

## **Transitioning from Batch and Interactive SAS® to SAS® Enterprise Guide**

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### **ABSTRACT**

Although the need for access to data and analytical answers remains the same, the way we get from here to there is changing. Change is not always adopted nor welcomed and it is not always voluntary. This paper intends to discuss the details and strategies for making the transition from traditional SAS software usage to SAS Enterprise Guide. These details and strategies will be discussed from the company as well as the individual SAS developer level. The audience for this paper should be traditional SAS coders who are just getting exposed to SAS Enterprise Guide but still want to write code.

### **INTRODUCTION**

Traditional SAS batch processing, SAS Display Manager, and SAS Enterprise Guide are three different methods for performing data processing and analytics. Users that do not understand the similarities and differences can often resist and/or struggle with their transition to SAS Enterprise Guide. By understanding the way SAS Enterprise Guide works and keeping an open mind to change, users will be less likely to struggle in their transition.

### **GETTING ACCLIMATED TO YOUR SAS ENTERPRISE GUIDE ENVIRONMENT**

SAS Enterprise Guide is a Windows application written in .Net. Without a SAS Foundation installation, it cannot process any data. The SAS Foundation installation, which at a minimum includes SAS/Base, can be installed on the same physical desktop or laptop that you are using SAS Enterprise Guide. Or it can be installed on a server whether it is a Windows, Linux, UNIX or a mainframe.

SAS Enterprise Guide is merely an integrated development environment that allows you to work with a SAS server. You can still write traditional SAS code and submit it to the server (or your desktop) as you did before.

We will now briefly review the three different types of SAS processing pertinent to this paper (batch processing, SAS Display Manager, and SAS Enterprise Guide).

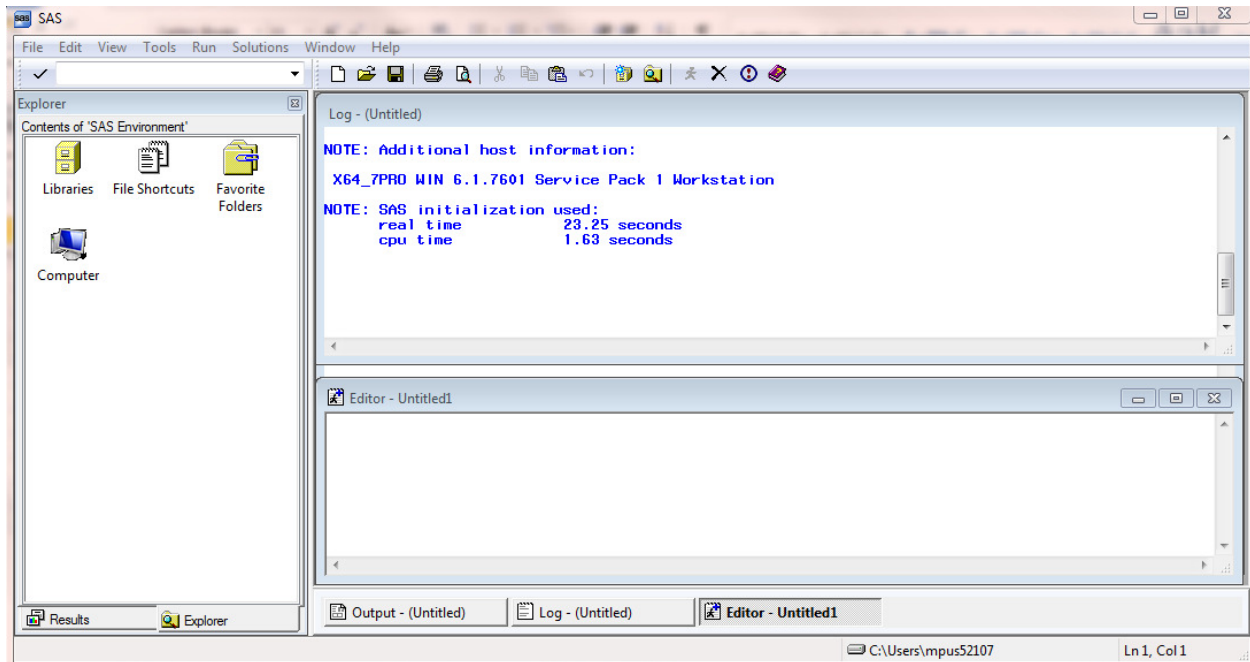
### **BATCH SAS PROCESSING**

SAS users have always been able to write programs using a text editor and submit them using the SAS executable. If you are on Windows, you could use notepad. If you are on Linux or UNIX, you can use VI. Once you have written the program, the user can submit the program using operating system commands using the SAS executable as long as you are logged onto the computer where SAS is installed. After running the program, the user would get back a log file at a minimum. Any type of results produced by the SAS program would have to be viewed using an appropriate non-SAS application (notepad, Word, Adobe, Excel, etc).

### **SAS DISPLAY MANAGER (INTERACTIVE SAS)**

SAS Display Manager is actually similar to batch SAS processing except it is a program that is hanging open until you close the interface. The user gets immediate feedback after submitting code. There is a program editor window, log window, output window, and a window containing a results and explorer tab (see Figure 1 below).

