

SAS Host Printing Interface Using XPrinter drivers

The SAS Host Printing Interface under Unix allows you to print text and graphics using an interface similar to that found in the Microsoft® Windows™ environment. The interface supports functions such as a **File▶ Print Setup** dialog, Print Preview and other features. Most common printers, such as HP LaserJet, HP DeskJet and PostScript printers, are supported.

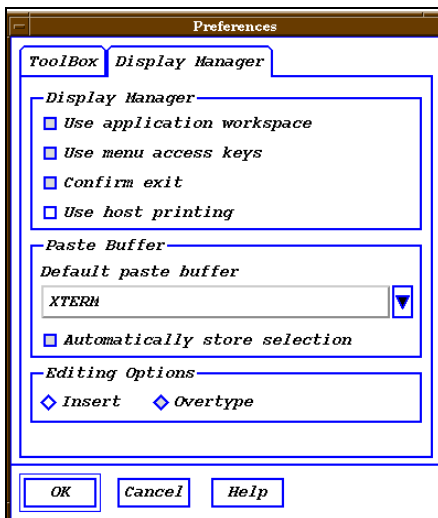
Online information about host printing is available. To get online help for the Host Printing Interface in 6.12 do the following:

1. Select **View-->Preferences** from the pulldown menu.
2. Select the Display Manager tab.
3. Click on the **Help** button at the bottom of the Display Manager page. This will bring up the Helpus window for the Preferences Dialog.
4. Scroll down in the Help screen until you see the '**Use host printing**' selection, and click on the **Host Printing** link (which should be a different color than the rest of the text).
5. Then click on the '**Using Host Printing**' link.

Note: - before you start!

Because printer definitions will be stored in your SASUSER.PROFILE catalog you cannot use profile catalogs from previous releases of SAS; otherwise disastrous results will occur. If you have been running a previous release of SAS, you should rename the profile.sct01 file located in your SASUSER directory before you start your release 6.12 SAS session the first time.

1. Activating the XPrinter environment

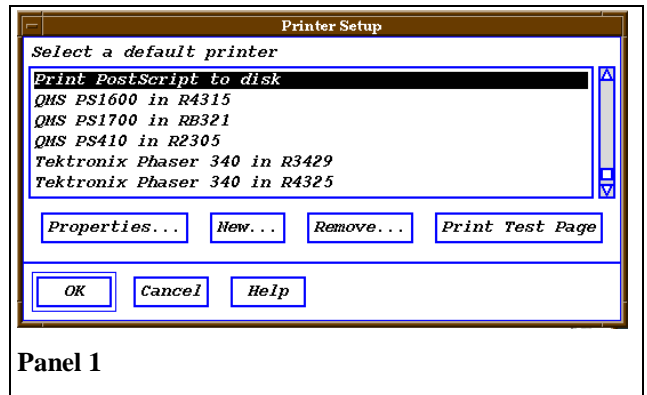


The XPrinter environment is not available by default when the SAS system is initialized. You can activate the XPrinter environment by selecting **View▶ Preferences**. If you click on the **Display Manager** tab located at the top you will see the screen shown on the left. To activate the XPrinter interface, click on the **Use host printing** button. This will activate the host printing and the XPrinter interface in SAS until you disable it using the same method. SAS Display Manager will refresh itself and will have two new items under the **File** pulldown (**Print Preview** and **Print Setup**). **Print Preview** allows you to view text and graphics on the screen before the output or graphics is sent to the printer (similar to a word processor's preview mode).

2. Creating a Host Printer Definition

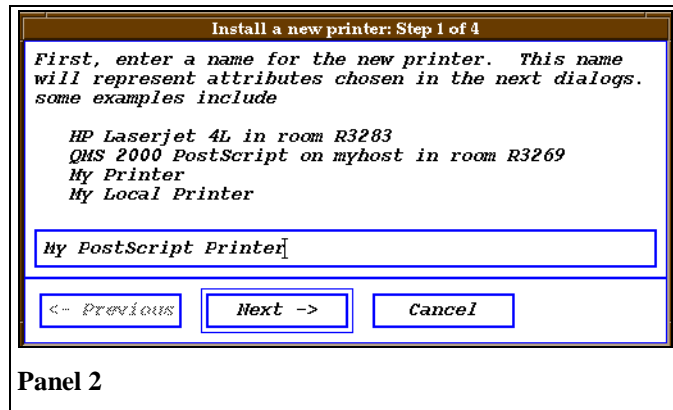
2.1 Creating a Printer Name

You can create a host printer definition by selecting **File** **Print Setup** or entering **DLGPRTSETUP** on any display manager command box or line. (*Note: If you wish to create printer definitions for all your users, see section 2.5 before beginning here.*) This will bring up a menu similar to the one shown on the right in panel 1. You should select the **New** button to create a new host printer definition (Panel 1). The host printer system will build a list of printers and then display the menu shown on the right in Panel 2. You can enter the name you wish to use for your printer. The printer name is limited to 99 characters. Click on the **Next** button to bring up the menu shown in Panel 3.



Panel 1

You can enter the

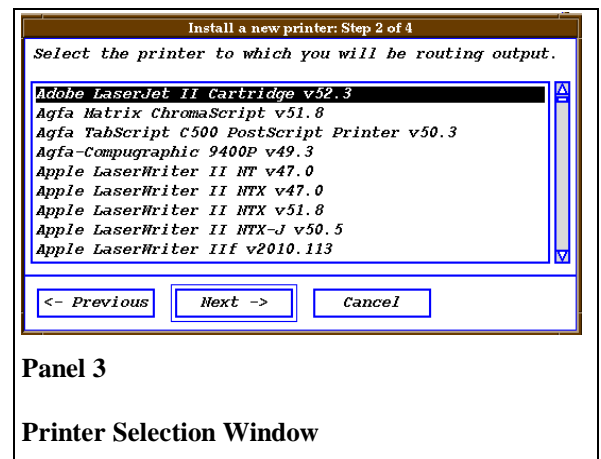


Panel 2

2.2 Selecting a Printer

This selection window has numerous printers available. Use the scroll bar on the right side of the window to scroll up and down the list of printers that are available. If your printer is not listed, it is very likely that it emulates one of the printers on the list. Many laser printers emulate a Hewlett

Packard LaserJet or use PostScript. If you cannot make a determination from the list, contact SAS Institute Technical Support for more information. Once you have selected a printer, click on the **Next** button to go to the screen shown below. Clicking on the **Previous** button takes you to the previous screen.

