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Saving and Restoring Startup (Initialized) SAS® System Options

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Abstract

Processing requirements sometimes require the saving (and restoration) of SAS® System options at strategic points during a program's execution cycle. This paper and presentation illustrates the process of using the OPTIONS, OPTSAVE, and OPTLOAD procedures to perform the following operations:

- ✓ Display portable and host-specific SAS System options and their settings;
- ✓ Display restricted SAS System options;
- ✓ Display SAS System options that can be restricted;
- ✓ Display information about SAS System option groups;
- ✓ Display a list of SAS System options that belong to a specific group;
- ✓ Display a list of SAS System options that can be saved;
- ✓ Save startup SAS System options;
- ✓ Restore startup SAS System options, when needed.

Introduction

The OPTIONS procedure is used to display the default settings associated with SAS System options including Portable and Host options. The PROC OPTIONS code illustrated below, displays an alphabetical sampling of default settings along with a brief explanation of each SAS System option on the SAS Log.

```
proc options ;
run ;
```

```
Portable Options:

ANIMATION=STOP      Specifies whether to start or stop animation.
ANIMDURATION=MIN    Specifies the number of seconds that each animation frame displays.
ANIMLOOP=YES        Specifies the number of iterations that animated images repeat.
ANIMOVERLAY         Specifies that animation frames are overlaid in order to view all frames.
APPEND=             Specifies an option=value pair to insert the value at the end of the existing
                    option value.
APPLETLOC=          Specifies the location of Java applets, which is typically a URL.
ARMAGENT=           Specifies an ARM agent (which is an executable module or keyword, such as
                    LOG4SAS) that contains a specific implementation of the ARM API.
ARMLOC=ARMLOG.LOG   Specifies the location of the ARM log.
ARMSUBSYS=(ARM_PROC)
                    Specifies the SAS ARM subsystems to enable or disable.
AUTOCORRECT         Automatically corrects misspelled procedure names and keywords, and global
                    statement names.
AUTOEXEC=/opt/sasinside/SASConfig/Lev1/SASApp/WorkspaceServer/autoexec.sas
                    Specifies the location of the SAS AUTOEXEC files.
AUTOSAVELOC=        Specifies the location of the Program Editor auto-saved file.
NOAUTOSIGNON        Disables a SAS/CONNECT client from automatically submitting the SIGNON command
                    remotely with the RSUBMIT command.
BINDING=DEFAULT     Specifies the binding edge type of duplexed printed output.
BOMFILE             Writes the byte order mark (BOM) prefix when a Unicode-encoded file is written
                    to an external file.
BOTTOMMARGIN=0.000 IN
                    Specifies the size of the margin at the bottom of a printed page.
BUFNO=1             Specifies the number of buffers for processing SAS data sets.
BUFSIZE=0           Specifies the size of a buffer page for output SAS data sets.

    . . .           . . .           . . .           . . .           . . .           . . .
```

(continued)

```
    . . .           . . .           . . .           . . .           . . .           . . .

VALIDMEMNAME=COMPAT
                  Specifies the rules for naming SAS data sets, SAS data views, and item stores.
VALIDVARNAME=V7   Specifies the rules for valid SAS variable names that can be created and
                  processed during a SAS session.
VARINITCHK=NOTE   Specifies the type of message to write to the SAS log when a variable is not
                  initialized.
VARLENCHK=WARN    Specifies the type of message to write to the SAS log when the length of the
                  variable that is being read is longer than the length that is defined for the
                  variable.
VBUFSIZE=65536    Specifies the buffer size for a view.
VIEWMENU          Displays the View menu in SAS windows.
VNFERR            SAS issues an error message when a BY variable exists in one data set but not
                  another when the other data set is _NULL_.
WORK=/tmp/SAS_work726100004B15_localhost.localdomain/SAS_work316E00004B15_localhost.localdomain
                  Specifies the libref or location of the Work library.
WORKINIT          At SAS invocation, erases files that exist from a previous SAS session in an
                  existing Work library.
WORKTERM          Erases the Work files when SAS terminates.
YEARCUTOFF=1926   Specifies the first year of a 100-year span that is used by date informats and
                  functions to read a two-digit year.
LAST_=_NULL       Specifies the most recently created data set.
```

