        52000-       55000="RGBA8097A495"
 17        +        55000-       58000="RGBA7D93A095"
 18        +        58000-       61000="RGBA7A909C95"
 19        +        61000-       64000="RGBA778C9895"
 20        +        64000-       67000="RGBA74899595"
 21        +        67000-       70000="RGBA72869195"
 22        +        70000-       73000="RGBA6F838E95"
 23        +        73000-       76000="RGBA6D808B95"
 24        +        76000-       79000="RGBA6B7D8895"
 25        +        79000-       82000="RGBA687B8595"
 26        +        82000-       85000="RGBA66788395"
 27        +        85000-       88000="RGBA64768095"
 28        + .="RGBAF7F5F0480" other="RGBAFF2A2A88";
 NOTE: Format PCT has been output.
 28        +                                          run;

 NOTE: PROCEDURE FORMAT used (Total process time):
       real time           0.03 seconds
       cpu time            0.03 seconds


 83
 84         data staff;
 85            infile datalines dlm="#";
 86            input Name $16. IdNumber $ Salary
 87                  Site $ HireDate date7.;
 88            format hiredate date7.;
 89            datalines;

 NOTE: The data set WORK.STAFF has 10 observations and 5 variables.
 NOTE: DATA statement used (Total process time):
       real time           0.00 seconds
       cpu time            0.00 seconds

 100        ;

 101        run;
```

```
102
 103             /* Format the header background using an RGBA color.       */
 104             /* Use the PCT. format to format the salary variable.      */
 105             /* Specify the pathname where the output will be written   */
 106
 107        ods pdf file="/pathname/outpdf.pdf";
 108        proc print data=staff noobs label
 109                   style(HEADER)={background=rgbac7eafe95  fontstyle=italic}
 110                   style(DATA)={foreground=black};
 111           var name IdNumber ;
 112           var salary /style(DATA)={background=pct.};
 113         label IdNumber="Employee Number" salary="Salary in U.S. Dollars";
 114           format salary dollar7.;
 115           title "Generated Colors for the Variable Salary";
 116        run;

 NOTE: There were 10 observations read from the data set WORK.STAFF.
 NOTE: PROCEDURE PRINT used (Total process time):
       real time           0.04 seconds
       cpu time            0.05 seconds
```

Here is the formatted PDF output:

***Output 2.1*** *PDF Formatted Using RGBA Color Values*

**Generated Colors for the Variable Salary**

| Name | Employee Number | Salary in U.S. Dollars |
|---|---|---|
| Capalleti, Jimmy | 2355 | $21,163 |
| Chen, Len# | 5889 | $20,976 |
| Davis, Brad# | 3878 | $19,571 |
| Leung, Brenda# | 4409 | $34,321 |
| Martinez, Maria# | 3985 | $49,056 |
| Orfali, Philip# | 0740 | $50,092 |
| Patel, Mary# | 2398 | $35,182 |
| Smith, Robert# | 5162 | $40,100 |
| Sorrell, Joseph# | 4421 | $38,760 |
| Zook, Carla# | 7385 | $22,988 |

## *Embedding Non-Viewable Comments in Universal Printing Output*

You can embed a comment in Universal Printer output that does not appear in the output when the file is displayed or printed. The comment can be a text string up to 4,000 characters that you specify using the COLOPHON= system option. You might want to use the comment as a digital signature or to identify the image, vector graphic, or PDF file. You can use a text editor or a third-party application to view the text string in the file.

This example adds text to a PDF document using the COLOPHON= option:

```
options printerpath=pdf colophon='Colophon text: PDF SGPLOT for sashelp.class';
filename output 'path-to-pdf';
ods printer file=output;
proc sgplot data=sashelp.class;
  reg x=height y=weight / CLM CLI;
```

```
run;
ods printer close;
```

For more information, see "COLOPHON= System Option" on page 38.

## System Options That Control Universal Printing

The following system options control Universal Printing.

***Table 2.4*** *System Options That Control Universal Printing*

| System Option | Description |
|---|---|
| "BOTTOMMARGIN= System Option" on page 37 | Specifies the size of the margin at the bottom of the page for printing. |
| "COLORPRINTING System Option" on page 39 | Specifies color printing, if it is supported. |
| "FONTEMBEDDING System Option" on page 41 | Specifies whether font embedding is enabled in Universal Printer. |
| "LEFTMARGIN= System Option" on page 41 | Specifies the size of the margin on the left side of the page. |
| "ORIENTATION= System Option" on page 42 | Specifies the paper orientation to use (either portrait, landscape, reverse-portrait, or reverse-landscape) for the whole document or for changing the orientation of individual pages in a document. |
| "PAPERSIZE= System Option" on page 44 | Specifies the paper size to use when printing. |
| "PRINTERPATH= System Option" on page 59 | Specifies a printer for Universal Printing print jobs. |
| "RIGHTMARGIN= System Option" on page 60 | Specifies the size of the margin on the right side of the page. |
| "TOPMARGIN= System Option" on page 61 | Specifies the size of the margin at the top of the page. |

*Note:* The PRINTERPATH= system option specifies which printer is used. If the PRINTERPATH= system option is blank, then the default printer is used.

# Using Fonts with Universal Printers

## Rendering Fonts

Universal printing uses the FreeType library to generate and display fonts in SAS output. The FreeType library supports TrueType and Type1 fonts, which are rendered in SAS by either the FreeType library or by using the font-rendering capabilities of the host.

Output methods that use the FreeType library are preferred because they can render fonts in all of the operating environments that SAS supports. The following Universal Printers are recommended because they use the FreeType library[1] to render fonts.

*Note:* Universal Printing does not support double-byte Type1 fonts.

***Table 2.5*** *Devices That Use the FreeType Library to Render Fonts*

| Output Method | Device |
|---|---|
| ODS printing and Universal Printing | PDF, PDFA |
| ODS RTF | PNG, SASEMF *, EMF |
| ODS HTML | PNG, PNGT, PNG300, GIF, JPEG, SVG, SVGT * |

* If the NOFONTRENDERING option is set, the device driver uses only the FreeType library for measuring the text.

Font embedding allows the fonts used in the creation of output to travel with that output, ensuring that it is displayed or printed exactly as you intended. See the "FONTEMBEDDING System Option" on page 41 for more information.

*Note:* Not all browsers support font embedding.

With devices that use host rendering in a Linux operating environment, the TrueType fonts must be installed on the X server that is being used. This is usually specified by the DISPLAY environment variable. For more information, see the *Configuration Guide for SAS 9.4 Foundation for UNIX Environments*.

## ODS Styles and TrueType Fonts

By default, all Universal Printers generate output by using ODS styles, and these ODS styles use TrueType fonts. If no style is specified, the default style is used.

## International Character Support

TrueType fonts support a wide range of international characters.

1 The FreeType library is used to perform two distinct operations in SAS: measuring the text and rendering the font. Depending on the output devices specified, the FreeType library can perform one or both of these operations. to render fonts.

## TrueType Fonts Supplied by SAS

When you install SAS, a number of TrueType fonts are available. TrueType fonts that are supplied by SAS can be categorized into four groups: Windows Glyph List (WGL) Pan-European character set fonts; graphic symbol; multilingual; and monolingual Asian. The following tables show the fonts supplied by SAS.

The fonts that are supplied by SAS

***Table 2.6*** *Windows Glyph List (WGL) Pan-European Character Set Fonts*

| Font Name | Font Description |
|---|---|
| Albany AMT | sans-serif |
| Thorndale AMT | serif |
| Cumberland AMT | serif fixed* |

* Fixed refers to uniform spacing.

***Table 2.7*** *Graphic Symbol TrueType Fonts*

| Font Name | Font Description |
|---|---|
| Arial Symbol Bold | 42 symbols** |
| Arial Symbol Bold Italic | 42 symbols** |
| Arial Symbol Italic | 42 symbols** |
| Arial Symbol Regular | 42 symbols** |
| Monotype Sorts* | 205 Wingdings characters |
| Symbol MT | 192 symbols |
| Times New Roman Symbol Bold | 42 symbols** |
| Times New Roman Symbol Bold Italic | 42 symbols** |
| Times New Roman Symbol Italic | 42 symbols** |
| Times New Roman Symbol Regular | 42 symbols** |

* SAS Monotype Sorts is an ornamental font consisting of shapes, symbols, and decorative glyphs.

** These fonts have special glyphs for the Latin characters 0, <. =, C, D, L, M, N, P, R, S, U, V ,W, X, Z, and a-z. All other characters are undefined and might be rendered as a rectangle. For example, in the HTML destination, the rectangle is replaced with the matching Latin1 character when it is displayed in Internet Explorer.

***Table 2.8*** *Multilingual TrueType Fonts*

| Font Name | Language Supported | Font Description |
|---|---|---|
| Arial Unicode MS* | Arabic, Armenian, Basic Latin, Bengali, Bopomofo, Cyrillic, Devanagari, Georgian, Greek and Coptic, Gujarati, Gurmukhi, hangul jamo, Hebrew, hiragana, Kanbun, Kannada, katakana, Lao, Malayalam, Oriya, Tamil, Telugu, Oriya, Tamil, Telugu, Thai Tibetan. | sans-serif |
| Times New Roman Uni* | Arabic, Basic Latin, Bopomofo, Cyrillic,Devanagari, Georgian, Greek and Coptic,Gujarati, hangul jamo, Hebrew, hiragana, Kanbun, katakana, Lao, Mongolian, Tamil, Telugu, Thai, Tibetan. | serif |

* Starting with SAS 9.4, the Arial Unicode MS and Times New Roman fonts replace the Monotype Sans WT and Thorndale Duospace WT fonts, respectively.

***Table 2.9*** *Monolingual Asian TrueType Fonts*

| Language Supported | Font Name | Character Set |
|---|---|---|
| Korean | Gulim, Dotum | KSC5601 |
| | Batang, Gungsuh | KSC5601 |
| Japanese | MS Gothic, MS UI Gothic, MS PGothic | Shift JIS |
| | MS Mincho, MS PMincho | Shift JIS |
| Simplified Chinese | CSongGB18030C-Light<br>CSongGB18030-LightHWL<br>MYingHei_18030_C-Medium<br>MYingHei_18030_C-MediumHWL | GB18030 and GB2312 |
| Traditional Chinese* | Hei | Big5 |
| | MingLiU, PMingLiU | Big5 |

* Hei, MingLiU, and PMingLiu support HKSCS2004 (Hong Kong Supplemental Character Set) characters.

Starting with the second release for SAS Viya, the fonts in the following table replace the Avenir Next and Helvetica LT Pro fonts.

***Table 2.10*** *AvenirNextforSAS and HelveticaNeueforSAS TrueType Fonts Distributed by SAS*

| Font Name |
|---|
| AvenirNextforSAS* |
| AvenirNextforSAS Bold Italic* |
| AvenirNextforSAS Bold* |
| AvenirNextforSAS Italic* |
| AvenirNextforSAS Light* |
| AvenirNextforSAS Light Italic* |
| HelveticaNeueforSAS |
| HelveticaNeueforSAS Bold Italic |
| HelveticaNeueforSAS Bold |
| HelveticaNeueforSAS Italic |
| HelveticaNeueforSAS Light |
| HelveticaNeueforSAS Light Italic |

* AvenirNextforSAS is a sans-serif TrueType font family with additional characters characterized as a modernistic typeface designed for on-screen display. Its ancestors are primarily the Futura and Univers typefaces.

## Using Fonts

### Specifying Fonts with SAS Program Statements

You can specify a font in the TITLE statement. For example, if you want to use the TrueType font Albany AMT in a TITLE statement, include the following line of code in your SAS program.

```
Title1 f="Albany AMT"  "Text in Albany AMT";
```

You can also specify attributes such as style or weight in the TITLE statement by using the forward slash (/) as a delimiter.

```
Title1 f="Albany AMT/Italic/Bold" "Text in Bold Italic Albany AMT";
```

Or, starting with the second release for SAS Viya, if you want to use the AvenirNextforSAS Light Italic TrueType font in a TITLE statement, include the following line of code in your SAS program.

```
Title1 f="AvenirNextforSAS Light/Italic" "AvenirNextforSAS Light Italic";
```

For ODS templates, the attributes are specified after the text size parameter.

*Note:* You should use the <ttf> tag only when it is necessary (for example, to distinguish between a TrueType font and another type of font with the same name).

### Specifying a Font with the SYSPRINTFONT Option

The SYSPRINTFONT= system option sets the default font that you want to use for printing from windows such as the Program Editor, the Log, and Output windows. For example, you could use the SYSPRINTFONT= system option to specify Albany AMT as your default font by submitting the following OPTIONS statement.

```
options sysprintfont=("Albany AMT");
```

You can also use the SYSPRINTFONT= system option to specify the weight and size of a font. For example, the following code specifies an Albany AMT font that uses bold face and has a size of 14 points.

```
options sysprintfont=("Albany AMT" bold 14);
```

You can override the default font by explicit font specifications or ODS styles.

## Creating PDF Files Using Universal Printing

### PDF Files in SAS

PDF files can be read by the Adobe Acrobat Reader and other applications. SAS Studio creates PDF output by default and gives you the option of saving the file to the location of your choice. You can also create PDF files using the Output Delivery System (ODS). ODS uses the PDF Universal Printing printer to create a PDF. ODS provides styles and templates that you can apply to a document, or you can create your own styles and templates to customize a document. See the ODS PDF statement for more information.

### Creating a PDF File

SAS Studio creates a PDF file by default.

You can also create a PDF file using the ODS PDF or ODS PRINTER statements. You can specify the PDF Universal Printer either as the value of the PRINTERPATH= system option or as the value of the PRINTER= option in the ODS PRINTER statement. The ODS PDF statement creates output using the PDF Universal Printer. Therefore, you do not need to explicitly specify the PDF Universal Printer when you use the ODS PDF statement.

Here is some sample code to create a PDF file. In the first sample, the PDF Universal Printer does not need to be specified because the ODS PDF statement uses the PDF Universal Printer to create a PDF. Note that you must specify a filename and a path to which the file can be written. In the second sample, the PDF Universal Printer is specified as the value of the PRINTERPATH= system option and the ODS PRINTER statement creates the PDF:

- ```
  filename out 'path-to-pdf';
  ods pdf file=out;

  ...more SAS code...

  ods pdf close;
  ```
  ```

- ```
  options printerpath=pdf;
  filename out 'path-to-pdf';
  ods printer file=out;

  ...more SAS code...

  ods printer close;
  ```

SAS Studio creates a file with the filename you specify and writes it to the directory specified. Download results as a PDF file with the icon in the Results tab of the SAS Studio interface.

## Example of Creating a PDF Using the ODS PDF Statement

This example creates a PDF file that contains the first five observations of the data set Sashelp.Class:

```
options obs=5 nodate pageno=1;
filename out 'path-to-pdf';
ods pdf file=out;

proc print data=sashelp.class;
run;

ods pdf close;
```

Here is the PDF output as viewed from your specified location:

***Figure 2.3*** *Sashelp.Class in a PDF File*

| Obs | Name | Sex | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | Alfred | M | 14 | 69.0 | 112.5 |
| 2 | Alice | F | 13 | 56.5 | 84.0 |
| 3 | Barbara | F | 13 | 65.3 | 98.0 |
| 4 | Carol | F | 14 | 62.8 | 102.5 |
| 5 | Henry | M | 14 | 63.5 | 102.5 |

## System Options That Affect PDF Output

Before you create PDF output, you can use SAS system options to set document security restrictions. The security restrictions specify what can be done to the document, as well as the security method, the printing resolution, and the encryption level.

The following table lists the system options that can be used to set the PDF document security restrictions:

| System Option | Description |
|---|---|
| PDFACCESS on page 46 | Enables editing of PDF documents. |
| PDFASSEMBLY on page 47 | Specifies whether PDF documents can be assembled. |
```

| System Option | Description |
|---|---|
| PDFCOMMENT on page 48 | Specifies whether PDF document comments can be modified. |
| PDFCONTENT on page 49 | Specifies whether the contents of a PDF document can be changed. |
| PDFCOPY on page 51 | Specifies whether text and graphics from a PDF document can be copied. |
| PDFFILLIN on page 52 | Specifies whether PDF forms can be filled in. |
| PDFPASSWORD on page 55 | Specifies the password to use to open a PDF document and the password used by a PDF document owner. |
| PDFPRINT on page 56 | Specifies the resolution to print PDF documents. |
| PDFSECURITY on page 57 | Specifies the level of encryption for PDF documents. |

# Part 3

# System Options for Universal Printing

*Chapter 3*
***What You Need to Know about SAS System Options*** . . . . . *35*

*Chapter 4*
***Dictionary of Printing-Related System Options*** . . . . . *37*

*Chapter 3*

# What You Need to Know about SAS System Options

**About SAS System Options** . . . . . 35

## About SAS System Options

System options are instructions that affect the processing of an entire SAS program or SAS session from the time the option is specified until it is changed. For example, there are SAS system options that control the appearance of SAS output or how observations are handled in SAS data sets. Some system options affect only a particular SAS component or product. The documentation for that component or product provides the details for those system options. This document provides information about the system options that affect printed output. For details of all other system options and how to use them, see "What You Need to Know" in *SAS Viya System Options: Reference*.

### *See Also*

For links to the component and product documents that describe system options affecting them, see "SAS System Options Documented in Other SAS Publications" in *SAS Viya System Options: Reference*.

*Chapter 4*

# Dictionary of Printing-Related System Options

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## Dictionary

### BOTTOMMARGIN= System Option

Specifies the size of the margin at the bottom of a printed page.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is 0.000 in.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**BOTTOMMARGIN=***margin-size*<*margin-unit*>

### *Syntax Description*

***margin-size***
specifies the size of the margin.

**Restriction** The bottom margin should be small enough so that the top margin plus the bottom margin is less than the height of the paper.

**Interaction** Changing the value of this option might result in changes to the value of the PAGESIZE= system option.

***<margin-unit>***
specifies the units for margin-size. The margin-unit can be *in* for inches or *cm* for centimeters. <*margin-unit*> is saved as part of the value of the BOTTOMMARGIN system option.

**Default** inches

## Details

All margins have a minimum that is dependent on the printer and the paper size.

## Example

```
options bottommargin=10cm;
```

## See Also

### System Options:

- "LEFTMARGIN= System Option" on page 41
- "RIGHTMARGIN= System Option" on page 60
- "TOPMARGIN= System Option" on page 61

# COLOPHON= System Option

Specifies a text string that is embedded in a PDF that is created by Universal Printers. The text string is not displayed in the rendered PDF.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**COLOPHON="***text-string***"**

### *Syntax Description*

***text-string***
specifies the text that is embedded in a graphic file.

**Length** up to 4,000 characters.

**Requirement** The text string must be enclosed in quotation marks.

## Details

A colophon is a printer's mark. You can use the COLOPHON= option to add a signature, an identification, or a comment to Universal Printer output files. The text string is not visible in the RTF or PDF when the output file is displayed or printed. You can view the colophon text string by using a text editor or a third-party application.

# COLORPRINTING System Option

Specifies whether to print in color if color printing is supported.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is COLORPRINTING.

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**COLORPRINTING | NOCOLORPRINTING**

### *Syntax Description*

**COLORPRINTING**
specifies to attempt to print in color.

**NOCOLORPRINTING**
specifies not to print in color.

# DEFLATION= System Option

Specifies the level of compression for device drivers that support the Deflate compression algorithm.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Alias:** DEFLATE

**Default:** The shipped default is 6.

**Requirement:** The UPRINTCOMPRESSION system option must be set in order to compress files.

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**DEFLATION**=*n* | MIN | MAX

### *Syntax Description*

***n***
specifies the level of compression. The larger the number, the greater the compression. For example, *n*=0 is the minimum compression level (completely uncompressed), and *n*=9 is the maximum compression level.

**Range** 0–9

**MIN**
specifies the minimum compression level of 0.

**MAX**
specifies the maximum compression level of 9.

## Details

The DEFLATION= system option controls the level of compression for device drivers that support Deflate, such as PDF.

The ODS PRINTER statement option, COMPRESS=, takes precedence over the DEFLATION system option.

## See Also

### System Options:

- "PRINTERPATH= System Option" on page 59
- "UPRINTCOMPRESSION System Option" on page 62

## FONTEMBEDDING System Option

Specifies whether font embedding is enabled in Universal Printer printing.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is FONTEMBEDDING.

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

### Syntax

**FONTEMBEDDING** | **NOFONTEMBEDDING**

#### *Syntax Description*

**FONTEMBEDDING**
specifies to enable font embedding.

**NOFONTEMBEDDING**
specifies to disable font embedding.

### Details

Font embedding is used mainly by Universal Printing. Not all printers support font embedding.

When FONTEMBEDDING is set, fonts can be embedded, or included, in the output files that are created by the Universal Printer. Output files with embedded fonts do not rely on fonts being installed on the computer that is used to view or print the output file. File size is increased for vector output for printers such as PDF.

When NOFONTEMBEDDING is set, the output files rely on the fonts being installed on the computer that is used to view or print the font. If a font is not found on the computer, the printer or the application that displays the output might perform font substitution. Image output is not affected when NOFONTEMBEDDING is set.

To determine which fonts are substituted for a given printer, use the Print Setup window to display the Printer Setup properties. Under **Fonts**, any individual fonts that are listed are recognized by the printer. All other fonts are substituted in the document when the document is created.

## LEFTMARGIN= System Option

Specifies the print margin for the left side of the page.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is 0.000 in.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**LEFTMARGIN=***margin-size*<*margin-unit*>

### *Syntax Description*

***margin-size***
specifies the size of the left print margin.

**Restriction** The left margin should be small enough so that the left margin plus the right margin is less than the width of the paper.

**Interaction** Changing the value of this option might result in changes to the value of the LINESIZE= system option.

***<margin-unit>***
specifies the units for margin-size. The margin-unit can be *in* for inches or *cm* for centimeters. <*margin-unit*> is saved as part of the value of the LEFTMARGIN system option whether it is specified.

**Default** inches

## Details

All margins have a minimum that is dependent on the printer and the paper size.

## See Also

- "Universal Printing" on page 15

**System Options:**

- "BOTTOMMARGIN= System Option" on page 37
- "RIGHTMARGIN= System Option" on page 60
- "TOPMARGIN= System Option" on page 61

# ORIENTATION= System Option

Specifies the paper orientation to use when printing to a printer.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is PORTRAIT.

**Requirement:** The ORIENTATION= option is valid only for paper sizes that are defined at the time of installation. The option is ignored for custom paper sizes.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

**Tip:** If the orientation of a PDF document is changed after the PDF destination is opened and before the PDF destination is closed, any setting for margins is taken from the OPTIONS statement in place before the ODS PDF FILE= statement. If no OPTIONS statement is used to explicitly set the margins, the margin settings are retrieved from defaults set at the time of installation.

## Syntax

**ORIENTATION=**PORTRAIT | LANDSCAPE | REVERSEPORTRAIT | REVERSELANDSCAPE

### *Syntax Description*

**PORTRAIT**
specifies the paper orientation as portrait.

**LANDSCAPE**
specifies the paper orientation as landscape.

**REVERSEPORTRAIT**
specifies the paper orientation as reverse portrait. Use this value to control the top of the page relative to how the paper is inserted into the input paper tray. REVERSEPORTRAIT can be used when you print preprinted or punched forms.

**REVERSELANDSCAPE**
specifies the paper orientation as reverse landscape. Use this value to control the top of the page relative to how the paper is inserted into the input paper tray. REVERSELANDSCAPE can be used when you print preprinted or punched forms.

## Details

Changing the value of this option might result in changes to the values of the portable LINESIZE= and PAGESIZE= system options.

You can change the orientation between document pages for the following output types:

- the RTF destination
- a Universal Printing printer

*Note:* Changing the orientation between document pages is supported only for Universal Printing.

Use the OPTIONS statement between the steps that create output to change the page orientation.

## Example

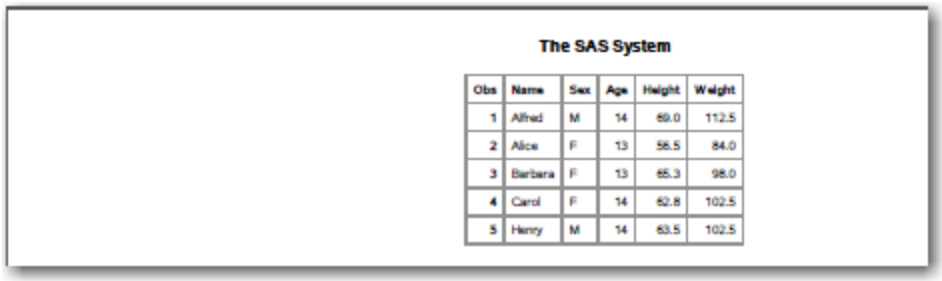
This example creates a PDF file with both portrait and landscape orientations.