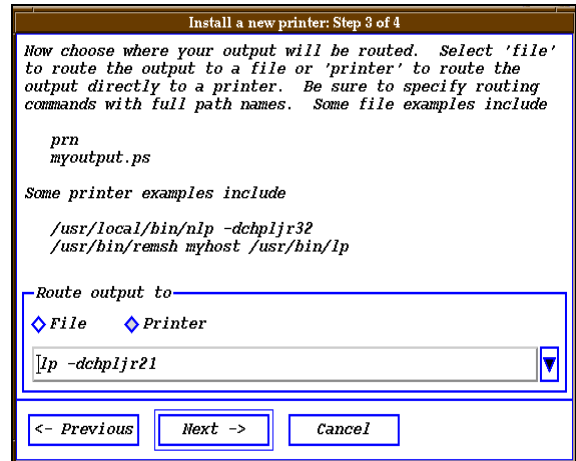


Panel 3

Printer Selection Window

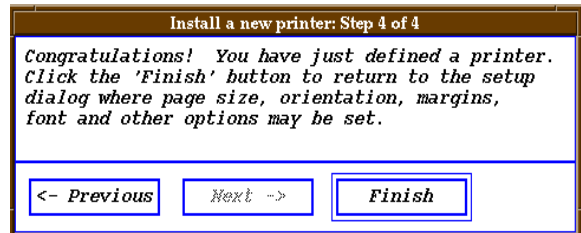
2.3 Selecting the Output Destination

This window prompts you for the printer destination. If you select the **File** button, enter the full path and the filename where the output from the driver will be sent. If you select the **Printer** button, enter the command that sends output to the printer. If you are using a LaserJet printer in PCL or HPGL mode, you will probably want to create two entries, one for text and one for graphics. When you are printing graphics in PCL or HPGL mode, you may need to add the `-oraw` option to your `lp` or `lpr` command. If the `-oraw` option is not available on your system, contact SAS Institute Technical Support for additional information. PostScript driver entries can be used for text printing or graphics printing.

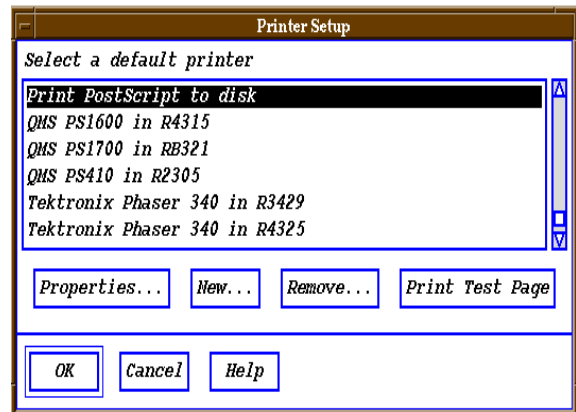


2.4 Finishing Up and Generating a Test Page

Select the **Next** button to see the final screen. Click on the **Finish** button to return to the initial menu. Click on the **Previous** button to return to the previous menu.



At this point, select your printer and then select **Print Test Page**. This will generate a sample test page of output to your printer with a SAS logo and a font list set available with the host printer driver. Any messages that are issued will appear in the Xwindow that has launched the SAS process (not the SAS log). Sample output is shown on the page following Section 2.5. Information on the test page includes the printer name, the port or file that it is printing to, the original driver, the resolution of the printer driver, the fonts available, paper trays allowed, and paper sizes allowed. These can be selected with the **Properties** button which is described in the next section. The information that you have entered for your XPrinter definition is stored in your `SASUSER.PROFILE.PRTINFO.XPRINTER` catalog entry.



2.5 Setting Up Printers for All Users at Your Site

If you are a system administrator at your site, you can set up a catalog containing customized printer entries for all your users by doing the following:

1. Make sure you have write access to the \$SASROOT/sashelp.directory. This often requires root access. See your system administrator for more details.
2. Make sure no one else is using the SAS system.
3. Check your own SASUSER.PROFILE for an entry named PRTINFO.XPRINTER. If this entry is present, then delete it.
4. Issue the command DLGPRTSETUP SASHELP.XPRINT.PRTINFO. This command displays the Printer Setup dialog. You can then add customized printers to the list.
5. Exit the SAS system.
6. Printers added by individual users will be stored in their personal SASUSER.PROFILE.PRTINFO.XPRINTER catalog entries and will be displayed first in the **File** **Print Setup** dialog box.



Printer Test Page

Printer Name: PostScript printer
Printer Model: Generic PostScript
Port name: (To File) 'testl.ps'
Driver Name: GENERIC
Color Support: No
Paper trays: Upper, Lower, Manual
Resolutions(dpi): 300

Fonts available on this printer:

-adobe-times-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-times-medium-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-times-bold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-times-bold-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-avant garde-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-avant garde-medium-o-normal--0-0-300-300-p-0-iso8859-1
-adobe-avant garde-bold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-avant garde-bold-o-normal--0-0-300-300-p-0-iso8859-1
-adobe-bookman light-medium-r-normal--0-0-300-300-p-0-adobe-standard
-adobe-bookman light-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-bookman light-demibold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-bookman light-demibold-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-courier-medium-r-normal--0-0-300-300-m-0-iso8859-1
-adobe-courier-medium-o-normal--0-0-300-300-m-0-iso8859-1
-adobe-courier-bold-r-normal--0-0-300-300-m-0-iso8859-1
-adobe-courier-bold-o-normal--0-0-300-300-m-0-iso8859-1
-adobe-helvetica-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-helvetica-medium-o-normal--0-0-300-300-p-0-iso8859-1
-adobe-helvetica-bold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-helvetica-bold-o-normal--0-0-300-300-p-0-iso8859-1
-adobe-new century schoolbook-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-new century schoolbook-medium-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-new century schoolbook-bold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-new century schoolbook-bold-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-palatino-medium-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-palatino-medium-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-palatino-bold-r-normal--0-0-300-300-p-0-iso8859-1
-adobe-palatino-bold-i-normal--0-0-300-300-p-0-iso8859-1
-adobe-symbol-medium-r-normal--0-0-300-300-p-0-adobe-fontspecific
-adobe-zapf chancery-medium-i-normal--0-0-300-300-p-0-adobe-standard
-adobe-zapf dingbats-medium-r-normal--0-0-300-300-p-0-adobe-fontspecific