The OPTIONS procedure can also be specified with the SHORT parameter so an alphabetical display of the default SAS System options is sent to the SAS Log without the brief explanation of each option, as shown below.

```
proc options short ;
run ;
```

```
Portable Options:

ANIMATION=STOP ANIMDURATION=MIN ANIMLOOP=YES ANIMOVERLAY APPEND= APPLETLOC= ARMAGENT=
ARMLOC=ARMLOG.LOG ARMSUBSYS=(ARM_PROC) AUTOCORRECT
AUTOEXEC=/opt/sasinside/SASConfig/Lev1/SASApp/WorkspaceServer/autoexec.sas AUTOSAVELOC=
NOAUTOSIGNON BINDING=DEFAULT BOMFILE BOTTOMMARGIN=0.000 IN BUFNO=1 BUFSIZE=0 BYERR BYLINE BYSORTED
NOCAPS NOCARDIMAGE CASAUTHINFO= CASDATALIMIT=100M CASHOST= CASLIB= CASNCHARMULTIPLIER=1.5
CASNWORKERS=ALL CASPORT=0 CASSESSOPTS= CASTIMEOUT=60 CASUSER= CATCACHE=0 CBUFNO=0 CENTER
CGOPTIMIZE=3 NOCHARCODE NOCHKPTCLEAN CLEANUP NOCMDMAC CMPLIB= CMPMODEL=BOTH CMPOPT=(NOEXTRAMATH
NOMISSCHECK NOPRECISE NOGUARDCHECK NOGENSYMNAMES NOFUNCDIFFERENCING SHORTCIRCUIT NOPROFILE)
NOCOLLATE COLOPHON= COLORPRINTING COMAMID=TCP COMPRESS=NO CONNECTEVENTS CONNECTMETACONNECTION
CONNECTOUTPUT=BUFFERED CONNECTPERSIST CONNECTREMOTE= CONNECTSTATUS CONNECTWAIT COPIES=1 CPUCOUNT=2
CPUID CSTGLOBALLIB= CSTSAMPLELIB= DATAPAGESIZE=CURRENT DATASTMTCHK=COREKEYWORDS DATE DATESTYLE=MDY
NODBFMTIGNORE NODBIDIRECTEXEC DBSLICEPARM=(THREADED_APPS, 2) DBSRVTP=NONE DCSHOST=LOCALHOST
DCSPORT=7111 DECIMALCONV=COMPATIBLE DEFLATION=6 NODETAILS DEVICE= DFLANG=LOCALE DKRICOND=ERROR
DKROCOND=WARN NODLCREATEDIR DLDMGACTION=FAIL NODMR NODMS NODMSEXP DMSLOGSIZE=99999
    . . .           . . .           . . .           . . .           . . .           . . .

Host Options:

ALIGNSASIOFILES ALTLOG= ALTPRINT= AUTHPROVIDERDOMAIN= BLKSIZE=256 COMAUX1= COMAUX2= CONFIG=(
/opt/sasinside/SASHome/SASFoundation/9.4/sasv9.cfg
/opt/sasinside/SASHome/SASFoundation/9.4/nls/u8/sasv9.cfg
/opt/sasinside/SASHome/SASFoundation/9.4/sasv9_local.cfg
/opt/sasinside/SASConfig/Lev1/SASApp/sasv9.cfg
/opt/sasinside/SASConfig/Lev1/SASApp/sasv9_usermods.cfg
/opt/sasinside/SASConfig/Lev1/SASApp/WorkspaceServer/sasv9.cfg
/opt/sasinside/SASConfig/Lev1/SASApp/WorkspaceServer/sasv9_usermods.cfg ) DBCS DBCSLANG=UNKNOWN
DBCSTYPE=UTF8 ECHO= EDITCMD= EMAILSYS=smtp ENCODING=UTF-8 FILELOCKS=( '/' FAIL ) FILELOCKWAIT=0
FILELOCKWAITMAX=600 FSDBTYPE=DEFAULT FSIMM= FSIMMOPT= NOFULLSTIMER HELPLOC=(
'!SASROOT/X11/native_help' '!SASROOT/X11/native_help'         '!SASUSER/classdoc' ) INGOPTS=
JREOPTIONS=(-DPFS_TEMPLATE=/opt/sasinside/SASHome/SASFoundation/9.4/misc/tkjava/qrpfstpt.xml
    . . .           . . .           . . .           . . .           . . .           . . .
```

