



## CHAPTER

## 8

## Routing the SAS Log and SAS Procedure Output

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### Default Routings

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

#### SAS log file

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. For more information, see “SAS Log File” on page 24 .

#### SAS procedure output file

is also called the *print file*. Whenever a SAS program executes a PROC step that produces printed output, SAS sends the output to the procedure output file. For more information, see “SAS Procedure Output File” on page 24 .

Table 8.1 on page 86 shows the default routings of the SAS log and procedure output files.

**Table 8.1** Default Routings of the SAS Log and Procedure Output Files

<b>Processing Mode</b>	<b>SAS Log File</b>	<b>Procedure Output File</b>
windowing environment	LOG window	OUTPUT window
interactive line	terminal	terminal
noninteractive	disk file	disk file
batch	disk file	disk file

By default, when you type input to SAS, the log file and output file are sent to a window or terminal. If a source file provides input to SAS, as is usually the case during noninteractive mode or in batch mode, the log file and output file are written to disk.

Typically, when SAS is running in noninteractive mode or in batch mode, the SAS log and procedure output are written to the same minidisk or directory where the source file was found—provided that there is both READ and WRITE access to the disk or directory. If there is only read access to the disk or directory, the SAS log and the procedure output are saved to the first accessed READ/WRITE disk or directory. The SAS log has a filetype of SASLOG, and the SAS procedure output file has a filetype of LISTING. The filename for each of these is the same as the filename of the source file.

This section explains how to change the routing of the SAS log and procedure output. Use Table 8.2 on page 86 to help you decide which method you should choose to change the routing.

**Table 8.2** Decision Table: Changing the Default Destination

<b>To route your SAS log or procedure output to...</b>	<b>Using this mode of processing...</b>	<b>Use this method...</b>	<b>See...</b>
a printer	batch, windowing	FILENAME statement and PRINTTO procedure	“Using the PRINTTO Procedure” on page 91
	windowing	PRINT command and FORM subsystem	“Using the PRINT Command and the FORM Subsystem” on page 89
		PRTFILE and PRINT commands	“Using the PRTFILE and PRINT Commands” on page 88
an external file	any mode	PRINTTO procedure	“Routing to External Files with the PRINTTO Procedure” on page 87
	batch	LOG= and PRINT= system options	“Routing Your SAS Log or Procedure Output to an External File” on page 88
its usual location <i>and</i> to an external file	any mode	ALTLOG= and ALTPRINT= system options	“Routing to External Files with SAS System Options” on page 87
	windowing	FILE command	“Using the FILE Command” on page 88

To route your SAS log or procedure output to...	Using this mode of processing...	Use this method...	See...
a terminal	noninteractive mode	LOG= and PRINT= system options	"Routing Output to the Terminal" on page 89
the same destination (log and output interleaved)	any mode	LOG= and PRINT= system options	"Routing the SAS Log and Output to the Same Destination" on page 91

## Routing to External Files with the PRINTTO Procedure

Using the PRINTTO procedure with its LOG= and PRINT= options, you can route the SAS log or SAS procedure output to an external file from the windowing environment or from batch mode. You can specify the name of the external file in the PROC PRINTTO statement. For example, the following statement routes procedure output to OUTPUT LISTING B:

```
proc printto print='output listing b' new;
```

The NEW option tells SAS to overwrite OUTPUT LISTING B if it already exists.

To specify print format or other characteristics for an external file, or to specify the same external file several times in your SAS program, use the FILENAME statement and the PRINTTO procedure. The following example shows how to send the SAS log to an external file that has print format. In the example, SASLOG is the name of the SAS log file, OUTLOG is the fileref of the external file, and the VA value of the RECFM= option specifies print format.

```
filename outlog 'SASLOG file a' recfm=va;
proc printto log=outlog;
run;
```

## Rerouting to the Default Destination

To reroute the log and procedure output to their default destinations, submit the following statements:

```
proc printto;
run;
```

See Table 8.1 on page 86 for a list of the default destinations.

## Routing to External Files with SAS System Options

As described in "Introduction" on page 13, you can specify SAS system options in a SAS command or in a SAS configuration file. You can use these options to change the destination of the SAS log and procedure output. The options that you use depend on whether you want to make a copy of your SAS log or procedure output, or whether you want to route it only to an external file.

---

## Routing Your SAS Log or Procedure Output to an External File

Use the LOG= and PRINT= system options to change the destination of your SAS log or procedure output.

For example, specify the LOG= option in the SAS command as follows to send the log file to the disk file HOUSES LOG1 B:

```
sas (log='houses log1 b'
```

LOG= and PRINT= have no effect in the windowing environment. If you are running SAS in the windowing environment, use the ALTLOG= and ALTPRINT= system options. See “Copying Your SAS Log or Procedure Output to an External File” on page 88 .

