

Paper 415-2013

Improving Your Relationship with SAS® Enterprise Guide®

Jennifer Bjurstrom, SAS Institute Inc.

ABSTRACT

SAS® Enterprise Guide® has proven to be a very beneficial tool for both novice and experienced SAS users. Because it is such a powerful tool, SAS Enterprise Guide has risen in popularity over the years. As a result, SAS Technical Support consultants field many calls from users who want to know the best way to use the application to accomplish a task or to obtain the results they want. This paper encompasses many of those tips that SAS Technical Support has provided to customers over the years. These tips are designed to improve your proficiency with SAS Enterprise Guide in the areas of connection and configuration, workflow preferences, logging, data source management, project files, operating-system commands, and custom tasks.

INTRODUCTION

SAS Enterprise Guide users fall into three general categories. There are the users who are unfamiliar with both Base SAS® software and SAS Enterprise Guide. Then there are the users who are very experienced with Base SAS software, but who are unfamiliar with SAS Enterprise Guide. The third type is the experienced SAS Enterprise Guide user. Despite this difference in experience level, all three groups look at SAS Enterprise Guide and ask "What can this product do for me?"

The answer depends on how much experience you have with SAS. Experienced Base SAS software programmers expect SAS Enterprise Guide to be similar in appearance and behavior to the SAS windowing environment. However, they discover that, as a GUI-based application, SAS Enterprise Guide does not work the same way as the windowing environment. Novice users have a number of basic questions. For example, they might not be aware of all the tools that are available in SAS Enterprise Guide to help them manipulate their data. Experienced SAS Enterprise Guide users are very comfortable in the GUI environment but want to enhance their experience with the application.

All three groups look to SAS Technical Support to help them become more proficient in using SAS Enterprise Guide. For novice users, SAS Technical Support consultants are a resource for showing users how to use SAS Enterprise Guide to get the results they want. For experienced Base SAS programmers, SAS Technical Support consultants are experts that can explain the benefits and features of SAS Enterprise Guide and how it might work best for them. For the experienced SAS Enterprise Guide user, SAS Technical Support consultants are mentors who share the latest features and improvements in new releases.

This paper offers time-tested tips to help all levels of users become proficient with SAS Enterprise Guide in the following areas:

- connection and configuration
- workflow preferences
- logging
- data source management
- project files
- operating-system commands
- custom tasks

CONNECTION AND CONFIGURATION

This section provides tips related to questions that you might have about the SAS Enterprise Guide environment, your server connections, and which SAS products you have licensed and installed for use with SAS Enterprise Guide.

ENSURE A CONNECTION TO THE SAS® SERVER

It is important to understand that SAS Enterprise Guide does not function the same way that the SAS windowing environment does. *SAS Enterprise Guide* is a client/server application that runs on top of a SAS server. Although it is not obvious when you first invoke the application, SAS Enterprise Guide must connect to an instance of Base SAS software in order to function properly. The SAS server can be on your local machine, or you can connect to multiple remote SAS servers that run on different platforms.

Users who are just starting to use SAS Enterprise Guide often encounter a common problem. You open SAS Enterprise Guide for the first time, but you find that you cannot connect to a SAS server. Without this connection, you cannot use the application. To compound the problem, it might not be clear to your SAS administrator exactly what the problem is.

To avoid this problem, you can use the SAS® Integration Technologies configuration wizard to test your server connections. On your machine, invoke this utility by selecting **Start ► All Programs ► SAS ► Utilities ► Integration Technologies Configuration Wizard**.

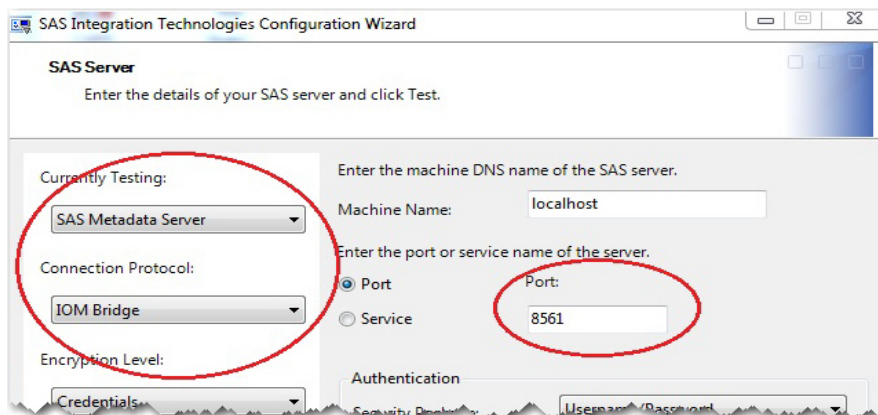
1. In the wizard, select **Test SAS Servers**, as shown below:



This wizard is a handy tool for checking server connections.

