

New SASV8 Tricks for Old SASV6 Dogs

Tips from the Command Line

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ABSTRACT

For those of us who can remember running SAS programs on punch cards (and even for those who can't!), the new capabilities of SASV8 can seem overwhelming at times. This paper will present a few "tricks" to make the transition from PROC PRINT to ODS a little smoother, by taking advantage of the nice, juicy bones that the SAS Institute has tossed us. These techniques, unless specifically noted as unique to a particular system, can be used with SASV8 in any operating environment, including Red Hat LINUX, Windows and AIX/UNIX (and presumably other UNIX versions).

INTRODUCTION



Since I first started using a beta version of SAS® on an IBM 360 at MIT to analyze data for a thesis more than 20 years ago, SAS has evolved into an amazing computing tool. Still, for those of us old DOS dogs used to operating from the command line, changing our ways is a challenge. The purpose of this paper is to outline a few tips for making the switch to SAS V8 from SAS V6 a little more palatable, and to give SAS users a taste of some of the new and improved functionality in SAS V8. Some of the tips are specific to PC-SAS; others are useful and have been tested on several platforms running SAS including Red Hat Linux 6.2.

"BADDEST" BATCH

As a SAS old-timer, I've long preferred running from the command line or in "batch mode". When my company moved from DOS-based SAS V5 to MS Windows-based SAS V6, the first thing I did was to enable batch mode processing for PC-SAS. For mainframe users this is irrelevant, and it is a non-issue for LINUX and UNIX installations of SAS where one can run a SAS program from the command line simply by appending the program name to the invocation of SAS. However, when SAS moved to Windows from DOS on the PC platform, the default became running from the Display Manager. The Display Manager carried with it some wonderful capabilities, but my preference was to not have to think about saving SAS logs and lists. With the advent of PC SAS V7 and V8 (which my company is running concurrently with SAS V6.12 on both our UNIX system and our PC-based network), it became even more complicated. Due to the compatibility issues between SAS V6.12 and SAS V8 files, I wanted to be able to run both versions in batch mode. The solution follows below.

To set up a single version of SAS to run batch on the PC by double-clicking the program name in Windows Explorer:

Make sure a client install has been performed on the PC. You can tell by right clicking on a SAS program in Windows Explorer and seeing if the batch option is available.

If not, here's how to perform the client install:

- start->run m:\winsas\setup.exe register (m:\winsas is the drive and directory where the current version of SAS is mapped on the computer)
- Supply default destination (wherever the config.sas you use is located, usually in the directory where the SAS system is resident) by typing it into the space provided.
- Supply directory where the core directory of SAS is installed.
- That will update the Windows registry, performing the client install.

If the batch option IS available when you right-click on a SAS program in Windows Explorer, then a client install has already been performed and you can set batch up as the default action when you double click on a SAS program in Windows Explorer.

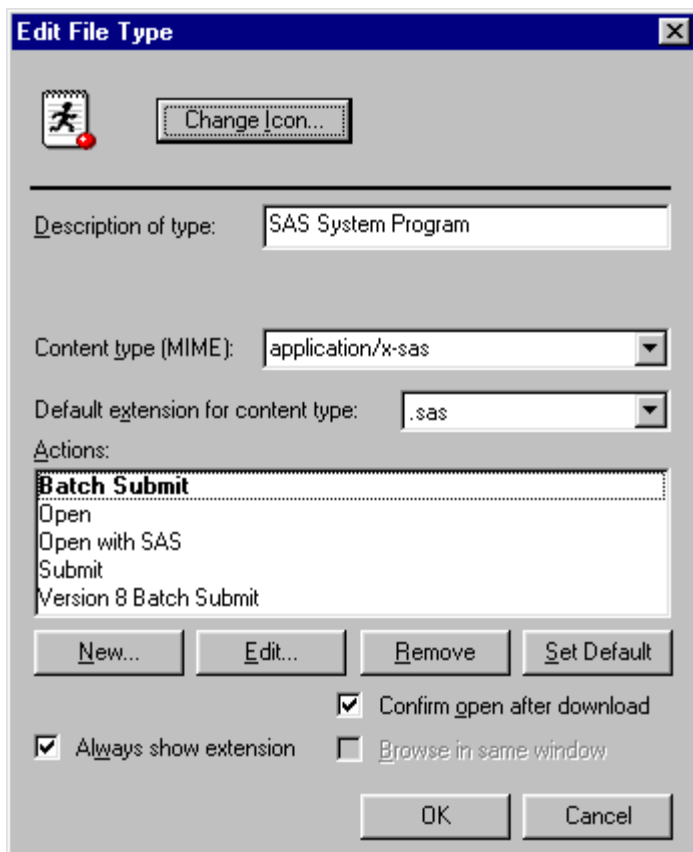
- Go to Windows Explorer.
- Select View->Options from the Menu Bar
- Click on File Types
- Scroll down until you find SAS System Program
- Highlight SAS System Program and click Edit
- Highlight Batch Submit and click on Set Default Button

