

The SAS® System Configuration Options: Understanding Your CONFIG.SAS File

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Melodie was a student programmer working for me at the time that I wanted to have a handout to distribute to users. Melodie wrote most of this article with some minor guidance from me. I recently added some more modifications to this paper to include more device drivers for the -FSDEVICE option and I also listed more options that can be included in your CONFIG.SAS file.

Introduction: A CONFIG.SAS file is automatically set up when SAS is installed. Generally the default settings are the optimum settings to use. However, it is useful for you, the user, to familiarize yourself with the configuration options used and others that are available in order to tailor the SAS® System to meet your needs.

Configuration options are global options. In other words, these options are in effect for the duration of the session. Consequently, they must be invoked at the beginning of a SAS session. These options cannot be changed during the middle of a session.

Some of the reason for this paper are that I (Randy) received four meg of expanded memory and needed to modify CONFIG.SAS in order to take advantage of

the extra memory. There were users on campus who received new monitors and/or computers and I needed to know how to modify the CONFIG.SAS file. The final reason was that I wanted to fine tune the SAS System in order to get more efficient use of my limited resources.

Setting Configuration Options: There are two ways to specify configuration options. The most commonly used method is to specify configuration options in the CONFIG.SAS file, which by default, is checked every time PC SAS is invoked.

When SAS searches for the CONFIG.SAS file, the current directory is search first, then any directories indicated in the DOS PATH command, and finally the root directory. If you have multiple CONFIG.SAS files, SAS uses the first one found in its search path. Thus it is recommended that you store the CONFIG.SAS file in the directory from which you execute SAS. If you execute SAS from several different directories, store a CONFIG.SAS file in each of those directories.

The second method of specifying configuration options is to specify them in the SAS command at the beginning of your

SAS session. This is useful for executing an option you only wish to use for a single session. For example, the command:

SAS -NODMS

will start your SAS session and set the display manager session option to off.

Configuration options specified in the SAS command override the settings in the CONFIG.SAS file.

Default Configuration Options:

-SET SASROOT drive:pathname

where pathname is the path, or route of subdirectory names, to follow on order to arrive at the file you wish to access.

This option specifies the root directory of the SAS System. In other words, this option tells the SAS System the path to follow to find the SAS execute file (SAS.EXE file) and other SAS subdirectories. This option must be the first option listed in your CONFIG.SAS file. The default value is

-SET SASROOT C:\SAS

Because this option specifies the name and location of the root directory, it allows you to install SAS in a directory other than the default directory. For example, we have SAS installed on a network so I have the option set as follows:

-SET SASROOT R:\APPS\SAS

In other words, I use R: as the root directory and store SAS on the network in

the APPS subdirectory. I have heard it mentioned that all of the letters need to be the same either upper case or lower case in order to apply ZAPS.

-FSDEVICE driver specifications

This option specifies the device driver for your PC's monitor. Optional specifications also affect the display.

If you have an IBM PC-compatible machine, you do not have to specify the FSDEVICE option. IBM compatible machines have an internal flag which indicates whether the machine is IBM compatible or not. The SAS System checks for this flag whenever SAS is started and the FSDEVICE option is absent from the CONFIG.SAS file.

Listed below are the device drivers from which you can select.

CAUTION: If you select the wrong driver, you may have very unpredictable results. If unsure about the type of device you have, call your local SAS Software Consultant.

SASXDICA	for IBM AT with CGA card and compatibles
SASXDICA NOWAIT	Compaq AT w/color
SASXDICX	for IBM XT with CGA card and compatibles, Leading Edge XT, AT&T color

SASXDICX
MODE=BW80
GRAY=BLACK
BLACK=WHITE AT&T monochrome monitor

SASXDIMA for IBM AT with monochrome monitor and compatibles

SASXDIMX for IBM XT with monochrome monitor and compatibles

SASXDNCA for IBM 3270 PC, AT-compatible and compatibles

SASXDNCX for IBM 3270 PC, XT-compatible and compatibles

SASXDIEA for IBM AT with EGA card and compatibles

SASXDIEX for IBM XT with EGA card and compatibles

SASXDIVA for IBM AT with VGA card and compatibles

SASXDIVX for IBM XT with VGA card and compatibles

SASXDWGM for Wang with color monochrome monitor

SASXDWGC for Wang with color monitor

SASXDCPA for COMPAQ with plasma display

SASXDVCA for Hewlett-Packard Vectra with color monitor

SASXDASY for all other non-IBM-compatible machines that use the ANSI.SYS driver

SASXDICA
NOWAIT for Compaq AT w/color

I have an IBM AT with EGA card, so I selected device driver SASXDIEA. I chose to set the FSDEVICE option because the FSDEVICE option also allows you to control the specifications of some display features. We wished to specify that the maximum number of lines (rows) be displayed on the screen. The LINES option allows you to specify that 25 lines be displayed (the default setting), or 43 lines for EGA devices, or 50 for VGA devices.

My FSDEVICE option is set as follows:

-FSDEVICE SASXDIEA LINES43

A full listing of the options available for each Device Driver may be found in **SAS Language Guide for Personal Computers**, Release 6.03, p. 482, or **Technical Report:P-171, Changes and Enhancements to Base SAS® Software for Personal Computers**, Release 6.03, p. 206.

-SASHELP drive:pathname

where pathname is the route of subdirectory names to follow to access the file you want.

