



CHAPTER

11

Special Considerations for SAS/AF Programmers

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Controlling the Appearance and Behavior of the SAS System

The SAS System under OS/2 provides SAS/AF programmers with extensive control over the appearance and behavior of the main SAS window. You can

- use SAS system options and commands to control the appearance of the main SAS window
- call external dynamic link libraries (DLLs) by using the DATA step or SAS Component Language (SCL) commands
- design, save, and load custom toolbar controls
- immediately invoke SAS/AF programs when you start the SAS System
- distribute the minimum subset of SAS files that are needed to run a particular SAS/AF application
- associate your own logo and icons with your SAS/AF applications
- use SCL code to send electronic mail (e-mail) to other users
- invoke a Web browser to view documents online.

Controlling the Main SAS Window

SAS system options and commands make it possible to change the appearance and behavior of the main SAS window.

SAS System Options That Control the Main SAS Window

Table 11.1 on page 186 lists the system options that provide control over the main SAS window.

Table 11.1 SAS System Options for the Main SAS Window

Option	Description
AWSCONTROL	Removes system controls such as the title bar, system menu, and minimize and maximize buttons from the main SAS window.
AWSDEF	Specifies the location and dimensions of the main SAS window when the SAS System initializes.
AWSMENU	Specifies whether to display the main SAS window menu bar.
AWSMENUMERGE	Specifies whether to include common options in the main SAS window menu bar (for example, the Window and Options menus).
AWSTITLE	Specifies the text that appears in the title bar of the main SAS window.
ICON	Iconizes (minimizes) the main SAS window at SAS System initialization.
REGISTER	Specifies other OS/2 programs to be included as options in the main SAS window File menu.
SASCONTROL	Removes system controls and the minimize and maximize buttons from SAS application windows.
SOLUTIONS	Adds or removes the SOLUTIONS menu to or from all menus.
SPLASH	Specifies whether the logo (splash screen) is displayed when the SAS System starts.
SPLASHLOC	Specifies the location of the bitmap that contains the splash screen that you want to display when SAS starts.
WINDOWSMENU	If NOAWSMENUMERGE is specified, this option determines if the Window submenu is included in the main menu.

Commands That Control the Main SAS Window

Table 11.2 on page 186 lists the commands that you can use to control the appearance and behavior of the main SAS window.

Table 11.2 SAS Commands for the Main SAS Window

Option	Description
AWSMAXIMIZE	Maximizes the main SAS window.
AWSMINIMIZE	Minimizes the main SAS window.
AWSRESTORE	Restores the main SAS window to its previous state.
COLOR	Sets the color for various components of the application windows.

Option	Description
COMMAND	Controls the appearance of the command bar or dialog box.
DLGABOUT	Invokes the About dialog box.
DLGCDIR	Invokes the Change Folder dialog box.
DLGENDR	Invokes the Exit SAS confirmation dialog box.
DLGFIND	Invokes the Find dialog box.
DLGFONT	Invokes the Fonts Selection dialog box.
DLGOPEN	Invokes the Open dialog box.
DLGPAGESETUP	Invokes the Page Setup dialog box.
DLGPREF	Invokes the Preferences dialog box.
DLGPRT	Invokes the Print dialog box.
DLGPRTSETUP	Invokes the Print Setup dialog box.
DLGREPLACE	Invokes the Replace dialog box.
DLGRUN	Invokes the Run dialog box.
DLGSAVE	Invokes the Save As dialog box.
DLGSMAIL	Invokes the E-mail dialog box.
NEXTWIND	Displays the next open SAS window.
PMENU	Toggles the command lines on and off in the windowing environment.
PREVWIND	Displays the previous open SAS window.
RESHOW	Redisplays the SAS windows that are currently open.
TOOLCLOSE	Closes the toolbox or toolbar.
TOOLEEDIT	Invokes the Customize... dialog box.
TOOLLARGE	Toggles the size of the toolbar buttons.
TOOLLOAD	Opens the toolbox or toolbar with the specified configuration.
TOOLSWITCH	Toggles whether the toolbar that is associated with the active window is automatically loaded.
TOOLTIPS	Toggles the ToolTips on and off.
WATTACH	Toggles whether the contents of the active window are attached to e-mail that you send through SAS.
WDOCKVIEW	Enables dockable windows.
WEMAILFMT	Specifies the format (.RTF or .TEXT) of any text window that you attach to an e-mail message.
WHIDECURSOR	Suppresses display of the cursor.
WHSBAR	Toggles the horizontal scroll bars on and off.
WINSERT	Toggles the insert mode on and off.
WMENUPOP	Enables or disables the pop-up menus in the SAS application windows.
WMRU	Specifies how many filenames to retain in the list under the File menu .