You can use any form of the *file-specification* parameter to describe the destination of the file. See “Identifying an External File” on page 60 for information about different ways of specifying destinations for these files.

---

## Copying Your SAS Log or Procedure Output to an External File

Use the ALTLOG= and ALTPRINT= system options to send a copy of your SAS log or procedure output to an external file. The log and procedure output are also displayed in the log and output windows as usual (if you are running SAS in the windowing environment), or are otherwise routed to their default destinations.

For example, the following SAS command begins an interactive line mode session in which the log and procedure output files appear on the terminal and a copy of the log is written to the disk file SEPT25 TESTS C:

```
sas (nodms altlog='sept25 tests c'
```

You can also specify the ALTLOG= and ALTPRINT= system options in a configuration file. See “System Options in the CMS Environment” on page 252 for information on these options.

---

## Routing to External Files with Commands

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### 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 a sequential data set, issue the following command on the command line of the log window:

```
file 'logout saslog b'
```

If the file already exists, a requestor window asks you whether you want to replace it or to append data to the existing file.

---

### Using the PRTFILE and PRINT Commands

You can route the contents of many windows, including the Log, Program Editor, and Output windows, to an external file by using the PRTFILE command followed by the PRINT command.

Normally, the PRINT command is used to send the contents of a window to the printer. When you use the PRINT command, the default destination is controlled by the FORM subsystem. One way to override the default print destination that is established by the FORM subsystem is to use the PRTFILE command.

For example, to route the contents of your Output window to the file 'MYFILE OUTPUT C', you enter the following command from the Output window command line:

```
prtfile 'myfile output c'
```

This directs the output from the PRINT command to the external file 'MYFILE OUTPUT C'. Then, you enter the following command from the command line of the Output window:

```
print
```

If the file already exists, you are asked if you want to append to or replace the data in the file or cancel the PRINT command. Then, if you actually want to print the file, you enter the following command from the command line:

```
free
```

*Note:* Using the PRTFILE and PRINT commands results in files with carriage returns if you are using the default form for carriage control in the FORM subsystem. See "Writing to External Files" on page 79 for more information about writing to print files and nonprint files. Modifying the defaults in the FORM subsystem is discussed in "Modifying Your Default Form" on page 90 .  $\Delta$

---

## Routing Output to the Terminal

When you are running SAS in interactive line mode, both the SAS log and procedure output files are directed to the terminal by default. When you are running SAS in noninteractive mode, you might want to direct the output files to your terminal instead of to the disk files, or in addition to the disk files.

The following SAS command begins a noninteractive session and redirects the log and procedure output to the terminal:

```
sas tastest(log=terminal print=terminal
```

To direct the log and procedure output to their normal destinations (in this case, the disk files TASTEST SASLOG\* and TASTEST LISTING\* and the terminal), use the ALTLOG= and ALTPRINT= system options. Like the LOG= and PRINT= system options, these system options must be specified either in a configuration file or in the SAS command.

---

## Routing Output to a Printer

---

### Using the PRINT Command and the FORM Subsystem

Use the PRINT command to route the contents of a window to your default printer. This is the easiest method of printing output. For example, issue the PRINT command from the command line of your Output window to send the contents of that window to your default printer.

The default printer—as well as other aspects of your output such as printer margins, printer control language, and font control information—is controlled by the FORM

subsystem. The FORM subsystem consists of six frames that are used to define a form for each printer that is available to you at your site. You can also define multiple forms for the same printer. (See “Adding a Form” on page 90.) Your SAS Support Consultant can give you information about your default form and about any other forms that have been defined at your site.

The following sections describe how to modify your default printer form.

## Specifying a Form

To route the contents of a window to a printer that is not your default printer, you can use the FORM= option with the PRINT command. Use this option to specify a form that has been defined for a different printer. For example, to copy output to a printer destination that is described in a form named MYOUTPUT, type the following on the command line:

```
print form=myoutput
```

## Modifying Your Default Form

To change the default destination printer and to customize other features of the output that the PRINT command generates, you can modify the default form that the FORM subsystem uses. To modify your default form, do the following:

- 1 Type **cat sasuser.profile** on the command line to display the CATALOG window.
- 2 Make sure that you have an entry called DEFAULT.FORM in your SASUSER.PROFILE library. If you do not have a default form, make a copy of your site’s default form by typing the following command on a single line:

```
copyitem sashelp.base.default.form sasuser.profile.default.form
```

- 3 Type **fsforms sasuser.profile.default** on the command line to display your default form.
- 4 Change the default form by typing over the information in the six frames of the FORM subsystem. Issue the **NEXTSCR** command to scroll to the next FORM frame, and issue the **PREVSCR** command to scroll to the previous frame. Two of these frames, the Print File Parameters frames, are used to specify host-specific printer information; they are described in “Host-Specific Frames of the FORM Subsystem” on page 319. Be sure to change the FORM name in the Print File Parameters frame. Under CMS, SAS recognizes changes only when you change the form name.