```
options orientation=landscape obs=5;
ods pdf file="path-to-pdf-output/File3.pdf";
proc print data=sashelp.class;
```

```
run;
options orientation=portrait obs=5;
proc print data=sashelp.class;
run;
ods pdf close;
```

Here is the PDF output as written to the specified location. Notice the amount of space between the left border and the table output:

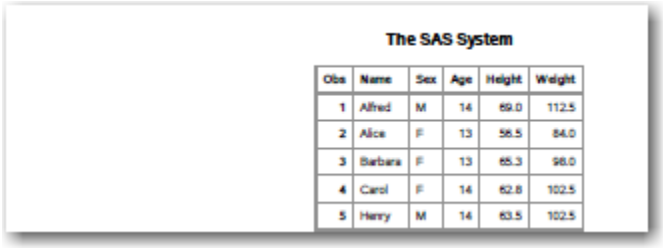
***Figure 4.1*** *The First Page of the PDF Has a Landscape Orientation*



The SAS System

| Obs | Name | Sex | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | Alfred | M | 14 | 69.0 | 112.5 |
| 2 | Alice | F | 13 | 56.5 | 84.0 |
| 3 | Barbara | F | 13 | 65.3 | 98.0 |
| 4 | Carol | F | 14 | 62.8 | 102.5 |
| 5 | Henry | M | 14 | 63.5 | 102.5 |

***Figure 4.2*** *The Second Page of the PDF Has a Portrait Orientation*



The SAS System

| Obs | Name | Sex | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | Alfred | M | 14 | 69.0 | 112.5 |
| 2 | Alice | F | 13 | 56.5 | 84.0 |
| 3 | Barbara | F | 13 | 65.3 | 98.0 |
| 4 | Carol | F | 14 | 62.8 | 102.5 |
| 5 | Henry | M | 14 | 63.5 | 102.5 |

## See Also

- “Universal Printing” on page 15

### System Options:

- “PAGESIZE= System Option” in *SAS Viya System Options: Reference*

# PAPERSIZE= System Option

Specifies the paper size to use for printing.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Categories:** Environment Control: Language Control
Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** LANGUAGECONTROL
ODSPRINT

**Default:** The default is LETTER or A4, depending on the locale.

**Note:** This option cannot be restricted by a site administrator. For more information, see “Restricted Options” in *SAS Viya System Options: Reference*.

## Syntax

**PAPERSIZE=**LOCALE | *paper_size_name*
| (*width_value*<,>*height_value*)
| ('*width_value*'<,> '*height_value*')
| ("*width_value*"<,>"*height_value*")

### Syntax Description

**LOCALE**
specifies to use the value of the LOCALE= system option to determine the value of the PAPERSIZE= option. Depending on the locale, the PAPERSIZE= option is set to either LETTER or A4.

**See** "LOCALE System Option" in *SAS Viya National Language Support: Reference Guide*

***paper_size_name***
specifies a predefined paper size.

**Default** LETTER or A4, depending on the locale

**Restriction** The maximum length is 200 characters.

**Requirements** When the name of a predefined paper size contains spaces, enclose the name in single or double quotation marks.

A space is required between the width and the height values if you do not use either single or double quotation marks for values.

***("width-value", "height-value")***
specifies paper width and height as positive floating-point values.

**Default** inches

**Range** *in* or *cm* for width_value, height_value

**Requirement** If you specify *width-value* and *height-value* with spaces between the number and the unit, the values must be enclosed in quotation marks (for example, "5 in" "7 in").

**Interaction** When you specify a custom paper size, the ORIENTATION= system option is ignored and the orientation is determined by the width and height values. The orientation is portrait if the paper height is more than the width. The orientation is landscape if the paper width is more than the height. Reverse orientations are not supported for custom paper sizes.

## Details

If you specify a predefined paper size or a custom size that is not supported by your printer, the printer default paper size is used. The printer default paper size is locale dependent and can be changed using the Page Setup dialog box.

Fields that specify values for paper sizes can either be separated by blanks or commas.

*Note:* Changing the value of this option can result in changes to the values of the portable LINESIZE= and PAGESIZE= system options.

## Comparisons

The first OPTIONS statement sets a paper size value that is a paper size name set at the time of installation. The second OPTIONS statement sets a specific width and height for a paper size.

```
options papersize="480x640 Pixels";
options papersize=(4.5 7);
```

In the first example, quotation marks are required because there is a space in the name.

In the second example, quotation marks are not required. When no measurement units are specified, SAS writes the following warning to the SAS log:

```
WARNING: Units were not specified on the PAPERSIZE option. Inches will be used.
```

You can avoid the warning message by adding the unit type, **in** or **cm**, to the value with no space separating the value and the unit type:

```
options papersize=(4.5in 7in);
```

## See Also

- "Universal Printing" on page 15

**System Options:**

- "ORIENTATION= System Option" on page 42

# PDFACCESS System Option

Enables editing of PDF documents.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is PDFACCESS.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFACCESS** | **NOPDFACCESS**

### *Syntax Description*

**PDFACCESS**
enables editing of PDF documents.

**NOPDFACCESS**
disables editing of PDF documents.

## Details

The PDFACCESS option can affect the Document Editing Enabled document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

The following table shows how the Document Editing Enabled document property is set when you specify the PDFACCESS option and set the PDFSECURITY= option to HIGH:

| | PDFACCESS PDFSECURITY=HIGH | NOPDFACCESS PDFSECURITY=HIGH |
|---|---|---|
| Document Editing Enabled | Allowed | Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFSECURITY= System Option" on page 57

# PDFASSEMBLY System Option

Specifies whether PDF documents can be assembled.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is NOPDFASSEMBLY.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property

values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFASSEMBLY** | **NOPDFASSEMBLY**

### *Syntax Description*

**PDFASSEMBLY**
specifies that PDF documents can be assembled.

**NOPDFASSEMBLY**
specifies that PDF documents cannot be assembled.

## Details

When a PDF document is assembled, pages can be rotated, inserted, and deleted, and bookmarks and thumbnail images can be added.

The PDFASSEMBLY option can affect the Document Assembly document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

The following table shows how the Document Assembly document property is set when you specify the PDFASSEMBLY option and set the PDFSECURITY= option to HIGH:

| | PDFASSEMBLY PDFSECURITY=HIGH | NOPDFASSEMBLY PDFSECURITY=HIGH |
|---|---|---|
| Document Assembly | Allowed | Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFSECURITY= System Option" on page 57

# PDFCOMMENT System Option

Specifies whether PDF document comments can be modified.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is NOPDFCOMMENT.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFCOMMENT** | **NOPDFCOMMENT**

### *Syntax Description*

**PDFCOMMENT**
specifies that PDF document comments can be modified.

**NOPDFCOMMENT**
specifies that PDF document comments cannot be modified.

## Details

The PDFCOMMENT option can affect the Commenting document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

When PDFSECURITY=NONE, the PDFCOMMENT option is enabled and PDF document comments can be modified.

The following table shows how the Commenting document properties are set when you specify the PDFCOMMENT option and set the PDFSECURITY= option to HIGH:

| | PDFCOMMENT PDFSECURITY=HIGH | NOPDFCOMMENT PDFSECURITY=HIGH |
|---|---|---|
| Commenting | Allowed | Not Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFFILLIN System Option" on page 52
- "PDFSECURITY= System Option" on page 57

# PDFCONTENT System Option

Specifies whether the contents of a PDF document can be changed.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is NOPDFCONTENT.

**Requirement:** Adobe Acrobat Reader or Professional 3.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFCONTENT** | **NOPDFCONTENT**

### *Syntax Description*

**PDFCONTENT**
specifies that the contents of a PDF document can be changed.

**NOPDFCONTENT**
specifies that the contents of a PDF document cannot be changed.

## Details

The PDFCONTENT option can affect the Changing the Document document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

The following table shows how the Changing the Document document property is set when you specify the PDFCONTENT option and set the PDFSECURITY= option to HIGH:

| | PDFCONTENT PDFSECURITY=HIGH | NOPDFCONTENT PDFSECURITY=HIGH |
|---|---|---|
| Changing the Document | Allowed | Not Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFSECURITY= System Option" on page 57

# PDFCOPY System Option

Specifies whether text and graphics from a PDF document can be copied.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is PDFCOPY.

**Requirement:** Adobe Acrobat Reader or Professional 3.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFCOPY** | **NOPDFCOPY**

### *Syntax Description*

**PDFCOPY**
specifies that text and graphics from a PDF document can be copied.

**NOPDFCOPY**
specifies that text and graphics from a PDF document cannot be copied.

## Details

The PDFCOPY option can affect the Content Copying document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

The following table shows how the Content Copying document property is set when you specify the PDFCOPY option and set the PDFSECURITY= option to HIGH:

| | PDFCOPY PDFSECURITY=HIGH | NOPDFCOPY PDFSECURITY=HIGH |
|---|---|---|
| Content Copying | Allowed | Not Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFSECURITY= System Option" on page 57

## PDFFILLIN System Option

Specifies whether PDF forms can be filled in.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is PDFFILLIN.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

### Syntax

**PDFFILLIN** | **NOPDFFILLIN**

#### *Syntax Description*

**PDFFILLIN**
specifies that PDF forms can be filled in.

**NOPDFFILLIN**
specifies that PDF forms cannot be filled in.

### Details

The PDFFILLIN option can affect the Form Field Fill-in or Signing document property.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

The Form Field Fill-in or Signing document property is set by the PDFFILLIN option only when PDFSECURITY=HIGH. When PDFSECURITY=HIGH, PDFCOMMENT and PDFFILLIN can be set independently.

The following table shows how the Form Field Fill-in or Signing document property is set when you specify the PDFFILLIN option and set the PDFSECURITY= option to HIGH:

| | PDFFILLIN PDFSECURITY=HIGH | NOPDFFILLIN PDFSECURITY=HIGH |
|---|---|---|
| Form Field Fill-in or Signing | Allowed | Not Allowed |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFCOMMENT System Option" on page 48
- "PDFSECURITY= System Option" on page 57

# PDFPAGELAYOUT= System Option

Specifies the page layout for PDF documents.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is DEFAULT.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Notes:** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFPAGELAYOUT=** DEFAULT | SINGLEPAGE | CONTINUOUS | FACING | CONTINUOUSFACING

### *Syntax Description*

**DEFAULT**
specifies to use the current page layout for Acrobat Reader.

**SINGLEPAGE**
specifies to display one page at a time in the viewing area.

**CONTINUOUS**
specifies to display all document pages in the viewing area in a single column.

**FACING**
specifies to display only two pages in the viewing area, with the even pages on the left and the odd pages on the right.

**Requirement** Acrobat Reader 5.0 or later version is required.

**CONTINUOUSFACING**
specifies to display all pages in the viewing area, two pages side by side. The even pages are displayed on the left, and the odd pages display on the right.

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- " PDFPAGEVIEW= System Option" on page 54

# PDFPAGEVIEW= System Option

Specifies the page viewing mode for PDF documents.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is DEFAULT.

**Requirement:** Adobe Acrobat Reader or Professional 5.0 and later versions

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFPAGEVIEW=** DEFAULT | ACTUAL | FITPAGE | FITWIDTH | FULLSCREEN

### *Syntax Description*

**DEFAULT**
specifies to use the current page view setting for Acrobat Reader.

**ACTUAL**
specifies to set the page view setting to 100%.

**FITPAGE**
specifies to view a page using the full extent of the viewing window, maintaining the height and width aspect ratio.

**FITWIDTH**
specifies to view a page using the full width of the viewing window. The height of the document is not scaled to fit the page.

**FULLSCREEN**
specifies to view a page using the full screen. This option disables the table of contents, bookmarks, and all other document access aids, such as accessing a specific page.

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- " PDFPAGEVIEW= System Option" on page 54

# PDFPASSWORD= System Option

Specifies the password to use to open a PDF document and the password used by a PDF document owner.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Categories:** Log and Procedure Output Control: PDF
System Administration: Security

**PROC OPTIONS GROUP=** PDF
SECURITY

**Alias:** PDFPW

**Requirement:** Adobe Acrobat Reader or Professional 3.0 and later versions

**Notes:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

The OPTIONS procedure displays passwords in the SAS log as 8 Xs, regardless of the actual password length.

## Syntax

**PDFPASSWORD**=(OPEN=*password* | OPEN="*password*"
< OWNER=*password* | OWNER="*password*">)

**PDFPASSWORD**=(OWNER=*password* | OWNER="*password*"
<OPEN=*password* | OPEN="*password*">)

**PDFPASSWORD**=(OPEN=*password* | OPEN="*password*")

**PDFPASSWORD**=(OWNER=*password* | OWNER="*password*")

### *Syntax Description*

**OPEN="*password*"**
specifies the password to open a PDF document. Enclosing the password in single or double quotation marks is optional.

***password***
specifies a set of characters, up to 32 characters, that are used to validate that a user has permission to open a PDF document.

**Restriction** The OPEN password must be different from the OWNER password.

**OWNER="*password*"**
specifies the password for the PDF document owner. Enclosing the password in quotation marks is optional.

*password*
specifies a set of characters, up to 32 characters, that are used to validate the owner of a PDF document.

**Restriction** The OWNER password must be different from the OPEN password.

## Details

You can set the PDFPASSWORD= option at any time, but it is ignored until the PDFSECURITY= system option is set to HIGH. When the PDFSECURITY= option is set to NONE, passwords for a PDF document are not needed.

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- " PDFPAGEVIEW= System Option" on page 54
- "PDFSECURITY= System Option" on page 57

# PDFPRINT= System Option

Specifies the resolution to print PDF documents.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: PDF

**PROC OPTIONS GROUP=** PDF

**Default:** The shipped default is HRES for Acrobat Reader or Professional 5.0 and later versions.

**Requirement:** Adobe Acrobat Reader or Professional 3.0 and later versions, depending on PDFPRINT setting

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFPRINT**=HRES | LRES | NONE

### Syntax Description

**HRES**
specifies to print PDF documents at the highest resolution available on the printer.

| | |
|---|---|
| Restriction | PDFPRINT=HRES can be set only when the PDFSECURITY option is set to HIGH. |
| Requirement | Acrobat Reader or Professional 5.0 and later versions. |

**LRES**
specifies to print PDF documents at a lower resolution for draft-quality documents.

| | |
|---|---|
| Restriction | PDFPRINT=LRES can be set only when the PDFSECURITY option is set to HIGH. |
| Requirement | Acrobat Reader or Professional 5.0 and later versions. |

**NONE**
specifies the PDF documents have no print resolution.

| | |
|---|---|
| Restriction | PDFPRINT=NONE can be set only when the PDFSECURITY option is set to HIGH |
| Requirement | Any version of Acrobat Reader or Professional. |

## Details

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

When PDFSECURITY= is set to HIGH, the value of the Printing document property is determined by the value of the PDFPRINT= option:

| | PDFPRINT=HRES PDFSECURITY=HIGH | PDFPRINT=LRES PDFSECURITY=HIGH | PDFPRINT=NONE PDFSECURITY=HIGH |
|---|---|---|---|
| Printing | High Resolution | Low Resolution (150 dpi) | None |

## See Also

- “Securing ODS-Generated PDF Files” on page 108

**System Options:**

- “ PDFPAGEVIEW= System Option” on page 54

# PDFSECURITY= System Option

Specifies the level of encryption for PDF documents.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Categories:** Log and Procedure Output Control: PDF

System Administration: Security

**PROC OPTIONS GROUP=** PDF
SECURITY

**Default:** The shipped default is NONE.

**Restriction:** The PDFSECURITY option is valid for the LINUX operating system, but only in countries where importing encryption software is legal.

**Requirement:** Adobe Acrobat Reader or Professional 3.0 and later versions, unless otherwise noted.

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PDFSECURITY=**HIGH | NONE

### *Syntax Description*

**HIGH**
specifies that SAS encrypts PDF documents using a 128-bit encryption algorithm.

**Requirement** When PDFSECURITY=HIGH, you must use Acrobat 5.0 or later version.

**Interaction** At least one password must be set using the PDFPASSWORD= system option when PDFSECURITY=HIGH.

**Note** Document properties might differ between the Documents Security window, the Show Details window, and SAS PDF option values for secure documents. The values might differ if a document password has only an Open password, or if the Open and Owner passwords are the same value. These windows display property values correctly when both Open and Owner have passwords, the passwords are not the same, and the document is opened with the Open password.

**NONE**
specifies that no encryption is performed on PDF documents.

The document property values for PDF security are not changed when you set PDFSECURITY=NONE. The results are the same as not specifying the option at all.

## Details

The following table shows the default document properties that are set when the PDFSECURITY= option is set to NONE or HIGH. When PDFSECURITY=NONE, there are no restrictions on PDF documents.

| | NONE | HIGH |
|---|---|---|
| Printing | Allowed | High Resolution |
| Changing the Document | Allowed | Not Allowed |

| | NONE | HIGH |
|---|---|---|
| Commenting | Allowed | Not Allowed |
| Form Field Fill-in or Signing | Allowed | Allowed |
| Document Assembly | Allowed | Not Allowed |
| Content Copying | Allowed | Allowed |
| Document Editing Enabled | Allowed | Allowed |
| Page Extraction | Allowed | Not Allowed |
| Encryption Level | None | 128-bit RC4 |

## See Also

- "Securing ODS-Generated PDF Files" on page 108

**System Options:**

- "PDFACCESS System Option" on page 46
- "PDFASSEMBLY System Option" on page 47
- "PDFCOMMENT System Option" on page 48
- "PDFCONTENT System Option" on page 49
- "PDFCOPY System Option" on page 51
- "PDFFILLIN System Option" on page 52
- "PDFPASSWORD= System Option" on page 55
- "PDFPRINT= System Option" on page 56

# PRINTERPATH= System Option

Specifies the name of a supported printer to use for Universal Printing.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** Under Linux, the default is PostScript Level 1.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**PRINTERPATH=**('*printer-name*' <*fileref*> )

### *Syntax Description*

**'*printer-name*'**
must be one of the printer devices allowed in the SAS Studio interface (PDF)

**Requirement** When the *printer name* contains blanks, you must enclose it in quotation marks.

***fileref***
is an optional fileref. If a fileref is specified, it must be defined with a FILENAME statement or an external allocation. Parentheses are required only when a *fileref* is specified.

## Details

If the PRINTERPATH= option is not a null string, then Universal Printing is used. If the PRINTERPATH= option does not specify a valid Universal Printing printer, then the default Universal Printer is used.

## Example

The following example specifies an output destination that is different from the default:

```
options PRINTERPATH=(corelab out);
filename out 'your_file';
```

## See Also

"Universal Printing" on page 15

# RIGHTMARGIN= System Option

Specifies the print margin for the right side of the page.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is 0.000 in.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**RIGHTMARGIN=***margin-size*<*margin-unit*>

### Syntax Description

***margin-size***
specifies the size of the margin.

**Restriction** The right margin should be small enough so that the left margin plus the right margin is less than the width of the paper.

**Interaction** Changing the value of this option might result in changes to the value of the LINESIZE= system option.

***<margin-unit>***
specifies the units for margin-size. The margin-unit can be *in* for inches or *cm* for centimeters. <*margin-unit*> is saved as part of the value of the RIGHTMARGIN system option.

**Default** inches

## Details

All margins have a minimum that is dependent on the printer and the paper size.

## See Also

**System Options:**

- "BOTTOMMARGIN= System Option" on page 37
- "LEFTMARGIN= System Option" on page 41
- "TOPMARGIN= System Option" on page 61

# TOPMARGIN= System Option

Specifies the print margin at the top of the page.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Default:** The shipped default is 0.000 in.

**Note:** This option cannot be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**TOPMARGIN=***margin-size*<*margin-unit*>

### Syntax Description

***margin-size***
specifies the size of the margin.

**Restriction** The bottom margin should be small enough so that the top margin plus the bottom margin is less than the height of the paper.

**Interaction** Changing the value of this option might result in changes to the value of the PAGESIZE= system option.

***<margin-unit>***
specifies the units for margin-size. The margin-unit can be *in* for inches or *cm* for centimeters. <*margin-unit*> is saved as part of the value of the TOPMARGIN system option.

**Default** inches

## Details

All margins have a minimum that is dependent on the printer and the paper size. The default value of the TOPMARGIN system option is `0.00 in`.

## See Also

- "Universal Printing" on page 15

**System Options:**

- "BOTTOMMARGIN= System Option" on page 37
- "LEFTMARGIN= System Option" on page 41
- "RIGHTMARGIN= System Option" on page 60

# UPRINTCOMPRESSION System Option

Specifies whether to enable the compression of files created by some Universal Printer devices.

**Valid in:** Configuration file, SAS command, OPTIONS statement, SASV9_OPTIONS environment variable

**Category:** Log and Procedure Output Control: ODS Printing

**PROC OPTIONS GROUP=** ODSPRINT

**Alias:** UPC | NOUPC

**Default:** The shipped default is UPRINTCOMPRESSION.

**Note:** This option can be restricted by a site administrator. For more information, see "Restricted Options" in *SAS Viya System Options: Reference*.

## Syntax

**UPRINTCOMPRESSION** | **NOUPRINTCOMPRESSION**

### *Syntax Description*

**UPRINTCOMPRESSION**
specifies to enable compression of files created by some Universal Printers.

**NOUPRINTCOMPRESSION**
specifies to disable compression of files created by some Universal Printers.

## Details

The UPRINTCOMPRESSION system option affects the PDF Universal Printer.

When NOUPRINTCOMPRESSION is set, the DEFLATION= option is ignored.

The ODS PRINTER statement option, COMPRESS=, takes precedence over the UPRINTCOMPRESSION system option.

## See Also

### System Options:

- "DEFLATION= System Option" on page 40

# Part 4

# SAS Functions and Statements Applicable to Universal Printing

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*Chapter 5*

# SAS Function and Statement That Process SAS System Options

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## SAS Function and Statement That Process SAS System Options

The SAS GETOPTION function is useful in finding out the value of a SAS system option. For more information, see "GETOPTION Function" in *SAS Viya System Options: Reference*.

The SAS OPTIONS statement specifies or changes the value of one or more SAS system options. This global change remains in effect for the rest of the job, session, SAS process, or until another SAS OPTIONS statement is issued. For details, see "OPTIONS Statement" in *SAS Viya Statements: Reference*.

*Chapter 6*

# SAS ODS Statements That Produce Output in SAS Studio

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## ODS Statement Category Descriptions

The following table lists and describes the categories of ODS global statements:

***Table 6.1*** *Global Statements by Category*

| Statement Category | Function |
|---|---|
| ODS: Output Control | Provide descriptive information about the specified output objects and their locations. |
| ODS: SAS Formatted | Produce a SAS output data set, or a hierarchy file. |
| ODS: Third-Party Formatted | Produce files that are formatted in the proper destination format. |

## ODS Statements by Category

| Category | Language Elements | Description |
|---|---|---|
| ODS: Third-Party Formatted | ODS HTML Statement (p. 70) | Opens, manages, or closes the HTML destination, which produces HTML 5.0 output that contains embedded style sheets. |

| Category | Language Elements | Description |
|---|---|---|
| | ODS PDF Statement (p. 94) | Opens, manages, or closes the PDF destination, which produces PDF output, a form of output that is read by Adobe Acrobat and other applications. |
| | ODS RTF Statement (p. 131) | Opens, manages, or closes the RTF destination, which produces output written in Rich Text Format for use with Microsoft Word 2002. |

# Dictionary

## ODS HTML Statement

Opens, manages, or closes the HTML destination, which produces HTML 5.0 output that contains embedded style sheets.

**Valid in:** Anywhere

**Category:** ODS: Third-Party Formatted

**Defaults:** The default style is HTMLBlue when using SAS Studio.

SVG is the default Universal Printer and device driver for the ODS HTML destination. When using the ODS HTML destination in SAS Studio, the device driver is set to PNG.

**Example:** “Example: ODS Graphics SVG Graph in an HTML File” on page 93

### Syntax

**ODS HTML** <(<ID=> *identifier*)> < *action*> ;

**ODS HTML** <(<ID=> *identifier*)> <*option(s)*> ;

#### *Summary of Optional Arguments*

(ID= *identifier*)
: Open multiple instances of the same destination at the same time

ANCHOR= '*anchor-name*'
: Specify a unique base name for the anchor tag that identifies each output object in the current body file

BASE= '*base-text*'
: Specify text to use as the first part of all links and references that ODS creates in output files

BODY= '*file-specification*' (*suboption(s)*)
: specify and open the destination file that contains the primary output that is created by the ODS statement

BOX_SIZING=(CONTENT_BOX | BORDER_BOX)
: Specify how to measure the width of cells. Use to override the default value of BOX_SIZING for a destination

CHARSET= *character-set*
: Specify the character set to be generated in the META declaration for the HTML output

CLOSE
: Close the destination and the file that is associated with it

CODE= '*file-specification*' <(*suboption(s)*)>
: Open the HTML destination and specify the file that contains relevant style information

CONTENTS= '*file-specification*' <(*suboption(s)*)>
: specify and open the destination file that contains a table of contents for the output

CSSSTYLE='*file-specification*' <(*media-type1 <...media-type-10>* )>
: Specify a cascading style sheet to apply to your output

DEVICE= *device-driver*
: Specify a device for the output destination

DOM <="*external-file*">
: Specify that the ODS document object model is written to the SAS log or to an external file.

ENCODING= *local-character-set-encoding*
: Override the encoding for input or output processing (transcodes) of external files

EXCLUDE *exclusion(s)* | ALL | NONE
: Exclude output objects from the destination

FRAME= '*file-specification*' <(*suboption(s)*)>
: Specify the file that integrates the table of contents, the page contents, and the body file

GFOOTNOTE | NOGFOOTNOTE
: Control the location where footnotes are printed in the graphics output

GPATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)
: Specify the location for all graphics output that is generated while the destination is open

GTITLE | NOGTITLE
: Control the location where titles are printed in the graphics output

HEADTEXT= '*markup-document-head*'
: Specify HTML tags to place between the < HEAD> and < /HEAD> tags in all of the output files.

IMAGE_DPI=
: Specify the image resolution for graphical output

METATEXT= '*metatext-for-document-head*'
: Specify HTML code to use as the <META> tag between the <HEAD> and </HEAD> tags in all of the HTML output files.

NEWFILE= *starting-point*
: Create a new body file at the specified starting point

OPTIONS ( BITMAP_MODE= | SVG_MODE= | GRAPH_BITMAP_MODE= | STYLE_BITMAP_MODE= | GRAPH_SVG_MODE= | STYLE_SVG_MODE | SHOW_GRAPH_STYLES= | USE_CSS_RESET)
: Specify suboptions and a named value for how images are handled using the HTML destination

PACKAGE *<package-name>*
: Specify that the output from the destination be added to an ODS package

PAGE= '*file-specification*' <(*suboption(s)*)>
: specify and open the destination file that contains a description of each page of the body file and contains links to the body file

PARAMETERS= (*parameter-pair-1 ... parameter-pair-n*)
: Write the specified parameters between the tags that generate dynamic graphics output

PATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)
: Specify the location of an aggregate storage location or a SAS catalog for all markup files

RECORD_SEPARATOR= '*alternative-separator*' | NONE
: Specify an alternative character or string to separate lines in the output files

SELECT *selection(s)* | ALL | NONE
: Select output objects for the destination

SHOW
: Write to the SAS log the current selection or exclusion list for the destination

STYLE= *style-template*
: Specify a style template to use in writing output files

STYLESHEET= '*file-specification*' <(*suboption(s)*)>
: Open the HTML destination and place style information for output into an external file, or read style sheet information from an existing file

TEXT=*text-string*
: Insert text into your document

TRANTAB= '*translation-table*'
: Specify a translation table to use when transcoding a file for output

### Without Arguments

If you use the ODS HTML statement without an action or options, then it opens the HTML destination and creates HTML output.

### Actions

The following actions are available for the ODS HTML statement.

**CLOSE**
closes the destination and any files that are associated with it.

**Tip** You must close the destination before you can print the file associated with it.

**EXCLUDE *exclusion(s)* | ALL | NONE**
excludes one or more output objects from the destination.

**Default** NONE

**Restriction** A destination must be open for this action to take effect.

**SELECT *selection(s)* | ALL | NONE**
selects output objects for the specified destination.

**Default** ALL

**Restriction** A destination must be open for this action to take effect.

**SHOW**
writes the current selection list or exclusion list for the destination to the SAS log.

**Restriction** The destination must be open for this action to take effect.

**Tip** If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

## Optional Arguments

**ANCHOR= '*anchor-name*'**
specifies a unique base name for the anchor tag that identifies each output object in the current body file.

Each output object has an anchor tag for the contents, page, and frame files to reference. The links and references are automatically created by ODS. The links and references point to the name of an anchor. Therefore, each anchor name in a file must be unique.

***anchor-name***
is the base name for the anchor tag that identifies each output object in the current body file.

ODS creates unique anchor names by incrementing the name that you specify. For example, if you specify ANCHOR= 'PRINT', then ODS names the first anchor **`print`**. The second anchor is named **`print1`**; the third is named **`print2`**, and so on.

**Restrictions** Each anchor name in a file must be unique.

Only alphanumeric values, the special characters "$ - _ . + ! * ' () , " and reserved characters used for their reserved purposes can be used unencoded within a URL.

**Requirement** You must enclose *anchor-name* in quotation marks.

**Interaction** If you open a file to append to it, be sure to specify a new anchor name to prevent writing the same anchors to the file again. ODS does not recognize anchors that are already in a file when it opens the file.

**Tips** You can change anchor names as often as you want by specifying the ANCHOR= option in a markup family statement anywhere in your program. After you have specified an anchor name, it remains in effect until you specify a new one.

Specifying new anchor names at various points in your program is useful when you want other web pages to link to specific parts of your markup language output. Because you can control where the anchor name changes, you know in advance what the anchor name is at those points.

An *anchor-name* must begin with a letter ([A-Za-z]) and can be followed by any number of letters, digits ([0-9]), hyphens (-), underscores (_), colons (:), and periods (.).

**BASE= '*base-text*'**
specifies the text to use as the first part of all links and references that ODS creates in the output files.

*base-text*
is the text that ODS uses as the first part of all links and references that ODS creates in the file.

Consider this specification:

```
BASE= 'http://www.your-company.com/local-url/'
```

In this case, ODS creates links that begin with the string http://www.your-company.com/local-url/. The appropriate *anchor-name* completes the link.

**Requirement** You must enclose *base-text* in quotation marks.

**BODY= '*file-specification*' (*suboption(s)*)**
specify and open the destination file that contains the primary output that is created by the ODS statement. This file remains open until you open the same destination with a second ODS HTML BODY= statement. This closes the first file and opens the second file.

*file-specification*
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

*external-file*
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

*fileref*
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**Restriction** The BODY=*fileref* option cannot be used in conjunction with the NEWFILE= option.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*entry.markup*
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

(*suboption(s)*)
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(NO_BOTTOM_MATTER)**
specifies that no ending markup language source code be added to the output file.

**(NO_TOP_MATTER)**
specifies that no beginning markup language source code be added to the top of the output file. For HTML 5.0, the NO_TOP_MATTER option removes the style sheet.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

**(URL= '*Uniform-Resource-Locator*' )**

**Alias** FILE=

**Interaction** Using the BODY= option in an ODS HTML statement that refers to an open ODS HTML destination file forces ODS to close the destination and all associated files. ODS then opens a new instance of the destination.

**BOX_SIZING=(CONTENT_BOX | BORDER_BOX)**
specifies how to measure the width of cells. This option overrides the default value of BOX_SIZING for a destination.

BOX_SIZING is defined by the WC3 specification, the CSS3 Module. For more information, refer to the CSS3 Box Model specification at http://www.w3.org/TR/2002/WD-css3-box-20021024/#box-sizing.

**CHARSET= *character-set***
specifies the character set to be generated in the META declaration for the HTML output.

**See** For information about the CHARSET= option, see "CHARSET= Option" in *SAS Viya National Language Support: Reference Guide*.

**CODE= '*file-specification*' <(*suboption(s)*)>**
opens a markup family destination and specifies the file that contains accompanying programming code, such as JavaScript or XSL (Extensible Stylesheet Language). These files remain open until you do one of the following:

- close the destination with either an ODS *markup-family-destination* CLOSE statement or ODS _ALL_ CLOSE statement.
- open the same destination with a second markup family statement. This closes the first file and opens the second file.

***file-specification***
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

***external-file***
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

***entry.markup***
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

*suboption(s)*
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**CONTENTS= '*file-specification*' <(*suboption(s)*)>**
opens the HTML destination and specifies the file that contains a table of contents for the output. This file remains open until you open the same destination with a second ODS HTML CONTENTS= statement. This closes the first file and opens the second file.

*Note:* SAS Studio provides its own table of contents navigation for HTML, negating the need for this option.

*file-specification*
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

*external-file*
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

*fileref*
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*entry.markup*
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

*suboption(s)*
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(NO_BOTTOM_MATTER)**
specifies that no ending markup language source code be added to the output file.

**(NO_TOP_MATTER)**
specifies that no beginning markup language source code be added to the top of the output file. For HTML 5.0, the NO_TOP_MATTER option removes the style sheet.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

***title-text***
is the text in the metadata of a file that indicates the title.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**CSSSTYLE='*file-specification*' <(*media-type1 <...media-type-10*> )>**
specifies a cascading style sheet to apply to your output.

***file-specification***
specifies a file, fileref, or URL that contains CSS code.

*file-specification* is one of the following:

**"*external-file*"**
is the name of the external file.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

**"*URL*"**
is a URL to an external file.

**Requirement** You must enclose *URL* in quotation marks.

**(*media-type-1*<*.. media-type-10*>)**
specifies one or more media blocks that correspond to the type of media that your output is rendered on. CSS uses media type blocks to specify how a document is to be presented on different media: on the screen, on paper, with a speech synthesizer, with a braille device, and so on.

The media block is added to your output in addition to the CSS code that is not contained in any media blocks. By using the *media-type* suboption, in addition to the general CSS code, you can import the section of a CSS file intended only for a specific media type.

**Default** If no *media-type* is specified in your ODS statement, but you do have media types specified in your CSS file, then ODS uses the Screen media type.

**Range** You can specify up to ten different media types.

**Requirements** You must enclose *media-type* in parentheses.

You must specify *media-type* next to the *file-specification* specified by the CSSSTYLE= option.

**Tip** If you specify multiple media types, all of the style information in all of the media types is applied to your output. However, if

there is duplicate style information in different media blocks, then the styles from the last media block are used.

**Interaction** If both the STYLE= option and the CSSSTYLE= option are specified in an ODS statement, the option specified last is the option that is used.

**DEVICE=** ***device-driver***
specifies the name of a device driver. ODS automatically selects an optimal default device for each open output destination.

The following table lists the default devices for the most common ODS output destinations. These default devices are used when graphics are created using ODS Graphics.

***Table 6.2*** *Default Devices for ODS Output Destinations*

| Output Destination | Default Device |
|---|---|
| HTML | PNG |
| PDF | SVG (ODS graphics) |
| RTF | EMF |

**Tip** Specifying a device on the ODS DEVICE= option takes precedence over the SAS global option and the graphics option.

**DOM <="*external-file*">**
specifies that the ODS document object model is written to the SAS log or an external file.

***external-file***
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

**ENCODING=** ***local-character-set-encoding***
overrides the encoding for input or output processing (transcodes) of external files.

**See** "ENCODING System Option" in *SAS Viya National Language Support: Reference Guide* for more information.

**FRAME= '*file-specification*' <(*suboption(s)*)>**
specify and open the destination file that integrates the table of contents, the page contents, and the body file. If you open the frame file, then you see a table of contents, a table of pages, or both, as well as the body file. For XML output, FRAME= specifies the file that contains the DTD. This file remains open until you open the same destination with a second ODS HTML FRAME= statement. This closes the first file and opens the second file.

*Note:* SAS Studio provides its own table of contents navigation for HTML, negating the need for this option.

***file-specification***
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

*external-file*
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

*fileref*
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*entry.markup*
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

*suboption(s)*
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(NO_BOTTOM_MATTER)**
specifies that no end markup language source code be added to the output file.

**(NO_TOP_MATTER)**
specifies that no beginning markup language source code be added to the top of the output file. For HTML 5.0, the NO_TOP_MATTER option removes the style sheet.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

*title-text*
is the text in the metadata of a file that indicates the title.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**Restriction** If you specify the FRAME= option, then you must also specify the CONTENTS= option, the PAGE= option, or both.

**GFOOTNOTE | NOGFOOTNOTE**
controls the location where footnotes are printed in the graphics output.

**GFOOTNOTE**
writes footnotes that are created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure. The footnotes appear inside the graph borders.

**NOGFOOTNOTE**
writes footnotes that are created by ODS, which appear outside the graph borders.

**Default** GFOOTNOTE

**Restriction** This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**GPATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)**

specifies the location for all graphics output that is generated while the destination is open. Use this option when you want to write graphics output files to a location different that specified by the PATH= option for markup files. If you specify an invalid filename, the ActiveX and Java devices send output to the default filename. Other devices create the file as a directory and write output to that directory using the default filename.

'*aggregate-file-storage-location*'

specifies an aggregate storage location such as directory, folder, or partitioned data set.

**Requirement** You must enclose *aggregate-file-storage-location* in quotation marks.

*fileref*

is a file reference that has been assigned to an aggregate storage location. Use the FILENAME statement to assign a fileref.

**Interaction** If you specify a fileref in the GPATH= option, then ODS does not use information from the GPATH= option when it constructs links.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*libref.catalog*

specifies a SAS catalog to write to.

**URL= '*Uniform-Resource-Locator*' | NONE**

specifies a URL for *file-specification*.

*Uniform-Resource-Locator*

is the URL that you specify. ODS uses this URL instead of the filename in all the links and references that it creates to the file.

**Requirement** You must enclose *Uniform-Resource-Locator* in quotation marks.

**NONE**

specifies that no information from the GPATH= option appears in the links or references.

**Tip** This option is useful for building output files that can be moved from one location to another. If the links from the contents and page files are constructed with a simple URL (one name), then they resolve. This is true as long as the contents, page, and body files are all in the same location.

**Default** If you omit the GPATH= option, then ODS stores graphics in the location that is specified by the PATH= option. If you do not specify the PATH=

option, then ODS stores the graphics in the current directory. For more information, see the PATH= option.

**GTITLE | NOGTITLE**
controls the location where titles are printed in the graphics output.

GTITLE
writes the title that is created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure. The title appears inside the graph borders.

NOGTITLE
writes the title that is created by ODS, which appears outside of the graph borders.

**Default** GTITLE

**Restriction** This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**HEADTEXT= '*markup-document-head*'**
specifies markup tags to place between the < HEAD> and < /HEAD> tags in all of the output files.

*markup-document-head*
specifies the markup tags to place between the < HEAD> and < /HEAD> tags.

**Restriction** HEADTEXT= cannot exceed 256 characters.

**Requirement** You must enclose *markup-document-head* in quotation marks.

**Tips** ODS cannot parse the markup that you supply. It should be well-formed markup that is correct in the context of the <HEAD> and </HEAD> tags.

Use the HEADTEXT= option to define programs (such as JavaScript) that you can use later in the file.

**(ID= *identifier*)**
enables you to run multiple instances of the same destination at the same time. Each instance can have different options.

*identifier*
specifies another instance of the destination that is already open. *identifier* is numeric or a series of characters that begin with a letter or an underscore. Subsequent characters can include letters, underscores, and numeric characters.

**Restriction** If *identifier* is numeric, it must be a positive integer.

**Requirement** You must specify the ID= option immediately after the destination name.

**Tip** You can omit the ID= option and instead use a name or a number to identify the instance.

**Example** "Example 1: Opening Multiple Instances of the Same Destination at the Same Time" on page 112

**IMAGE_DPI=**
specifies the image resolution for graphical output.

**Alias** DPI=

**Default** 96

**CAUTION** **Caution: When using high DPI= or DPI_IMAGE= values (values over 1000), you might need to increase memory allocations. To increase memory, set the MEMSIZE= system option to 500M or higher. You can also decrease the DPI= value to ensure that you do not run out of memory.**

**METATEXT= '*metatext-for-document-head*'**
specifies HTML code to use as the <META> tag between the <HEAD> and </HEAD> tags of all of the HTML output files.

'*metatext-for-document-head*'
specifies the HTML code that provides the browser with information about the document that it is loading. For example, this attribute could specify the content type and the character set to use.

**Requirement** You must enclose *metatext-for-document-head* in quotation marks.

**Default** If you do not specify METATEXT=, then ODS writes a simple <META> tag, which includes the content-type of the document and the character set to use, to all the HTML files that it creates.

**Restriction** METATEXT= cannot exceed 256 characters.

**Tip** ODS cannot parse the HTML code that you supply. It should be well-formed HTML code that is correct in the context of the <HEAD> tags. If you are using METATEXT= as it is intended, then your META tag should look like this:

```
<META your-metatext-is-here>
```

**NEWFILE= *starting-point***
creates a new body file at the specified *starting-point*.

*starting-point*
is the location in the output where you want to create a new body file.

ODS automatically names new files by incrementing the name of the body file. In the following example, ODS names the first body file **REPORT.XML**. Additional body files are named **REPORT1.XML**, **REPORT2.XML**, and so on.

Example:

```
BODY= 'REPORT.XML'
```

*starting-point* is one of the following:

**BYGROUP**
starts a new file for the results of each BY group.

**NONE**
writes all output to the body file that is currently open.

**OUTPUT**
starts a new body file for each output object.

**Alias** TABLE

**PAGE**
starts a new body file for each page of output. A page break occurs when a procedure explicitly starts a new page (not because the page size was exceeded) or when you start a new procedure.

**PROC**
starts a new body file each time you start a new procedure.

**Default** NONE

**Restriction** The NEWFILE= option cannot be used in conjunction with the BODY=*fileref* option.

**Tips** If you end the filename with a number, then ODS begins incrementing with that number. In the following example, ODS names the first body file *MAY5.XML*. Additional body files are named *MAY6.XML*, *MAY7.XML*, and so on.

Example:

```
BODY= 'MAY5.XML'
```

**OPTIONS ( BITMAP_MODE= | SVG_MODE= | GRAPH_BITMAP_MODE= | STYLE_BITMAP_MODE= | GRAPH_SVG_MODE= | STYLE_SVG_MODE | SHOW_GRAPH_STYLES= | USE_CSS_RESET)**
specifies suboptions and a named value for how images are handled using the HTML destination.

**BITMAP_MODE= | GRAPH_BITMAP_MODE= | STYLE_BITMAP_MODE=**
specifies how all bit mapped images are inserted into the HTML document. Use the GRAPH_BITMAP_MODE and the STYLE_BITMAP_MODE to insert your style images and your graph images differently.

```
ods html options (bitmap_mode='object');
```

*Note:* The BITMAP_MODE can be overridden by STYLE_BITMAP_MODE or by GRAPH_BITMAP_MODE.

**EMBED**
creates an HTML <embed> tag.

```
<embed src="pathname-with-PNGfilename"/>
```

**IMG**
creates an HTML <img> tag that displays the image file.

```
<img src="pathname-with-PNGfilename"/>
```

**Default** IMG is the default for displaying bit maps.

**INLINE**
inserts the image data into the HTML file. The image data is base64 encoded and is inserted into the document as a URL for bitmaps.

**Restriction** Inline graphs and images might not be supported by some email clients.

**LINK**
creates a hyperlink that points to the image file.

```
<a href="c:\Public\arrow.png" My Arrow PNG</a>
```

**OBJECT**
creates an HTML <object> tag that displays the image file. This tag is used to embed multimedia files and applications into your document (audio, video, Java applets, ActiveX, PDF, and Flash).

```
<object data="c:\Public\arrow.png" </object>
```

**SVG_MODE= | GRAPH_SVG_MODE= | STYLE_SVG_MODE=**
specifies how all SVG images are inserted into the HTML document. Use the GRAPH_SVG_MODE and the STYLE_SVG_MODE to insert your style images and your graph images differently.

```
ods html options (svg_mode='img');
```

*Note:* The SVG_MODE can be overridden by STYLE_SVG_MODE or by GRAPH_SVG_MODE.

**EMBED**
creates an HTML <embed> tag.

```
<embed src="pathname-with-SVGfilename"/>
```

**IMG**
creates an HTML <img> tag that displays the image file.

```
<img src="pathname-with-SVGfilename"/>
```

**Restriction** In 9.4, an image map is not generated using SVG with ODS Graphics. The image map data that is used to produce tooltips and links is written directly in the SVG and is not part of the HTML document.

**INLINE**
inserts the image data into the HTML file. The image data is base64 encoded and is inserted into the document as a URL for bitmaps.

**Default** INLINE is the default for displaying SVG.

**Restrictions** In 9.4, an image map is not generated using SVG with ODS Graphics. The image map data that is used to produce tooltips and links is written directly in the SVG and is not part of the HTML document.

Inline graphs and images might not be supported by some email clients.

**LINK**
creates a hyperlink that points to the image file.

```
<a href="c:\Public\arrow.svg" My Arrow SVG</a>
```

**OBJECT**
creates an HTML <object> tag that displays the image file. This tag is used to embed multimedia files and applications into your document (audio, video, Java applets, ActiveX, PDF, and Flash).

```
<object data="pathname-with-SVGfilename" </object>
```

**SHOW_GRAPH_STYLES= 'YES' | 'ON' | 'TRUE' | 'NO' | 'OFF' | 'FALSE'**
specifies that the output should contain elements from the graph style that is specified for CSS.

**YES | ON | TRUE**
specifies that the output should contain elements from the graph style that is specified for CSS. These values must be enclosed in parentheses.

**NO | OFF | FALSE**
specifies that the output should not contain elements from the graph style that is specified for CSS. These values must be enclosed in parentheses.

**Example**
```
ods html file=mycss style=styles.seaside dev=svg gpath=gout
    options(show_graph_styles='yes' svg_mode='embed');
```

**USE_CSS_RESET= 'ON' | 'OFF'**
turns on or off the default CSS styles information. This option works well with the SHOW_GRAPH_STYLES= suboption to provide a starting point to creating a style that works with the CSSSTYLE= option.

**OFF**
turns off the default CSS styles information.

**ON**
turns on the default CSS styles information.

**Requirement** *suboption(s)* must be enclosed in parentheses.

**PACKAGE <*package-name*>**
specifies that the output from the destination be added to a package.

***package-name***
specifies the name of a package that was created with the ODS PACKAGE statement. If no name is specified, then the output is added to the unnamed package that was opened last.

**PAGE= '*file-specification*' <(*suboption(s)*)>**
specify and open the destination file that contains a description of each page of the body file, and contains links to the body file. ODS produces a new page of output whenever a procedure requests a new page. This file remains open until you open the same destination with a second ODS HTML PAGE= statement. This closes the first file and opens the second file.

*Note:* SAS Studio provides its own table of contents navigation for HTML, negating the need for this option.

***file-specification***
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

***external-file***
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

***entry.markup***
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

***suboption(s)***
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(NO_BOTTOM_MATTER)**
specifies that no ending file source code be added to the output file.

**(NO_TOP_MATTER)**
specifies that no beginning file source code be added to the top of the output file.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

***title-text***
is the text in the metadata of a file that indicates the title.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**Interaction** The SAS system option PAGESIZE= has no effect on pages in HTML output except when you are creating batch output. See the "PAGESIZE= System Option" in *SAS Viya System Options: Reference* for information.

**PARAMETERS= (*parameter-pair-1 ... parameter-pair-n*)**
writes the specified parameters between the tags that generate dynamic graphics output.

***parameter-pair***
specifies the name and value of each parameter. *parameter-pair* has the following form:

'*parameter-name*'= '*parameter-value*'

***parameter-name***
is the name of the parameter.

***parameter-value***
is the value of the parameter.

**Requirement** You must enclose *parameter-name* and *parameter-value* in quotation marks.

**PATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)**
specifies the location of an aggregate storage location or a SAS catalog for all markup files. If the GPATH= option is not specified, all graphics output files are written to the *"aggregate-file-storage-specification"* or *libref*.

*'aggregate-file-storage-location'*
specifies an aggregate storage location such as directory, folder, or partitioned data set.

**Requirement** You must enclose *aggregate-file-storage-location* in quotation marks.

*fileref*
is a file reference that has been assigned to an aggregate storage location. Use the FILENAME statement to assign a fileref.

**Interaction** If you use a fileref in the PATH= option, then ODS does not use information from PATH= when it constructs links.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*libref.catalog*
specifies a SAS catalog to write to.

**See** "LIBNAME Statement" in *SAS Viya Statements: Reference* for more information.

**URL= '*Uniform-Resource-Locator*' | NONE**
specifies a URL for the *file-specification*.

***Uniform-Resource-Locator***
is the URL that you specify. ODS uses this URL instead of the filename in all the links and references that it creates to the file.

**NONE**
specifies that no information from the PATH= option appears in the links or references.

**Tip** This option is useful for building output files that can be moved from one location to another. The links from the contents and page files must be constructed with a single-name URL, and the contents, page, and body files must be in the same location.

**Interaction** If you use the BODY= or FILE= external file option in conjunction with the PATH= option, the external file specification should not include path information.

**RECORD_SEPARATOR= '*alternative-separator*' | NONE**
specifies an alternative character or string that separates lines in the output files.

Different operating environments use different separator characters. If you do not specify a record separator, then the files are formatted for the environment where you run the SAS program. However, you can generate files for viewing in a different operating environment that uses a different separator character. In this case you can specify a record separator that is appropriate for the target environment.

*alternative-separator*
represents one or more characters in hexadecimal or ASCII format. For example, the following option specifies a record separator for a carriage return character and a linefeed character for use with an ASCII file system:

```
RECORD_SEPARATOR= '0D0A'x
```

*Operating Environment Information*

In a mainframe environment, the following option specifies a record separator for a carriage return character and a linefeed character for use with an ASCII file system:

```
RECORD_SEPARATOR= '0D25'x
```

**Requirement** You must enclose *alternative-separator* in quotation marks.

**NONE**
produces the markup language that is appropriate for the environment where you run the SAS job.

**Aliases** RECSEP=

RS=

**STYLE= *style-template***
specifies the style template to use in writing the output files.

***style-template***
describes how to display the presentation aspects (color, font face, font size, and so on) of your SAS output. A style template determines the overall appearance of the documents that use it. Each style template consists of style elements.

**Interaction** The STYLE= option is not valid when you are creating XML output.

**Note** If you are using SAS Studio, you do not need to specify the STYLE= option. You can go to **Preferences** ⇨ **Results** and change the style from the drop-down list for your selected destination.

**Default** If you do not specify a style template, then ODS uses HTMLBlue as the style for HTML output.

**Interaction** If you specify the STYLE= option in an ODS HTML statement and subsequently need PROC PRINT output to use new style templates in another ODS HTML statement, close the first statement before specifying the second statement.

**STYLESHEET= '*file-specification*' <(*suboption(s)*)>**
opens the HTML destination and places the style information for output into an external file, or reads style sheet information from an existing file. This file remains open until you open the same destination with a second ODS HTML STYLESHEET= statement. This closes the first file and opens the second file.

*Note:* SAS Studio provides its own table of contents navigation for HTML, negating the need for this option.

***file-specification***
specifies the file, fileref, or SAS catalog to write to.

*file-specification* is one of the following:

***external-file***
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

*fileref*
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

*entry.markup*
specifies an entry in a SAS catalog to write to.

**Interaction** If you specify an entry name, you must also specify a library and catalog. See the discussion of the PATH= option.

*suboption(s)*
specifies one or more suboptions in parentheses. Suboptions are instructions for writing the output files. Suboptions can be the following:

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file.

**(NO_BOTTOM_MATTER)**
specifies that no ending markup language source code be added to the output file.

**(NO_TOP_MATTER)**
specifies that no beginning markup language source code be added to the top of the output file. For HTML 5.0, the NO_TOP_MATTER option removes the style sheet.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

*title-text*
is the text in the metadata of a file that indicates the title.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**Note** By default, if you do not specifically send the information to a separate file, then the style sheet information is included in the specified HTML file.

**TEXT=*text-string***
inserts text into your document by triggering the paragraph event and specifying a text string to be assigned to the VALUE event variable.

**Default** By default the TEXT= option is used in a paragraph event.

**TRANTAB= '*translation-table*'**
specifies the translation table to use when transcoding a file for output.

## Suboptions

**(DYNAMIC)**
enables you to send output directly to a web server instead of writing it to a file. This option sets the value of the CONTENTTYPE= style attribute.

**Default** If you do not specify DYNAMIC, then ODS sets the value of HTMLCONTENTTYPE= for writing to a file.

**Restriction** If you specify the DYNAMIC suboption with one of the following options in the ODS HTML statement, then you must specify it for all of these options in that statement.

- BODY=
- CONTENTS=
- PAGE=
- FRAME=
- STYLESHEET=
- TAGSET=

**Requirements** You must enclose DYNAMIC in parentheses.

You must specify DYNAMIC next to the *file-specification* specified by the BODY=, CONTENTS=, PAGE=, FRAME=, or STYLESHEET= option, or next to the *tagset-name* specified by the TAGSET= option.

**(NO_BOTTOM_MATTER)**

specifies that no end-of-file source code be added to the output file.

**Alias** NOBOT

**Requirements** You must enclose NO_BOTTOM_MATTER in parentheses.

You must specify NO_BOTTOM_MATTER next to the *file-specification* specified by the BODY=, CONTENTS=, PAGE=, FRAME=, or STYLESHEET= option, or next to the *tagset-name* specified by the TAGSET= option.

If you append text to an external file, you must use a FILENAME statement with the appropriate option for the operating environment.

**Interactions** The NO_BOTTOM_MATTER suboption, in conjunction with the NO_TOP_MATTER suboption, makes it possible for you to add output to an existing file. You can then put your own markup language between output objects in the file.

When you are opening a file that ODS has previously written to, use the ANCHOR= option to specify a new base name for the anchors. This step prevents duplicate anchors.

**Tip** If you want to leave a body file in a state that you can append to with ODS, then use NO_BOTTOM_MATTER with the *file-specification* BODY= option in any markup language statement.

**(NO_TOP_MATTER)**

specifies that no beginning-of-file source code be added to the top of the output file. For HTML 5.0, the NO_TOP_MATTER option removes the style sheet.

**Alias** NOTOP

**Requirements** You must enclose NO_TOP_MATTER in parentheses.

You must specify NO_TOP_MATTER next to the *file-specification* specified by the BODY=, CONTENTS=, PAGE=, FRAME=, or STYLESHEET= option, or next to the *tagset-name* specified by the TAGSET= option.

If you append text to an external file, you must use a FILENAME statement with the appropriate option for the operating environment.

**Interactions** The NO_TOP_MATTER suboption, in conjunction with the NO_BOTTOM_MATTER suboption, makes it possible for you to add output to an existing file. You can then put your own markup language between output objects in the file.

When you are opening a file that ODS has previously written to, use the ANCHOR= option to specify a new base name for the anchors. This step prevents duplicate anchors.

**(TITLE='*title-text*')**
inserts into the metadata of a file the text string that you specify as the text to appear in the browser window title bar.

***title-text***
is the text in the metadata of a file that indicates the title.

**Requirements** You must enclose TITLE= in parentheses.

You must enclose *title-text* in quotation marks.

**Tip** If you are creating a web page that uses frames, then it is the TITLE= specification for the frame file that appears in the browser window title bar.

**(URL= '*Uniform-Resource-Locator*' )**
specifies a URL for the *file-specification*. ODS uses this URL (instead of the filename) in all the links and references that it creates and that point to the file.

**Requirements** You must enclose URL= '*Uniform-Resource-Locator*' in parentheses.

You must enclose *Uniform-Resource-Locator* in quotation marks.

You must specify URL= '*Uniform-Resource-Locator*' next to the *file-specification* specified by the BODY=, CONTENTS=, PAGE=, FRAME=, or STYLESHEET= option, or next to the *tagset-name* specified by the TAGSET= option.

**Tips** This option is useful for building HTML files that can be moved from one location to another. The links from the contents and page files must be constructed with a single name URL, and the contents, page, and body files must all be in the same location.

You never need to specify this suboption with the FRAME= option because ODS files do not reference the frame file.

## Details

### Accessibility with HTML5

In the second release for SAS Viya, the ODS HTML destination together with the Daisy style provides the best accessibility of the ODS destinations because there are many tags and attributes that allow for compliance with W3C Web Content Accessibility Guidelines (WCAG), version 2.0.

### HTML5 Differences from HTML4

There are differences between HTML5 and HTML4. Refer to the W3C document W3C HTML5 Differences.

### HTML Output Defaults

You can submit an ODS HTML statement in your SAS program if you want output that uses HTML 5.0. SAS Studio defaults to HTML 5.0 output.

*Note:* ODS HTML uses the HTMLBlue style by default when using SAS Studio.

### HTML and Portable Network Graphics (PNG)

The ODS HTML statement supports Portable Network Graphics (PNG). When using SAS Studio, PNG is the default Universal Printer and device driver for the ODS HTML destination. Portable Network Graphics is a file format for image compression and was created to replace Graphics Interchange Format (GIF). The PNG image does not incur blurring after compression as may happen with a JPEG image. PNG is the default file type for the HTML destination when using SAS Studio. Most browsers and image editing programs support the PNG format.

The PNG format supports the Red, Green, Blue, Alpha (RGBA) color model. The Alpha channel provides 256 levels of transparency. GIF images only support completely transparent pixels in a graphic. GIF pixels cannot be partially opaque. A PNG graphic can be placed on any color background and maintain its edges and original appearance.

Graphs can be created by using ODS Graphics. The ODS HTML destination can be used to create PNG documents. You can also specify PNG output with the device option in the GOPTIONS statement.

Here are examples of each of these methods of requesting PNG output:

- ODS GRAPHICS statement