Option	Description
WNEWTITLE	Clears the contents of the active window and removes its title.
WPOPUP	Causes the pop-up menu for the active window to appear.
WSCREENTIPS	Toggles the ScreenTips on and off.
WSTATUSLN	Toggles the status line on and off, and controls the area proportions.
WUNDO	Undoes the previous editing action.
WVSBAR	Toggles the vertical scroll bars on and off.
ZOOM	Maximizes the active SAS application window.

Accessing External DLLs from the SAS System

You can access routines that reside in external dynamic link libraries (DLLs) by using the SAS MODULE family of functions within a DATA step or SCL. This lets you access DLLs that you create or purchase; you can even access operating environment DLLs.

To access an external DLL, you must have

- the name of the DLL
- the function name or ordinal
- a description of the function's arguments
- a description of the return code.

CAUTION:

Only experienced programmers should access external DLLs. The MODULE routines can be a flexible and powerful tool, especially when they are used with the SASCBTL file, SAS formats and informats, and other SAS routines. When you access an external DLL, you are passing control of your computer from the SAS System to the DLL function. If this is done improperly, or if the DLL function is unreliable, you might lose data or have to reset your computer (or both). Δ

The general steps for accessing an external DLL routine are

- 1 Create a text file that describes the DLL routine that you want to access, including the arguments that it expects and the values it returns (if any). This attribute file must be in a special format.
- 2 Use the FILENAME statement to assign the SASCBTBL fileref to the attribute file that you created.
- 3 In a DATA step or SCL code, use MODULE, MODULEN, or MODULEC to invoke the DLL routine. The specific function that you use depends on the type of expected return value (none, numeric, or character). (You can also use MODULEI, MODULEIN, or MODULEIC within a PROC IML step.)

For complete information about accessing DLLs from within SAS, see "Overview of Dynamic Link Libraries in the SAS System" on page 165.

Designing, Saving, and Loading Custom Toolbar Controls

You can provide the users of your SAS/AF application with easy-to-use tools by creating a custom toolbar configuration. You can assign these tools to represent any

windowing environment command. For complete information about creating and saving custom toolbars, see “Customizing the Toolbar” on page 50.

If you distribute your SAS/AF application to other machines, be sure to include the catalog entry that contains your custom tool configuration.

By default, tool switching is enabled, which allows the use of a custom toolbar in your SAS/AF application. Tool switching can be disabled by issuing the `TOOLSWITCH OFF` command.

Invoking SAS/AF Applications Automatically

The SAS System provides a system option, `INITCMD`, that lets you invoke SAS/AF programs automatically. When you use this option, the SAS System does not create the `PROGRAM EDITOR`, `LOG`, or `OUTPUT` windows but instead runs the SAS/AF applications and windowing environment commands that you specify.

The general syntax of the `INITCMD` option is

```
-INITCMD "af-command" <DM-command-1...DM-command-n>
```

where *af-command* is a command to start an AF application, and *DM-command-1* through *DM-command-n* are any windowing environment commands.

For example, the following option specification starts a SAS/AF application and loads a custom toolbar:

```
-initcmd "AF c=mylib.myapp.myfirst.frame;  
  toolload bar mylib.myapp.profile.toolbox"
```

For more information about the `INITCMD` system option, see *SAS Language Reference: Dictionary*.

Creating a Scaled-Down Configuration of the SAS System for Distribution

The SAS System under OS/2 provides a file resource tracking facility that allows you to keep track of which files the SAS System uses during a particular SAS session. This information can be valuable for several reasons:

- You can create and distribute a subset of the SAS System to licensed users at your site who run a particular SAS application. These users might not need all of the SAS System resources that are installed by default.
- You can create scaled-down configurations of the SAS System for use on portable or notebook computers for which disk space is scarce.
- You can customize the global installation of the SAS System at your site to optimize use of disk space on individual machines.

To generate a list of files that the SAS System opens and closes during a particular session:

- 1 Specify the `RTRACE` and `RTRACELOC` system options when you start the SAS System. You can specify these options in the `Parameters` field of the SAS System under OS/2–Version 8 Properties page, in the configuration file (`SASV8.CFG`), or as part of a SAS command that you specify. For more information about specifying options when you start the SAS System, see “SAS System Options under OS/2” on page 313.

Issue the RTRACE and RTRACELOC system options by using the following syntax

```
-rtrace all -rtraceloc c:\sas\filename.ext
```

where *filename.ext* is the name of the file to which the SAS System writes the list of opened files.