Once a SAS user is happy with a program, they can save it to disk. They then have the option of running it in batch or a future display manager session.



**Figure 1. SAS Display Manager Interface**

## **SAS ENTERPRISE GUIDE**

SAS Enterprise Guide is the third development environment that we will discuss in this paper. With the introduction of SAS Enterprise Guide, came an additional proprietary file format called a SAS Enterprise Guide Project. The project saves all of the process flows and the programs, tasks, results, etc. that you create in your project.

SAS Enterprise Guide has gotten a bad rap by some that come from a traditional SAS programming development environment. The first impression that programmers have is that they cannot write code any more. They have to use all of this fluffy drag and drop nonsense. They see demonstrations of producing results without having to write one line of code. They get scared that they are losing control and will not be able to write the beautiful, creative SAS code that they know and love. What they do not realize is that ...

## **Now Hear This**

**SAS Enterprise Guide can be used exactly like SAS Display Manager!**

**You can just write code and submit it like in SAS Display Manager!**

**You do not have to use SAS Enterprise Guide Projects but just create and save SAS programs.**

**After learning more about SAS Enterprise Guide you will want to take advantage of some of the features and functionality.**

Now let us dive into learning more about how SAS Enterprise Guide works.

In Figure 2, you will see the SAS Enterprise Guide interface.

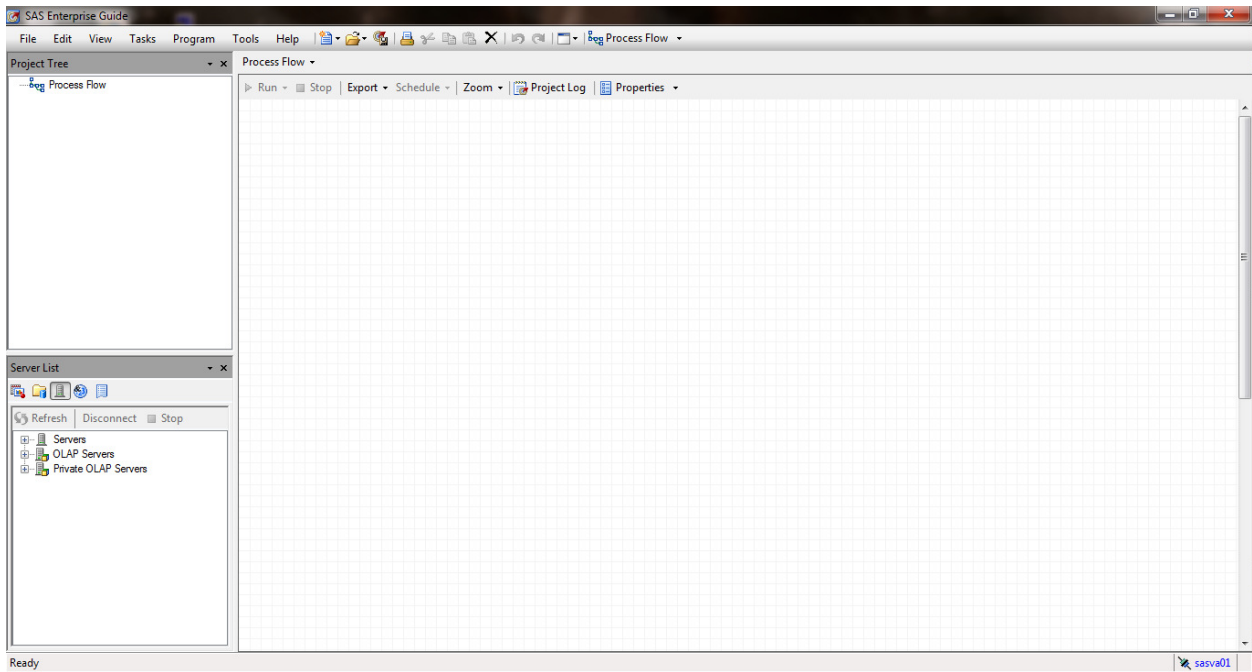


Figure 2. SAS Enterprise Guide Interface

We will now discuss the different components of the SAS Enterprise Guide development interface.

### Project Tree (upper left)

- Lists Process Flows within the SAS Enterprise Guide Project
- Can be used to organize multiple steps of a process (like a driver program including multiple SAS programs)
- Autoexec functionality