If you DON'T want Batch Submit as the default, just right-clicking on the program in the Windows Explorer will offer the option of running a program in batch once you have ensured that a client install of your particular version(s) of SAS has occurred.

The option to run both SAS V612 and SAS V8 from Windows Explorer in batch mode is a little trickier. Make sure client installs (see above) have been performed on both versions of SAS you are running. Because you want to be able to choose which version of SAS to use on a given program (with the extension .sas) you must do a little fancy editing. Most people in my company are still using SAS V612, therefore I have SAS V612 set up as my default when I double-click on a SAS program in Windows Explorer. If I want to run SAS V8 on a program in Windows Explorer, I right-click on the program and it gives me an option to run SAS V8 batch or SAS V612 batch.

To do a dual-version SAS batch set up:

- Go to Windows Explorer
- Select View->Options from the Menu Bar
- Click on File Types
- Scroll down until you find SAS System Program
- Highlight SAS System Program and click Edit
- Click on New This will bring up a screen where you can name your "action" (I named mine Version 8 Batch Submit) and you must supply the path to the application used to perform the action (in my case, "C:\Program Files\SAS Institute\SASV8\Sas.exe")
- Click OK and then CLOSE.



*TIP: Should you run your PC SAS programs in "batch", any print formatting you may have set up in the Display Manager will not take effect. You **must** include such items as `ps` and `ls` in your options statement to produce landscape versus portrait logs and lists. Batch Submit processing will use the current SAS defaults. This also holds true for SAS Graph jobs run in batch. You must specify your options in your program.*

ASK NOT WHAT ODS CAN DO FOR YOU; SEE FOR YOURSELF! (WITHOUT A "TRACE" OF THE DISPLAY MANAGER)

The ODS (Output Delivery System) is a really exciting innovation in the SAS system. It is available on all platforms running SAS V8 and the mainframe counterpart of SAS V8. Since I use SAS on UNIX, LINUX, an IBM Mainframe running TSO, and the PC, I wanted to be able to take advantage of the Output Delivery System's capabilities on all 4 platforms. On the PC, viewing SAS V8 output is fairly straightforward using the Display Manager and Windows' multitasking capabilities. However, on the mainframe viewing output in the form of HTML, for example, is not easy, if possible at all; and the SAS V8 Display Manager using XWINDOWS on LINUX and UNIX is pretty "busy" (understatement). Even on the PC, there are times when you are outputting a file from a procedure using SAS V8, and what you get is not what you might expect. There are also new procedures that can output files (i.e. PROC SURVEYMEANS) whose name and contents are unknown, and procedures which once did not produce output files which now have the capability of doing so (i.e. PROC TABULATE). What is an old SAS dog to do?

There are a number of commands having to do with ODS which can be inserted into your code, similar in style to an options statement, which might use to change SAS system options midstream. The many ODS commands are explained in the SAS V8 Online Documentation as well

as in SAS V8 printed documentation material such as "The Complete Guide to the SAS Output Delivery System".

The command relevant here is ODS TRACE ON (and OFF). This command allows you to "turn on" SAS V8's capability of tracing your output from a program, which will appear in your SAS log. You can view the output file from a procedure you are not familiar with, say PROC SURVEYMEANS, then do a contents on that output file (all nicely and informatively labeled by the SAS System!), then do what you will with your output file. Below follows an example of using the ODS TRACE, LISTING and OUTPUT commands, run using SAS V8 on AIX UNIX in batch mode.