2. Click **Next**. Then you can choose to test connections to the SAS servers by entering the server definitions manually, or the utility can retrieve the server definitions from the default SAS® Metadata Server.
3. Select the type of SAS server that you want to test. For SAS Enterprise Guide, the two most important servers are the SAS Workspace Server and the SAS Metadata Server.

SAS Enterprise Guide connects to a remote SAS server using an Integrated Object Model (IOM) bridge protocol. The protocol listens to the workspace server through port 8591 and to the metadata server through port 8561.



- After you enter the other details necessary for connecting to the SAS server (for example, a user ID and password), click **Test** to test the connection to the server that you selected. If the test is successful, the wizard displays a page saying that a connection is established, and it displays details for your SAS server.

REFERENCE AN EXTERNAL FILE IN YOUR PROGRAM

Many experienced SAS programmers who run their programs in the traditional SAS windowing environment often find that their programs no longer work when they move to SAS Enterprise Guide. This problem commonly occurs when SAS Enterprise Guide connects to a remote SAS server and you reference an external file in your program

Consider the following DATA step:

```
data new;
  infile 'C:\sas data\testfile.txt';
  input x y $ z $;
run;
```

This DATA step references a TXT file that resides on your local C drive. If you attempt to execute this DATA step from SAS Enterprise Guide, the program will not execute properly if the SAS server to which SAS Enterprise Guide connects cannot access the location that is specified in the INFILE statement. When this happens, an error similar to the following occurs:

```
ERROR: Physical file does not exist, C:\sas data\testfile.txt.
```

```
NOTE: The SAS System stopped processing this step because of errors.
```

In this case, you need to move the file to a location that the SAS server can access.

Note: For an easy solution to this problem, see the section "The **Copy Files** Task," later in this paper.

If the SAS server does have a drive that is mapped to your local machine, you can use a universal naming convention (UNC) pathname to reference the file, as shown below:

```
data new;
  infile '\\techspt\users\user-ID\dlm files\file1.txt';
  input x y $ z $;
run;
```

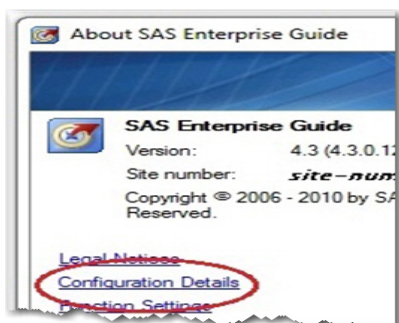
DETERMINE YOUR SERVER AND CONFIGURATION INFORMATION

When you call SAS Technical Support with a problem concerning SAS Enterprise Guide, you need to provide your consultant with configuration information about your environment to help the troubleshooting process. Typically, the consultant needs to know which software applications you have licensed and installed on your SAS server and on which operating system your server is installed. However, it might not be obvious where to find the information. The next two sections explain how to locate your configuration information and, from that, how to determine what operating system you have as well as what applications you have licensed and installed.

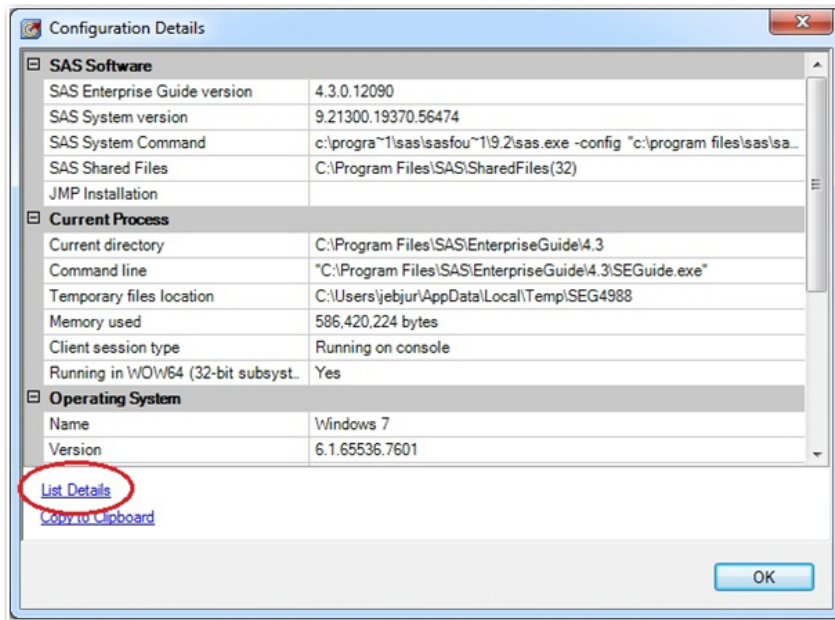
Locating Your Configuration Information

To find your configuration information, follow these steps:

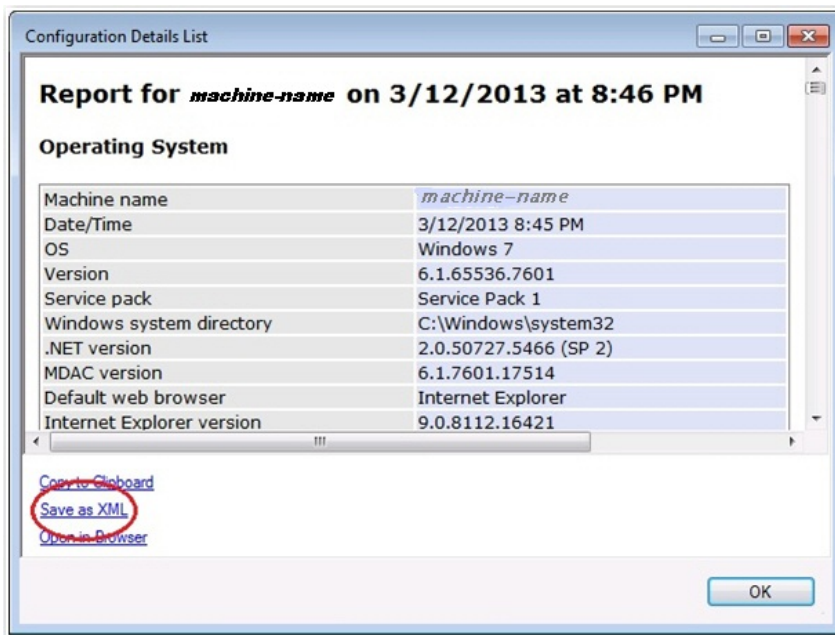
- In SAS Enterprise Guide, select **Help ► About SAS Enterprise Guide**.
- In the About SAS Enterprise Guide dialog box, click the **Configuration Details** link, as shown below:



Clicking the link opens the Configuration Details dialog box, which contains SAS Enterprise Guide release information, the SAS server release information, the directory in which SAS Enterprise Guide is installed, and information about your operating system.



- Click the **List Details** link to open the Configuration Link Details dialog box.



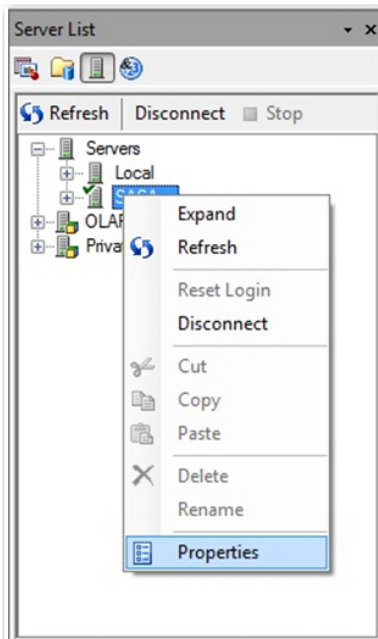
- Click the **Save as XML** link to save the information as an XML file that you can send to SAS Technical Support. Then click **OK** to exit the dialog box.

Determining Your Operating System as Well as Licensed and Installed Applications

Your SAS Technical Support consultant also needs to know on which operating system your SAS server is installed as well as which applications you have licensed on the server.