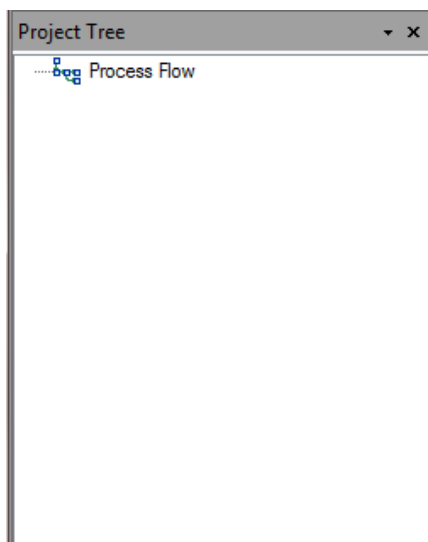


Figure 3. Initial Project Tree

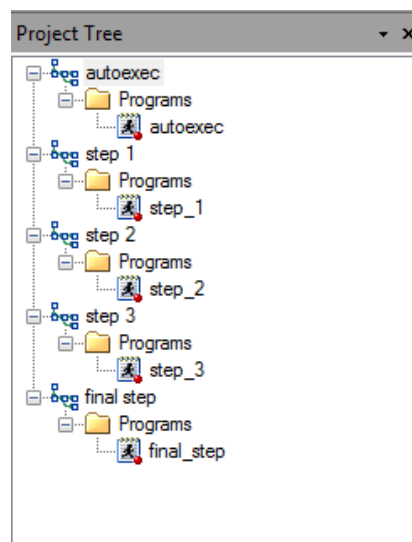


Figure 4. Project Tree with Multiple Process Flows

### Process Flow (right side)

- Contains the Process Flow items
  - Data
  - Programs
  - Tasks
  - Results

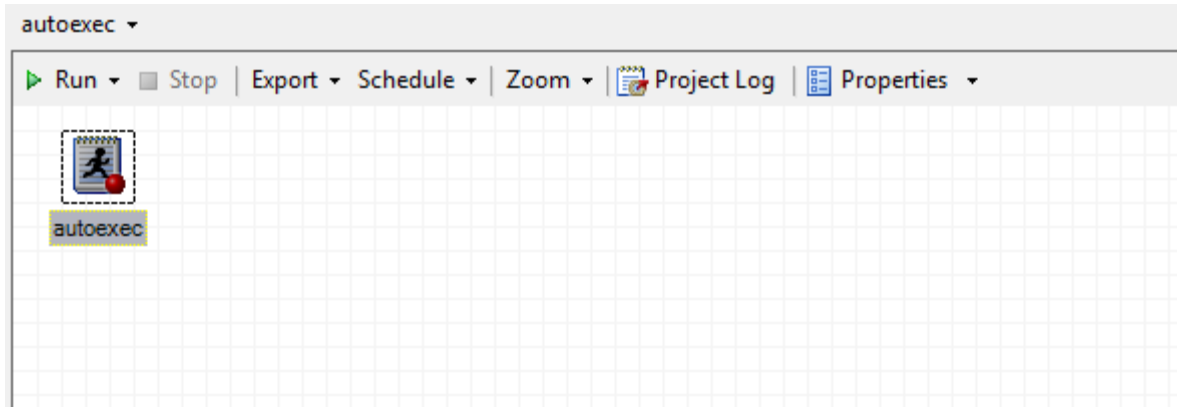


Figure 5. Process Flow

### Resource Pane (lower left)

- Server List (see Figure 6)
- Task List (see Figure 7)
- SAS Folders (metadata)
- Prompt Manager
- Data Exploration History

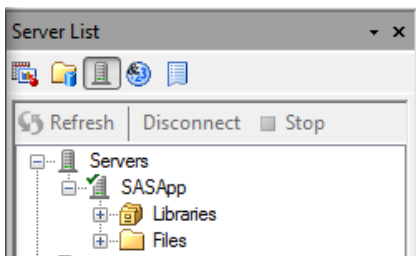


Figure 6. Server List

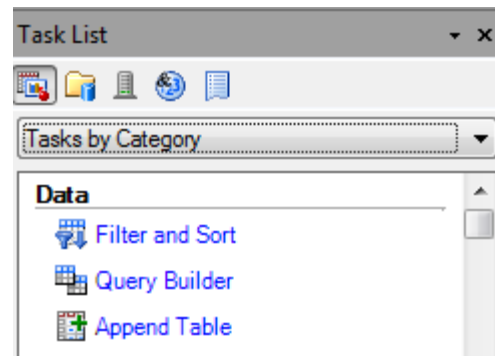
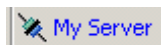