*Note:* Many of the values for the FORM parameters are unique to your site. See your system administrator if you need assistance.  $\Delta$

- 5 Type the **END** command to save your changes.

## Adding a Form

You can add additional printer forms to the FORM subsystem. These forms can then be used with the PRINT command, as described in “Specifying a Form” on page 90, and they can be modified in the same manner as described in “Modifying Your Default Form” on page 90. For example, to create a form named MYOUTPUT, do the following:

- 1 Type **fsforms myoutput** on the command line or select the following from the **File** pull-down menu:

```
Print ► Utilities ► Set Up Form Name
```

- 2 Select a printer from the Printer Selection frame.
- 3 Use the **NEXTSCR** and **PREVSCR** commands to scroll through the other frames of the FORM subsystem. Use these other frames to provide additional information that will be associated with the MYOUTPUT form.
- 4 Type the **END** command to save your changes.

---

## Using the PRINTTO Procedure

You can use the FILENAME statement in conjunction with the PRINTTO procedure to route your output directly to a printer. Use a device type of PRINTER in the FILENAME statement to assign a fileref to the system printer. Then specify the fileref with the PRINT= or LOG= option in the PROC PRINTTO statement. The following example establishes a fileref and uses it in the PROC PRINTTO statement to reroute the procedure output:

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

---

## Using the PRTFILE and PRINT Commands

You can also use the PRTFILE command, followed by the PRINT command, to print the contents of SAS windows. PRTFILE establishes the destination, and PRINT sends the contents of the window to that destination. If you don't specify a destination with the PRTFILE command, PRINT automatically sends the window contents to your default printer. (See "Using the PRINT Command and the FORM Subsystem" on page 89 for details about using the PRINT command alone.)

Follow these steps to print the contents of one or more windows:

- 1 From the Program Editor window, submit a FILENAME statement to allocate a destination file for the output.
- 2 From the command line of any window, issue the PRTFILE command, and specify the fileref from your FILENAME statement:

```
prtfile <fileref>
```

- 3 From the command line of the window whose contents you want to print, issue the PRINT command.
- 4 If you want to print the contents of any other windows, issue the PRINT command from the command line of those windows. A requestor window warns you that the destination file already exists. Type **A** in the requestor window to append the window contents to the destination file.
- 5 From the command line of the first window that you printed, issue the FREE command. Your output is not actually printed until you perform this step.
- 6 From the Program Editor window, submit a FILENAME statement as follows to clear (deassign) the fileref. For example:

```
filename myrpt clear;
```

---

## Routing the SAS Log and Output to the Same Destination

At some point, you may need to route the log and output to the same location in order to interleave the log and the procedure output. To do this, specify the same

destination for the SAS system options LOG= and PRINT= or for ALTLOG= and ALTPRINT=. For example, the following command sends both the log and the procedure output to the file TESTOUT LISTING A.

```
sas testfile (log='testout listing a'
              print='testout listing a')
```

The log for each step is followed by any output for that step.

## Routing Output to a Remote Destination

Use the PRINTTO= option of the FILENAME statement to route output to a remote destination. The destination can be a workstation, a local or remote printer, or other device.

In order to route your output to a remote destination, you must know the remote station ID of the device that will receive your output. The station ID is an identifying label that is established by your data center; it is one to eight characters long. You must also know the appropriate output class for output that is directed to the remote device. Your data center personnel can provide you with this information. See also information on the CP TAG or SPOOL command in the *VM CP General User Command Reference*.

After determining the remote station ID and the output class, you use the SAS FILENAME statement to establish the fileref for the destination. Then use the fileref with the PRINTTO procedure to route your output. Here is an example that routes the procedure output file to a remote printer:

```
filename output printer;
proc printto print=output;
proc print data=oranges;
run;
```

In the preceding FILENAME statement, OUTPUT is the fileref for the printer; PRINTER is the device type.

The PROC PRINTTO statement then specifies the fileref OUTPUT in the PRINT= option. This option routes the procedure output file to the destination that was associated with the fileref OUTPUT in the FILENAME statement. When the PRINT procedure is executed, SAS sends the procedure output to your virtual printer. CMS holds the output in the virtual printer until the file that is identified by the fileref OUTPUT is freed. Then the output is printed at the remote destination.

To route the SAS log to a remote destination, use the same procedure, but use the LOG= option instead of the PRINT= option with the PROC PRINTTO statement.



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