Default font for this printer:
Courier

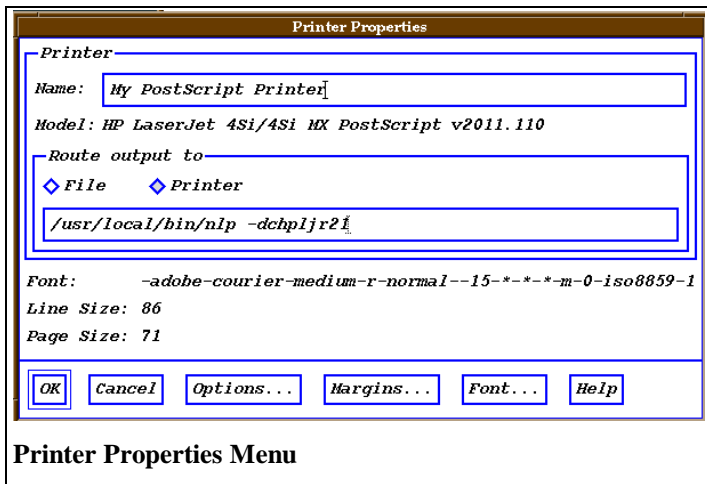
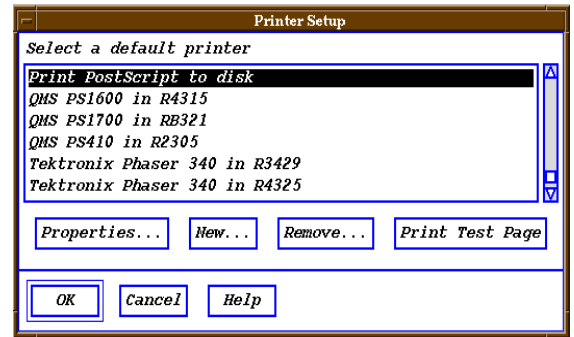
Paper sizes available on this printer:

Letter
Legal
Executive
A4
Comm10
Monarch
DL
C5

3. Generating Text Output using the SAS Host Printing Interface

3.1 Setting up your printer for output.

You can generate text output using the Host Printing Interface by selecting **File** **Print**. However, it is a good idea to take a look at the **File** **Print Setup** menu before attempting to print or even generate output to the output window. This will allow you to see what host printer is active, the default font used, and the maximum line size and page size settings when that printer is selected. When you select **File** **Print Setup**, you will see a list of printer definitions that you have created. Select the printer that you want to use by clicking on that printer with your left mouse button, and then select **Properties**.

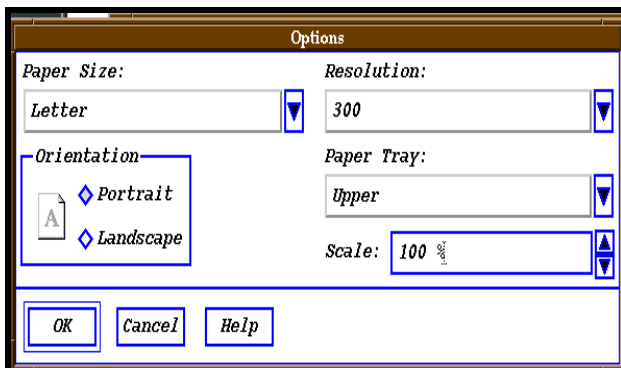


Printer Properties Menu

The **Name** field contains the name of the host print definitions you have selected. The **Model** field contains the type of printer driver that you are using to generate output to the printer. This may not match your printer model exactly; but may instead be the emulation mode for your printer. The **Route Output** field allows you to route your output to a file or to a printer destination using your system's printing commands. The **Font** field contains the default font that the host printing device will use to generate output. The line size and page size are the default line size and page size used with this font.

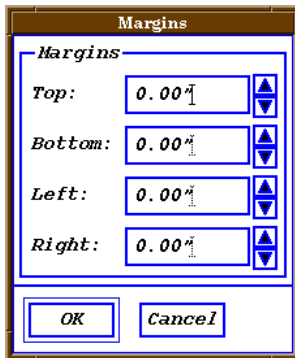
Note: SAS printed output is formatted assuming the use of a monospace font. Use of a proportionally spaced font will produce improperly formatted reports.

If you select the **Options** button, you will see the menu below:

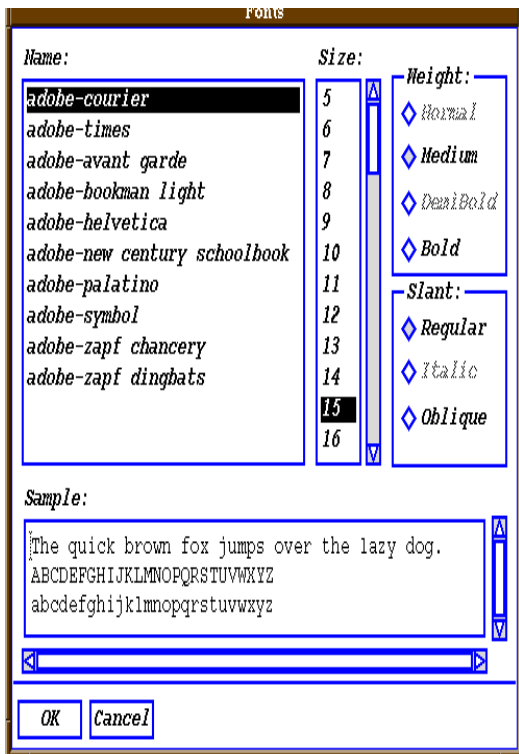


The **Options** menu allows you to control the paper size, orientation of the output in landscape or portrait, etc. The **Resolution** field is listed in dots per inch (dpi). Most printers are either 300 or 600 dpi (the higher the dpi, the sharper the text and graphics). The **Paper Tray** field shows the default tray on your printer from which paper is selected. The **Scale** field is a zoom value which instructs the host printer device to change the size

of its output. If you increase the scale value, the line size and page size will **decrease**. If you decrease the scale value, the line size and page size will **increase**. A scaling factor of 50 % will print your document at half the original size. After you have made your changes, select **OK** to return to the **Properties** menu.



The **Margins** menu allows you to set the margins for your printed output. The arrow controls increase or decrease the value of the margins by tenths of an inch. You can also type your own values in each of the boxes. Increasing the top and bottom margins will decrease the page size values found on the **Properties** menu. Increasing the left and right margins will decrease the line size values found on the **Properties** menu. Clicking on **OK** will return you to the **Properties** menu where you can select the **Fonts** button to go to the **Fonts** Menu.