Figure 7. Task List

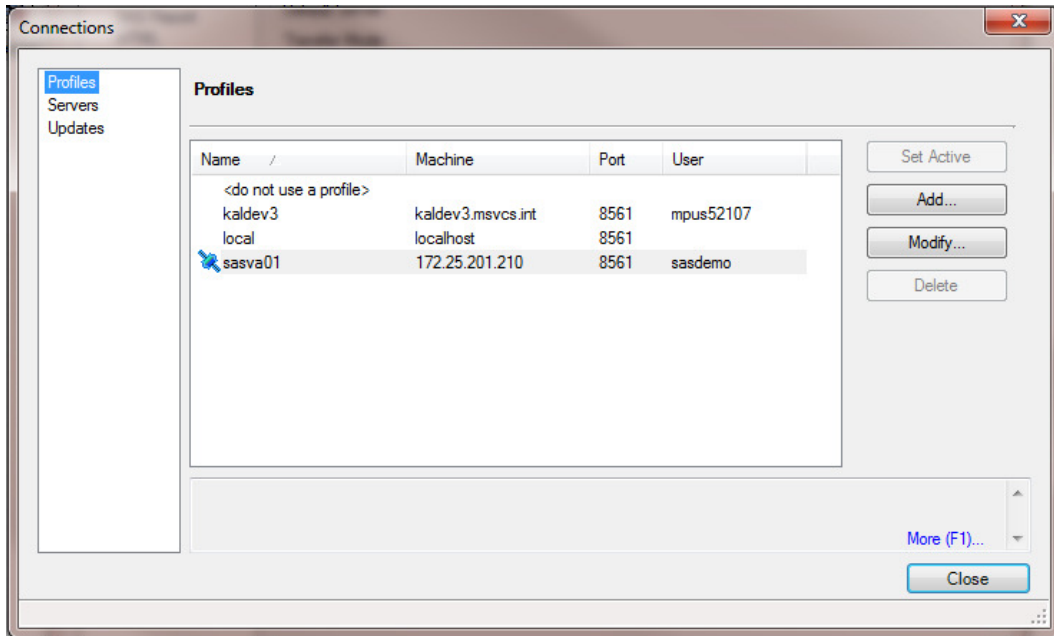
### Current Connection (extreme lower right)



The current connection area shows the SAS Foundation environment that SAS Enterprise Guide is connected to. As stated before, this may be on the local desktop / laptop or a separate server. In the following section, we will discuss connection profiles. If you click on the link next to the  icon, you are taken to your connection profile.

## CONNECTING TO AND SETTING UP YOUR ENVIRONMENT

The first important aspect that you will have to be concerned with when starting to use SAS Enterprise Guide is: "Which SAS Foundation installation will I be leveraging?" Your Connections Window is the place to choose which SAS Foundation installation to use by choosing a profile (see Figures 8 and 9).



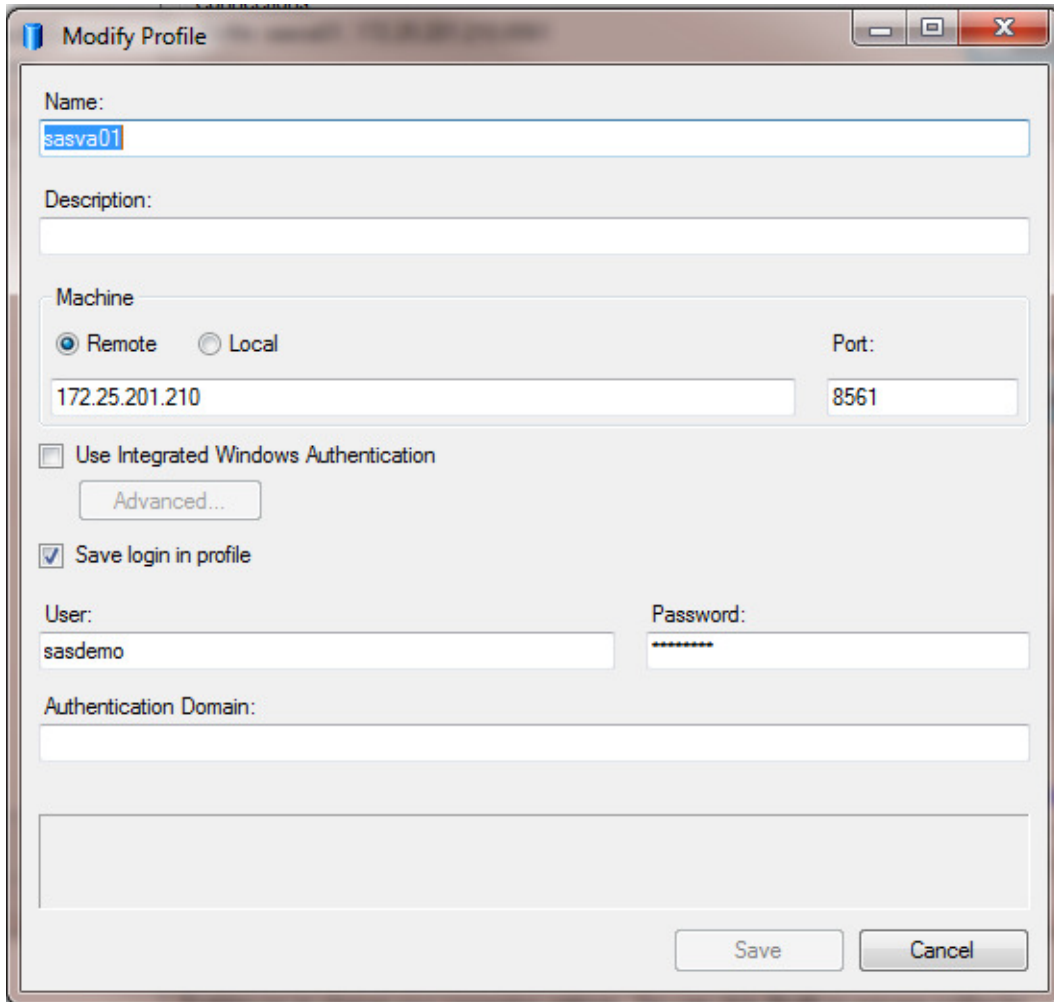
**Figure 8. Connections Window**

Notice the necessary parameters to define a connection.