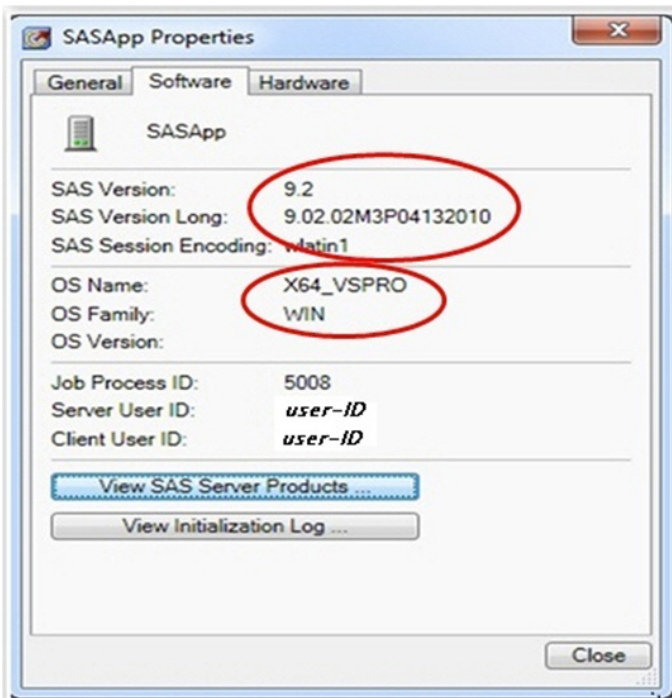
To determine which operating system you are running and which applications are licensed on the SAS server, follow these steps:

1. In the SAS Enterprise Guide **Server List** window, right-click your server name and select **Properties**.

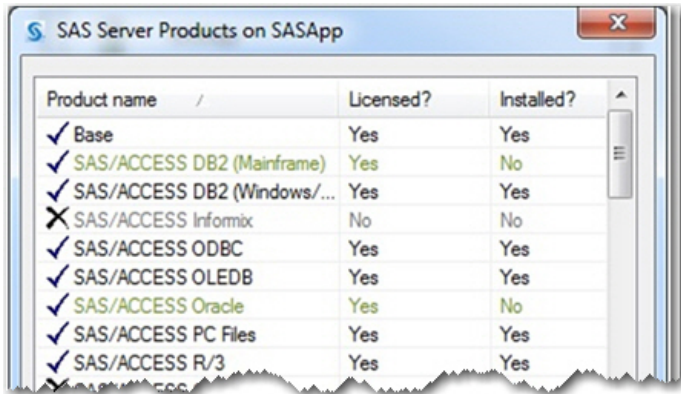


Selecting **Properties** opens the SASApp Properties dialog box.

2. In the SASApp Properties dialog box, click the **Software** tab. Your release of SAS and the operating system on which your SAS server is installed are both listed on this tab, as shown below.



- Next, click the **View SAS Server Products** button to see a list of the applications that you have licensed and installed on the server. Click **Close** to exit the dialog box.



REDIRECT YOUR TEMPORARY (TMP) DIRECTORIES

SAS Enterprise Guide connects to a SAS server, and therefore, just like Base SAS software, it uses temporary files during processing. These temporary files are stored in a location that is defined in the SAS server's configuration file. For example, when you import an external file, SAS Enterprise Guide sends the cleansed delimited file to a temporary location on the SAS server. Any database tables that need to be processed on the SAS server are also stored in this temporary location. If the temporary files are very large or if many temporary tables are generated while users are running projects, you can run out of disk space and experience errors during processing.

To avoid this issue, your SAS administrator can redirect the location of these temporary files to a location that contains more available space. The path that SAS Enterprise Guide chooses is dependent on the environment variable !TEMP. You can change the location of the !TEMP environment variable by editing the SAS Enterprise Guide configuration file. The TMP variables that are set in the SAS Enterprise Guide configuration file only affect SAS Enterprise Guide. All other applications use the default values for the TMP and TEMP variables that are set by the operating system. For more information about how to redirect the TMP directories that are used by SAS Enterprise Guide, see the "Recommended Reading" section later in this paper.

WORKFLOW PREFERENCES

This section covers the most popular options to help you customize your SAS Enterprise Guide workspace and enable you to use the application in the most efficient way.

USE OPTIONS TO CUSTOMIZE SAS® ENTERPRISE GUIDE®

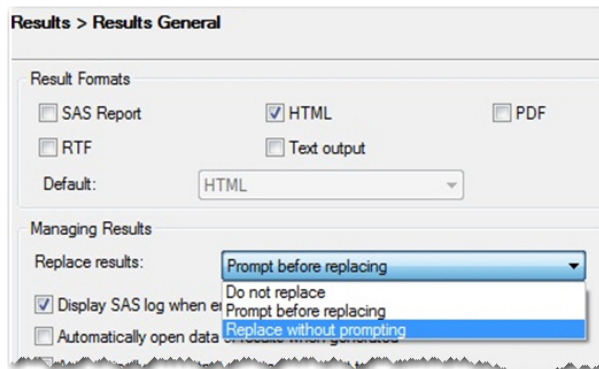
Once you start using SAS Enterprise Guide on a daily basis and become comfortable with the application, you might have questions about how to work more efficiently. One way to increase your efficiency with the application is to take advantage of available options that enable you to customize SAS Enterprise Guide. To see a list of available options, select **Tools ► Options** in the SAS Enterprise Guide interface. SAS Technical Support highly recommends that you take the time to familiarize yourself with all of the options that are offered in the application.