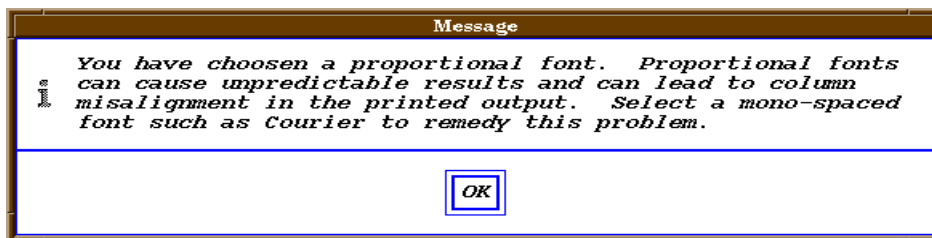


The **Fonts** menu allows you to select the default hardware font used with your output. The number of fonts and types available will vary depending on the printer model. The larger the font size you select, the smaller the line size and page size will be. If you are printing output where the columns must be aligned, you should select a monospace font such as Courier to print the output. A monospaced font is a font where each character takes up the same amount of space. Other fonts, such as Times, are proportional fonts. A proportional font is a font where each letter takes up a different amount of space (for example, the letter I takes up less space than the letter W).

A proportional font will generally take up less space than a monospace font of the same size. An example of a monospace font versus a proportional font is shown below.

The quick brown fox jumps over the dog
 The quick brown fox jumps jumps over the dog

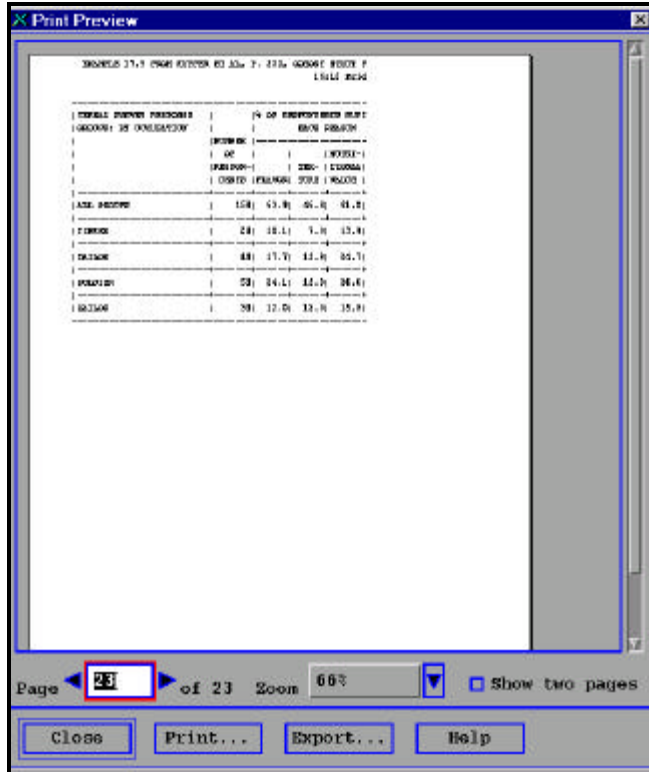
The **weight** option allows you to select whether the output text will be bold or a lighter weight. The slant option allows you to print in italics. If you select a proportional font, you will receive the warning message shown below:



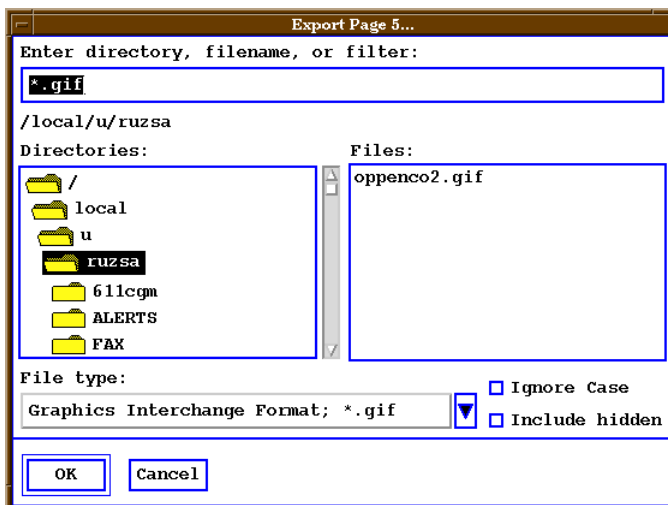
After you have set your printer options, you should make sure the LINESIZE and PAGESIZE options specified in your program are the same or smaller than the line size and page size specified for your printer.

3.2 Previewing Your Output

After you have set up your printer for output, you can start generating SAS output to your output window. After you generate output, you can select **File** **Print Preview** to see how your output will look before it is sent to the printer. An example of the **Print Preview** window is below.

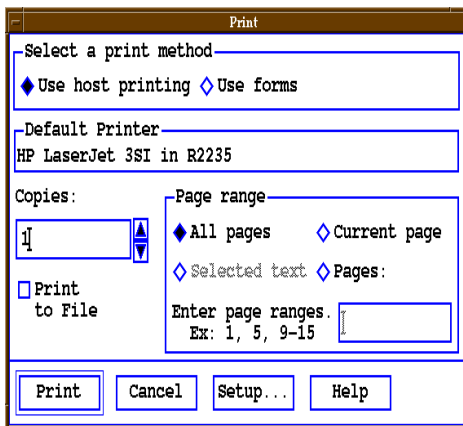


The **Page** control allows you to view your pages in order or to select the specific page that you wish to view. The **Zoom** pulldown allows you to have different magnifications of the page you are viewing. The Zoom settings are 100%, 66%, and 33% of the page. If you select the **Show two pages** box, you will see two pages in the preview screen with a scroll bar to scroll from the first page to the second page. The **Close** button returns you to the window from where you selected **File** **Print Preview**. The **Print...** button activates the print dialog box. This will be covered in section 3.3, "Printing Your Output Interactively".



The **Export...** dialog allows you to generate output to several graphical formats such as GIF or TIFF. Generally you will not use this feature for text. See the "Printing Graphics" section for more details on exporting.