The SASHELP option specifies the path

name for the directory containing the SAS help files. The default value is

-SASHELP !SASROOT\SASHELP

The **!SASROOT** value is replaced by the pathname assigned in the **SET SASROOT** option.

-SASUSER PATHNAME

The user profile directory path name is specified by this option. The directory and catalog are created during installation. The default value is

-SASUSER SASUSER

The default value is generally not changed. This setting will create the **SASUSER** subdirectory each time you start SAS. The **SASUSER** subdirectory will be placed in your start-up directory.

-WORK pathname

This option specifies the path name for the directory containing the SAS WORK library. The default is

-WORK SASWORK

Like the **SASUSER** option, the default setting places the **SASWORK** subdirectory in your start-up directory. If you frequently run out of work space in the default location, you can direct SAS to access work space in another drive with more disk space. For example, if we use the D: drive our option statement is set up as follows.

-WORK D:\SAS\SASWORK

-MSG pathname

The **MSG** option specifies the path name for the directory containing the SAS error message file. The default value is

-MSG !SASROOT\SASMSG

-DMS

-NODMS

This option specifies the kind of interactive SAS session to initiate. **-DMS** initiates a display manager session. **-NODMS** initiates a line-mode session.

-DMS

is the default setting.

-PATH drive:pathname

You can set up path information for directories containing SAS executable modules. Multiple **-PATH** options may be used. The paths are searched in the order in which the paths are specified, so it is recommended that you list the path names of the products you use most frequently at the top of the list. The default settings are

-PATH !SASROOT\SASEXE\CORE
-PATH !SASROOT\SASEXE\BASE
-PATH !SASROOT\SASEXE\STAT
-PATH !SASROOT\SASEXE\IML
-PATH !SASROOT\SASEXE\AF
-PATH !SASROOT\SASEXE\FSP
-PATH !SASROOT\SASEXE\GRAPH

The **!SASROOT** value will be replaced by the pathname specified in the **-SET SASROOT** option when the **CONFIG.SAS**

file is executed.

-FILEBUFFERS n_buffers s_buffers

The file buffers option specifies the number of file buffers (n_buffers) and the size of each buffer (s_buffers) you want the SAS System to use, in bytes. The n_buffers value must be an integer between 1 and 50; the s_buffers value must be an integer between 256 and 64512.

The -FILEBUFFERS parameters are positional parameters. Both parameters must be listed (except when turning off the option where only the keyword -FILEBUFFERS is specified), with n_buffers listed first, followed by s_buffers.

The -FILEBUFFERS option enhances the speed of the SAS System and improves performance by reducing the number of read and write disk accesses when SAS data sets or external files are accessed. The default, and optimal, setting is

-FILEBUFFERS 5 512

-FILECACHE drive:path n

The -FILECACHE option allows you to specify a directory and number of files in that directory that can be "cached". Path is the directory from which files are cached and n is an integer value from 1 to 50.

Caching a file increases the speed of the SAS System by reducing the overhead involved in opening files. Caching a file simply means that you place it in a special table, the filecache table, when it is opened. Then, whenever a SAS program reaches a

point where the file would normally be closed, caching allows SAS to "logically" close the file instead of having it "physically" closed by DOS. Because the file has not been physically closed, SAS can find and open the file faster than if the file had not been cached. File caching is more effective with executable files.

Multiple FILECACHE options may be listed. However, don't give the same directory more than one FILECACHE specification. The SAS System searches the filecache table from top to bottom and only uses entries created by the first specification.

For best performance, the total number of table entries across all directories to be cached should not exceed the value of the FILES= parameter in the CONFIG.SYS file, because the FILES= parameter determines how many files may be open at one time and cannot be overridden by the SAS System.

NOTE: Do not cache directories that contain SAS data sets or SAS catalogs.

Your -FILECACHE statement could look like this:

```
-FILECACHE !SASROOT\SASEXE\CORE 15  
-FILECACHE !SASROOT\SASEXE\BASE 5  
-FILECACHE !SASROOT\SASMSG 5
```

Other Commonly Used Options:

-EMS n

-EMS ALL

The EMS option specifies the amount of expanded memory SAS can access. N is

an integer value representing the number of 16K pages of expanded memory to use. (A 2-megabyte expanded memory board has 128 16K-pages.) The ALL option allows SAS to use as much memory as it needs, up to 2-megabytes. There is no default setting. The memory board needs to be LIM 3.0 compatible. The SAS Supervisor uses about 350K of memory and what is left in conventional memory is where procedures and data reside. By using the -EMS option the SAS Supervisor and certain procedures will be loaded into the expanded memory address space.

-AUTOEXEC drive:\path\filename.ext

Specifies a filename containing SAS statements that execute automatically when the SAS System is invoked.

-ECHO CLS
-ECHO 'messages'

The CLS option specifies that the screen should be cleared. The message enclosed in quotes will be displayed on your screen when SAS is invoked.

-NEWS drive:\path\filename.ext

Specifies a filename containing a message to be printed to the log screen when SAS is invoked. This works as an excellent method of sending messages to users on a network.

-VERBOSE

This statement will give a listing of all options specified in the CONFIG.SAS file and the name of the CONFIG.SAS file

(including path information).

-XWAIT ON/OFF

This indicates whether or not SAS waits for the return key after processing DOS commands.

The material for this paper was drawn from discussions of SAS global configuration options in **SAS Language Guide for Personal Computers**, Release 6.03, ch. 16, and **Technical Report:P-171, Changes and Enhancements to Base SAS® Software for Personal Computers**, Release 6.03, ch. 12.

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