```
ods graphics / outputfmt=png;
```

- ODS HTML statement

```
ods html dev=png;
```

- GOPTIONS statement

```
goptions device=pnvg;
```

For detailed information about the PNG standard, see the W3 documentation at W3 Portable Network Graphics (PNG) document.

### HTML and Scalable Vector Graphics (SVG)

The ODS HTML statement supports Scalable Vector Graphics (SVG). Scalable Vector Graphics is an XML language for describing two-dimensional vector graphics.

SAS can create SVG documents by using Universal Printers. Graphs can be created by using ODS Graphics. The ODS HTML destination can be used to create SVG

documents. You can also specify SVG output with the device option in the GOPTIONS statement or the OPTIONS statement. SVG documents can be stand-alone files or integrated within an HTML file.

Here are examples of each of these methods of requesting SVG output:

- ODS GRAPHICS statement

```
ods graphics / outputfmt=svg;
```

- ODS HTML statement

```
ods html dev=svg;
```

- GOPTIONS statement

```
goptions device=svg;
```

- OPTIONS statement

```
options printerpath=svg;
```

In order to view SVG documents, you need a viewer or browser that supports Scalable Vector Graphics.

To view an SVG document in an HTML file, you either create a link to the SVG document, embed the SVG document in the HTML file, or create an SVG graph that is integrated in the HTML. The default value for option SVG_MODE for the HTML destination is INLINE. In order to embed the SVG graph, you must specify

```
OPTIONS (SVG_MODE="EMBED")
```

in the ODS HTML statement.

For detailed information about the SVG standard, see the W3 documentation at W3 Scalable Vector Graphics (SVG) document.

## Example: ODS Graphics SVG Graph in an HTML File

**Features:** ODS HTML Statement
ODS GRAPHICS Statement

**Other features:** PROC SGPLOT

### Details

To integrate an ODS Graphics SVG graph in an HTML file, you must use the HTML destination. For this example, **`option(SVG_MODE='INLINE')`** is not needed, but shows how to specify the option when needed.

### Program

```
ods html options(svg_mode="inline")
file= "path-to-output-location-with-filename";

ods graphics /outputfmt=svg;

proc sgplot data=sashelp.class
  scatter x=weight y=height;
run;
```

### Program Description

**Open a new HTML destination and make the SVG graph appear inline.** Open a new HTML destination. The SVG_MODE option instructs SAS to place the HTML 5.0 graph inline. Specify the pathname for the output file location, including the filename.

```
ods html options(svg_mode="inline")
file= "path-to-output-location-with-filename";
```

**Specify the SVG output format for ODS GRAPHICS.** Use ODS GRAPHICS to generate an SVG file.

```
ods graphics /outputfmt=svg;
```

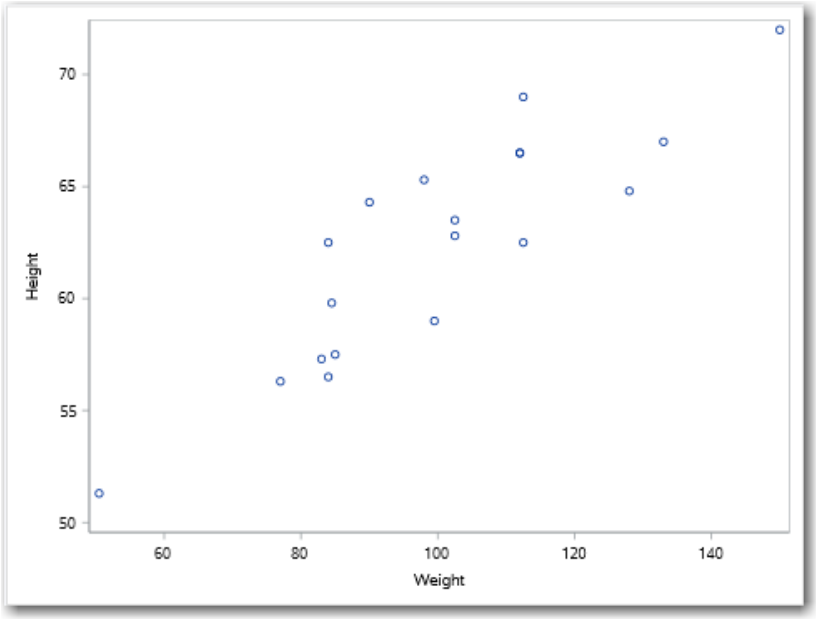
**Use PROC SGPLOT to create a graph.**

```
proc sgplot data=sashelp.class
  scatter x=weight y=height;
run;
```

### HTML Output

This output is created using the ODS HTML destination.

***Output 6.1*** *Integrating an ODS Graphics SVG Graph in an HTML File*




## ODS PDF Statement

Opens, manages, or closes the PDF destination, which produces PDF output, a form of output that is read by Adobe Acrobat and other applications.

**Valid in:** Anywhere

**Category:** ODS: Third-Party Formatted

**Default:** The default style for PRINTER destinations is Pearl.

**Restriction:** PDF does not support double-byte Type1 fonts.

**Note:** You can add drill-down graphs in your PDF file.

**Tip:** If the orientation of a PDF document is changed after the PDF destination is opened and before the PDF destination is closed, any setting for margins is taken from the OPTIONS statement in place before the ODS PDF FILE= statement. If no OPTIONS statement is used to explicitly set the margins, the margin settings are retrieved from defaults set at the time of installation.

## Syntax

**ODS PDF** <(<ID=> *identifier*)> < *action*> ;

**ODS PDF** <(<ID=> *identifier*)> <*option(s)*> ;

### *Summary of Optional Arguments*

(<ID=> *identifier*)
: Open multiple instances of the same destination at the same time

ANCHOR='*anchor-name*'
: Specify the root name for the anchor tag that identifies each output object in the current file

AUTHOR= '*author-text*'
: Insert the text string that you specify as the author into the metadata of a file

BASE='*base-text*'
: Specify a string to use as the first part of all references that ODS creates in the file

BOOKMARKGEN | NOBOOKMARKGEN | BOOKMARKGEN=
: Control the generation of bookmarks in PDF files

BOOKMARKLIST= HIDE | NONE | SHOW
: Specify whether to generate and display the list of bookmarks for PDF files

BOX_SIZING=(CONTENT_BOX | BORDER_BOX)
: Specify how to measure the width of cells. Use to override the default value of BOX_SIZING for a destination

CLOSE
: Close the destination and the file that is associated with it

COLOR=FULL | GRAY | MONO | NO | YES
: Apply a specified color scheme to your output

COLUMNS=*n*
: Specify the number of columns to create on each page of output

COMPRESS=*n*
: Specify the compression of a PDF file. Compression reduces the size of the file

CONTENTS= NO | YES
: Control the generation of a printable table of contents

CSSSTYLE= '*file-specification*'<(*media-type-1*<…*media-type-10*>)>
: Specify a cascading style sheet to apply to your output

DOM <="*external-file*">
: Specify that the ODS document object model is written to the SAS log or to an external file.

DPI=
: Specify the image resolution in dots per inch for output images

EXCLUDE *exclusion(s)* | ALL | NONE

Exclude output objects from the destination

FILE='*external-file*' | *fileref*
Specify the output file.

GFOOTNOTE | NOGFOOTNOTE
Specify the location where footnotes are printed in the graphics output

GTITLE | NOGTITLE
Control the location where titles are printed in the graphics output

KEYWORDS='*keywords-text*'
Insert a string of keywords into the output file's metadata

NEWFILE= *starting-point*
Create a new file at the specified starting-point

NOTOC
Omit the table of contents (Bookmark list) that is produced by default when producing PDF output

PACKAGE <*package-name*>
Specify that the output from the destination be added to an ODS package

PDFNOTE
Control whether notes are added to a PDF file for items that are associated with the FLYOVER= style attribute

PDFTOC=*n*
Control the level of the expansion of the table of contents in PDF documents

SELECT *selection(s)* | ALL | NONE
Select output objects for the destination

SHOW
Write to the SAS log the current selection or exclusion list for the destination

STARTPAGE=NEVER | NO | NOW | YES | BYGROUP
Control page breaks

STYLE=*style-template*
Specify the style template to use in writing the PDF output

SUBJECT='*subject-text*'
Insert the text string that you specify as the subject in the metadata of a file

TEXT='*text-string*'
Insert text into your output

TITLE='*title-text*'
Insert the text string that you specify as the title in the metadata of a file

UNIFORM
For multi-page tables, provide uniformity from page to page within a single table

### *Without Arguments*

In SAS Studio, the PDF destination is open by default. In SAS Studio, you must use the ODS PDF statement with at least one action or option. When you do this, it opens another instance of a PDF destination and creates PDF output as specified.

### *Actions*

The following actions are available for the ODS PDF statement:

**CLOSE**
closes the destination and any files that are associated with it.

**Tip** You must close the destination before you can print the file associated with it.

**EXCLUDE *exclusion(s)* | ALL | NONE**
excludes one or more output objects from the destination.

**Default** NONE

**Restriction** A destination must be open for this action to take effect.

**SELECT *selection(s)* | ALL | NONE**
selects output objects for the specified destination.

**Default** ALL

**Restriction** A destination must be open for this action to take effect.

**SHOW**
writes the current selection list or exclusion list for the destination to the SAS log.

**Restriction** The destination must be open for this action to take effect.

**Tip** If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

## Optional Arguments

**ANCHOR='*anchor-name*'**
specifies the root name for the anchor tag that identifies each output object in the current file.

Each output object must have an anchor tag for the bookmarks to reference. The references are automatically created by ODS. These references point to the name of an anchor. Therefore, each anchor name in a file must be unique.

*anchor-name*
is the root name for the anchor tag that identifies each output object in the current file.

ODS creates unique anchor names by incrementing the name that you specify. For example, if you specify ANCHOR='PRINT', then ODS names the first anchor **`print`**. The second anchor is named **`print1`**; the third is named **`print2`**, and so on.

**Requirement** You must enclose *anchor-name* in quotation marks.

**Alias** NAMED_DEST= | BOOKMARK=

**Restriction** Use this option only with the ODS PDF statement.

**Tips** You can change anchor names as often as you want by submitting the ANCHOR= option in a valid statement anywhere in your program. After you have specified an anchor name, it remains in effect until you specify a new one.

Specifying new anchor names at various points in your program is useful when you want to link to specific parts of your PRINTER output. Because you can control where the anchor name changes, you know in advance what the anchor name is at those points.

**AUTHOR= '*author-text*'**
inserts the text string that you specify as the author into the metadata of a file.

*author-text*
is the text in the metadata of an open file that indicates the author.

**Restrictions** Use this option only with the ODS PDF statement.

The AUTHOR= option takes effect only if specified at the opening of a file.

**Requirement** You must enclose *author-text* in quotation marks.

**BASE='*base-text*'**
specifies the text to use as the first part of all references that ODS creates in the output file.

*base-text*
is the text that ODS uses as the first part of all references that ODS creates in the file.

Consider this specification:

```
BASE='http://www.your-company.com/local-url/'
```

In this case, ODS creates references that begin with the string **`http://www.your-company.com/local-url/`**. The appropriate *anchor-name* completes the link.

**Restriction** Use this option only with the ODS PDF statement.

**Requirement** You must enclose *base-text* in quotation marks.

**BOOKMARKLIST= HIDE | NONE | SHOW**
specifies whether to generate and display the list of bookmarks for PDF files.

**HIDE**
generates a list of bookmarks for your PDF file. The bookmarks are not automatically displayed when you open the PDFfile.

**NONE**
specifies not to generate a list of bookmarks for your PDF files.

**Aliases** NO | OFF

NOBOOKMARKLIST is an alias for BOOKMARKLIST=NONE | NO | OFF.

**SHOW**
generates a list of bookmarks for your PDF file. The bookmarks are automatically displayed when you open the PDF file.

**Aliases** YES | ON

BOOKMARKLIST is an alias for BOOKMARKLIST=SHOW | YES | ON.

**Example** "Example 2: Creating a Printable Table of Contents" on page 115

**Default** SHOW

**Restrictions** This option can be set only when you first open the destination.

This option has an effect only when creating PDF output.

**Interaction** The NOTOC option specifies BOOKMARKLIST= OFF and CONTENTS= OFF.

**Note** The generation of the bookmarks is not affected by the setting of this option. Bookmarks are generated by the BOOKMARKGEN= option.

**Example** "Example 2: Creating a Printable Table of Contents" on page 115

**BOOKMARKGEN | NOBOOKMARKGEN | BOOKMARKGEN=**
controls the generation of bookmarks in PDFS files.

**BOOKMARKGEN**
specifies to generate bookmarks in PDF files.

**BOOKMARKGEN=**
controls the generation of bookmarks in PDF files.

**NO**
specifies not to generate bookmarks in PDF files.

**Alias** OFF

**YES**
specifies to generate bookmarks in PDF files.

**Alias** ON

**NOBOOKMARKGEN**
specifies not to generate bookmarks in the PDF files.

**Default** YES or BOOKMARKGEN

**Interaction** If you set BOOKMARKGEN=NO, then the BOOKMARKLIST option is set to NO also.

**BOX_SIZING=(CONTENT_BOX | BORDER_BOX)**
specifies how to measure the width of cells. This option overrides the default value of BOX_SIZING for a destination. The default value is set at the time of installation.

BOX_SIZING is defined by the WC3 specification, the CSS3 Module. For more information, refer to the CSS3 Box Model specification at http://www.w3.org/TR/2002/WD-css3-box-20021024/#box-sizing.

**COLOR=FULL | GRAY | MONO | NO | YES**
applies the specified color scheme to your output.

**FULL**
creates full color output for both text and graphics.

**GRAY**
creates gray scale output for both text and graphics.

**Alias** GREY

**MONO**
creates monochromatic output for both text and graphics.

**Alias** BW

**NO**
does not use all the color information that the style template provides. If you specify COLOR=NO, then the destination does this:

- generates black and white output
- creates all text and rules in black
- ignores specifications for a background color from the style template except for the purposes of determining whether to print rules for the table

**YES**
uses all the color information that a style template provides, including background color. To print in color, you must also do the following:

- use a printer that is capable of printing in color.
- use the COLORPRINTING SAS system option. See the "COLORPRINTING System Option" on page 39 for more information.

**Default** YES

**Tip** If you choose color output for a printer that does not support color, then your output might be difficult to read.

**COLUMNS=*n***
specifies the number of columns to create on each page of output.

***n***
is the number columns per page.

**Default** 1

**COMPRESS=*n***
controls the compression of a PDF file. Compression reduces the size of the file.

***n***
specifies the level of compression. The larger the number, the greater the compression. For example, *n*=0 is completely uncompressed, and *n*=9 is the maximum compression level.

**Default** 6

**Range** 0–9

**Restrictions** Use this option only with the ODS PDF statement and the ODS PRINTER statement with the PDF option specified.

The COMPRESS= option takes effect only if specified at the opening of a file.

**Interactions** The COMPRESS= option overrides the DEFLATION system option. First, the DEFLATION system option checked. Next, the ODS PDF statement COMPRESS= option is checked. If the COMPRESS= option is specified, that value is used regardless of the value specified for the DEFLATION system option. See the "DEFLATION= System Option" on page 40 for more information.

The COMPRESS= option overrides the UPRINTCOMPRESSION option. If COMPRESS= is specified, the UPRINTCOMPRESSION system option is then queried. If the system option is off, it is turned on for this one PDF statement and the PDF file is compressed. When compression is complete, the UPRINTCOMPRESSION system option is again enabled for all other files to use. See the "UPRINTCOMPRESSION System Option" on page 62 for more information.

**CONTENTS= NO | YES**
controls the generation of a printable table of contents.

**NO**
does not generate a printable table of contents.

**Alias** NOCONTENTS is an alias for CONTENTS=NO.

**YES**
generates a printable table of contents.

**Alias** CONTENTS is an alias for CONTENTS=YES.

**Default** NO

**Example** "Example 2: Creating a Printable Table of Contents" on page 115

**CSSSTYLE= '*file-specification*'<(*media-type-1*<…*media-type-10*>)>**
specifies a cascading style sheet to apply to your output.

***file-specification***
specifies a file, fileref, or URL that contains CSS code.

*file-specification* is one of the following:

**"*external-file*"**
is the name of the external file.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

**"*URL*"**
is a URL to an external file.

**Requirement** You must enclose *URL* in quotation marks.

**(*media-type-1*<*. media-type-10*>)**
specifies one or more media blocks that correspond to the type of media that your output is rendered on. CSS uses media type blocks to specify how a document is to be presented on different media: on the screen, on paper, with a speech synthesizer, with a braille device, and so on.

The media block is added to your output in addition to the CSS code that is not contained in any media blocks. By using the *media-type* suboption, in addition to

the general CSS code, you can import the section of a CSS file intended only for a specific media type.

**Default** If no *media-type* is specified in your ODS statement, but you do have media types specified in your CSS file, then ODS uses the Screen media type.

**Range** You can specify up to ten different media types.

**Requirements** You must enclose *media-type* in parentheses.

You must specify *media-type* next to the *file-specification* specified by the CSSSTYLE= option.

**Tip** If you specify multiple media types, all of the style information in all of the media types is applied to your output. However, if there is duplicate style information in different media blocks, then the styles from the last media block are used.

**Requirement** CSS files must be written in the same type of CSS produced by the ODS HTML statement. To view the CSS code that ODS creates, you can do one of the following:

- specify the ODS TRACE DOM statement
- specify the DOM option

**Interaction** If both the STYLE= option and the CSSSTYLE= option are specified in an ODS statement, the option specified last is the option that is used.

**DOM <="*external-file*">**
specifies that the ODS document object model is written to the SAS log or an external file.

*external-file*
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

**DPI=**
specifies the image resolution for output files.

**Default** 150

**Restriction** The DPI= option takes effect only if specified at the opening of a file.

**Note** For best results use standard printer DPI values such as 300, 600, or 1200.

**CAUTION** **When the PDF contains an image and you are using high DPI= or DPI_IMAGE= values (values over 600), you might need to increase memory allocations. To increase memory, set the MEMSIZE= system option to 500 or higher. You can also decrease the DPI= value to ensure that you do not run out of memory.**

**FILE='*external-file*' | *fileref***
specifies the output file.

*external-file*
is the name of an external file.

**Requirement** You must enclose *external-file* in quotation marks.

*fileref*
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**Restriction** The FILE=*fileref* option cannot be used in conjunction with the NEWFILE= option.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

**Default** If you do not specify an output file, then ODS writes to the file that is specified by the PRINTERPATH= system option. If the system option does not specify a file, then ODS writes to the default printer. For more information, see the PRINTER= option.

**Interaction** In an ODS printer family statement that refers to an open ODS PRINTER destination, the FILE= option forces ODS to close the destination and all files that are associated with it. ODS then opens a new instance of the destination.

**GFOOTNOTE | NOGFOOTNOTE**
controls the location of the footnotes that are defined by the graphics program that generates the Printer output.

GFOOTNOTE
includes all of the currently defined footnotes within the graphics output.

NOGFOOTNOTE
prevents all of the currently defined footnotes from appearing in the graphics file. Instead, they become part of the Printer file.

**Default** GFOOTNOTE

**Restriction** This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**GTITLE | NOGTITLE**
controls the location of the titles that are defined by the graphics program that generates the Printer output.

GTITLE
includes all of the currently defined titles within the graphics output.

NOGTITLE
prevents all of the currently defined titles from appearing in the graphics output. Instead, the titles become part of the Printer file.

**Default** GTITLE

**Restriction** This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**(<ID=> *identifier*)**
enables you to open multiple instances of the same destination at the same time. Each instance can have different options.

*identifier*
can be numeric or can be a series of characters that begin with a letter or an underscore. Subsequent characters can include letters, underscores, and numerals.

**Restriction** If *identifier* is numeric, it must be a positive integer.

**Requirement** The ID= option must be specified immediately after the destination name.

**KEYWORDS='*keywords-text*'**
inserts a string of keywords into the output file's metadata. The keywords enable a document management system to do topic-based searches.

*keywords-text*
is the string of keywords.

**Restrictions** Use this option only with the ODS PDF statement.

The KEYWORDS= option takes effect only if specified at the opening of a file.

**Requirement** You must enclose *keywords-text* in quotation marks.

**NEWFILE= *starting-point***
creates a new file at the specified *starting-point*.

*starting-point*
is the location in the output where you want to create a new file.

ODS automatically names new files by incrementing the name of the file. In the following example, ODS names the first file **`REPORT.PDF`**. Additional files are named **`REPORT1.PDF`**, **`REPORT2.PDF`**, and so on.

Example:

```
FILE= 'REPORT.PDF'
```

*starting-point* can be one of the following:

**BYGROUP**
starts a new file for the results of each BY group.

**NONE**
writes all output to the file that is currently open.

**OUTPUT**
starts a new file for each output object.

**Alias** TABLE

**PAGE**
starts a new file for each page of output. A page break occurs when a procedure explicitly starts a new page (not because the page size was exceeded) or when you start a new procedure.

**PROC**
starts a file each time you start a new procedure.

Default NONE

Restrictions The NEWFILE= option cannot be used if you are sending output to a physical printer.

When using the NEWFILE= option with the ODS PDF or the ODS Printer statement, you must also use the FILE= option and, in SAS Studio, specify an explicit path.

Tips If you end the filename with a number, then ODS begins incrementing with that number. In the following example, ODS names the first file *MAY5.PDF*. Additional body files are named *MAY6.PDF*, *MAY7.PDF*, and so on.

Example:

```
FILE= 'pathname-to-file-MAY5.PDF'
```

**NOTOC**
specifies that ODS omit the table of contents (Bookmark list) that is produced by default when producing PDF output.

Interaction The NOTOC option specifies BOOKMARKLIST=OFF and CONTENTS= OFF.

Examples "Example 3: Combining a Table and Image on the Same Page" on page 116

"Example 4: Adding Text That Imitates a System Title" on page 120

"Example 5: Toggling Page Breaks" on page 123

"Example 6: Suppressing a Page Break" on page 128

**PACKAGE <*package-name*>**
specifies that the output from the destination be added to a package.

*package-name*
specifies the name of a package that was created with the ODS PACKAGE statement. If no name is specified, then the output is added to the unnamed package that was opened last.

**PDFNOTE**
controls whether notes are added to a PDF file for items that are associated with the FLYOVER= style attribute.

PDFNOTE
adds notes to a PDF file for items that are associated with the FLYOVER= style attribute.

Default PDFNOTE

Restriction Use this option only with the ODS PDF statement.

**PDFTOC=*n***
controls the level of the expansion of the table of contents in PDF documents.

*n*

specifies the level of expansion. For example, PDFTOC=`0` results in a fully expanded table of contents. PDFTOC=`2` results in a table of contents that is expanded to two levels.

**Default** 0

**Tip** The PDFTOC= can be set after the file has been opened, but only the last specification for a given file is used.

**See** "Example 1: Opening Multiple Instances of the Same Destination at the Same Time" on page 112

**STARTPAGE=NEVER | NO | NOW | YES | BYGROUP**

controls page breaks.

**BYGROUP**

specifies to insert page breaks after each BY group.

**NEVER**

specifies not to insert page breaks, even before graphics procedures.

***CAUTION:***

**Each graph normally requires an entire page. The default behavior forces a new page after a graphics procedure. STARTPAGE=NEVER turns off that behavior, so specifying STARTPAGE= NEVER might cause graphics to overprint.**

**NO**

specifies that no new pages be inserted at the beginning of each procedure, or within certain procedures, even if new pages are requested by the procedure code. A new page begins only when a page is filled or when you specify STARTPAGE=NOW.

***CAUTION:***

**Each graph normally requires an entire page. The default behavior forces a new page after a graphics procedure, even if you use STARTPAGE=NO. STARTPAGE=NEVER turns off that behavior, so specifying STARTPAGE= NEVER might cause graphics to overprint.**

**Alias** OFF

**Tip** When you specify STARTPAGE=NO, system titles and footnotes are still produced only at the top and bottom of each physical page, regardless of the setting of this option. Thus, some system titles and footnotes that you specify might not appear when this option is specified.

**Examples** "Example 3: Combining a Table and Image on the Same Page" on page 116

"Example 4: Adding Text That Imitates a System Title" on page 120

"Example 5: Toggling Page Breaks" on page 123

"Example 6: Suppressing a Page Break" on page 128

**NOW**

forces the immediate insertion of a new page.

Tip This option is useful primarily when the current value of the STARTPAGE= option is NO. Otherwise, each new procedure forces a new page automatically.

Example "Example 5: Toggling Page Breaks" on page 123

YES
inserts a new page at the beginning of each procedure, and within certain procedures, as requested by the procedure code.

Alias ON

Default YES

**STYLE=*style-template***
specifies the style template to use in writing the printer output.

Default By default, this value is Pearl for the PDF destination.

Note If you are using SAS Studio, you do not need to specify the STYLE= option. You can go to **Preferences** ⇨ **Results** and change the style from the drop-down list for your selected destination.

Example "Example 1: Opening Multiple Instances of the Same Destination at the Same Time" on page 112 to see the STYLE= option used.

**SUBJECT='*subject-text*'**
inserts into the metadata of a file the text string that you specify as the subject.

*subject-text*
is the text in the metadata of a file that indicates the subject.

Restrictions Use this option only with the ODS PDF statement.

The SUBJECT= option takes effect only if specified at the opening of a file.

Requirement You must enclose *subject-text* in quotation marks.

**TEXT='*text-string*'**
inserts a text string into your output.

*text-string*
is the text that you want to insert into your output.

Requirement You must enclose *text-string* in quotation marks.

Tip If you are submitting more than one procedure step and you do not specify the STARTPAGE=NO option, each procedure forces a new page before the output. Therefore, any text that you specify with TEXT= is on the same page as the previous procedure.

**TITLE='*title-text*'**
inserts into the metadata of a file the text string that you specify as the title.

*title-text*
is the text in the metadata of a file that indicates the title.

**Restrictions** Use this option only with the ODS PDF statement.

The TITLE= option takes effect only if specified at the opening of a file.

**Requirement** You must enclose *title-text* in quotation marks.

**UNIFORM**
for multiple page tables, ensures uniformity from page to page within a single table. When the UNIFORM option is in effect, ODS reads the entire table first, so that it can determine the column widths that are necessary to accommodate all the data. These column widths are applied to all pages of a multiple page table.

**Default** If you do not specify the UNIFORM option, then ODS prints a table one page at a time. This approach ensures that SAS does not run out of memory while processing very large tables. However, it can also mean that column widths vary from one page to the next.

**Note** With BY-group processing, SAS writes the results of each BY group to a separate table, so the output might not be uniform across BY groups.

**Tip** The UNIFORM option can cause SAS to run out of memory if you are printing a very large table. If this happens, then you can explicitly set the width of each of the columns in the table, and then print the table one page at a time. To do so, you must edit the table template that you use.

## Details

### *Opening and Closing the PDF Destination*

You can modify an open PDF destination with many ODS PDF options. However, the FILE= and SAS options perform the following actions on an open PDF destination:

- close the open destination referred to in the ODS PDF statement
- close any files associated with the open PDF destination
- open a new instance of the PDF destination

If you use one of these options, it is best if you explicitly close the destination yourself.

### *Securing ODS-Generated PDF Files*

You can use the ODS PRINTER statement or the ODS PDF statement to generate PDF output. By default, PDF files are not password protected, so any user can view, and edit the PDF files without restrictions. However, you can use SAS system options to restrict or allow users' ability to access, assemble, copy, or modify the ODS PDF files. Other SAS system options control whether the user can fill in forms and set the print resolution.

Setting the security of a PDF file involves setting an encryption level and setting PDF document properties. You use the following SAS system options to secure and configure document properties for PDF files:

***Table 6.3*** *PDF System Options and Associated PDF Document Properties*

| Action | System Option | Document Property |
|---|---|---|
| Enables editing of PDF documents | "PDFACCESS System Option" | **Document Editing Enabled** |
| Specifies whether PDF documents can be assembled | "PDFASSEMBLY System Option" | **Document Assembly** |
| Specifies whether PDF document comments can be modified | "PDFCOMMENT System Option" | **Commenting** |
| Specifies whether the contents of a PDF document can be changed | "PDFCONTENT System Option" | **Changing the Document** |
| Specifies whether text and graphics from a PDF document can be copied | "PDFCOPY System Option" | **Content Copying** |
| Specifies whether PDF forms can be filled in | "PDFFILLIN System Option" | **Form Field Fill-in or Signing** |
| Specifies the password to use to open a PDF document and the password used by a PDF document owner | "PDFPASSWORD= System Option" | **Security Method**<br>**Document Open Password**<br>**Permissions Password** |
| Specifies the resolution used to print the PDF document | "PDFPRINT= System Option" | **Printing** |
| Specifies the level of encryption for PDF documents | "PDFSECURITY= System Option" | **Encryption Level** |

*Note:* The SAS/SECURE SSL software that is used to encrypt PDF files is included in the SAS installation software only for countries that allow the importation of encryption software.

You secure a PDF file by setting the PDFSECURITY= system option to an encryption level. Valid security levels for the PDFSECURITY= option are NONE or HIGH. SAS sets the default PDF document properties based on the encryption level.

PDFSECURITY=NONE sets no encryption level or document property restrictions for the document. All of the PDF document properties are set to Allowed. Setting other PDF system options has no effect on PDF document properties when PDFSECURITY=NONE.

PDFSECURITY=HIGH sets the encryption level to 128-bit RC4.

When the PDFSECURITY= option is set to HIGH, you must specify one or more document passwords using the PDFPASSWORD= option. Passwords are required to open a secure document. An optional permissions password can be required to validate the document owner. Use the OPEN= "*pw*" argument to specify a password to open a document. Use the OWNER="*pw*" argument to specify a permissions password for the document owner.

To view the document properties for a PDF file, open the PDF file, right-click in the document, select **Document Properties** from the menu, and click **Show Details**. The Document Security window appears with the document property values.

*Note:* The **Security** tab in the Document Properties window displays the security settings. When PDFSECURITY=NONE, the **Show Details** button is inactive and the **Document Restrictions Summary** section displays the document property value of Allowed for all properties. If PDFSECURITY= is set HIGH, ignore the **Document Restrictions Summary** section. The PDF document properties are displayed properly only from the Document Security window, which you access with the **Show Details** button.

The Yes and No values for the Document Open Password and the Permissions Password document properties indicate whether password security has been set for a document. These values are determined by the values of the PDFSECURITY= option and the PDFPASSWORD= option as shown in this table:

| | PDFPASSWORD= | PDFSECURITY=HIGH |
|---|---|---|
| Security Method | | Password Security |
| Document Open Password | OPEN="*pw*" | Yes |
| | OWNER="*pw*" | No |
| | OPEN="*pw*" OWNER="*pw*" | Yes |
| Permissions Password | OPEN="*pw*" | No |
| | OWNER="*pw*" | Yes |
| | OPEN="*pw*" OWNER="*pw*" | Yes |

Nearly all other document properties can be set to Allowed or Not Allowed by using other PDF system options. The Page Extraction property cannot be set by using a system option. To see how the individual options set the document properties, refer to the PDF system options in Table 6.3 on page 109.

The following table shows the default PDF document properties for the two values of the PDFSECURITY= option:

| | PDFSECURITY=NONE | PDFSECURITY=HIGH * |
|---|---|---|
| Printing | Allowed | High Resolution |
| Changing the Document | Allowed | Not Allowed |
| Commenting | Allowed | Not Allowed |
| Form Field Fill-in or Signing | Allowed | Allowed |
| Document Assembly | Allowed | Not Allowed |
| Content Copying | Allowed | Allowed |
| Document Editing Enabled | Allowed | Allowed |
| Page Extraction | Allowed | Not Allowed |

| | PDFSECURITY=NONE | PDFSECURITY=HIGH * |
|---|---|---|
| Encryption Level | None | 128-bit RC4 |

* Documents that are created when PDFSECURITY=HIGH can be viewed using Acrobat 5.0 and later.

Some document properties are set by SAS system options only when PDFSECURITY=HIGH.

### Importing Existing Images into a PDF File

Images can be included in PDF files created with SAS using the style attributes BACKGROUNDIMAGE, POSTIMAGE, and PREIMAGE. These can be included using PROC TEMPLATE or inline style syntax.

In order to get the best looking images included in your ODS PDF file, the images should follow these parameters:

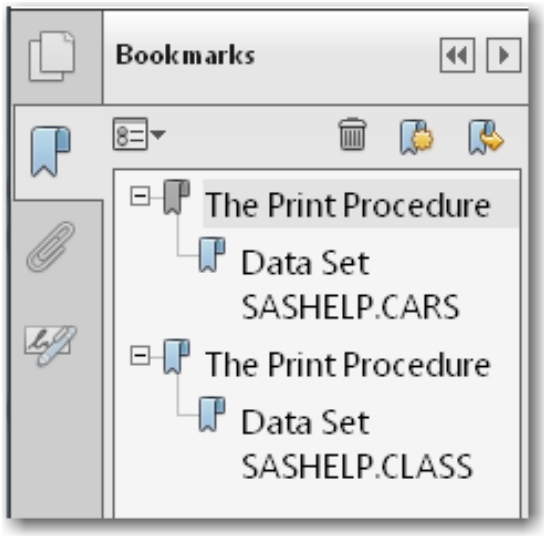
- Images should be in one of the following formats: JPEG, PNG, GIF, BMP, TIFF.
- The image should have 150 dots per inch (DPI). It is important that all images have a consistent DPI. For example, if you have more than one image to include in your PDF file(s), they should all have the same DPI (150 for best results).
- The image DPI should match the PDF DPI.
- If you use JPG files, these should conform to the JFIF standard, use RGB colors, and should not use transparency in the image.
- It is recommended that you create the image in the height and width that is desired in the final report output. For example, if you need to display a banner image that is 2 inches by 6 inches in size, the file should be 150 DPI, use RGB colors, and have the dimensions of 2 inches by 6 inches. ODS PDF will then accurately include the image in the resulting PDF file.

### Working with the Table of Contents

The ODS PDF destination provides the following two navigation tools:

- The default table of contents (TOC), which is a clickable bookmark tree that is not printed.

***Output 6.2*** *PDF Output Default Bookmark Tree*




- A printable table of contents, which is generated using the CONTENTS=YES option on the ODS PDF FILE= statement. The output created this way is static and, just like the table of contents in a book, does not count toward the page count of the PDF file. The text "Table of Contents" is customizable using PROC TEMPLATE, and the text of each of the entries is customizable with the CONTENTS= options on some of the PROC statements.

***Output 6.3*** *PDF Output Default Table of Contents Page*

The text displayed by the nodes of each tool is controlled with the following:

- the CONTENTS=, the DESCRIPTION=, and the OBJECTLABEL= options
- the TEMPLATE procedure

## Examples

### *Example 1: Opening Multiple Instances of the Same Destination at the Same Time*

**Features:** ODS PDF statement option:

FILE=
ID=
PDFTOC=
STYLE=

**Other features:**

PROC PRINT
PROC SORT
NOBYLINE|BYLINE system option
NODATE system option

**Data set:** SASHELP.CARS

### Details

This example opens multiple instances of the PDF destination to create PDF output. One instance uses the default style template and the second instance uses the STYLE= option to specify the Sapphire style template.

*Note:* The HTML destination is open by default in SAS Studio. Concentrate on the PDF output for this example.

### Program

```
proc sort data=sashelp.cars out=cars;
by make model type;
run;

options nobyline nodate;
title 'Make and Model of Cars';

ods pdf file='pathname-cars-1.pdf' pdftoc=2;
ods pdf (id=SapphireStyle) style=Sapphire file='pathname-cars-2.pdf' pdftoc=3;

proc print data=work.cars;
var make model type;
by make model type;
pageby make;
run;

ods pdf close;
ods pdf(id=Sapphirestyle) close;
```

### Program Description

---

**Sort the data set SASHELP.CARS.** The SORT procedure sorts the input dataset SASHELP.CARS and names the resulting output file ‘cars’. The data is first sorted by the make of the car, next by model within each make of car, and finally by type of car.

```
proc sort data=sashelp.cars out=cars;
by make model type;
run;
```

---

**Suppress the default BY line, suppress the printing of the date, and use the BY value in a title.** The NOBYLINE option suppresses the BY line. The NODATE option suppresses the date and timestamp in the output..

```
options nobyline nodate;
title 'Make and Model of Cars';
```

---

**Create two different PDF output files at the same time.** The ODS PDF statement opens the PDF destination and creates PDF output. The file cars-1.pdf is created by the first ODS PDF statement. Because no style template is specified, the default style, Styles.Pearl, is used. The PDFTOC=2 option specifies that the table of contents is expanded two levels. The file cars-2.pdf is created by the second ODS PDF statement with the ID= option specified. The STYLE= option specifies that ODS use the style template Sapphire. The ID= option gives this instance of the PDF destination the name SapphireStyle. The PDFTOC=3 option specifies that the table of contents is expanded three levels. If you do not specify the ID= option, then this second ODS PDF statement would close the instance of the PDF destination that was opened by the previous ODS PDF statement and would open a new instance of the PDF destination. The file cars-1.pdf would contain no output.

```
ods pdf file='pathname-cars-1.pdf' pdftoc=2;
ods pdf (id=SapphireStyle) style=Sapphire file='pathname-cars-2.pdf' pdftoc=3;
```

---

**Produce a report.** This PROC PRINT step produces a report on cars from the data set sorted by make, model, and type, and shows only these variables. Each make of car BY group produces a page of output.

```
proc print data=work.cars;
var make model type;
by make model type;
pageby make;
run;
```

---

**Close the open destinations so that you can view or print the output.** The ODS PDF CLOSE statement closes the first instance of the PDF destination and all of the files that are associated with it. The ODS PDF (ID=Sapphirestyle) statement closes the second instance of the PDF destination and all of the files that are associated with it. You must close the destinations before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
ods pdf(id=Sapphirestyle) close;
```

### PDF Output

The default style for the ODS PDF and ODS PRINTER statements is Pearl.

***Output 6.4*** *PDF Output with the Default Style Applied*

**Make & Model of Cars**

| Obs | Make | Model | Type |
|---|---|---|---|
| 1 | Acura | 3.5 RL 4dr | Sedan |
| 2 | Acura | 3.5 RL w/Navigation 4dr | Sedan |
| 3 | Acura | MDX | SUV |
| 4 | Acura | NSX coupe 2dr manual S | Sports |
| 5 | Acura | RSX Type S 2dr | Sedan |
| 6 | Acura | TL 4dr | Sedan |
| 7 | Acura | TSX 4dr | Sedan |

***Output 6.5*** *PDF Output Using Sapphire Style Applied*

**Make & Model of Cars**

| Obs | Make | Model | Type |
|---|---|---|---|
| 1 | Acura | 3.5 RL 4dr | Sedan |
| 2 | Acura | 3.5 RL w/Navigation 4dr | Sedan |
| 3 | Acura | MDX | SUV |
| 4 | Acura | NSX coupe 2dr manual S | Sports |
| 5 | Acura | RSX Type S 2dr | Sedan |
| 6 | Acura | TL 4dr | Sedan |
| 7 | Acura | TSX 4dr | Sedan |

## *Example 2: Creating a Printable Table of Contents*

**Features:** ODS PDF statement option:

BOOKMARKLIST=
CONTENTS=
FILE=

**Other features:** OPTIONS statement
PROC PRINT

**Data sets:** SASHELP.CARS
SASHELP.CLASS

### Details

By default, ODS PDF does not create a printable table of contents, only a clickable bookmark tree. This example shows you how to create a printable table of contents.

### Program

```
title "Create a Table of Contents";
options nodate;

ods pdf file="pathname-to-MyDefaultToc.pdf" contents=yes bookmarklist=hide;


proc print data=sashelp.cars;
run;

proc print data=sashelp.class;
run;


ods pdf close;
```

### Program Description

**Specify a title and set the SAS system options.**

```
title "Create a Table of Contents";
```

```
options nodate;
```

**Open the PDF destination and specify the ODS PDF statement options.** The ODS PDF statement opens the PDF destination and the FILE= option specifies the PDF filename and its location. The CONTENTS=YES option specifies that a table of contents is created. Because you are creating a table of contents, you might not need the bookmark tree. The BOOKMARKLIST=HIDE option specifies that a bookmark tree is created but hidden.

```
ods pdf file="pathname-to-MyDefaultToc.pdf" contents=yes bookmarklist=hide;
```

**Create the procedure output.**

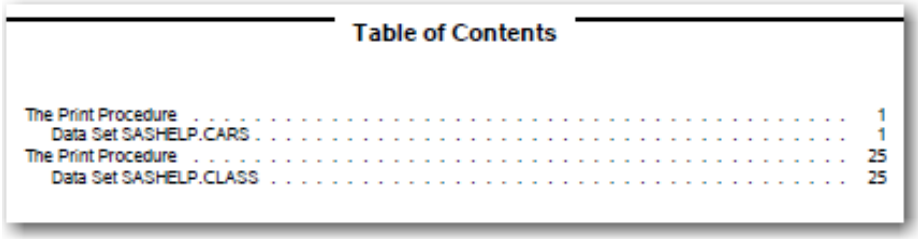
```
proc print data=sashelp.cars;
run;

proc print data=sashelp.class;
run;
```

**Close the PDF destination.** The ODS PDF CLOSE statement closes the PDF destination and all of the files that are associated with it. You must close the destinations before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
```

### PDF Output

***Output 6.6*** *Printable Table of Contents for PDF Output*




## *Example 3: Combining a Table and Image on the Same Page*

**Features:** ODS PDF statement option

- FILE=
- NOTOC
- STARTPAGE=NO

ODS HTML

**Other features:**

- OPTIONS statement
- PROC CONTENTS
- PROC PRINT
- PROC SGPLOT

**Data set:** SASHELP.CARS

### Details

ODS PDF will paginate according to the individual procedures' behavior. For example, PROC PRINT will generate a new page break for every BY group if the PAGEBY statement is used. ODS GRAPHICS procedure will place one image on a page then produce a page break. To override this behavior, the STARTPAGE= option is available in the ODS PDF statement.

### Program

```
title "Eliminating Page Breaks";
options nodate;

ods pdf file="pathname-to-file.pdf" notoc startpage=no nogtitle;

ods select variables;
proc contents data=sashelp.cars;
run;

ods graphics / reset noborder width=6in;
proc sgplot data=sashelp.cars;
   scatter x=cylinders y=mpg_highway;
   scatter x=cylinders y=mpg_city;
   yaxis label=" ";
   keylegend  / noborder;
run;


ods pdf close;
```

### Program Description

**Specify a title and set the SAS system options.**

```
title "Eliminating Page Breaks";
options nodate;
```

**Open the PDF destination and specify the ODS PDF statement options.** The ODS PDF statement opens the PDF destination and the FILE= option specifies the PDF filename and its location. The NOTOC option specifies that no table of contents is created. The STARTPAGE=NO option specifies that no new pages are inserted at the beginning of each procedure, or within certain procedures, even if new pages are requested by the procedure code. The NOGTITLE option specifies that the title is not inserted into the graphic image.

```
ods pdf file="pathname-to-file.pdf" notoc startpage=no nogtitle;
```

**Create the table output with variables from the Cars data set.**

```
ods select variables;
proc contents data=sashelp.cars;
run;
```

**Create a scatter plot with ODS graphics.**

```
ods graphics / reset noborder width=6in;
proc sgplot data=sashelp.cars;
   scatter x=cylinders y=mpg_highway;
   scatter x=cylinders y=mpg_city;
```

```
    yaxis label=" ";
    keylegend  / noborder;
run;
```

**Close the PDF destination.** The ODS PDF CLOSE statement closes the PDF destination and all of the files that are associated with it. You must close the destination before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
```

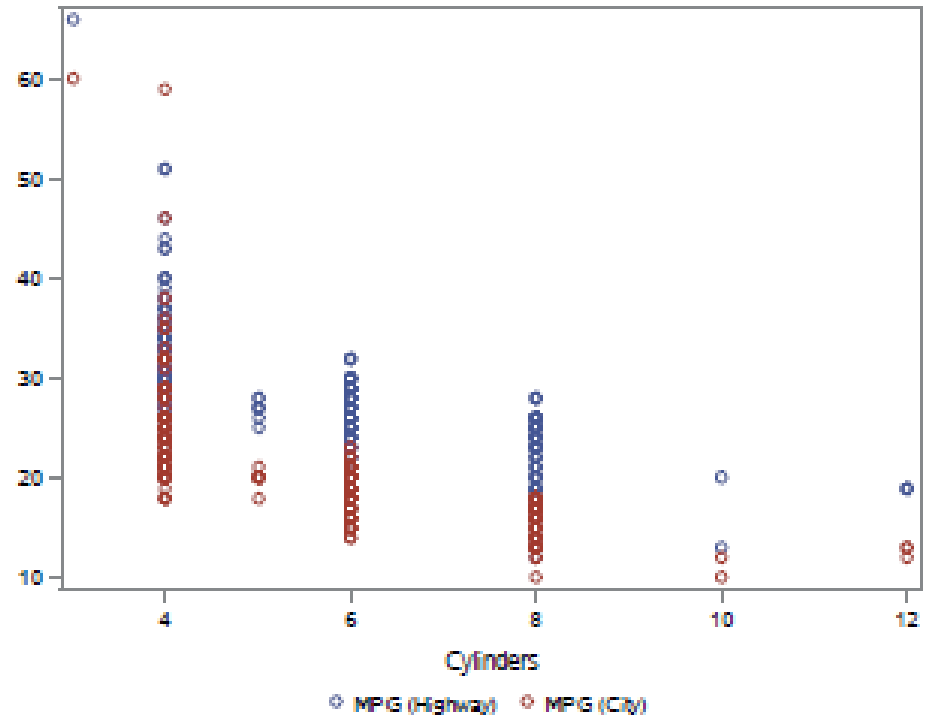
## PDF Output

***Output 6.7*** *PDF Output with No Page Breaks*

**Eliminating Page Breaks**

The CONTENTS Procedure

| Alphabetic List of Variables and Attributes | | | | | |
|---|---|---|---|---|---|
| # | Variable | Type | Len | Format | Label |
| 9 | Cylinders | Num | 8 | | |
| 5 | DriveTrain | Char | 5 | | |
| 8 | EngineSize | Num | 8 | | Engine Size (L) |
| 10 | Horsepower | Num | 8 | | |
| 7 | Invoice | Num | 8 | DOLLAR8. | |
| 15 | Length | Num | 8 | | Length (IN) |
| 11 | MPG_City | Num | 8 | | MPG (City) |
| 12 | MPG_Highway | Num | 8 | | MPG (Highway) |
| 6 | MSRP | Num | 8 | DOLLAR8. | |
| 1 | Make | Char | 13 | | |
| 2 | Model | Char | 40 | | |
| 4 | Origin | Char | 6 | | |
| 3 | Type | Char | 8 | | |
| 13 | Weight | Num | 8 | | Weight (LBS) |
| 14 | Wheelbase | Num | 8 | | Wheelbase (IN) |



### *Example 4: Adding Text That Imitates a System Title*

**Features:** ODS PDF statement option

- FILE=
- NOTOC
- STARTPAGE=NO
- STYLE=

ODS HTML
ODS TEXT statement
PROC TEMPLATE

**Other features:** OPTIONS statement
PROC CONTENTS
PROC PRINT
TITLE statement

#### Details

SAS titles and footnotes are displayed once per page in the PDF destination. Therefore, when the STARTPAGE= option is set to NO (OFF) and output from more than one procedure or DATA _NULL_ step is routed to ODS PDF, only the first set of titles and footnotes are written to the output file. This example shows how to use the TEXT= option to mimic an interim title, displayed above the second procedure output. PROC TEMPLATE is used to create a custom style template that mimics the style of the Systemtitle element. Systemtitle is the style element that controls the appearance of titles.

This example requires some knowledge of style templates, style elements, and style attributes.

#### Program

```
options nodate;


proc template;
   define style styles.mimictitle;
   parent=styles.pearl;
   class usertext from systemtitle /
     just=c;
   end;
run;

ods pdf file="pathname-to-file.pdf" notoc startpage=no style=styles.mimictitle;


title "Overriding the Default Procedure Title";

proc contents data=sashelp.cars;
run;


ods text="My Custom PROC PRINT Output Title";


proc print data=sashelp.cars noobs;
   where mpg_highway gt 45;
run;
```

```
ods pdf close;

proc template;
delete Styles.Mimictitle;
run;
```

### Program Description

**Set the SAS system options.**

```
options nodate;
```

**Create a custom style template.** The Usertext style element controls the appearance of user text, which includes text specified by the TEXT= option. The Systemtitle style element controls the appearance of the default SAS titles, which include the text specified by the TITLE= statement. This PROC TEMPLATE step creates a new style named Styles.Mimictitle, which contains all of the style elements and style attributes that Styles.Pearl contains. However, the CLASS statement modifies the Usertext style element to produce center-justified text, just as the Systemtitle style element does. This ensures that text specified by the TEXT= option will look the same as the text specified by the TITLE= statement.

```
proc template;
   define style styles.mimictitle;
   parent=styles.pearl;
   class usertext from systemtitle /
     just=c;
   end;
run;
```

**Open the PDF destination and specify the ODS PDF statement options.** The ODS PDF statement opens the PDF destination and the FILE= option specifies the PDF filename and its location. The NOTOC option specifies that no table of contents is created. The STARTPAGE=NO option specifies that no new pages are inserted at the beginning of each procedure, or within certain procedures, even if new pages are requested by the procedure code. The STYLE= option specifies the style to use for the output, which is Styles.Mimictitle in this example.

```
ods pdf file="pathname-to-file.pdf" notoc startpage=no style=styles.mimictitle;
```

**Specify a title.**

```
title "Overriding the Default Procedure Title";
```

**Create the table output.**

```
proc contents data=sashelp.cars;
run;
```

**Specify the text to use as the second procedure title.** The TEXT= option specifies the text that appears above the PRINT procedure output. Because the custom style Styles.Mimictitle was specified in the ODS PDF statement, this text will look like a title specified by the TITLE= statement.

```
ods text="My Custom PROC PRINT Output Title";
```

---

**Create the PRINT procedure output.**

```
proc print data=sashelp.cars noobs;
   where mpg_highway gt 45;
run;
```

---

**Close the PDF destination.** The ODS PDF CLOSE statement closes the PDF destination and all of the files that are associated with it. You must close the destination before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
```

---

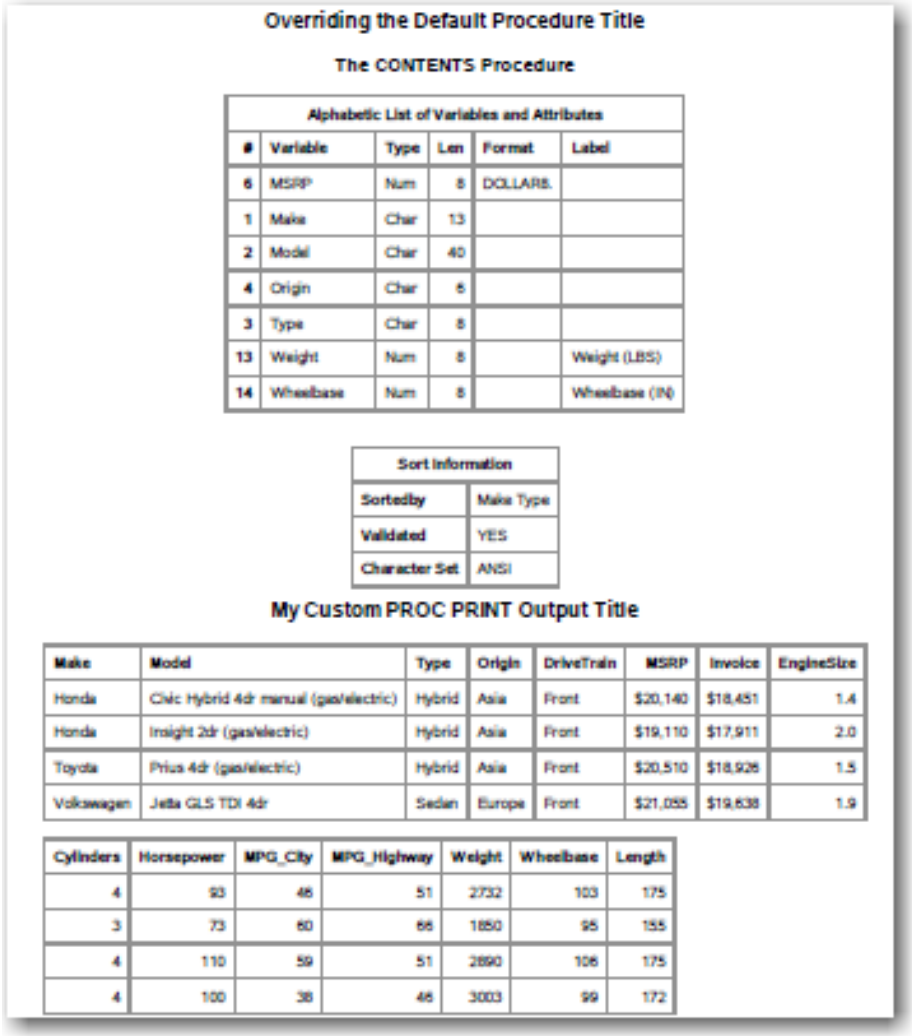
**After your output is produced, you can remove the custom style.** The DELETE statement in PROC TEMPLATE removes the custom style.