3.3 Printing Text Output Interactively

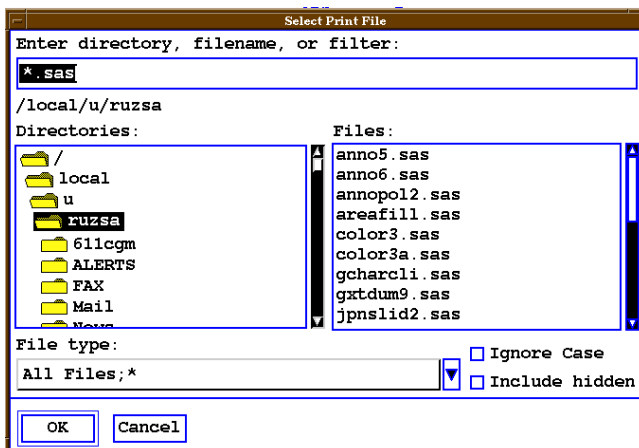


Once you have viewed your output you will probably want to print your output. The **Print** dialog box allows you to print your output directly to the device. You can also activate this menu by selecting **File▶ Print** or use the **DLGPRT** command from a window. The Print Dialog also allows you to print individual pages to your printer. The **print method** box allows you activate printer forms or not. If you select **Use Forms**, you disable the host printing option and activate FSFORMS subsystem printing. The **Default Printer** is the current host printer. If this is not the desired printer, you can select the **Setup...** button to activate the Print Setup menu shown at the top of this section. The **Copies** dialog box allows you to specify the number of copies of output that you desire.

The **Page range** box allows you to specify the pages of the output that you wish to print. If you select **All pages**, all of the information stored in that particular window will print. The **Current Page** button will print the page showing in the Print Preview window. The **Pages:** dialog allows you to enter the specific pages that you wish to print. You can enter multiple page numbers or page ranges (separated by commas). Some examples are shown in the table below. After you select the pages you wish to print, select the **Print** button to generate output.

Page Selection Criteria

-5	Print all pages up to page 5
6	Print page 6
9-12	Print pages 9-12
15-	Print all pages including page 15 and beyond



If you select the **Print to File** button and then the **Print** button, a dialog box similar to the one on the left will appear. This allows you to enter the name of a file to store the output instead of directing the output to a printer.

3.4 Printing Text Non-Interactively

While the Host Printing Option can make printing interactively a much more intuitive task, you can also use this facility to print non-interactively. You will still need to define your printer definitions first in an interactive session of SAS in display manager as described in Section 2. Once the printers are defined then you can use the PROC PRINTTO procedure to route your output using Host Printing Option.

3.4.1 Setting your default printer

The SAS system checks these sources for the default printer settings (in order of precedence):

- the XPRINTNM system option
- the settings in the SASUSER.PROFILE.PRTINFO.XPRINTER catalog entry (which you can set through the DLGPRTSETUP dialog)
- the settings in the SASHELP.XPRINT.PRTINFO.XPRINTER catalog entry (which the system administrator sets up through the DLGPRTSETUP dialog)

The XPRINTNM option allows you to specify the default host printer definition in your program for example:

```
OPTIONS XPRINTNM='HP LaserJet 3SI in R2235';
```

Note that the printer definition in your OPTIONS statement must exactly match the printer definition specified in the **File > Print Setup** dialog box, including upper and lower case characters. If it is specified incorrectly, the following message will appear in the log:

```
WARNING: Unable to find printer 'printername' specified in the XPRINTNM option
```

*Note: If you change the default printer using the **File > Print Setup** dialog box it will not be reflected in the XPRINTNM option. The value can only specify the default definition for the **Print Setup** dialog box but cannot read the **Print Setup** dialog.*

3.4.2 Routing your output non-interactively using the PRINTTO procedure

A simple way to route your output non interactively is to use the PRINTTO procedure. Before using PROC PRINTTO, you must first use a FILENAME statement to associate a FILEREF with the XPrinter. For example:

```
FILENAME fileref XPRINTER;
```

where the fileref is the name by which you reference the XPrinter throughout the SAS session. There are no options for this statement.

You can then use that fileref in a PROC PRINTTO statement to print the log or procedure output. The following example directs any log and procedure output to the default XPrinter:

```
FILENAME MYXPRT XPRINTER;  
PROC PRINTTO LOG=MYXPRT PRINT=MYXPRT; RUN;
```

IMPORTANT NOTES

- If you are in Display Manager and you redirect any output to an XPrinter, you must close the XPrinter device to print output. You can do this by submitting another PROC PRINTTO without any parameters.

```
PROC PRINTTO; RUN;
```

- You are limited to one open XPrinter device at a time. You will receive an error if you try opening more than one active XPrinter device at a time during a session.
- If no default XPrinter has been selected, the SAS system will use the Generic PostScript driver with a Courier font, and Generic PostScript margins will be used to format your output to a file called **prn** in your current working directory.

3.5 Using the PRTFILE command with XPrinter

The **PRTFILE** command can also be used with a XPrinter device, and is a useful way to switch from forms based printing to XPrinter printing on the fly. The syntax for the PRTFILE command, which specifies where your output is sent to, appears below:

```
PRTFILE [file-spec] CLEAR | APPEND | REPLACE;
```

Here *file-spec* can be a fileref previously associated with a FILENAME statement or an external file name. If an external file name is specified, forms formatted printing will be used.

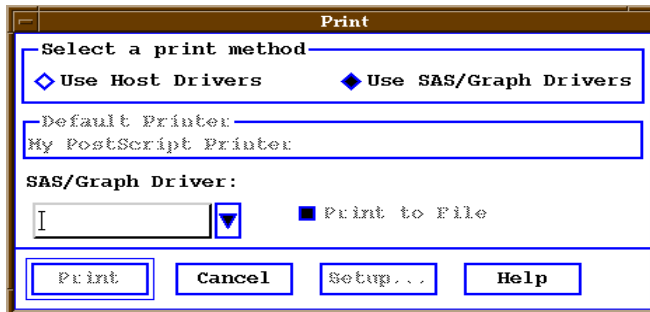
In order to use the XPrinter interface, you must use a fileref that has been referenced in a FILENAME statement pointing to XPRINTER. To direct your output to the XPrinter, do the following:

- set up a fileref to an XPRINTER device using a FILENAME statement as follows:
 FILENAME *fileref* XPRINTER;
- issue the 'PRTFILE *fileref*' command.
- issue the 'PRINT' command; this will start to generate output to the XPrinter.
- each time the PRINT command is executed, the print file will be **replaced**.
 The APPEND option does not work with XPrinter.
- issue the 'PRTFILE CLEAR' command to re-enable forms-based printing.