- remote machine name or IP address
- the SAS Metadata Server port (typically 8561)
- authentication method / credentials for the server

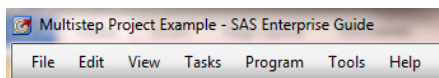
In most environments that use SAS Enterprise Guide, there is a SAS Metadata Server running that acts as a gatekeeper to the environment. It is a SAS layer of security that handles authentication and authorization from the SAS perspective. It complements the operating system and database security, it does not override it.

In order to access a SAS server from SAS Enterprise Guide, you will have to have your SAS Administrator add you as a SAS user. This is accomplished using a separate SAS interface called the SAS Management Console. The SAS Management Console is the application used to manage the SAS Metadata Server.



**Figure 9. Connection Profile Window**

The next aspect that a new user will be interested in will be the options window. The options window is available via the Tools menu along the upper left portion of the SAS Enterprise Guide interface.



**Figure 10. SAS Enterprise Guide Program Menus**

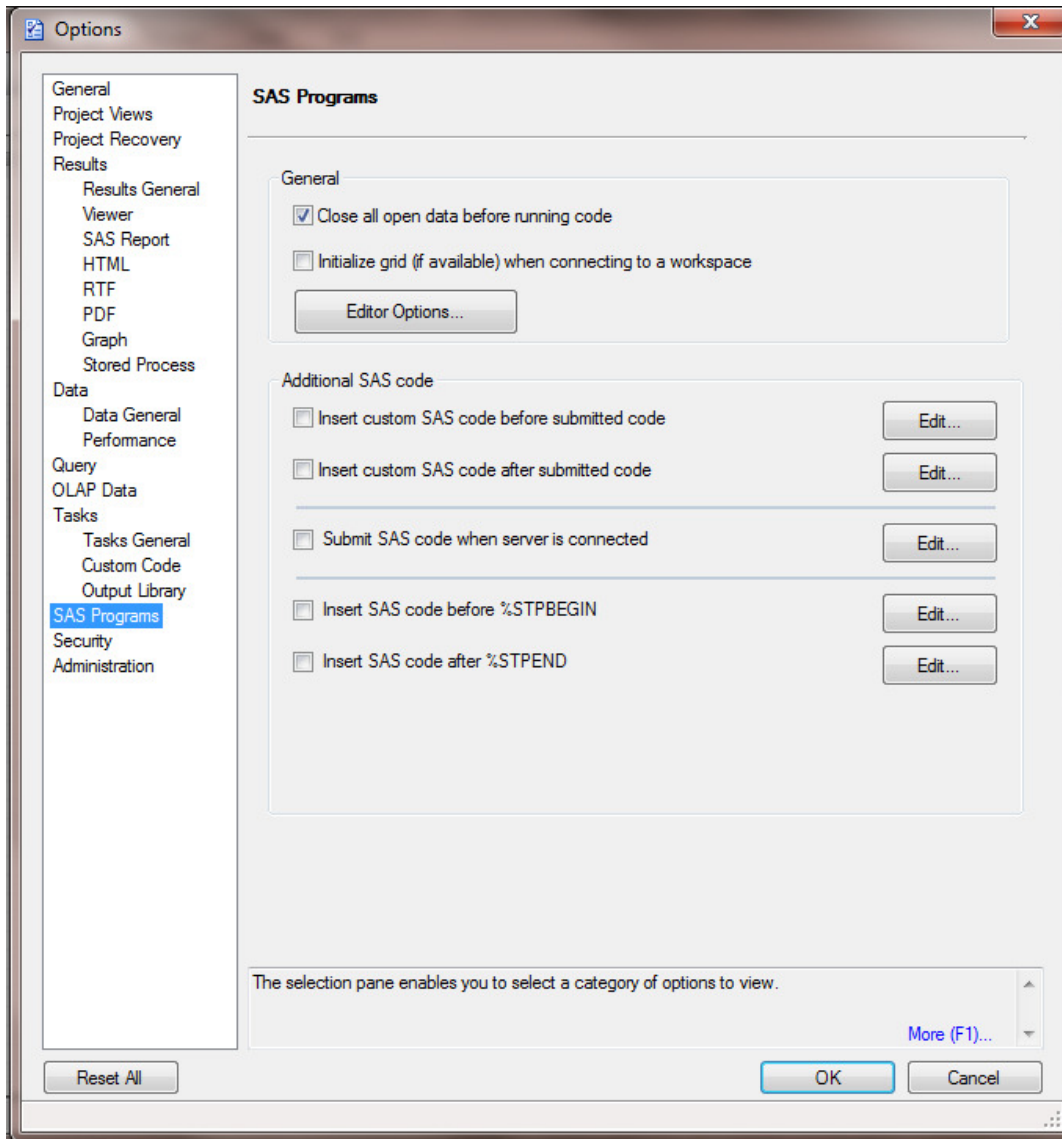


Figure 11. Tools > Options > SAS Programs

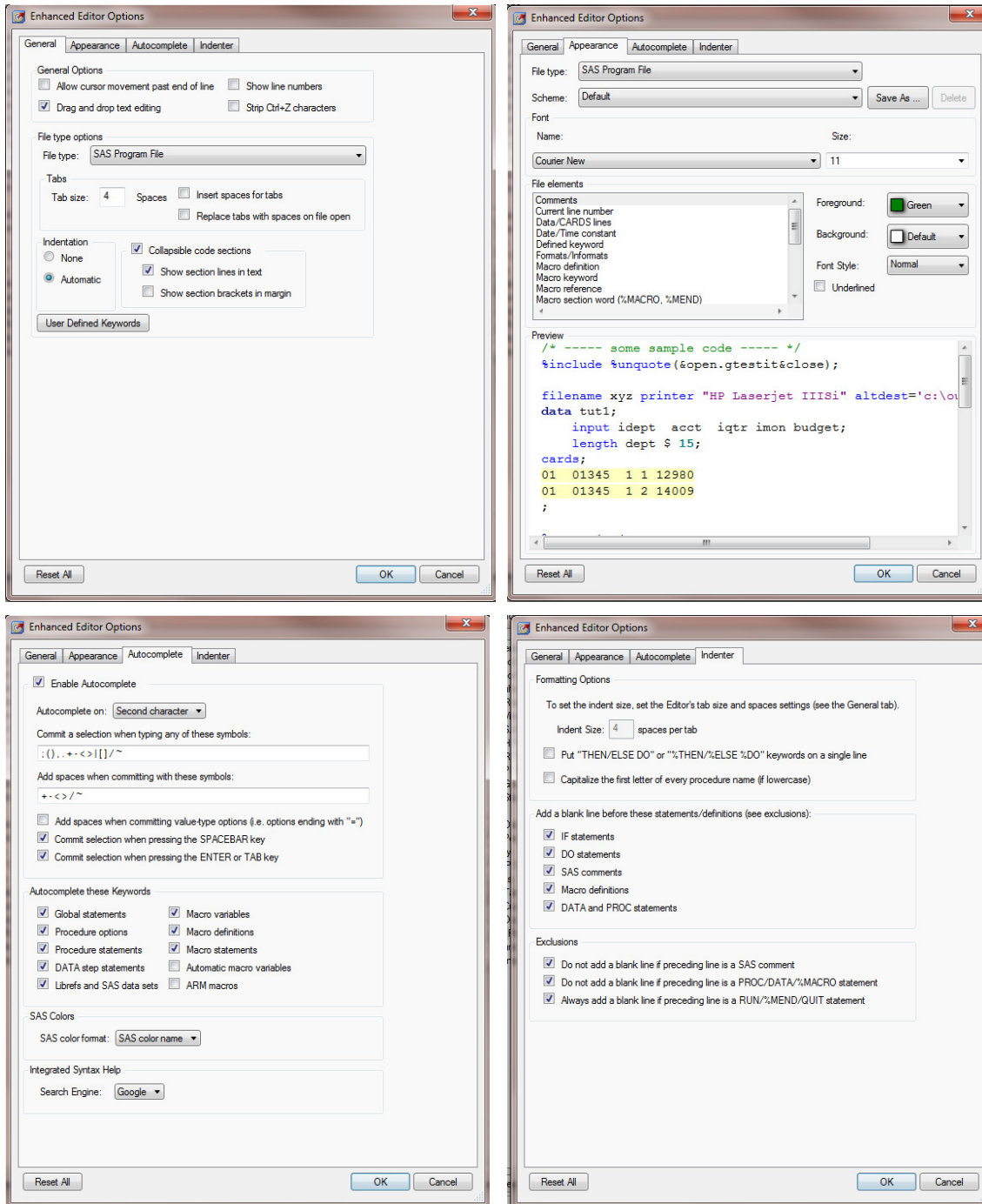