During a SAS session, you'll be able to determine whether the current system options and values, assigned either at SAS system startup or anytime thereafter, require preserving for later reinitializing (or restoration). To determine which SAS System options can be saved, the OPTIONS procedure with the DEFINE parameter is specified, as follows. Although the Log results show a great amount of detail, the line corresponding to **OPTSAVE:** indicates whether the option can be saved or not. Other notable information displayed in the Log results show when an option can be set and whether your Site Administrator can restrict the modification of an option.

```
proc options define ;
run ;
```

```
 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
     Optsave: PROC Optsave or command Dmoptsave will not save this option

 APPLETLOC=
Option Definition Information for SAS Option APPLETLOC
     Group= ENVFILES
     Group Description: SAS library and file location information
     Description: Specifies the location of Java applets, which is typically a URL.
     Type: The option value is of type CHARACTER
           Maximum Number of Characters: 256
           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 expanded
     When Can Set: Startup or anytime during the SAS Session
     Restricted: Your Site Administrator can restrict modification of this option
     Optsave: PROC Optsave or command Dmoptsave will save this option
    . . .           . . .           . . .           . . .           . . .           . . .
```

To produce an abbreviated list of just the SAS System options that can be saved, the OPTIONS procedure with the LISTOPTSAVE parameter can be specified, as follows.

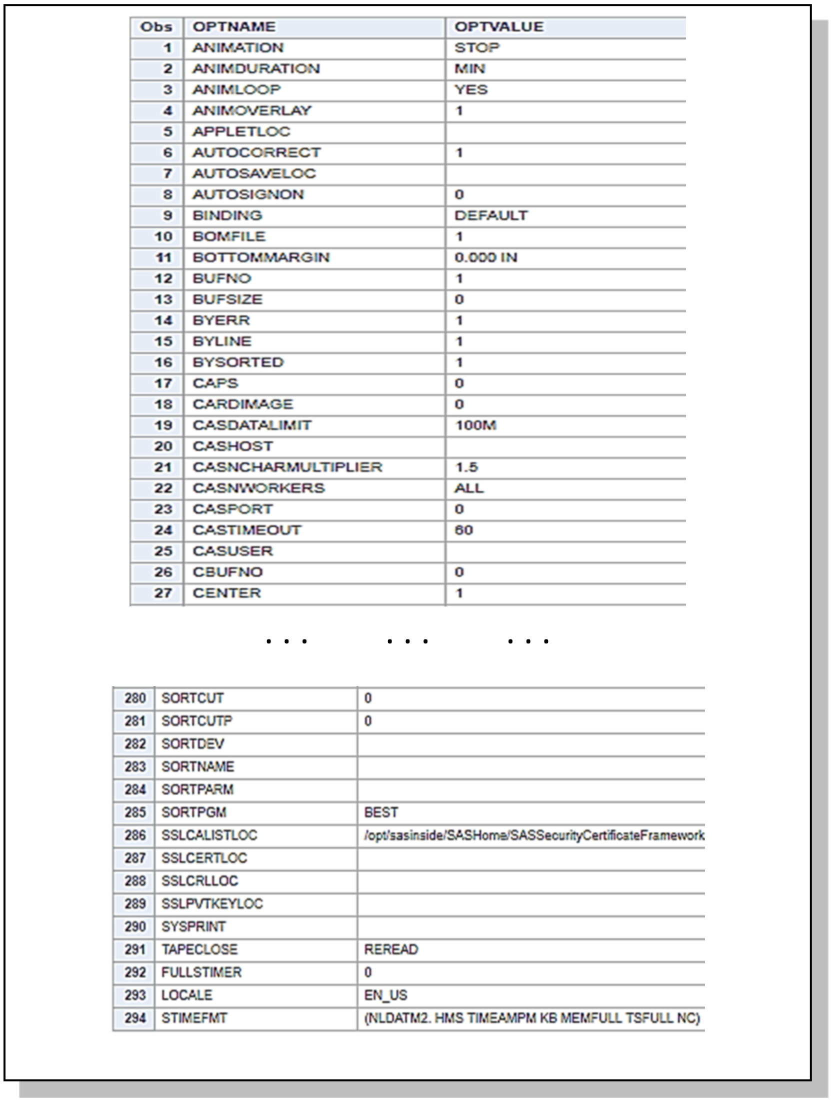
```
proc options listoptsave ;
run ;
```

```
Core options that can be saved with OPTSAVE

ANIMATION        Specifies whether to start or stop animation.
ANIMDURATION     Specifies the number of seconds that each animation frame displays.
ANIMLOOP         Specifies the number of iterations that animated images repeat.
ANIMOVERLAY      Specifies that animation frames are overlaid in order to view all frames.
APPLETLOC        Specifies the location of Java applets, which is typically a URL.
AUTOCORRECT      Automatically corrects misspelled procedure names and keywords, and global
                 statement names.
AUTOSAVELOC      Specifies the location of the Program Editor auto-saved file.
AUTOSIGNON       Enables a SAS/CONNECT client to automatically submit the SIGNON command remotely
                 with the RSUBMIT command.
BINDING          Specifies the binding edge type of duplexed printed output.
BOMFILE          Writes the byte order mark (BOM) prefix when a Unicode-encoded file is written to
                 an external file.
BOTTOMMARGIN     Specifies the size of the margin at the bottom of a printed page.
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.
CAPS             Converts certain types of input, and all data lines, into uppercase characters.
CARDIMAGE        Processes SAS source code and data lines as 80-byte records.
CASDATALIMIT     Specifies the maximum number of bytes that can be read from a file.
CASHOST          The CAS server name associated with a CAS session.
    . . .           . . .           . . .           . . .           . . .           . . .
```