4. Printing Graphics using XPrinter Host Printing

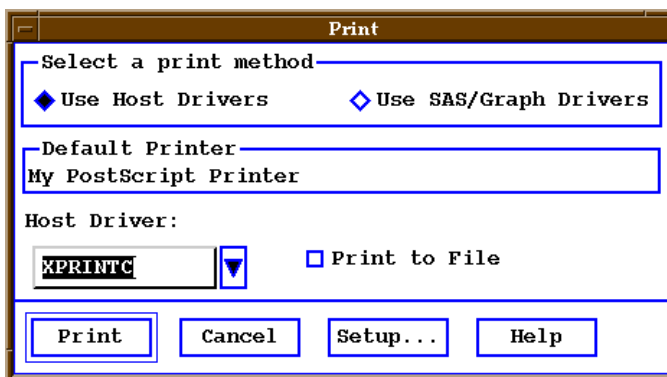
4.1 Printing Graphics Interactively

You can print the contents of a GRAPH window by making that window active and selecting **File▶ Print** from the pulldown menu. By default, the **Print Preview** and the **Print Setup** selections will be grayed out. To access host printing and activate these selections, select **File▶ Print**. The following menu will appear:



By default, the SAS/GRAPH Drivers checkbox will be selected and the **Default Printer** field will be grayed out. If you want to use the default SAS/GRAPH device drivers, you need to make sure that your printer destination has been set inside the device using the GDEVICE procedure or with appropriate GOPTIONS. See Technical Support Note TS246 for more information.

To activate the Host Drivers XPrinter system, you must check the **Use Host Drivers** checkbox. This will change the menu to appear as shown below. Once you select the **Use Host Drivers** checkbox, the **Print Preview** and **Print Setup** selections will be active in the **File▶ Print** pulldown menu.



You can use the XPRINTC driver for color output, XPRINTG driver for gray scale output and the XPRINTM driver for monochrome output.

Note: Most laser printers can produce gray scale output (including PostScript and HP LaserJet printers). You can select the **Print** button to send your graphics directly to the device. When printing graphics using the XPrinter interface, you will see notes in the SAS log similar

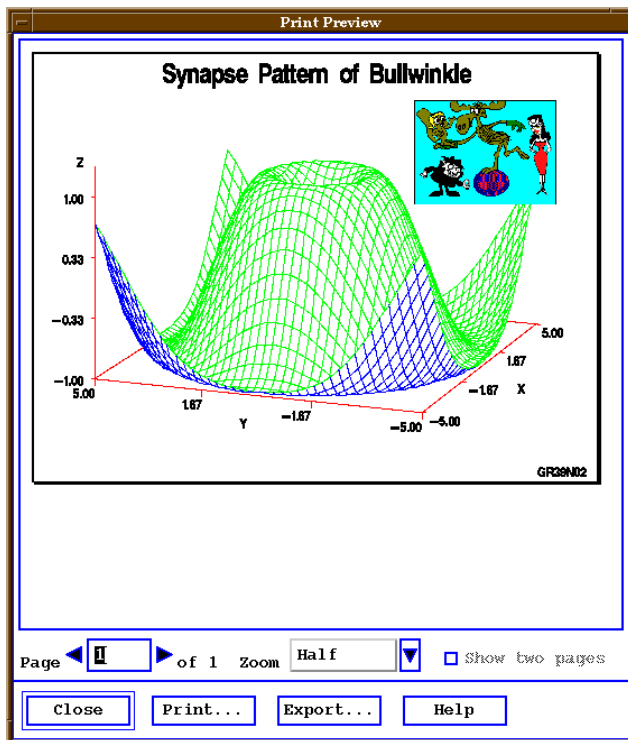
to the following:

Note: The window system or device has set the XMAX value of the device XPRINTG to 7.99 inches.

Note: The window system or device has set the YMAX value of the device XPRINTG to 10.61 inches

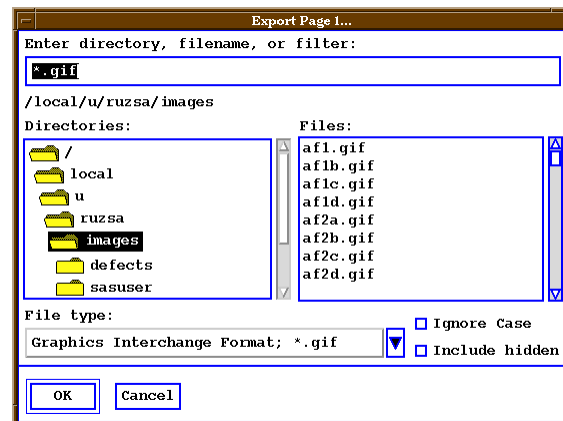
You can ignore these notes

You can also select the **File Print Preview** pulldown to see how the graph will appear before sending it to the printer. This is shown in the panel below:



You can export the output to the bitmap formats shown in the table on the right. SAS/GRAPH output can also be exported in CGM format for better control of the graph after it is exported. See Technical Support Note TS-252 for more information.

If you select the **Print** button, the output will be sent directly to the device. The **Export** button allows you to export to several file formats. The export menu is shown below:



GIF	Graphics Interchange Format
XPM	X11 Pixmap
XBM	X11 Bitmap
PPM	Portable Pixmap
PS	Adobe PostScript
EPS	Encapsulated PostScript
BMP	Microsoft Windows Bitmap
TIF	Tagged Image File Format
JPEG	Joint Photographic Experts Group

4.2 Using Hardware Fonts with XPrinter

In order to use hardware fonts with the XPRINTRC, XPRINTG, and XPRINTM device drivers you must use the undocumented GETFNT procedure. There are advantages and disadvantages in using hardware fonts with the XPrinter system.

Advantages of using Hardware fonts

1. Smoother looking fonts in your graphics.
2. Faster printing response on the printer.
3. Special characters are available, particularly with PostScript based printers.

Disadvantages of using Hardware fonts

1. The output can only be viewed on the printer itself, or if the driver is generating PostScript output, with a PostScript viewer such as Ghostview or Adobe Distiller.
2. The hardware font set will change depending on the printer that you have selected in the **File > Print Setup** window. Each time you change your printer you must rerun the GETFNT procedure to load the correct fonts in the driver.