Figure 12. Tools > Options > SAS Programs > Editor Options



## CONFIGURATION OPTIONS

Since SAS Enterprise Guide is leveraging a SAS Foundation installation, the configuration options actually belong to the SAS Foundation installation. If you are connecting to a server, there will be additional layers of configuration options in the SAS Configuration directory. The layers look like this...

### Traditional Layer (Batch and SAS Display Manger)

Base Configuration: \SASHome\SASFoundation\9.3\nls\en\sasv9.cfg

Base Configuration Additional Layer: \SASHome\SASFoundation\9.3\sasv9.cfg

### SAS Application Server Layer (Workspace and Stored Process Server)

SAS Application Server Layer: \config\Lev1\SASApp\sasv9.cfg

SAS Application Additional Layer: \config\Lev1\SASApp\sasv9\_usermods.cfg

### SAS Workspace Server Layer

SAS Workspace Server Layer: \config\Lev1\SASApp\workspaceserver\sasv9.cfg

SAS Workspace Server Additional Layer: \config\Lev1\SASApp\workspaceserver\sasv9\_usermods.cfg

If you are using, SAS Enterprise Guide without a SAS Metadata Server, only the traditional layer of configuration files are used. However, if you are connecting using a SAS Metadata Server, the SAS Application Server layers also come into play.