Example of PROC SURVEYMEANS WITH ODS TRACE ON (LOG):

NOTE: SAS initialization used:
 real time 2.41 seconds
 cpu time 0.20 seconds

```
28
29          ods trace on;
30
31          proc surveymeans data=chhld007;
32              weight c_adjwgt;
33              cluster stratum psu;
34              var
35                  agecat1
36                  agecat2
37                  agecat3 . . . ;
136          run;
```

Output Added:

```
-----
Name:      Summary
Label:     Data Summary
Template:  Stat.SurveyMeans.Factoid
Path:     Surveymeans.Summary
-----
```

Output Added:

```
-----
Name:      Statistics
Label:     Statistics
Template:  Stat.SurveyMeans.Statistics
Path:     Surveymeans.Statistics
-----
```

NOTE: There were 1200 observations read from the dataset WORK.CHHLD007.

NOTE: The PROCEDURE SURVEYMEANS printed pages 1-3.

NOTE: PROCEDURE SURVEYMEANS used:
 real time 2.31 seconds
 cpu time 1.65 seconds

```
137
138          ods trace off;
139
140          endsas;
```

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:
 real time 7.34 seconds
 cpu time 2.97 seconds

Example of PROC SURVEYMEANS WITH ODS OUTPUT & LISTING ON (LOG):

NOTE: SAS initialization used:
 real time 0.13 seconds
 cpu time 0.11 seconds

```

29
30      ods listing close;
31
32      ods output Summary=dd.tt1_sum Statistics=dd.tt1_stat;
33
34      proc surveymeans data=chhld007;
35      weight c_adjwgt;
36      cluster stratum psu;
37      var
38      agecat1
39      agecat2
40      agecat3 . . .;

NOTE: The data set DD.TT1_STAT has 1 observations and 606 variables.
NOTE: Compressing data set DD.TT1_STAT increased size by 50.00
percent.
      Compressed is 3 pages; un-compressed would require 2 pages.
NOTE: The data set DD.TT1_SUM has 3 observations and 3 variables.
NOTE: Compressing data set DD.TT1_SUM increased size by 100.00
percent.
      Compressed is 2 pages; un-compressed would require 1 pages.
NOTE: There were 576 observations read from the dataset
WORK.CHHLD007.
NOTE: PROCEDURE SURVEYMEANS used:
      real time      1.43 seconds
      cpu time       1.37 seconds

140
141      ods listing;
142
143      proc print data=dd.tt1_sum;
144      run;

NOTE: There were 3 observations read from the dataset DD.TT1_SUM.
NOTE: The PROCEDURE PRINT printed page 1.
NOTE: PROCEDURE PRINT used:
      real time      0.02 seconds

146      proc print data=dd.tt1_stat;
147      run;

NOTE: There were 1 observations read from the dataset DD.TT1_STAT.
NOTE: The PROCEDURE PRINT printed pages 2-14.
NOTE: PROCEDURE PRINT used:
      real time      0.14 seconds
      cpu time       0.15 seconds

148
149      endsas;

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NOTE: The SAS System used:
      real time      2.59 seconds
      cpu time       2.32 seconds

```

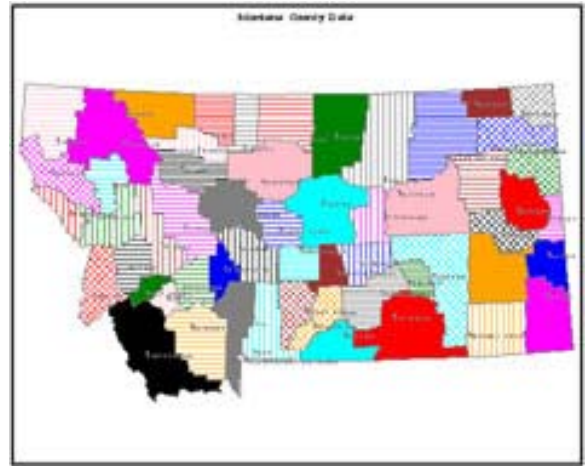
TIP: SAS V8 output files naturally take advantage of the expanded space for variable names. The files which were output from the example above were destined to be "transported" to the PC platform for further use in SAS V6.12. It was necessary to rename the variables with 8 column names and transpose the file in order to produce a useable transport file (not shown in program above). Other file types on the UNIX or other platforms may or may not have similar problems with this. HTML and EXCEL files, for example, are fine.

CHANGE IS BAD, OR IS IT?

(OR, THE THINGS YOU CAN CODE . . .)