Once it’s determined that SAS System option settings need saving, a PROC OPTSAVE can be executed. SAS System options can either be saved to the SAS registry (an area where information about specific SAS sessions and applications are stored) or to a SAS data set. **Note:** For more information about the SAS 9.4 Registry readers are encouraged to read, Understanding the SAS Registry. The next example illustrates the process of saving the SAS System options to a SAS data set using the OPTSAVE procedure and the OUT= parameter.

```
libname mylib “c:\” ;
proc optsave out=mylib.myoptions ;
run ;

proc print data=mylib.myoptions ;
run ;
```

The OPTSAVE procedure code saves the SAS System options to the user-assigned data set MYOPTIONS in the user-assigned MYLIB library of the root-level of the C-drive. Should the output data set already exist with the same name, then it is automatically replaced. A partial snapshot of the saved SAS System options is illustrated using the PRINT procedure, below.



Obs	OPTNAME	OPTVALUE
1	ANIMATION	STOP
2	ANIMDURATION	MIN
3	ANIMLOOP	YES
4	ANIMOVERLAY	1
5	APPLETLOC	
6	AUTOCORRECT	1
7	AUTOSAVELOC	
8	AUTOSIGNON	0
9	BINDING	DEFAULT
10	BOMFILE	1
11	BOTTOMMARGIN	0.000 IN
12	BUFNO	1
13	BUFSIZE	0
14	BYERR	1
15	BYLINE	1
16	BYSORTED	1
17	CAPS	0
18	CARDIMAGE	0
19	CASDATALIMIT	100M
20	CASHOST	
21	CASNCHARMULTIPLIER	1.5
22	CASNWORKERS	ALL
23	CASPORT	0
24	CASTIMEOUT	60
25	CASUSER	
26	CBUFNO	0
27	CENTER	1
. . .	. . .	. . .
280	SORTCUT	0
281	SORTCUTP	0
282	SORTDEV	
283	SORTNAME	
284	SORTPARM	
285	SORTPGM	BEST
286	SSLCALISTLOC	/opt/sasinside/SASHome/SASSecurityCertificateFramework
287	SSLCERTLOC	
288	SSLCRLLOC	
289	SSLPVTKEYLOC	
290	SYSPRINT	
291	TAPECLOSE	REREAD
292	FULLSTIMER	0
293	LOCALE	EN_US
294	STIMEFMT	(NLDATM2. HMS TIMEAMPM KB MEMFULL TSFULL NC)

After processing is complete and you desire to restore the SAS system option settings you saved earlier, you'll be able to restore (recover) the SAS System option settings from the "saved" data set using the OPTLOAD procedure, as follows.

```
proc optload data=mylib.myoptions ;
run ;
```

The OPTLOAD procedure restores the SAS System options and settings from the user-assigned SAS data set MYOPTIONS in the user-assigned MYLIB library that was saved earlier. When run, the OPTLOAD procedure automatically replaces the current option settings with the "saved" settings that were created earlier using the OPTSAVE procedure.

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