## AUTOEXEC PROCESSING

Similar to the configuration options, SAS Autoexec processing also has layers.

### Traditional Layer (Batch and SAS Display Manger)

These are optional. The two configuration files in the \SASHome\SASFoundation\9.x\ and \SASHome\SASFoundation\9.x\nls\en\ may or may not define a program to use for SAS Autoexec processing.

### SAS Application Server Layer (Workspace and Stored Process Server)

Additional Layer: \config\Lev1\SASApp\autoexec.sas

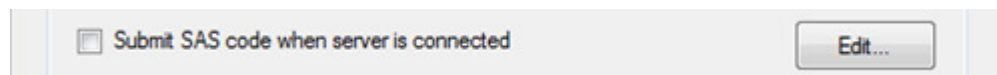
Additional Layer: \config\Lev1\SASApp\autoexec\_usermods.sas

### SAS Workspace Server Layer

Additional Layer: \config\Lev1\SASApp\workspaceserver\autoexec.sas

Additional Layer: \config\Lev1\SASApp\workspaceserver\autoexec\_usermods.sas

In addition, you can have SAS Autoexec Processing defined in SAS Enterprise Guide by placing code in the Tools> Options> SAS Programs > by checking the box and clicking on the Edit button.



Finally, if your first process flow is named "autoexec", the code will run when you open the project automatically (see Figure 4).

## DEFINING SAS LIBRARIES

The SAS libraries in SAS Enterprise Guide are no different than the SAS libraries in traditional SAS programming. They can point at a directory of SAS data sets or RDBMS tables. There are a few methods for defining SAS libraries that are listed below.

- libname statements can be placed in any of the locations mentioned in the above autoexec processing locations. Where you place it, depends on the audience you want the library to have. Some locations may require the SAS Administrator to update.
- libname statements can be in any of your SAS code.
- There is a SAS Enterprise Guide Task for defining a SAS library that can be part of your project
- The SAS Administrator can set up SAS Metadata Libraries

SAS cannot override operating system security or database security.

## CODE VERSUS TASKS

As mentioned previously, you can just open up a program editor window in SAS Enterprise Guide and type in code as you always have. Or you can leverage SAS Enterprise Guide Tasks which are wizards that walk you through the settings and options that you normally code and then SAS Enterprise Guide generates the code for you.

<demonstration during presentation>

## USING PARAMETERIZED PROGRAMS / MACROS / MACRO VARIABLES

Parameterized programs can be handled the same way in SAS Enterprise Guide as with traditional methods. However, SAS Enterprise Guide has the features to give the person running the program a much better experience by using prompts.

Consider the following simple macro definition and macro call.

```
%macro doit(monyear,gender);  
  
%put &monyear.    &gender.;  
  
%mend doit;  
  
%doit(jan2013,M);
```

A SAS user could certainly open SAS Enterprise Guide, open the program, update the macro parameters, and re-run the code.

Another option would be to use the SAS Enterprise Guide Prompt Manager and create a prompt for "month/year" and "gender" parameters.