```
proc template;
delete Styles.Mimictitle;
run;
```

### PDF Output

The following image shows the text “My Custom PROC PRINT Output Title” above the PROC PRINT table in the same style as the title.

***Output 6.8*** *PDF Output with Custom Procedure Title*



Overriding the Default Procedure Title

The CONTENTS Procedure

| Alphabetic List of Variables and Attributes | | | | | |
|---|---|---|---|---|---|
| # | Variable | Type | Len | Format | Label |
| 6 | MSRP | Num | 8 | DOLLAR8. | |
| 1 | Make | Char | 13 | | |
| 2 | Model | Char | 40 | | |
| 4 | Origin | Char | 6 | | |
| 3 | Type | Char | 8 | | |
| 13 | Weight | Num | 8 | | Weight (LBS) |
| 14 | Wheelbase | Num | 8 | | Wheelbase (IN) |

| Sort Information | |
|---|---|
| Sortedby | Make Type |
| Validated | YES |
| Character Set | ANSI |

My Custom PROC PRINT Output Title

| Make | Model | Type | Origin | DriveTrain | MSRP | Invoice | EngineSize |
|---|---|---|---|---|---|---|---|
| Honda | Civic Hybrid 4dr manual (gas/electric) | Hybrid | Asia | Front | $20,140 | $18,451 | 1.4 |
| Honda | Insight 2dr (gas/electric) | Hybrid | Asia | Front | $19,110 | $17,911 | 2.0 |
| Toyota | Prius 4dr (gas/electric) | Hybrid | Asia | Front | $20,510 | $18,926 | 1.5 |
| Volkswagen | Jetta GLS TDI 4dr | Sedan | Europe | Front | $21,055 | $19,638 | 1.9 |

| Cylinders | Horsepower | MPG_City | MPG_Highway | Weight | Wheelbase | Length |
|---|---|---|---|---|---|---|
| 4 | 93 | 46 | 51 | 2732 | 103 | 175 |
| 3 | 73 | 60 | 66 | 1850 | 95 | 155 |
| 4 | 110 | 59 | 51 | 2890 | 106 | 175 |
| 4 | 100 | 38 | 46 | 3003 | 99 | 172 |

## *Example 5: Toggling Page Breaks*

**Features:** ODS PDF statement option

- FILE=
- NOTOC
- STARTPAGE=NO
- STARTPAGE=NOW

ODS GRAPHICS statement
ODS HTML

**Other features:** FOOTNOTE statement
OPTIONS statement
PROC PRINT
PROC SGPLOT
TITLE statement

**Data set:** SASHELP.CARS

### Details

After pagination is turned off with STARTPAGE=NO, the setting stays in effect until it is overridden. If pagination is needed immediately and only once, the STARTPAGE=NOW setting is helpful. In the following example, PROC PRINT and PROC SGPLOT results are grouped onto two separate pages. The first PRINT table and SGPLOT image are on one page, and the second PRINT table and SGPLOT image are placed each on the next page. Each page has a different title and footnote.

### Program

```
options nodate;

ods pdf file="pathname-to-file.pdf" notoc startpage=no;


title "Top of the First Page Title";
footnote "Bottom of the first page footnote";


proc print data=sashelp.cars ;
  where mpg_highway gt 45;
run;

title;
footnote;

ods graphics on / reset noborder;
   proc sgplot data=sashelp.cars;
    where mpg_highway gt 45;
    scatter x=enginesize y=mpg_city;
  run;

ods pdf startpage=now;

title "Top of the Second Page Title";
footnote "Bottom of the second page footnote";


proc print data=sashelp.cars ;
  where mpg_highway gt 45;
run;


title;
footnote;

proc sgplot data=sashelp.cars;
   where mpg_highway gt 45;
   scatter x=enginesize y=mpg_highway;
run;



ods pdf close;
```

### Program Description

**Set the SAS system options.**

```
options nodate;
```

**Open the PDF destination and specify the ODS PDF statement options.** The ODS PDF statement opens the PDF destination and the FILE= option specifies the PDF filename and its location. The NOTOC option specifies that no table of contents is created. The STARTPAGE=NO option specifies that no new pages are inserted at the beginning of each procedure, or within certain procedures, even if new pages are requested by the procedure code.

```
ods pdf file="pathname-to-file.pdf" notoc startpage=no;
```

**Specify the title and footnote for the first page of output.** The title and footnote specified in this step are displayed at the top and bottom of the first page of output.

```
title "Top of the First Page Title";
footnote "Bottom of the first page footnote";
```

**Create the PRINT procedure output for the first page.**

```
proc print data=sashelp.cars ;
  where mpg_highway gt 45;
run;
```

**Clear the title and footnote.** Specifying a blank TITLE statement prevents the title from printing before the SGPLOT procedure output. Specifying a blank FOOTNOTE statement prevents the footnote from printing after the SGPLOT procedure output.

```
title;
footnote;
```

**Create the SGPLOT procedure output for the first page.**

```
ods graphics on / reset noborder;
   proc sgplot data=sashelp.cars;
    where mpg_highway gt 45;
    scatter x=enginesize y=mpg_city;
  run;
```

**Begin a new page and specify a title and footnote for the page.** The STARTPAGE=NOW option forces the immediate insertion of a new page. The TITLE and FOOTNOTE statements specify a title and footnote for the new page.

```
ods pdf startpage=now;

title "Top of the Second Page Title";
footnote "Bottom of the second page footnote";
```

**Create the PRINT procedure output for the second page.**

```
proc print data=sashelp.cars ;
  where mpg_highway gt 45;
run;
```

**Clear the title and footnote.** Specifying a blank TITLE statement prevents the title from printing before the SGPLOT procedure output. Specifying a blank FOOTNOTE statement prevents the footnote from printing after the SGPLOT procedure output.

```
title;
footnote;
```

---

**Create the SGPLOT procedure output for the second page.**

```
proc sgplot data=sashelp.cars;
   where mpg_highway gt 45;
   scatter x=enginesize y=mpg_highway;
run;
```

---

**Close the PDF destination.** The ODS PDF CLOSE statement closes the PDF destination and all of the files that are associated with it. You must close the destination before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
```

### PDF Output

If you had used STARTPAGE=YES instead of STARTPAGE=NOW in this example, a three-page PDF file is created with second SGPLOT output on the third page.

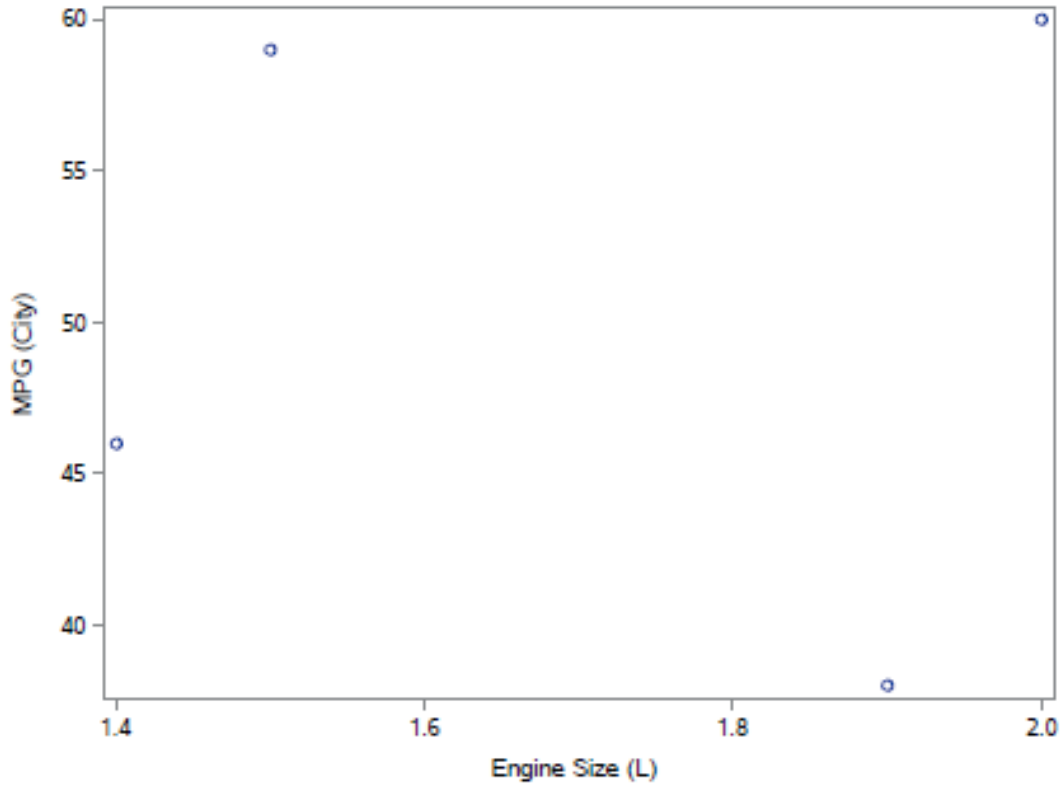
***Output 6.9*** *PDF Output with Customized Title and Footnote Behavior*

**Top of the First Page Title**

1

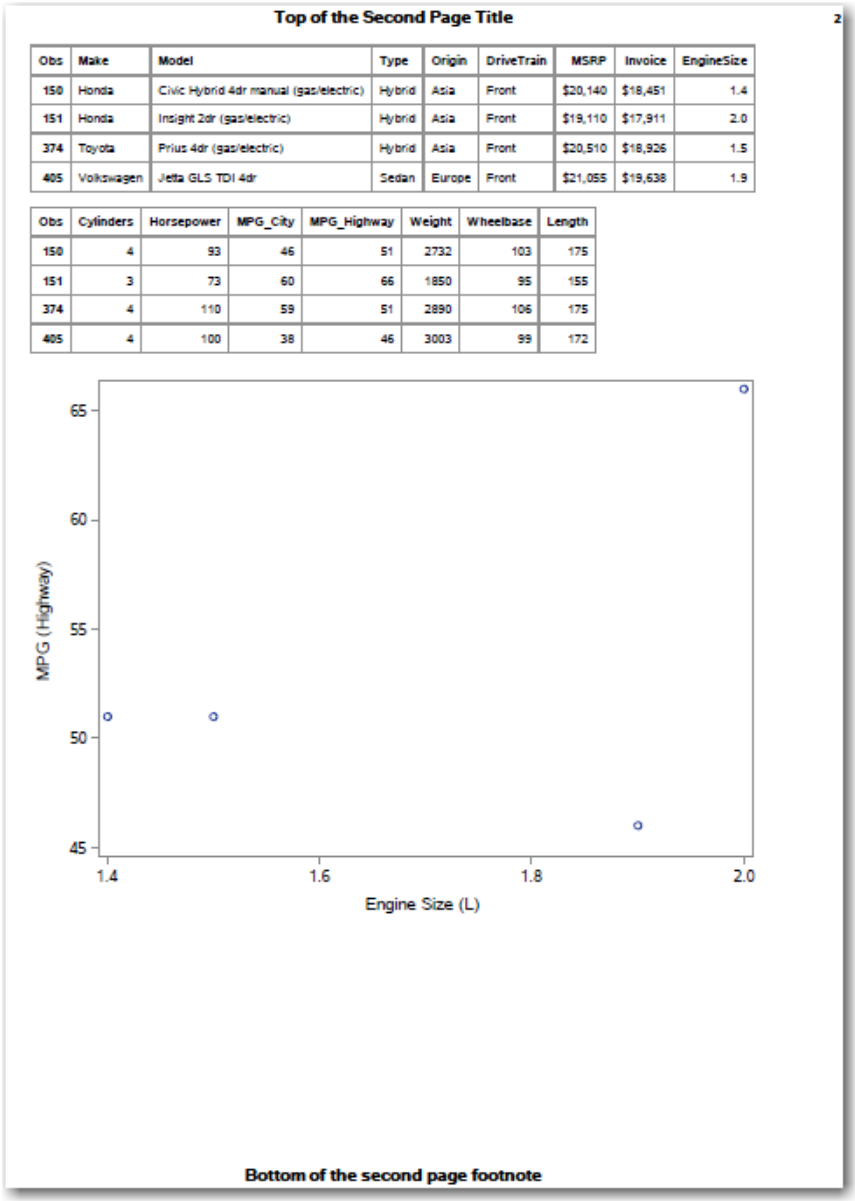
| Obs | Make | Model | Type | Origin | DriveTrain | MSRP | Invoice | EngineSize |
|---|---|---|---|---|---|---|---|---|
| 150 | Honda | Civic Hybrid 4dr manual (gas/electric) | Hybrid | Asia | Front | $20,140 | $18,451 | 1.4 |
| 151 | Honda | Insight 2dr (gas/electric) | Hybrid | Asia | Front | $19,110 | $17,911 | 2.0 |
| 374 | Toyota | Prius 4dr (gas/electric) | Hybrid | Asia | Front | $20,510 | $18,926 | 1.5 |
| 405 | Volkswagen | Jetta GLS TDI 4dr | Sedan | Europe | Front | $21,055 | $19,638 | 1.9 |

| Obs | Cylinders | Horsepower | MPG_City | MPG_Highway | Weight | Wheelbase | Length |
|---|---|---|---|---|---|---|---|
| 150 | 4 | 93 | 46 | 51 | 2732 | 103 | 175 |
| 151 | 3 | 73 | 60 | 66 | 1850 | 95 | 155 |
| 374 | 4 | 110 | 59 | 51 | 2890 | 106 | 175 |
| 405 | 4 | 100 | 38 | 46 | 3003 | 99 | 172 |




**Bottom of the first page footnote**

Using STARTPAGE=NOW in this example, a two-page PDF file is created with second SGPLOT output on the second page.



Top of the Second Page Title

| Obs | Make | Model | Type | Origin | DriveTrain | MSRP | Invoice | EngineSize |
|---|---|---|---|---|---|---|---|---|
| 150 | Honda | Civic Hybrid 4dr manual (gas/electric) | Hybrid | Asia | Front | $20,140 | $18,451 | 1.4 |
| 151 | Honda | Insight 2dr (gas/electric) | Hybrid | Asia | Front | $19,110 | $17,911 | 2.0 |
| 374 | Toyota | Prius 4dr (gas/electric) | Hybrid | Asia | Front | $20,510 | $18,926 | 1.5 |
| 405 | Volkswagen | Jetta GLS TDI 4dr | Sedan | Europe | Front | $21,055 | $19,638 | 1.9 |

| Obs | Cylinders | Horsepower | MPG_City | MPG_Highway | Weight | Wheelbase | Length |
|---|---|---|---|---|---|---|---|
| 150 | 4 | 93 | 46 | 51 | 2732 | 103 | 175 |
| 151 | 3 | 73 | 60 | 66 | 1850 | 95 | 155 |
| 374 | 4 | 110 | 59 | 51 | 2890 | 106 | 175 |
| 405 | 4 | 100 | 38 | 46 | 3003 | 99 | 172 |



Bottom of the second page footnote

### *Example 6: Suppressing a Page Break*

**Features:** ODS PDF statement option:

FILE=
NOTOC
STARTPAGE=NO

ODS GRAPHICS statement
ODS HTML

**Other features:** FOOTNOTE statement
OPTIONS statement
PROC PRINT
PROC SGSCATTER
TITLE statement

**Data set:** SASHELP.CARS

### Details

The following example illustrates a basic behavior of the STARTPAGE= option. The STARTPAGE= option does not have to be specified on the first ODS PDF statement. In this example the STARTPAGE=NO setting is made after the first PROC step and takes effect immediately to combine the PROC SGSCATTER results on the first page.

Also, this example illustrates that populated title and footnotes are included in the PROC SGSCATTER portion of the next example. Title and footnote text is embedded in any image created by ODS GRAPHICS output.

### Program

```
options nodate;

ods pdf file="pathname-to-file.pdf" notoc;


title "Top Of the Page Title";
footnote "Bottom of the page footnote";

proc print data=sashelp.cars (obs=5) noobs;
var Origin EngineSize MPG_City MPG_Highway Type Cylinders;
by Make;
run;

ods pdf startpage=no;

ods graphics on / reset noborder;
title "Title Embedded In the Image";
footnote "Footnote embedded in the image";
proc sgscatter data=sashelp.cars;
   plot mpg_highway*weight mpg_city*weight;
run;


ods pdf close;
```

### Program Description

**Set the SAS system options.**

```
options nodate;
```

**Open a PDF destination and specify a title and footnote.** The ODS PDF statement opens the PDF destination and the FILE= option specifies the PDF filename and its location. The NOTOC option specifies that no table of contents is created. The TITLE and FOOTNOTE statements specify a title and footnote for the top and bottom of the page.

```
ods pdf file="pathname-to-file.pdf" notoc;

title "Top Of the Page Title";
footnote "Bottom of the page footnote";
```

**Create the PRINT procedure output.**

```
proc print data=sashelp.cars (obs=5) noobs;
```

```
var Origin EngineSize MPG_City MPG_Highway Type Cylinders;
by Make;
run;
```

---

**Prevent a page break.** The STARTPAGE=NO option specified in the ODS PDF statement prevents a page break.

```
ods pdf startpage=no;
```

---

**Create the SGSCATTER procedure output and specify a title and footnote.** The title and footnote specified before an ODS graphics procedure step are embedded in the image.

```
ods graphics on / reset noborder;
title "Title Embedded In the Image";
footnote "Footnote embedded in the image";
proc sgscatter data=sashelp.cars;
   plot mpg_highway*weight mpg_city*weight;
run;
```

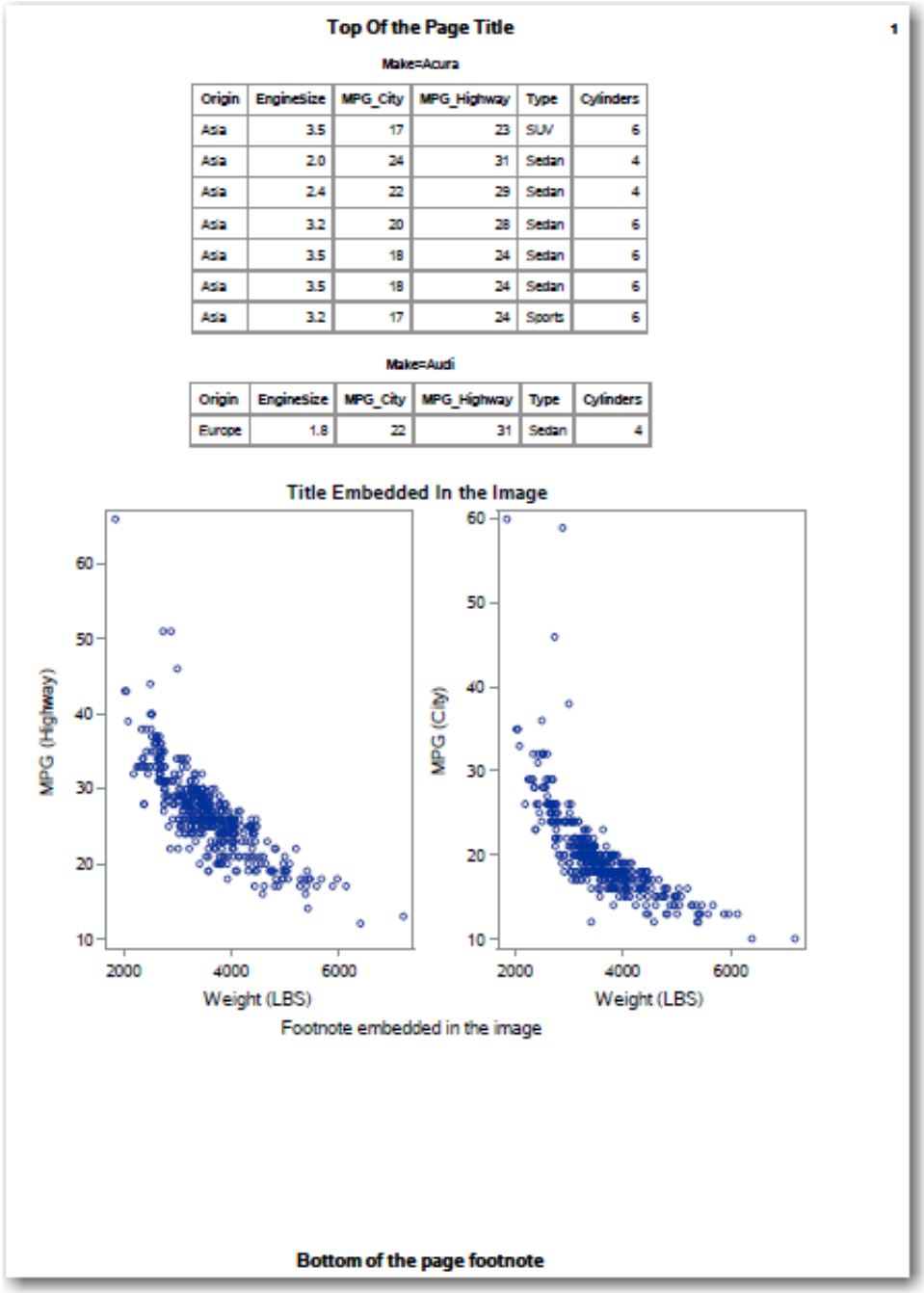
---

**Close the PDF destination.** The ODS PDF CLOSE statement closes the PDF destination and all of the files that are associated with it. You must close the destination before you can view the output with a browser or before you can send the output to a physical printer.

```
ods pdf close;
```

### PDF Output

***Output 6.10*** *Preventing a Page Break in PDF Output*




## ODS RTF Statement

Opens, manages, or closes the RTF destination, which produces output written in Rich Text Format for use with Microsoft Word 2002.

**Valid in:** Anywhere

**Category:** ODS: Third-Party Formatted

**Default:** The default style for the RTF destination is RTF.

**Restriction:** When a table that is generated using SAS is copied and pasted into or imported into a Word document, it is assigned the Word style "Normal". As a result, most of the custom ODS formatting is lost, and the output does not display as expected.

**Interaction:** To change the page orientation of the RTF output, specify the system option ORIENTATION=. To change the orientation, you will need to trigger the change by issuing the ODS RTF statement after the global options statement. See "Example: RTF Interaction with the ORIENTATION= System Option" on page 146 for details.

**Tip:** Microsoft Word 2002 is the current, official, minimum level that is supported. However, no problems have been found with Microsoft Word 2000 and SAS RTF files.

## Syntax

**ODS RTF** <(<ID=> *identifier*)> *action*;

**ODS RTF** <(<ID=> *identifier*)> <*option(s)*> ;

### *Summary of Optional Arguments*

(ID= *identifier*)
: Open multiple instances of the same destination at the same time

ANCHOR= '*anchor-name*'
: Specify a unique base name for the anchor tag that identifies each output object in the current body file

AUTHOR= '*author-text*'
: Specify the text string that identifies the author. This text string is inserted into the metadata of a file.

BASE= '*base-text*'
: Specify text to use as the first part of all links and references that ODS creates in output files

BODYTITLE
: Specify that the titles and footnotes are to be placed into the body of the RTF document and not into the header and footer sections

BOX_SIZING=(CONTENT_BOX | BORDER_BOX)
: Specify how to measure the width of cells. Use to override the default value of BOX_SIZING for a destination

CLOSE
: Close the destination and the file that is associated with it

COLUMNS= *n* | MAX
: Specify the number of columns to create on each page of output

CONTENTS
: Specify whether to produce a table of contents page

CSSSTYLE= '*file-specification*'<(*media-type-1*<…*media-type-10*>)>
: Specify a cascading style sheet to apply to your output

DEVICE= *device-driver*
: Specify a device for the RTF output destination

DOM <="*external-file*">
: Specify that the ODS document object model is written to the SAS log or to an external file.