4.2.1 The GETFNT Procedure

The GETFNT procedure analyzes the driver selected in your FILE=>PRINT SETUP pulldown and loads the appropriate hardware fonts into the XPRINTG, XPRINTRC, or XPRINTM graphics driver entry. In order to do this, you need to have a separate device driver catalog. This is created using the GDEVICE procedure. Normally a LIBNAME statement with the libref GDEVICE0 is also required to tell the GDEVICE procedure where to create this catalog. The following program will load hardware fonts to your new device driver catalog. You can download this program from <ftp.sas.com/techsup/download/graph/getfnt.sas>.

```
dm 'clear log';
dm 'clear output';
*****;
* Make sure host printing is enabled *;
* To do this *;
* 1. select the view pulldown *;
* 2. select preferences *;
* 3. select the display manager tab *;
* 4. click on the "use host printing" button *;
* 5. click on the driver you wish to use in the *;
* file=>print setup pulldown *;
*****;
libname gdevice0 'your.device.driver.catalog.directory';
libname gfont0 'your.device.driver.catalog.directory';
goptions reset=global;
*****;
* This step deletes any previous xprintg entry in the *;
* catalog so we can update the fonts appropriate for *;
* the new device that has been selected in the *;
* file=>print setup window. *;
*****;

*****;
* In all of these steps you can substitute xprintrc or *;
* xprintm depending on the printer you have selected *;
* the file=>print setup window. I would only use *;
* the xprintm device driver if monochrome output was *;
* was desired. *;
*****;

proc gdevice c=gdevice0.devices nofs;
delete xprintg;
copy xprintg from=sashelp.devices newname=xprintg;
run;
```

```

quit;

*****;
* This step loads the fonts in the chartype screen *;
*****;
proc getfnt device=xprintg; run; quit;

*****;
* This step generates a listing to the output window *;
* of the device drivers involved *;
* The chartype section will have a listing of the *;
* fonts and the font number associated with the printer*;
*****;

proc gdevice c=gdevice0.devices nofs;
list xprintg;
run;

*****;
* Now to generate some output to see how the fonts *;
* on the printer. Depending on the device driver *;
* selected in the FILE=>PRINT SETUP window *;
* you may have anywhere from 12 to 30 fonts loaded *;
*****;

goptions device=xprintg;
proc gslide;
title f=hwdmx001 H=2 'This is hwdmx001';
title2 f=hwdmx002 H=2 'This is hwdmx002';
title3 f=hwdmx003 H=2 'This is hwdmx003';
title4 f=hwdmx004 H=2 'This is hwdmx004';
title5 f=hwdmx005 H=2 'This is hwdmx005';

title6 f=hwdmx006 H=2 'This is hwdmx006';
title7 f=hwdmx007 H=2 'This is hwdmx007';
title8 f=hwdmx008 H=2 'This is hwdmx008';
title9 f=hwdmx009 H=2 'This is hwdmx009';
title10 f=hwdmx010 H=2 'This is hwdmx010';
note j=c f=hwdmx011 H=2 'This is hwdmx011';
note j=c f=hwdmx012 H=2 'This is hwdmx012';
note j=c f=hwdmx013 H=2 'This is hwdmx013';
note j=c f=hwdmx014 H=2 'This is hwdmx014';
note j=c f=hwdmx015 H=2 'This is hwdmx015';
note j=c f=hwdmx016 H=2 'This is hwdmx016';
note j=c f=hwdmx017 H=2 'This is hwdmx017';
note j=c f=hwdmx018 H=2 'This is hwdmx018';
note j=c f=hwdmx019 H=2 'This is hwdmx019';
note j=c f=hwdmx020 H=2 'This is hwdmx020';
footnote1 j=c f=hwdmx021 H=2 'This is hwdmx021';
footnote2 j=c f=hwdmx022 H=2 'This is hwdmx022';
footnote3 j=c f=hwdmx023 H=2 'This is hwdmx023';
footnote4 j=c f=hwdmx024 H=2 'This is hwdmx024';
footnote5 j=c f=hwdmx025 H=2 'This is hwdmx025';
footnote6 j=c f=hwdmx026 H=2 'This is hwdmx026';
footnote7 j=c f=hwdmx027 H=2 'This is hwdmx027';
footnote8 j=c f=hwdmx028 H=2 'This is hwdmx028';
footnote9 j=c f=hwdmx029 H=2 'This is hwdmx029';
footnote10 j=c f=hwdmx030 H=2 'This is hwdmx030';
run;
quit;

```

4.2.2 Results in the SAS Log and Output Windows from Running the Program

Several messages from the log and information in the output window are useful when using SAS/GRAPH with the XPrinter drivers. The output window contents should be saved for later reference. The SAS Log will often contain the message described below:

```
WARNING: A character was defined in the character position normally
         reserved for a blank.
NOTE: Font HWDMX001 will use 4935 bytes of memory when loaded.
```

This means that the font name that was loaded had a space in the middle of its description. It will not affect the performance of the driver in any way.

In the output window, you will see a listing with a title similar to the following:

```
          GDEVICE procedure
Listing from GDEVICE0.DEVICES - Entry XPRINTG
```

This listing is the contents of the new XPrinter device driver catalog entry that you have created. The most important section of the listing is the CHARTYPE section similar to the listing below:

CHARTYPE RECORDS

Chartype	Rows	Cols	Font Name	Scalable
0	1	1	DMS Font	N
1	1	1	-adobe-courier-medium-r-normal--0-0-300*	Y
2	1	1	-adobe-courier-medium-o-normal--0-0-300*	Y
3	1	1	-adobe-courier-bold-r-normal--0-0-300-3*	Y
4	1	1	-adobe-courier-bold-o-normal--0-0-300-3*	Y
5	1	1	-adobe-times-medium-r-normal--0-0-300-3*	Y
6	1	1	-adobe-times-medium-i-normal--0-0-300-3*	Y
7	1	1	-adobe-times-bold-r-normal--0-0-300-300*	Y
8	1	1	-adobe-times-bold-i-normal--0-0-300-300*	Y
9	1	1	-adobe-avant garde-medium-r-normal--0-0-0*	Y
10	1	1	-adobe-avant garde-medium-o-normal--0-0-0*	Y
11	1	1	-adobe-avant garde-bold-r-normal--0-0-3*	Y
12	1	1	-adobe-avant garde-bold-o-normal--0-0-3*	Y
13	1	1	-adobe-bookman light-medium-r-normal--0*	Y
14	1	1	-adobe-bookman light-demibold-r-normal-*	Y
15	1	1	-adobe-bookman light-demibold-i-normal-*	Y
16	1	1	-adobe-helvetica-medium-r-normal--0-0-3*	Y
17	1	1	-adobe-helvetica-medium-o-normal--0-0-3*	Y
18	1	1	-adobe-helvetica-bold-r-normal--0-0-300*	Y
19	1	1	-adobe-helvetica-bold-o-normal--0-0-300*	Y
20	1	1	-adobe-new century schoolbook-medium-r-*	Y
21	1	1	-adobe-new century schoolbook-medium-i-*	Y
22	1	1	-adobe-new century schoolbook-bold-r-no*	Y
23	1	1	-adobe-new century schoolbook-bold-i-no*	Y
24	1	1	-adobe-palatino-medium-r-normal--0-0-30*	Y
25	1	1	-adobe-palatino-medium-i-normal--0-0-30*	Y
26	1	1	-adobe-palatino-bold-r-normal--0-0-300-*	Y
27	1	1	-adobe-palatino-bold-i-normal--0-0-300-*	Y
28	1	1	-adobe-symbol-medium-r-normal--0-0-300-*	Y
29	1	1	-adobe-zapf chancery-medium-i-normal--0*	Y
30	1	1	-adobe-zapf dingbats-medium-r-normal--0*	Y

This is the listing of the hardware character sets available for the device driver selected in your **File Print Setup** window. This listing can change depending on the device driver selected. The listing above is for a PostScript printer.