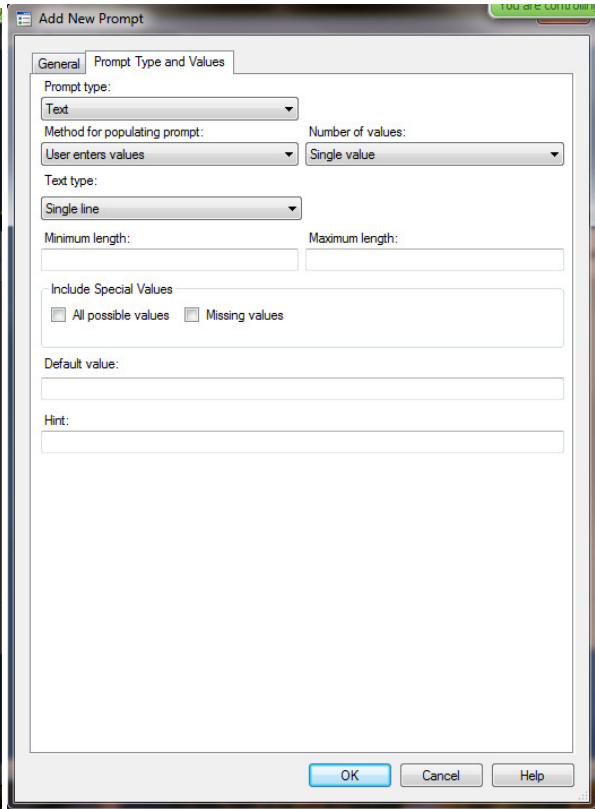
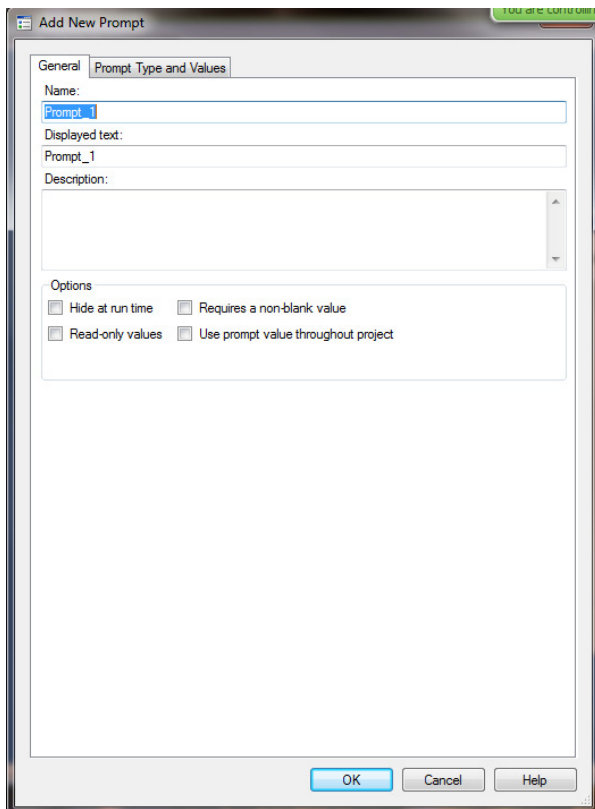
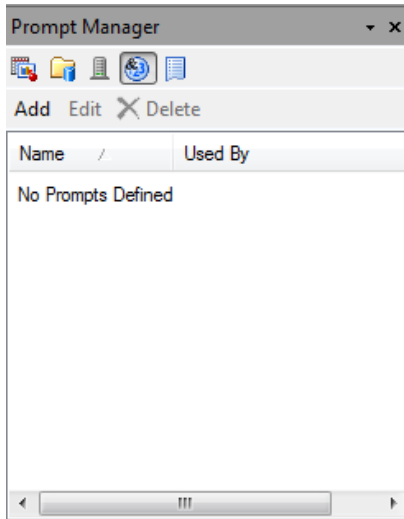
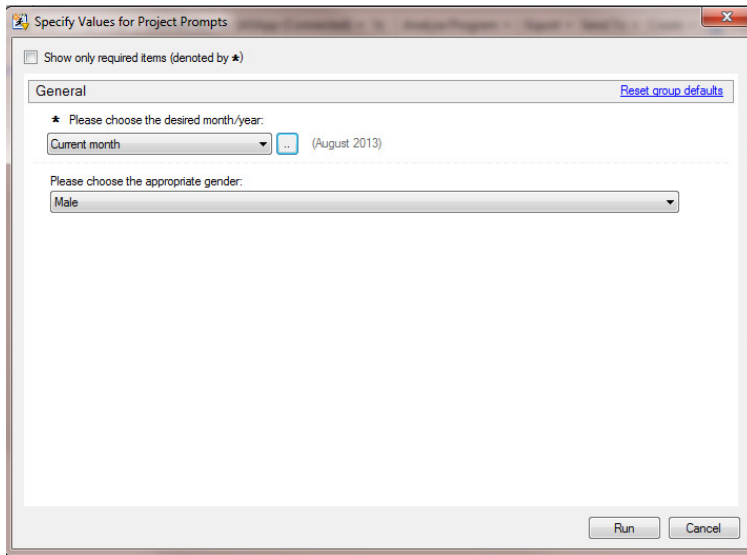


Figure 13. SAS Enterprise Guide Prompt Manager Screens

<demonstration building prompts in presentation>



**Figure 14. Prompts Displayed after Attaching the monthyear and gender prompts to the program**

After running the code `%put _all_;`, we can see that the following global macro variables are now available to use in our code.

```
GLOBAL GENDER M
GLOBAL MONTHYEAR_REL M0M
GLOBAL MONTHYEAR_END 31Aug2013
GLOBAL MONTHYEAR 01Aug2013
GLOBAL MONTHYEAR_LABEL Current month
```

## **CREATING AND USING SAS STORED PROCESSES**

Depending on how you want to share your SAS program or SAS Enterprise Guide project, you may want to build a SAS Stored Process. A SAS Stored Process is merely a SAS program that is registered in the SAS Metadata. SAS Stored Processes can be run from many other SAS BI applications such as the SAS Add-in for Microsoft Office, SAS Information Delivery Portal, SAS Web Report Studio, and SAS Visual Analytics.

<demonstration of creating and leveraging a SAS Stored Process will be in the presentation>

## CONCLUSION

In conclusion, by understanding how SAS Enterprise Guide works as well as the similarities and differences between SAS Enterprise Guide, SAS Display Manager, and Batch SAS processing, you can be more accepting and comfortable in embracing SAS Enterprise Guide.

## RECOMMENDED READING

Any other SAS Global Forum and SAS regional conference papers about SAS Enterprise Guide

<http://support.sas.com> Enterprise Guide pages

The internal SAS Enterprise Guide Help and Tutorial under the Help program menu

## CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

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