ENCODING= *local-character-set-encoding*

Override the encoding for input or output processing (transcodes) of external files

EXCLUDE *exclusion(s)* | ALL | NONE
Exclude output objects from the destination

FILE= '*external-file*' | *fileref*
Open the ODS RTF destination and specify the name of the file to which to write information

GFOOTNOTE | NOGFOOTNOTE
Specify the location where footnotes are printed in the graphics output

GTITLE | NOGTITLE
Control the location where titles are printed in the graphics output

IMAGE_DPI
Specify the image resolution for the graphical output

KEEPN | NOKEEPN
Control where tables split on a page

NEWFILE= *starting-point*
Create a new body file at the specified starting point

NOTOC_DATA
Specify whether contents data is inserted into the RTF file

OPERATOR= '*text-string*'
Insert the text that you specify into the metadata of the RTF file

PACKAGE <*package-name*>
Specify that the output from the destination be added to an ODS package

PATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)
Specify the location of an aggregate storage location or a SAS catalog for all RTF files

PREPAGE='*text-string*'
Specify a text string that occurs before a table on a page

RECORD_SEPARATOR= '*alternative-separator*' | NONE
Specify an alternative character or string to separate lines in the output files

SASDATE
Write to the RTF file the time and date that you started your SAS session

SELECT *selection(s)* | ALL | NONE
Select output objects for the destination

SHOW
Write to the SAS log the current selection or exclusion list for the destination

STARTPAGE= BYGROUP | YES | NO | NOW
Control page breaks

STYLE= *style-template*
Specify a style template to use in writing the RTF files

TEXT= '*text-string*'
Insert text into your RTF output

TITLE= '*title-text*'
Insert the text string that you want as your title into the metadata of a file

TOC_DATA | NOTOC_DATA
Specify whether contents data is inserted into the RTF file

TRANTAB= *translation-table*
Specify a translation table to use when you transcode a file for output

### Actions

The following actions are available for the ODS RTF statement:

**CLOSE**
closes the destination and any files that are associated with it.

**Tip** You must close the destination before you can print the file associated with it.

**EXCLUDE *exclusion(s)* | ALL | NONE**
excludes one or more output objects from the destination.

**Default** NONE

**Restriction** A destination must be open for this action to take effect.

**SELECT *selection(s)* | ALL | NONE**
selects output objects for the specified destination.

**Default** ALL

**Restriction** A destination must be open for this action to take effect.

**SHOW**
writes the current selection list or exclusion list for the destination to the SAS log.

**Restriction** The destination must be open for this action to take effect.

**Tip** If the selection or exclusion list is the default list (SELECT ALL), then SHOW also writes the entire selection or exclusion list.

### Optional Arguments

**ANCHOR= '*anchor-name*'**
specifies the base name for the RTF anchor tag that identifies each output object in the current file.

Each output object must have an anchor tag to which other files link or reference. The references, which ODS automatically creates, point to the name of an anchor. Therefore, each anchor name in a file must be unique.

***anchor-name***
is the base name for the RTF anchor tag that identifies each output object in the current file.

ODS increments the name that you specify and creates unique anchor names. For example, if you specify ANCHOR= 'tabulate', then ODS names the first anchor **`tabulate`**. The second anchor is named **`tabulate1`**; the third is named **`tabulate2`**, and so on.

**Requirement** You must enclose *anchor-name* in quotation marks.

**Alias** NAMED_DEST= | BOOKMARK=

**Tips** It is useful to specify new anchor names at various points in your program when you want other RTF files to link to specific parts of your RTF output. Because you can control where the anchor name changes, you know in advance what the anchor name is at those points.

You can change anchor names as often as you want by submitting the ANCHOR= option in an ODS RTF statement anywhere in your program. After you specify an anchor name, it remains in effect until you specify a new one.

**AUTHOR= '*author-text*'**
inserts the text string that you specify as the author into the metadata of a file.

***author-text***
is the text in the metadata of an open file that indicates the author.

**Requirement** You must enclose *author-text* in quotation marks.

**BASE= '*base-text*'**
specifies the text to use as the first part of references that ODS creates in the output file.

***base-text***
is the text that ODS uses as the first part of all references that ODS creates in the file.

Consider this specification:

```
BASE='http://www.your-company.com/local-url/'
```

In this case, ODS creates links that begin with the string **`http://www.your-company.com/local-url/`**.

**Requirement** You must enclose *base-text* in quotation marks.

**BODYTITLE**
specifies that SAS titles and footnotes are placed into the body of the RTF document instead of into the headers and footers section of the RTF document.

**Restriction** The BODYTITLE option can be specified only when you create a new RTF file.

**Interactions** When you set the STARTPAGE= option to YES (the default), ODS inserts a new page at the start of each procedure. ODS relies on Word to place headers and footers correctly before and after the procedures. When you specify BODYTITLE, titles and footnotes are removed from the header and footer sections of the RTF document. Titles and footnotes are then placed into the body of the document, and are appended to every TABLE. Therefore, when you set the STARTPAGE= option to YES and specify the BODYTITLE option, the titles and footnotes might not repeat on every page. For example, if there is a table that spans multiple pages, the title is on the first page only, and the footnote is on the last page only.

When you specify the BODYTITLE option, Microsoft Word no longer controls the placement of the header and footer text. However, Microsoft Word still controls other header and footer information, such as page number and date.

**Tip** The background is not honored on the title cells.

**See** BODYTITLE_AUX option. Use the BODYTITLE_AUX option when you want titles and footnotes placed in tables in the body of the RTF document.

**BOX_SIZING=(CONTENT_BOX | BORDER_BOX)**
specifies how to measure the width of cells. This option overrides the default value of BOX_SIZING for a destination. The default value is set at the time of installation.

BOX_SIZING is defined by the WC3 specification, the CSS3 Module. For more information, refer to the CSS3 Box Model specification at http://www.w3.org/TR/2002/WD-css3-box-20021024/#box-sizing.

**COLUMNS= *n* | MAX**
specifies the number of columns to place across each page of output.

***n***
is the number of one-inch columns that you want on the page.

**MAX**
specifies the maximum number of columns for the paper size and margin setting. This value is dependent upon the paper size and page orientation.

**Default** The number of columns that fit on the page

**Interaction** When you specify the COLUMNS= option, the STARTPAGE=NO option is not honored.

**Tips** Titles are considered tables and not RTF instructions in Measured RTF (ODS TAGSETS.RTF statement). When you use the COLUMNS= option with Measured RTF, titles appear at the top of each column. However, ODS truncates the titles to fit the column width.

You can specify a value greater than the maximum number of columns that can fit on the page. However, a note is written to the SAS log that states what the maximum value can be for that page.

**CONTENTS**
produces a table of contents page for RTF documents that are opened in Microsoft Word. The table of contents page contains a Table of Contents field, which puts all of the contents information that is embedded in the document into a table of contents. To expand the table of contents, right-click under the title in Microsoft Word and select **Update Field** from the selection list.

**Restriction** Do not use the CONTENTS option with the NEWFILE option.

**Tips** To go to a specific topic in the document, you can double-click or hold down the Ctrl key and click on the topic in the table of contents. You might have to configure Microsoft Word to use the **Ctrl + click** method by selecting **Tools** ⇨ **Options** ⇨ **Edit** and checking Use **Ctrl + Click** to follow hyperlink.

You must specify the TOC_DATA option to view the text that is captured in the Table of Contents. If not, the Table of Contents page displays the error message "Error! No table of contents entries found." NOTOC_DATA is the default option that is used.

**See** TOC_DATA option

**CSSSTYLE= '*file-specification*'<(*media-type-1*<…*media-type-10*>)>**
specifies a cascading style sheet to apply to your output.

***file-specification***
specifies a file, fileref, or URL that contains CSS code.

*file-specification* is one of the following:

**"*external-file*"**
is the name of the external file.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**See** "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

**"*URL*"**
is a URL to an external file.

**Requirement** You must enclose *URL* in quotation marks.

**(*media-type-1*<.. *media-type-10*>)**
specifies one or more media blocks that correspond to the type of media that your output is rendered on. CSS uses media type blocks to specify how a document is to be presented on different media: on the screen, on paper, with a speech synthesizer, with a braille device, and so on.

The media block is added to your output in addition to the CSS code that is not contained in any media blocks. By using the *media-type* suboption, in addition to the general CSS code, you can import the section of a CSS file intended only for a specific media type.

**Default** If no *media-type* is specified in your ODS statement, but you do have media types specified in your CSS file, then ODS uses the Screen media type.

**Range** You can specify up to ten different media types.

**Requirements** You must enclose *media-type* in parentheses.

You must specify *media-type* next to the *file-specification* specified by the CSSSTYLE= option.

**Tip** If you specify multiple media types, all of the style information in all of the media types is applied to your output. However, if there is duplicate style information in different media blocks, then the styles from the last media block are used.

**Requirement** CSS files must be written in the same type of CSS produced by the ODS HTML statement. To view the CSS code that ODS creates, you can do one of the following:

- specify the ODS TRACE DOM statement
- specify the DOM option

**Interaction** If both the STYLE= option and the CSSSTYLE= option are specified in an ODS statement, the option specified last is the option that is used.

**DEVICE= *device-driver***
specifies the name of a device driver. ODS automatically selects an optimal default device for each open output destination.

The following table lists the default devices for the most common ODS output destinations. These default devices are used when graphics are created using ODS Graphics.

***Table 6.4*** *Default Devices for ODS Output Destinations*

| Output Destination | Default Device |
|---|---|
| HTML | PNG |
| PDF | SVG (ODS graphics) |
| RTF | EMF |

**Tip** Specifying a device on the ODS DEVICE= option takes precedence over the SAS global option and the graphics option.

**DOM <="*external-file*">**
specifies that the ODS document object model is written to the SAS log or an external file.

***external-file***
is the name of an external output file.

**Requirement** You must enclose *external-file* in quotation marks.

**ENCODING= *local-character-set-encoding***
overrides the encoding for input or output processing (transcodes) of external files.

**See** "ENCODING System Option" in *SAS Viya National Language Support: Reference Guide* for more information.

**FILE= '*external-file*' | *fileref***
opens the RTF destination and specifies the RTF file or SAS catalog to which to write. This file remains open until you do one of the following actions:

- Close the RTF destination with ODS RTF CLOSE or ODS _ALL_ CLOSE.
- Specify a different file to which to write.

***external-file***
is the name of an external file to which to write.

**Requirement** You must enclose *external-file* in quotation marks.

***fileref***
is a file reference that has been assigned to an external file. Use the FILENAME statement to assign a fileref.

**Restriction** You cannot use the FILE=*fileref* option with the NEWFILE= option.

See "FILENAME Statement" in *SAS Viya Statements: Reference* for more information.

Alias BODY=

Interaction In an ODS RTF statement that refers to an open RTF destination, the FILE= option forces ODS to close the destination and all files that are associated with it. ODS then opens a new instance of the destination. For more information, see "Opening and Closing the RTF Destination" on page 145.

See NEWFILE= option

**GFOOTNOTE | NOGFOOTNOTE**
controls the location of the footnotes that are defined by the graphics program that generates the RTF output.

GFOOTNOTE
includes all of the currently defined footnotes within the graphics output.

NOGFOOTNOTE
prevents all of the currently defined footnotes from appearing in the graphics file. Instead, they become part of the RTF file.

Default GFOOTNOTE

Restriction This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**GTITLE | NOGTITLE**
controls the location of the titles that are defined by the graphics program that generates the RTF output.

GTITLE
includes all of the currently defined titles within the graphics output that is called by the body file.

NOGTITLE
prevents all of the currently defined titles from appearing in the graphics output. Instead, the titles become part of the RTF file.

Default GTITLE

Restriction This option applies only to SAS programs that produce one or more graphics created by the SGPLOT procedure, the SGPANEL procedure, or the SGSCATTER procedure.

**(ID= *identifier*)**
enables you to run multiple instances of the same destination at the same time. Each instance can have different options.

*identifier*
specifies another instance of the destination that is already open. *identifier* is numeric or a series of characters that begin with a letter or an underscore. Subsequent characters can include letters, underscores, and numeric characters.

Restriction If *identifier* is numeric, it must be a positive integer.

Requirement You must specify the ID= option immediately after the destination name.

Tip You can omit the ID= option and instead use a name or a number to identify the instance.

Example "Example 1: Opening Multiple Instances of the Same Destination at the Same Time" on page 112

**IMAGE_DPI**
specifies the image resolution for graphical output.

Alias DPI=

Default 200

CAUTION **Caution: When the PDF contains an embedded image and you are using high DPI= or DPI_IMAGE= values (values over 1000), you might need to increase memory allocations. To increase memory, set the MEMSIZE= system option to 500M or higher. You can also decrease the DPI= value to ensure that you do not run out of memory.**

**KEEPN | NOKEEPN**
controls where tables split on a page.

**KEEPN**
ODS allows table splits only if the entire table cannot fit on one page.

**NOKEEPN**
ODS lets a table split at a page break.

Tip Although KEEPN minimizes page breaks in tables, it might use substantially more paper than NOKEEPN. This is because the KEEPN option issues a page break before starting to print any table that does not fit on the remainder of the page.

**NEWFILE= *starting-point***
creates a new file at the specified *starting-point*.

*starting-point* can be one of the following:

**BYGROUP**
starts a new file for the results of each BY group.

**NONE**
writes all output to the body file that is currently open.

**OUTPUT**
starts a new file for each output object.

Alias TABLE

**PROC**
starts a new file each time you start a new procedure.

Default NONE

Restriction You cannot use the NEWFILE= option with the FILE=*fileref* option.

Tip If you end the filename with a number, then ODS begins incrementing with that number. In the following example, ODS names the first body file MAY5.XML, and names additional body files MAY6.XML, MAY7.XML, and so on.

**NOTOC_DATA**
See the description of TOC_DATA in this section.

**OPERATOR= '*text-string*'**
inserts the text that you specify into the metadata of the RTF file.

*text-string*
is the text in the metadata of a file that indicates the author.

Requirement You must enclose *text-string* in quotation marks.

**PACKAGE <*package-name*>**
specifies that the output from the destination be added to a package.

*package-name*
specifies the name of a package that was created with the ODS PACKAGE statement. If no name is specified, then the output is added to the unnamed package that was opened last.

**PATH= *'aggregate-file-storage-specification'* | *fileref* | *libref.catalog* (URL= '*Uniform-Resource-Locator*' | NONE)**
specifies the location of an aggregate storage location or a SAS catalog for all RTF files. If the GPATH= option is not specified, all graphics output files are written to the *"aggregate-file-storage-specification"* or *libref*.

'*aggregate-file-storage-location*'
specifies an aggregate storage location such as directory, folder, or partitioned data set.

Requirement You must enclose *aggregate-file-storage-location* in quotation marks.

*fileref*
is a file reference that has been assigned to an aggregate storage location. Use the FILENAME statement to assign a fileref.

Interaction If you use a fileref in the PATH= option, then ODS does not use information from PATH= when it constructs links.

See "FILENAME Statement" in *SAS Viya Statements: Reference*.

*libref.catalog*
specifies a SAS catalog to write to.

See "LIBNAME Statement" in *SAS Viya Statements: Reference*.

**URL= '*Uniform-Resource-Locator*' | NONE**
specifies a URL for the *file-specification*.

*Uniform-Resource-Locator*
is the URL that you specify. ODS uses this URL instead of the filename in all the links and references that it creates to the file.

**NONE**
specifies that no information from the PATH= option appears in the links or references.

**Tip** This option is useful for building output files that can be moved from one location to another. The links from the contents and page files must be constructed with a single-name URL, and the contents, page, and body files must be in the same location.

**Interaction** If you use the BODY= or FILE= external file option in conjunction with the PATH= option, the external file specification should not include path information.

**PREPAGE='*text-string*'**
specifies a text string that occurs before a table on a page.

***text-string***
is the text at the top of the table, after the titles. The text is placed before any tables created by the procedure.

**Requirement** You must enclose *text-string* in quotation marks.

**RECORD_SEPARATOR= '*alternative-separator*' | NONE**
specifies an alternative record separator. This separator is a character or string that separates lines in the output files.

Different operating environments use different separator characters. If you do not specify a record separator, ODS formats the RTF files for the environment in which you run the SAS job. However, you can generate files in one operating environment to view in another operating environment that uses a different separator character. In this case, you can specify a record separator that is appropriate for the target environment.

***alternative-separator***
represents one or more characters in hexadecimal or ASCII format. For example, the following option specifies a record separator of a carriage-return character and a linefeed character (on an ASCII file system):

```
RECORD_SEPARATOR= '0D0A'x
```

*Operating Environment Information*
In a mainframe environment, the following option specifies a record separator for a carriage-return character and a linefeed character for use with an ASCII file system:

```
RECORD_SEPARATOR= '0D25'x
```

**Requirement** You must enclose *alternative-separator* in quotation marks.

**NONE**
produces RTF output that is appropriate for the environment in which you run the SAS job.

*Operating Environment Information*
In many operating environments, using a value of NONE has the same result as omitting the RECORD_SEPARATOR option.

*Operating Environment Information*
In a mainframe environment, by default, ODS produces a binary file that contains embedded record-separator characters. This approach means that the

file is not restricted by the line-length restrictions on ASCII files. However, this also means that the lines are concatenated if you view the file in an editor. If you want to format the RTF files in a manner that enables you to read them with an editor, use RECORD_SEPARATOR= NONE. In this case, ODS writes one line of RTF at a time to the file. When you use a value of NONE, the logical record length of the file to which you are writing must be at least as long as the longest line that ODS produces. Otherwise, RTF might wrap to another line at an inappropriate place.

**Aliases** RECSEP=

RS=

**SASDATE**
writes to the RTF file the time and the date that you started your SAS session.

**Restriction** You can specify SASDATE only when you open a new file. If you specify the option at any other time, ODS writes a warning message to the SAS log.

**Interaction** To reset the SAS session time that is input into the RTF file, use the DTRESET system option.

**See** For information about the DTRESET system option, see *SAS Viya System Options: Reference*.

**STARTPAGE= BYGROUP | YES | NO | NOW**
controls page breaks.

**BYGROUP**
specifies to insert page breaks after each BY group.

**YES**
inserts a new page at the start of each procedure and within certain procedures, as is requested by the procedure code.

**Alias** ON

**Interactions** When the STARTPAGE= option is set to YES (the default), ODS inserts a new page at the start of each procedure. ODS relies on Word for the correct placement of headers and footers before and after the procedures. When you specify BODYTITLE, titles and footnotes are removed from the header and footer sections of the RTF document. Titles and footnotes are then placed into the body of the document, and they are appended to every TABLE. Therefore, when you set the STARTPAGE= option to YES and you specify the BODYTITLE option, the titles and footnotes might not repeat on every page. For example, if there is a table that spans multiple pages, the title appears on only the first page, and the footnote appears on only the last page.

Note that when you specify the BODYTITLE option, Microsoft Word no longer controls the placement of the headers and footers text. However, Word still controls other header and footer information, such as page number and date.

**NO**
instructs ODS not to insert any new pages at the start of each procedure or within certain procedures, even if the procedure code requests new pages. A new page begins only when a page is filled or when you specify STARTPAGE= NOW.

**Alias** NEVER

**Interaction** When you specify the COLUMNS= option, the STARTPAGE=NO option is not honored.

**NOW**
forces the immediate insertion of a new page.

**Tip** This option is useful primarily when the current value of the STARTPAGE= option is NO. Otherwise, each new procedure forces a new page automatically.

**Default** YES

**Tip** Specifying STARTPAGE= NO prevents forced page breaks. You can turn on forced page breaking again by specifying STARTPAGE=YES. You can insert a page break at any time by specifying STARTPAGE=NOW.

**STYLE= *style-template***
specifies the style template for ODS to use to write the RTF files.

***style-template***
describes how to display the presentation aspects (color, font face, font size, and so on) of your SAS output. A style template determines the overall appearance of the documents that use that style template. Each style template consists of style elements.

**Note** If you are using SAS Studio, you do not need to specify the STYLE= option. You can go to **Preferences** ⇨ **Results** and change the style from the drop-down list for your selected destination.

**Default** By default, this value specifies *RTF* for traditional RTF.

**Restriction** Do not use the function syntax for ODS ESCAPECHAR to produce superscripts with the ODS RTF destination. Instead, use the traditional ODS ESCAPECHAR syntax. For example, use the following statement:

```
proc print style(report)=[posttext="SuperScript test \super 2"];
```

instead of this statement:

```
proc print style(report)=[posttext="SuperScript test ^{super 2}"];
```

**TEXT= '*text-string*'**
inserts text into your RTF output.

***text-string***
is the text that you want to insert into your RTF output. You can also use TEXT= to annotate other output.

**Requirement** You must enclose a *text-string* in quotation marks.

**TITLE= '*title-text*'**
inserts the text string that you specify as the title into the metadata of a file.

*title-text*
is the text in the metadata of a file that indicates the title.

**Requirement** You must enclose a *title-text* in quotation marks.

**TOC_DATA | NOTOC_DATA**
specifies whether contents data is embedded in the RTF file as hidden text.

**NOTOC_DATA**
instructs ODS not to insert contents data into the RTF file.

**TOC_DATA**
instructs ODS to insert contents data into the RTF file.

**Tip** Insertion of table of contents data can be resumed in the middle of a SAS program by including the following statement:

```
ods rtf toc_data;
```

**Default** NOTOC_DATA

**Tip** To create a visible table of contents from the inserted table of contents data, specify the CONTENTS option.

**See** CONTENTS option

**TRANTAB=** ***translation-table***
specifies the translation table for ODS to use when it transcodes a file for output.

## Details

### Opening and Closing the RTF Destination

You can modify an open RTF destination with many ODS RTF options. However, the FILE= option performs the following actions on an open RTF destination:

- close the open destination referred to in the ODS RTF statement
- close any files associated with the open RTF destination
- open a new instance of the RTF destination

If you use the FILE= option, you should explicitly close the destination yourself.

### Understanding How RTF Formats Output

RTF produces output for Microsoft Word 2002. Although other applications can read RTF files, the RTF output might not work successfully with the other applications.

The RTF destination enables you to view and edit the RTF output. ODS does not define the vertical measurement, which means that SAS does not determine the optimal place to position each item on the page. For example, page breaks are not always fixed because you do not want your RTF output tables to split at inappropriate places when you edit your text. Your tables remain intact on one page, or break where you specify.

However, Microsoft Word needs to know the widths of table columns; and Microsoft Word cannot adjust tables if they are too wide for the page. Therefore, ODS measures the width of the text and tables (horizontal measurement). All of the column widths can be set properly by SAS and the table can be divided into panels if it is too wide to fit on a single page.

In short, when producing RTF output for input to Microsoft Word, SAS determines the horizontal measurement and Microsoft Word controls the vertical measurement. Because Microsoft Word can determine how much room there is on the page, your tables are displayed consistently even after you modify your RTF file.

*Note:* Complex tables that contain a large number of observations can reduce system efficiencies and take longer to process.

### *ODS RTF and Graphics*

ODS RTF produces output in rich text format, which supports three formats for graphics that Microsoft Word can read.

- emfblips
- pngblips
- jpegblips

When you do not specify a target device, the default target is EMF.

## Example: RTF Interaction with the ORIENTATION= System Option

**Features:** ODS RTF statement action:

CLOSE

ODS RTF statement option:

FILE=

**Other features:** OPTIONS statement: ORIENTATION option
PROC PRINT
TITLE statement

**Data set:** SASHELP.CLASS

When you want to change the page orientation for RTF, specify the ORIENTATION= system option. To activate or trigger this change of the page orientation, the ODS RTF statement needs to follow the ORIENTATION= option. The following example provides example code for specifying a page orientation change within an RTF file.

### Program

```
OPTIONS NODATE NOSTIMER LS=78 PS=60;

title 'Page Orientation';
title2 'Default';

ods rtf file="ChgOrientation.rtf";

proc print data=sashelp.class (obs=3);
run;

title 'Page Orientation';
title2 'Landscape';

options orientation=landscape;

ods rtf;

proc print data=sashelp.class (obs=3);
run;

ods rtf close;
```

### Program Description

**Specify the layout of the output.** Instruct ODS not to print the date or time on the page and not to write any SAS statistics to the SAS log. Set the page size to 60 and the line size to 78.

```
OPTIONS NODATE NOSTIMER LS=78 PS=60;
```

**Add titles and footnotes to the output.** Add a title for the overall file output and then titles that describe the changing orientation.

```
title 'Page Orientation';
title2 'Default';
```

**Create RTF output.** The ODS RTF statement opens the RTF destination and creates RTF output. In this case, the statement also triggers the change in the page orientation from the default.

```
ods rtf file="ChgOrientation.rtf";
```

**Print the Sashelp.Class data set with only one observation.** The page orientation is the default orientation, which is portrait.

```
proc print data=sashelp.class (obs=3);
run;
```

**Add a title to change the page orientation in the output file.** Add a title to change the page orientation to landscape.

```
title 'Page Orientation';
title2 'Landscape';
```

**Specify the system option that changes the page orientation.**

```
options orientation=landscape;
```

**Trigger the page orientation change.** This RTF statement triggers the change of the page orientation from portrait to landscape.

```
ods rtf;
```

**Print the Sashelp.Class data set with only one observation.**

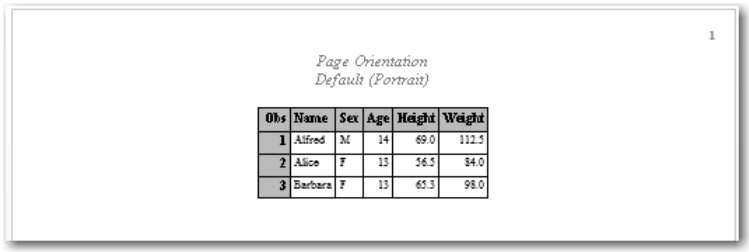
```
proc print data=sashelp.class (obs=3);
run;
```

**Close the RTF destination.** The ODS RTF CLOSE statement closes the RTF destination and all the files that are associated with it.

```
ods rtf close;
```

### RTF Output

The following shows the RTF output for the first page. The orientation is portrait, which is the default.

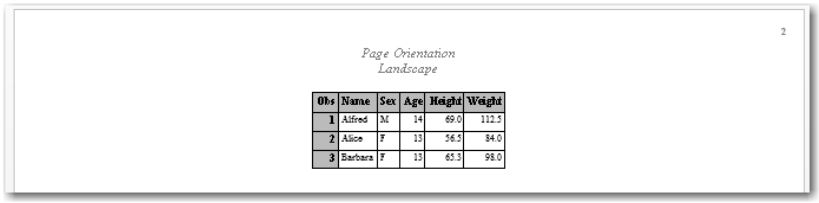


1

*Page Orientation*
*Default (Portrait)*

| Obs | Name | Sex | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | Alfred | M | 14 | 69.0 | 112.5 |
| 2 | Alice | F | 13 | 56.5 | 84.0 |
| 3 | Barbara | F | 13 | 65.3 | 98.0 |

The following shows the RTF output for the second page. The orientation was changed to landscape.



2

*Page Orientation*
*Landscape*

| Obs | Name | Sex | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | Alfred | M | 14 | 69.0 | 112.5 |
| 2 | Alice | F | 13 | 56.5 | 84.0 |
| 3 | Barbara | F | 13 | 65.3 | 98.0 |

*Chapter 7*

# SAS Statement That Controls ODS Graphics Processing

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## Graphics Processing and Environment Options

The ODS GRAPHICS Statement enables or disables ODS Graphics processing and sets graphics environment options. ODS Graphics is enabled by default, unless you are running SAS in batch mode. For detailed information, see "ODS GRAPHICS Statement" in *SAS Viya ODS Graphics: Procedures Guide*.