The following listing is for a HP LaserJet 3 printer.

Chartype	Rows	Cols	Font Name	Scalable
0	1	1	DMS Font	N
1	1	1	-adobe-times-medium-r-normal--0-0-300-3*	Y
2	1	1	-adobe-times-medium-i-normal--0-0-300-3*	Y
3	1	1	-adobe-times-bold-r-normal--0-0-300-300*	Y

4	1	1	-adobe-times-bold-i-normal--0-0-300-300*	Y
5	1	1	-agfa-cg times-medium-r-normal--0-0-300*	Y
6	1	1	-agfa-cg times-medium-i-normal--0-0-300*	Y
7	1	1	-agfa-cg times-bold-r-normal--0-0-300-3*	Y
8	1	1	-agfa-cg times-bold-i-normal--0-0-300-3*	Y
9	1	1	-agfa-univers-medium-r-normal--0-0-300-*	Y
10	1	1	-agfa-univers-medium-i-normal--0-0-300-*	Y
11	1	1	-agfa-univers-bold-r-normal--0-0-300-30*	Y
12	1	1	-agfa-univers-bold-i-normal--0-0-300-30*	Y

While you can always look up your character sets using the GDEVICE procedure, keeping a printout of this section is often easier to use. You can use any of the hardware fonts in your SAS/GRAPH output by specifying F=HWDMXzzz in your program where zzz is the chartype number. For example, if you want to use the -adobe-zapf chancery-medium-i-normal-0 font with a PostScript driver, specify F=HWDMX029 in your program.

4.2.3 Output from the GSLIDE program

The output from the GSLIDE program in section 4.3.1 will generate a listing of the hardware fonts to your printer so you can see how the fonts will appear when printed. Sample output from a PostScript driver is listed below. Note that the output here is not nearly as sharp as the actual printed output will look.

This is hwdmx001
This is hwdmx002
This is hwdmx003
This is hwdmx004
This is hwdmx005
This is hwdmx006
This is hwdmx007
This is hwdmx008
This is hwdmx009
This is hwdmx010
This is hwdmx011
This is hwdmx012
This is hwdmx013
This is hwdmx014
This is hwdmx015
This is hwdmx016
This is hwdmx017
This is hwdmx018
This is hwdmx019
This is hwdmx020

This is hwdmx021

This is hwdmx022

This is hwdmx023

This is hwdmx024

This is hwdmx025

This is hwdmx026

This is hwdmx027

Τηισ ισ ηωδμξ028

This is hwdmx029

***▲ *▲ *D*O|✓✓

5. Questions and Answers

5.1 Can hardware fonts be used with the XPrinter drivers?

The GETFNT procedure loads fonts into the XPrinter drivers. See section 4 for information.

5.2 Can I control sizing of the graphics output?

Yes, the HSIZE and VSIZE graphics options work with the XPRINT drivers.

5.3 Can I do page selections non-interactively?

Not yet, but this has been suggested for a future release of the SAS system.

5.4 Can I change the file destination that an XPrinter device writes to dynamically?

No, you would have to create several XPrinter device drivers (each of which would write to a different file). You can switch from printer to printer using the XPRINTNM option.

5.5 Can you duplicate drivers in the Print Setup Menu?

Not currently, but a duplicate button has been suggested and hopefully will be implemented for a future release of the SAS system.

6. Common Problems and Solutions with XPrinter

To get complete information on problems with XPrinter, you can search the SAS Institute Technical Support usage note database at the following site:

http://www.sas.com/service/techsup/find_answer.html

The following is a listing of the more common messages you may receive when using the XPrinter interface:

6.1 Invalid messages when selecting certain fonts.

You may receive the following message when selecting the adobe-courier, agfa-courier, or agfa-letter gothic fonts:

"You have chosen a proportional font. Proportional fonts can cause unpredictable results and can lead to column misalignment in the printed output. Select a mono-spaced font such as Courier to remedy this problem."

Since those fonts are all monospaced, you can ignore the warning message that is being issued. Your SAS output will not be misaligned as the warning implies.

6.2 Printing from Helplus fails when printing to Non-PostScript devices

When printing help topics from Helplus, you will only be able to successfully get output only when printing to a PostScript device. Currently, if you choose a PCL device (such as the generic PCL5 or any of the HP PCL cartridge printers), you will not receive an error when you attempt to print, but your output will not print.

6.3 Output from PROC TABULATE and PROC FREQ does not have solid lines:

When using host printing (Xprinter) to print Procedure output, you will be unable to obtain solid lines on your output. This is because the third party package used for host printing uses a symbol set that does not contain solid line characters.

The only way to get solid lines on your output at this time is to go back to using forms for printing. If your printer does not use the correct symbol set by default, you can add the following section to the Printer Control Language page of your form:

```
PRINT INIT
~(10U
PRINT TERM
~E
```

In order to switch from host printing to forms, select **View Preferences...** then click on the **Display Manager** tab and deselect the **Host Printing** option.

6.4 ERROR: Segmentation Violation captured in task 'PROGRAM' with Xprinter on AIX Platforms

When using host printing on AIX, you may intermittently get segmentation violations. A typical scenario that demonstrates this problem is when you turn on host printing and issue the DLGPRTSETUP command or attempt to access the **File Print Setup** dialog. The error you may receive is:

```
ERROR: Segmentation Violation captured in task 'PROGRAM'
```

To correct this problem, terminate your current SAS session and set the environment variable XPHOME to \$SASROOT/X11 (where \$SASROOT is the directory where you have SAS installed). An example of the syntax would be:

```
for bsh and ksh: export XPHOME=/usr/local/sas612/X11
for csh: setenv XPHOME /usr/local/sas612/X11
```

Once you have the environment variable set, reinvoke SAS. Host printing will then work correctly.