- 2 During the SAS session, perform the actions that a user who will be working with the subset of SAS files will perform. For example, if a user will use a particular SAS/AF application, run that application during this session.

CAUTION:

If you do not include all of the necessary files in your scaled-down configuration of the SAS System, you might get unexpected results from your SAS application. To ensure that all of the necessary file resources are recorded, you must traverse *every* path in your SAS session that an end user of the scaled-down configuration should be able to traverse. (If you are running a SAS/AF application, you should exercise every possible path, including error conditions.) Otherwise, you might fail to include a necessary file in your run-time configuration of the SAS System. If you do not include all of the necessary files in your scaled-down configuration of the SAS System, you might get unexpected results from your SAS application. Δ

- 3 When you are finished with the SAS session, exit the SAS System. Be sure to remove the RTRACE and RTRACELOC option specifications from wherever you put them (for example, the SAS program item or SASV8.CFG file).

This procedure results in a list of the files (located in *filename.ext*) that the SAS System opened and closed during your SAS session.

You can use the COPYSAS autocall macro to create a batch program to copy this subset of files. This automates and simplifies the task of distribution.

To use the COPYSAS macro to create a copy script for a scaled-down configuration of the SAS System, submit a statement with the following syntax:

```
%COPYSAS (copydir,rtracelog cpcmd scriptloc mkcmd)
```

where

copydir

is the destination SAS root directory for the scaled-down configuration. You can specify *copydir* as a local directory (for example, **c:\mysas**) or as a network path (for example, **\\server\share\pubsas**).

rtracelog

is the log file that is created when you use the RTRACE and RTRACELOC system options.

cpcmd

is the DOS copy command, with options, that you want to use in the copy script. The default is COPY /V.

scriptloc

is the location of the resulting batch file containing the copy commands. The default is COPYSAS.BAT in your SASUSER folder.

mkcmd

is the DOS make directory command, with options, that you want to use in the copy script. The default is MKDIR.

For complete information about the COPYSAS macro, see “COPYSAS Autocall Macro” on page 394.

Associating Your Own Logo and Icons with Your SAS/AF Application

You can substitute your own logo screen and icons in place of those that are provided by the SAS System.

Note: These procedures require that you create resources for and build your own dynamic link libraries (DLLs). For more information about creating DLLs, see the OS/2 software development kit. Δ

To display your own logo when the SAS System starts

- 1 Create the logo that you want to display and save it either as a bitmap (which has a .BMP file extension), or compile it as resource and build it into a DLL.
- 2 When you invoke SAS, specify the `-SPLASHLOC` option with the full pathname of the file that contains your bitmap. If the bitmap is in a DLL, be sure to specify the resource number as well. The default resource number is 1. For more information about the `SPLASHLOC` system option, see “`SPLASHLOC`” on page 375.

Your logo will display when you start the SAS System.

To use your own icons with your SAS/AF application

- 1 Use the `USERICON` system option when you start the SAS System to specify the resource file that contains the icons that you want to include. You must use the OS/2 software development tool to compile the resource file. For more information about the `USERICON` system option, see “`USERICON`” on page 383.
- 2 Use SAS/AF software to create a `FRAME` entry.
- 3 On the `FRAME` entry, select **Make** from the pop-up menu. (Alternatively, you can create a region and then select **Fill** from the pop-up menu.)
- 4 Select **Icon** from the selection list.
- 5 From the Icon Attributes dialog box, select **Current Icon**.
- 6 Select **User-defined** to display the icons in your resource file.
- 7 From the Select an Icon dialog box, select the icon that you want to use. If there are more icons than will fit in the window, use the scrollbars to see the rest of the icons.

Incorporating E-Mail into Your SAS/AF Application

You can associate SCL code with buttons and fields in a `FRAME` entry to create your own interface to e-mail. The SAS System provides methods to interface with VIM-compatible e-mail programs.

Using SCL code, you can specify who should receive mail (TO and CC), the subject of the mail, the body of the message, and any files that you want to attach to the message. “Sending E-Mail from within the SAS System” on page 129 describes the e-mail functions that the SAS System facilitates and contains examples of `DATA` step and SCL code.

The correct bibliographic citation for this manual is as follows: SAS Institute Inc., *SAS[®] Companion for the OS/2[®] Environment, Version 8*, Cary, NC: SAS Institute Inc., 1999. 448 pp.

SAS[®] Companion for the OS/2[®] Environment, Version 8

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ISBN 1-58025-521-3

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SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

1st printing, October 1999

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