# Part 5

# The SAS Procedure That Processes SAS System Options

*Chapter 8*
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*Chapter 8*

# OPTIONS Procedure

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## Overview: OPTIONS Procedure

The OPTIONS procedure lists the current settings of SAS system options in the SAS log.

SAS system options control how SAS formats output, handles files, processes data sets, interacts with the operating environment, and does other tasks that are not specific to a single SAS program or data set. You use the OPTIONS procedure to obtain information about an option or a group of options. Here is some of the information that the OPTIONS procedure provides:

- the current value of an option and how it was set
- a description of an option
- valid syntax for the option, valid option values, and the range of values
- where you can set the system option
- if the option can be restricted by your site administrator
- if the option has been restricted
- system options that belong to a system option group

- system options that are specific for an operating environment
- if an option value has been modified by the INSERT or APPEND system options

For additional information about SAS system options, see *SAS Viya System Options: Reference*.

# Syntax: OPTIONS Procedure

**PROC OPTIONS** <*option(s)*>;

| Statement | Task | Example |
|---|---|---|
| PROC OPTIONS | List the current system option settings to the SAS Log | Ex. 1, Ex. 2, Ex. 3, Ex. 4 |

## PROC OPTIONS Statement

Lists the current settings of SAS system options in the SAS log.

**Examples:**
"Example 1: Producing the Short Form of the Options Listing" on page 165
"Example 2: Displaying the Setting of a Single Option" on page 165
"Example 3: Displaying Expanded Path Environment Variables" on page 167
"Example 4: List the Options That Can Be Specified by the INSERT and APPEND Options" on page 168

### Syntax

**PROC OPTIONS** <*option(s)*>;

#### *Summary of Optional Arguments*

LISTGROUPS
: lists the system option groups as well as a description of each group.

**Choose the format of the listing**

DEFINE
: displays the short description of the option, the option group, and the option type.

EXPAND
: when displaying a character option, replaces an environment variable in the option value with the value of the environment variable. EXPAND is ignored if the option is a Boolean option, such as CENTER or NOCENTER, or if the value of the option is numeric.

HEXVALUE
: displays system option character values as hexadecimal values.

LOGNUMBERFORMAT
: displays numeric system option values using locale-specific punctuation.

LONG
lists each system option on a separate line with a description.

NOEXPAND
when displaying a path, displays the path using environment variable(s) and not the value of the environment variable(s). This is the default.

NOLOGNUMBERFORMAT
displays numeric system option values without using punctuation, such as a comma or a period. This is the default.

SHORT
specifies to display a compressed listing of options without descriptions.

VALUE
displays the option's value and scope, as well as how the value was set.

**Restrict the number of options displayed**

GROUP=*group-name*

GROUP=*(group-name–1 ... group-name-n)*
displays the options in one or more groups specified by *group-name*.

HOST
displays only host options.

LISTINSERTAPPEND
lists the system options whose value can be modified by the INSERT and APPEND system options.

LISTRESTRICT
lists the system options that can be restricted by your site administrator.

NOHOST
displays only portable options.

OPTION=*option-name*

OPTION=(*option-name-1 … option-name-n*)
displays information about one or more system options.

RESTRICT
displays system options that the site administrator has restricted from being updated.

## *Optional Arguments*

**DEFINE**
displays the short description of the option, the option group, and the option type. SAS displays information about when the option can be set, whether an option can be restricted, and the valid values for the option.

**Interaction** This option is ignored when SHORT is specified.

**Example** "Example 2: Displaying the Setting of a Single Option" on page 165

**EXPAND**
when displaying a character option, replaces an environment variable in the option value with the value of the environment variable. EXPAND is ignored if the option is a Boolean option, such as CENTER or NOCENTER, or if the value of the option is numeric.

**Tip** By default, some option values are displayed with expanded variables. Other options require the EXPAND option in the PROC OPTIONS statement. Use the DEFINE option in the PROC OPTIONS statement to

determine whether an option value expands variables by default or if the EXPAND option is required. If the output from PROC OPTIONS DEFINE shows the following information, you must use the EXPAND option to expand variable values:

```
Expansion: Environment variables, within the option value,
           are not expanded
```

**See** "NOEXPAND" on page 157 option to view paths that display the environment variable

**Example** "Example 3: Displaying Expanded Path Environment Variables" on page 167

**GROUP=*group-name***
**GROUP=*(group-name–1 ... group-name-n*)**
displays the options in one or more groups specified by *group-name*.

**Requirement** When you specify more than one group, enclose the group names in parenthesis and separate the group names by a space.

**See** "Displaying Information about System Option Groups" on page 161

**HEXVALUE**
displays system option character values as hexadecimal values.

**HOST**
displays only host options.

**See** "NOHOST" on page 157 option to display only portable options.

**LISTINSERTAPPEND**
lists the system options whose value can be modified by the INSERT and APPEND system options. The INSERT option specifies a value that is inserted as the first value of a system option value list. The APPEND option specifies a value that is appended as the last value of a system option value list. Use the LISTINERTAPPEND option to display which system options can have values inserted at the beginning or appended at the end of their value lists.

**See** "INSERT= System Option" in *SAS Viya System Options: Reference* and

"APPEND= System Option" in *SAS Viya System Options: Reference*

**Example** "Example 4: List the Options That Can Be Specified by the INSERT and APPEND Options" on page 168

**LISTGROUPS**
lists the system option groups as well as a description of each group.

**See** "Displaying Information about System Option Groups" on page 161

**LISTRESTRICT**
lists the system options that can be restricted by your site administrator.

**See** "RESTRICT" on page 157 option to list options that have been restricted by the site administrator

**LONG**
lists each system option on a separate line with a description. This is the default. Alternatively, you can create a compressed listing without descriptions.

**See** "SHORT" on page 158 option to produce a compressed listing without descriptions

**Example** "Example 1: Producing the Short Form of the Options Listing" on page 165

**LOGNUMBERFORMAT**
displays numeric system option values using locale-specific punctuation.

**See** "NOLOGNUMBERFORMAT" on page 157 option to display numeric option values without using commas

**Example** "Example 2: Displaying the Setting of a Single Option" on page 165

**NOEXPAND**
when displaying a path, displays the path using environment variable(s) and not the value of the environment variable(s). This is the default.

**See** "EXPAND" on page 155 option to display a path by expanding the value of environment variables

**NOHOST**
displays only portable options.

**Alias** PORTABLE or PORT

**See** "HOST" on page 156 option to display only host options

**NOLOGNUMBERFORMAT**
displays numeric system option values without using punctuation, such as a comma or a period. This is the default.

**See** "LOGNUMBERFORMAT" on page 157 option to display numeric system options using commas

**OPTION=*option-name***
**OPTION=(*option-name-1 … option-name-n*)**
displays a short description and the value (if any) of the option specified by *option-name*. DEFINE and VALUE options provide additional information about the option.

***option-name***
specifies the option to use as input to the procedure.

**Requirement** If a SAS system option uses an equal sign, such as PAGESIZE=, do not include the equal sign when specifying the option to OPTION=.

**Example** "Example 2: Displaying the Setting of a Single Option" on page 165

**RESTRICT**
displays the system options that have been set by your site administrator in a restricted options configuration file. These options cannot be changed by the user. For each option that is restricted, the RESTRICT option displays the option's value, scope, and how it was set.

If your site administrator has not restricted any options, then the following message appears in the SAS log:

```
Your Site Administrator has not restricted any SAS options.
```

See "LISTRESTRICT" on page 156 option to list options that can be restricted by the site administrator

**SHORT**
specifies to display a compressed listing of options without descriptions.

See "LONG" on page 157 option to create a listing with descriptions of the options.

**VALUE**
displays the option's value and scope, as well as how the value was set. If the value was set using a configuration file, the SAS log displays the name of the configuration file. If the option was set using the INSERT or APPEND system options, the SAS log displays the value that was inserted or appended.

Interaction This option has no effect when SHORT is specified.

Note SAS options that are passwords, such as METAPASS, return the value XXXXXXXX and not the actual password.

Example "Example 2: Displaying the Setting of a Single Option" on page 165

## Displaying a List of System Options

The log that results from running PROC OPTIONS can show the system options for the options that are available for all operating environment and those that are specific to a single operating environment. Options that are available for all operating environments are referred to as portable options. Options that are specific to a single operating environment are referred to as host options.

The following example shows a partial log that displays the settings of session options. Your listing might differ.

```
proc options;
run;
```

***Log 8.1*** *The SAS Log Showing a Partial Listing of SAS System Options*

```
Portable Options:

 APPEND=           Specifies an option=value pair to insert the value at the end of the existing
                   option value.
 APPLETLOC=site-specific-path
                   Specifies the location of Java applets, which is typically a URL.
 AUTOCORRECT       Automatically corrects misspelled procedure names and keywords, and global
                   statement names.
 AUTOEXEC=/server-path/autoexec.sas
                    Specifies the location of the SAS AUTOEXEC files.
```

The log displays both portable and host options when you submit **`proc options;`**. The host options are specific for the Linux operating environment.

To view only host options, use this version of the OPTIONS procedure. Your listing might differ.

```
proc options host;
run;
```

***Log 8.2*** *The SAS Log Showing a Partial List of Host Options*

```
Host Options:

  ALIGNSASIOFILES   Aligns SAS files on a page boundary for improved performance.
  ALTLOG=           Specifies the location for a copy of the SAS log when SAS is running in batch mode.
  ALTPRINT=         Specifies the location for a copy of the SAS procedure output when SAS is running
in batch mode.
  BLKSIZE=256       Specifies the number of bytes that are read or written in one I/O operation.
```

# Displaying Information about One or More Options

To view the setting of one or more particular options, you can use the OPTION= and DEFINE options in the PROC OPTIONS statement. The following example shows a log that PROC OPTIONS produces for a single SAS system option. Your output might differ.

```
proc options option=errorcheck define;
run;
```

***Log 8.3*** *The Setting of a Single SAS System Option*

```
 56         proc options option=errorcheck define; run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0

  ERRORCHECK=NORMAL
 Option Definition Information for SAS Option ERRORCHECK
     Group= ERRORHANDLING
     Group Description: Error messages and error conditions settings
     Description: Specifies whether SAS enters syntax-check mode when errors are found in the LIBNAME,
FILENAME,  %INCLUDE, and LOCK statements.
     Type: The option value is of type CHARACTER
           Maximum Number of Characters: 10
           Casing: The option value is retained uppercased
           Quotes: If present during "set", start and end quotes are removed
           Parentheses: The option value does not require enclosure within parentheses. If present,
the parentheses are retained.
           Expansion: Environment variables, within the option value, are not expanded
           Number of valid values: 2
                Valid value: NORMAL
                Valid value: STRICT
     When Can Set: Startup or anytime during the SAS Session
     Restricted: Your Site Administrator can restrict modification of this option
```

To view the settings for more than one option, enclose the options in parentheses and separate the options with a space:

```
proc options option=(append insert) define;
run;
```

***Log 8.4*** *The Settings of Two SAS System Options*

```
     SAS (r) Proprietary Software Release V.03.02  TS1M0

APPEND=
 Option Definition Information for SAS Option APPEND
     Group= ENVFILES
     Group Description: SAS library and file location information
     Description: Specifies an option=value pair to insert the value at the end of the existing option
value.
     Type: The option value is of type CHARACTER
           Maximum Number of Characters: 32000
           Casing: The option value is retained with original casing
           Quotes: If present during "set", start and end quotes are removed
           Parentheses: The option value does not require enclosure within parentheses. If present,
the parentheses are retained.
           Expansion: Environment variables, within the option value, are not expanded
     When Can Set: Startup or anytime during the SAS Session
     Restricted: Your Site Administrator cannot restrict modification of this option
```

```
INSERT=
 Option Definition Information for SAS Option INSERT
     Group= ENVFILES
     Group Description: SAS library and file location information
     Description: Specifies an option=value pair to insert the value at the beginning of the existing
option value.
     Type: The option value is of type CHARACTER
           Maximum Number of Characters: 32000
           Casing: The option value is retained with original casing
           Quotes: If present during "set", start and end quotes are removed
           Parentheses: The option value does not require enclosure within parentheses. If present,
the parentheses are retained.
           Expansion: Environment variables, within the option value, are not expanded
     When Can Set: Startup or anytime during the SAS Session
     Restricted: Your Site Administrator cannot restrict modification of this option
```

# Displaying Information about System Option Groups

Each SAS system option belongs to one or more groups, which are based on functionality, such as error handling or sorting. You can display a list of system-option groups and the system options that belong to one or more of the groups.

Use the LISTGROUPS option to display a list of system-option groups. Your listing might differ.

```
proc options listgroups;
run;
```

***Log 8.5*** *List of SAS System Option Groups*

```
56         proc options listgroups; run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0


     Option Groups

        GROUP=CAS                    CAS Options

        GROUP=CODEGEN                Code generation

        GROUP=COMMUNICATIONS         Networking and encryption

        GROUP=DATACOM                Datacom

        GROUP=ENVFILES               Files

        GROUP=ERRORHANDLING          Error handling

        GROUP=EXECMODES              Initialization and operation

        GROUP=EXTFILES               External files

        GROUP=INPUTCONTROL           Data Processing

        GROUP=INSTALL                Installation
```

```
      GROUP=LANGUAGECONTROL        Language control

      GROUP=LISTCONTROL            Procedure output

      GROUP=LOGCONTROL             SAS log

      GROUP=LOG_LISTCONTROL        SAS log and procedure output

      GROUP=MACRO                  SAS macro

      GROUP=MEMORY                 Memory

      GROUP=ODSPRINT               ODS Printing

      GROUP=PDF                    PDF

      GROUP=PERFORMANCE            Performance

      GROUP=SASFILES               SAS Files

      GROUP=SECURITY               Security

      GROUP=SORT                   Procedure options

      GROUP=SQL                    SQL
```

Use the GROUP= option to display system options that belong to a particular group. You can specify one or more groups.

```
proc options group=(cas memory);
run;
```

***Log 8.6*** *Sample Output Using the GROUP= Option*

```
56         proc options group=(cas memory); run;

    SAS (r) Proprietary Software Release V.03.02  TS1M0


Group=CAS
 CASAUTHINFO=      Specifies an authinfo or netrc file that includes authentication information.
 CASHOST=cloud.sas.com
                   The CAS server name associated with a CAS session.
 CASLIB=           Specify the default CASLIB name.
 CASNAME=CASAUTO   Identify the name to associate with a generated CAS session.
 CASNWORKERS=ALL   Specify the number of workers to use with a CAS session.
 CASPORT=5570      The port associated with a CAS session.
 CASSESSOPTS=      Identify CAS server session options.
 CASTIMEOUT=60     The CAS session timeout in seconds.
 CASUSER=          The userid associated with a CAS session.

Group=MEMORY
 SORTSIZE=1073741824
                   Specifies the amount of memory that is available to the SORT procedure.
 SUMSIZE=0         Specifies a limit on the amount of memory that is available for data summarization
procedures when class
                   variables are active.
 MAXMEMQUERY=268435456
                   For certain procedures, specifies the maximum amount of memory that can be
allocated per request.
 LOADMEMSIZE=0     Specifies a suggested amount of memory that is needed for executable programs
loaded by SAS.
 MEMSIZE=2147483648
                   Specifies the limit on the amount of virtual memory that can be used during a SAS
session.
 REALMEMSIZE=0     Specifies the amount of real memory SAS can expect to allocate.
```

You can use the following group names as values for the GROUP= option to list the system options in a group:

| | | |
|---|---|---|
| ANIMATION | EXECMODES | MEMORY |
| CAS | EXTFILES | ODSPRINT |
| CODEGEN | INPUTCONTROL | PDF |
| COMMUNICATIONS | INSTALL | PERFORMANCE |
| EMAIL | LANGUAGECONTROL | SASFILES |
| ENVDISPLAY | LOGCONTROL | SECURITY |
| ENVFILES | LOG_LISTCONTROL | SORT |
| ERRORHANDLING | MACRO | SQL |

## Displaying Restricted Options

Your site administrator can restrict some system options so that your SAS session conforms to options that are set for your site. Restricted options can be modified only by your site administrator. The OPTIONS procedure provides two options that display information about restricted options. The RESTRICT option lists the system options that your site administrator has restricted. The LISTRESTRICT option lists the options that can be restricted by your site administrator. For more information, see the listing of options that cannot be restricted .

The following SAS logs shows the output when the RESTRICT option is specified and partial output when the LISTRESTRICT option is specified. Your output might differ.

***Log 8.7*** *A List of Options That Have Been Restricted by the Site Administrator*

```
1
   proc options restrict;
2    run;
    SAS (r) Proprietary Software Release V.03.02  TS1M0

Option Value Information For SAS Option BUFNO
    Value: 10
    Scope: SAS Session
    How option value set:  Config File
    Config file name:
             /opt/sas/viya/SASFoundation/sasv9.cfg
```

***Log 8.8*** *A Partial Log That Lists Options That Can Be Restricted*

```
56         proc options listrestrict; run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0


     Your Site Administrator can restrict the ability to modify the following Portable Options:

      APPLETLOC          Specifies the location of Java applets, which is typically a URL.
      AUTOCORRECT        Automatically corrects misspelled procedure names and keywords, and global
statement names.
      BINDING            Specifies the binding edge type of duplexed printed output.
      BUFNO              Specifies the number of buffers for processing SAS data sets.
      BUFSIZE            Specifies the size of a buffer page for output SAS data sets.
      BYERR              SAS issues an error message and stops processing if the SORT procedure
attempts to sort a _NULL_ data set.
      BYLINE             Prints the BY line above each BY group.
      BYSORTED           Requires observations in one or more data sets to be sorted in alphabetic or
numeric order.
```

# Results: OPTIONS Procedure

SAS writes the options list to the SAS log. SAS system options of the form ***option*** | **NO*option*** are listed as either ***option*** or **NO*option***, depending on the current setting. They are always sorted by the positive form. For example, NOCAPS would be listed under the Cs.

The OPTIONS procedure displays passwords in the SAS log as eight Xs, regardless of the actual password length.

# Examples: OPTIONS Procedure

## Example 1: Producing the Short Form of the Options Listing

**Features:** PROC OPTIONS statement option
SHORT

### Details

This example shows how to generate the short form of the listing of SAS system option settings. Compare this short form with the long form that is shown in "Displaying a List of System Options" on page 158.

### Program

```
proc options short;
run;
```

### Program Description

**List all options and their settings.** SHORT lists the SAS system options and their settings without any descriptions. Your output might differ.

```
proc options short;
run;
```

### Log

***Log 8.9*** *Partial Listing of the SHORT Option*

```
56         proc options short; run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0


 Portable Options:

  APPEND= APPLETLOC=/pathname  AUTOCORRECT AUTOEXEC=/opt/sas/viya/etc/workspaceserver/autoexec.sas
 BINDING=DEFAULT BOTTOMMARGIN=0.000 IN BUFNO=1 BUFSIZE=0 BYERR BYLINE BYSORTED NOCAPS NOCARDIMAGE
CASAUTHINFO=  CASHOST=hostname  CASINSTALL= CASLIB= CASLIFETIME=1000000 CASLOGCNTL=NOMETRICS
CASNAME=CASAUTO CASNWORKERS=ALL
 CASPORT=7314 CASSESSOPTS= CASTIMEOUT=60 CASUSER= CATCACHE=0 CBUFNO=0 CENTER NOCHARCODE NOCHKPTCLEAN
```

## Example 2: Displaying the Setting of a Single Option

**Features:** PROC OPTIONS statement option

OPTION=
DEFINE
LOGNUMBERFORMAT
VALUE

### Details

This example shows how to display the setting of a single SAS system option. The log shows the current setting of the SAS system option MEMSIZE. The DEFINE and VALUE options display additional information. The LOGNUMBERFORMAT displays the value using commas.

### Program

```
proc options option=memsize define value lognumberformat;
run;
```

### Program Description

**Specify the MEMSIZE SAS system option.** OPTION=MEMSIZE displays option value information. DEFINE and VALUE display additional information. LOGNUMBERFORMAT specifies to format the value using commas.

```
proc options option=memsize define value lognumberformat;
run;
```

### Log

***Log 8.10*** *Log Output from Specifying the MEMSIZE Option*

```
56         proc options option=memsize define value lognumberformat;
 57         run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0

 Option Value Information For SAS Option MEMSIZE
     Value: 2,147,483,648
     Scope: SAS Session
     How option value set: Config File
     Config file name:
             /opt/sas/viya/SASFoundation/sasv9.cfg


 Option Definition Information for SAS Option MEMSIZE
     Group= MEMORY
     Group Description: Memory settings
     Group= PERFORMANCE
     Group Description: Performance settings
     Description: Specifies the limit on the amount of virtual memory that can be used during a SAS
session.
     Type: The option value is of type INTMAX
           Range of Values: The minimum is 0 and the maximum is 9223372036854775807
           Valid Syntax(any casing): MIN|MAX|n|nK|nM|nG|nT|hexadecimal
     Numeric Format: Usage of LOGNUMBERFORMAT impacts the value format
     When Can Set: Session startup (command line or config) only
     Restricted: Your Site Administrator can restrict modification of this option
```

# Example 3: Displaying Expanded Path Environment Variables

**Features:** PROC OPTIONS statement options
OPTION=
EXPAND
NOEXPAND
HOST

### Details

This example shows the value of an environment variable within an option value when the path is displayed.

### Program

```
proc options option=msg expand;
run;
proc options option=msg noexpand;
run;
```

### Program Description

**Show the value of the environment variables within an option value:** The EXPAND option causes the values of environment variables within the option value to display in place of the environment variable. The NOEXPAND option causes the environment variable within the options value to display. In this example, the environment variable is !sasroot

```
proc options option=msg expand;
run;
proc options option=msg noexpand;
run;
```

### Log

***Log 8.11*** *Displaying an Expanded and Nonexpanded Pathname Using the OPTIONS Procedure*

```
56         proc options option=msg expand;
 57         run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0

  MSG=/opt/sas/viya/SASFoundation/sasmsg
                   Specifies the path to the library that contains SAS messages.
 NOTE: PROCEDURE OPTIONS used (Total process time):
       real time           0.00 seconds
       cpu time            0.00 seconds


 58         proc options option=msg noexpand;
 59         run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0

  MSG=!SASROOT/sasmsg
                   Specifies the path to the library that contains SAS messages.
```

## Example 4: List the Options That Can Be Specified by the INSERT and APPEND Options

**Features:** PROC OPTIONS statement option
LISTINSERTAPPEND

### Details

This example shows how to display the options that can be specified by the INSERT and APPEND system options.

### Program

```
proc options listinsertappend;
run;
```

### Program Description

**List all options that can be specified by the INSERT and APPEND options.** The LISTINSERTAPPEND option provides a list and a description of these options. Your listing might differ.

```
proc options listinsertappend;
run;
```

## Log

***Log 8.12*** *Displaying the Options That Can Be Specified by the INSERT and APPEND Options*

```
56         proc options listinsertappend; run;

     SAS (r) Proprietary Software Release V.03.02  TS1M0


     Core options that can utilize INSERT and APPEND

      AUTOEXEC           Specifies the location of the SAS AUTOEXEC files.
      FMTSEARCH          Specifies the order in which format catalogs are searched.
      SASAUTOS           Specifies the location of one or more autocall libraries.
      SASHELP            Specifies the location of the Sashelp library.
      SASSCRIPT          Specifies one or more locations of SAS/CONNECT server sign-on script files.

     Host options that can utilize INSERT and APPEND

      MSG                Specifies the path to the library that contains SAS messages.
      SET                Defines an environment variable.
```

# Recommended Reading

Here is the recommended reading list for this title:

- *Batch and Line Mode Processing in SAS Viya*
- *Cody's Data Cleaning Techniques Using SAS, Second Edition*
- *Combining and Modifying SAS Data Sets: Examples, Second Edition*
- *Learning SAS by Example*
- *SAS Functions by Example, Second Edition*
- SAS Glossary
- *SAS Viya Data Set Options: Reference*
- *SAS Viya Formats and Informats: Reference*
- *SAS Viya Functions and CALL Routines: Reference*
- *SAS Viya National Language Support: Reference Guide*
- *SAS Viya Statements: Reference*
- *SAS Viya Visual Data Management and Utility Procedures Guide*
- *SAS Viya XML LIBNAME Engine: User's Guide*
- *The Little SAS Book: A Primer, Fifth Edition*

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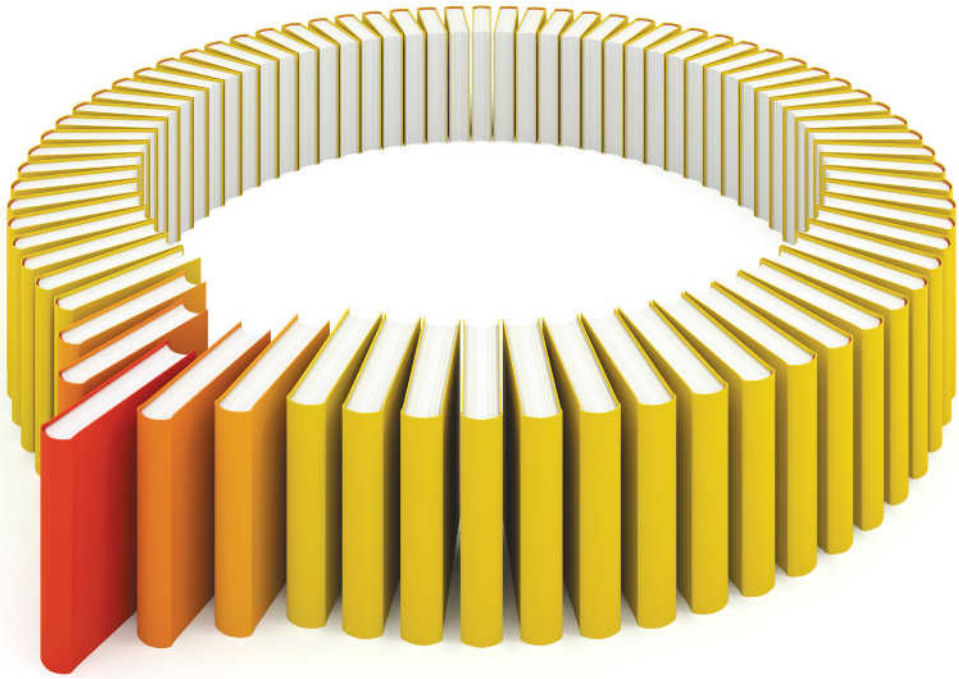

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