I'm the first to admit I'm dreading the advent of Windows 2000 Professional in my office environment looming ahead of me this summer. It means I will have to give up the last of my cherished user-written DOS tools, like GREP, WHEREIS, and LIST, since DOS as we know it will no longer exist. However, in the case of SAS V8 versus SAS V6.12, there are numerous reasons to embrace the changes and new capabilities. Among these reasons already mentioned are new procedures such as SURVEYREG and SURVEYMEANS, the Output Delivery System, added macro language capability, addition of output files to procedures which did not produce them earlier, and, BE STILL MY HEART, the addition of medians to many procedures which did not include them earlier. Below follows an example of the many things you can do with SAS V8. Due to the size limitations of the paper, the example does not have the full impact possible in either the poster format or "on-line", but it should serve to give the reader some idea of the possibilities.

The map below represents a "clickable" HTML document created by a SAS Graph program. The resolution of the graphics suffer when they are compressed into a size that fits into a paper format and printed in black and white, but the picture is quite striking in its full glory on the computer screen.



The idea is that one can click on any county on the map to get more information about that county. In this case, I have suppressed the confidential data that was actually produced for a contract with the state of Montana, but have provided some basic information (below).

Click on Chouteau county in the map and you get:

County Information		
State FIPS Code	County FIPS Code	County Name
30	15	CHOUTEAU

The possibilities are endless!

Below follows the code to produce this "clickable" map.

```

filename odsout ' ';
/* Produce a Format to Associate County-level data
with its html table based on county code */
proc format;
value cntystat
1='href="cty1.htm"'
/* a value for each county to be represented */
;
run;
ods listing close;
options reset=global;

/* Create a Map of Montana from the U.S. Map */
proc sort data=maps.county (where=(state eq 30))
out=mt1;
by state county;
run;

proc sort data=maps.cntyname (where=(state eq 30))
out=mt2;
by state county;
run;

```

```

data county;
  length linkme $ 80;
  merge mt1 mt2 (keep=state county countynm);
  by state county;
  linkme = put(county,cntystat.); /* provide link to the HTML tables */
run;

/* Find the Point at Which to Place County Markers and Names */
proc means data=county noprint;
  var x y;
  by state county;
  id countynm;
  output out=means median=; /* note the use of median in proc
                             means */
run;

/* Create Annotate Dataset for Markers and Names */
data cnties;
  length function style color $ 8 position $ 1 text $ 20;
  retain function 'label' xsys ysys '2' hsys '1' when 'a' state 100
        county 1000;
  set means (drop=state county);
  state+1;
  county+1;
  color='gray';
  size=1;
  text='T';
  position='5';
  style='marker';
  output;
  color='gray';
  state+1;
  county+1;
  size=2;
  text=countynm;
  position='6';
  style='zapfb';
  output;
run;

data all;
  set county cnties;
run;

/* Reproject the Data After all our Fussing Around */
proc gproject data=all out=allp;
  id state county;
run;

data county2 anno2;
  set allp;
  if state ge 100 then output anno2;
  if state lt 100 then output county2;
run;

/* Create the Map */
goptions device=gif;
goptions hsize=5 in vsize=4 in;
ods html body='mthead.htm' path=odsout;
pattern value=msolid;

proc gmap data=county map=county2;
  id state county;
  choro countynm / discrete html=linkme coutline=gray
    nolegend annotate=anno2;
title1 f=zapfb h=1 "Montana County Data";
run;
quit;

/* Create the County Level Detail HTML */
%macro details(cntynum);
options ps=30 ls=64;
ods html body="cty&cntynum..htm" path=odsout;

```

```

title1 "County Information";
proc print data=means (where=(county=&cntynum)) noobs
  label uniform;
  var state county countynm;
run;

ods html close;
run;

%mend details;

%details(1);
/* run for each county */

```

NOTE: spacing and proper indents removed for inclusion of the code in the paper format.

TIP: check for actual state/county values by running a frequency on your map data set, or do the formatting and linking with a sort and array processing.

CONCLUSION

SAS Version 8 provides many new and improved older tools to produce some amazing results. It is well worth the effort for SAS V6 dogs to learn some new V8 tricks. With careful planning, the command line can still be a part of our lives! We *can* have our cake and eat it, too.



REFERENCES

SAS Online Documentation (PC SAS V612, PC SAS V8, AIX UNIX SAS V612, AIX UNIX SAS V8, RED HAT LINUX 6.2 SAS V8)

The Complete Guide to the SAS Output Delivery System, Version 7-1

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