The following sections discuss how to set a few of the options that garner the most questions from SAS Enterprise Guide customers.

Enabling the Option to Automatically Replace Results for Resubmitted Tasks, Queries, or Programs

When you resubmit a task, query, or program in SAS Enterprise Guide, the application prompts you as to whether you want to replace the original results. Rather than being prompted, users prefer that the application replace the results by default. To do that, you need to set the **Replace without prompting** option, as follows:

1. In SAS Enterprise Guide, select **Tools ► Options ► Results ► Results General**.

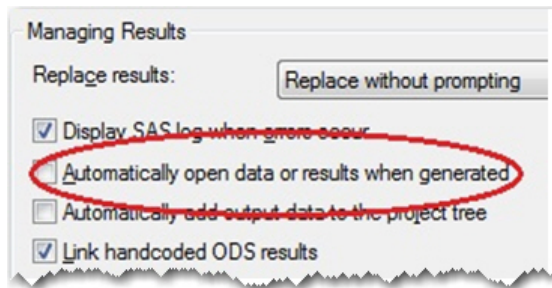


2. Under the **Managing Results** section, select **Replace without prompting** from the **Replace results** list. Then click **OK** to Results General pane.

Disabling the Option to Automatically Open Generated Data or Results

Generating output data or results that are very large can affect performance in SAS Enterprise Guide. To avoid performance issues, you can disable the option that automatically opens your data or results when they are generated. To deselect this option, follow these steps:

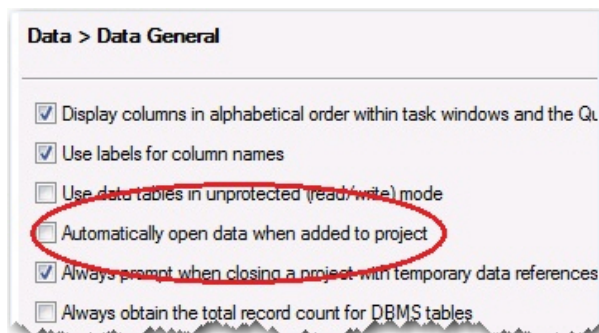
1. Select **Tools ► Options ► Results – Results General**.
2. In the **Managing Results** section, deselect the option **Automatically open data or results when generated**, as shown below. Then click **OK** to close the Results General pane.



Disabling the Option to Automatically Open Data When It Is Added to a Project

In a situation similar to the one described above, performance can be affected when you query or otherwise work with large input data. To avoid this situation, disable the option **Automatically open data when added to project** by following these steps:

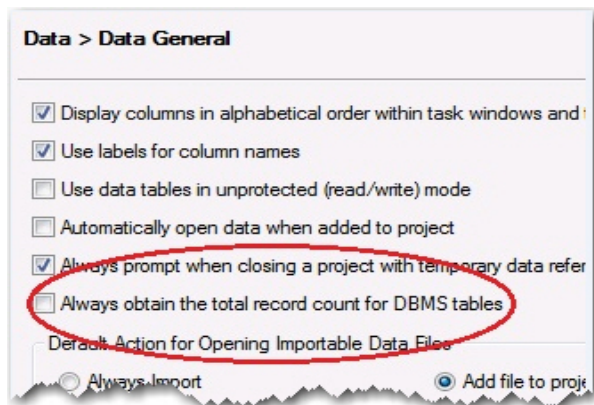
1. Select **Tools ► Options ► Data ► Data General** to open the Data General pane.
2. Deselect the option **Automatically open data when added to project** as show below. Then click **OK** to close the Data General pane.



Disabling the Option to Obtain the Total Record Count for DBMS Tables

When you open a large database management system (DBMS) table in SAS Enterprise Guide, you might notice that the table takes a while to open. Most likely, this slow performance occurs because SAS Enterprise Guide is determining the total record count when you open a DBMS table.

1. To help improve performance, disable the option **Always obtain the total record count for DBMS tables** by following these steps: Select **Tools ► Options ► Data ► Data General**.
2. Deselect the **Always obtain the total record count for DBMS tables** option, as shown below. Then click **OK** to close the pane.



RUN AUTOEXEC PROCESS FLOWS

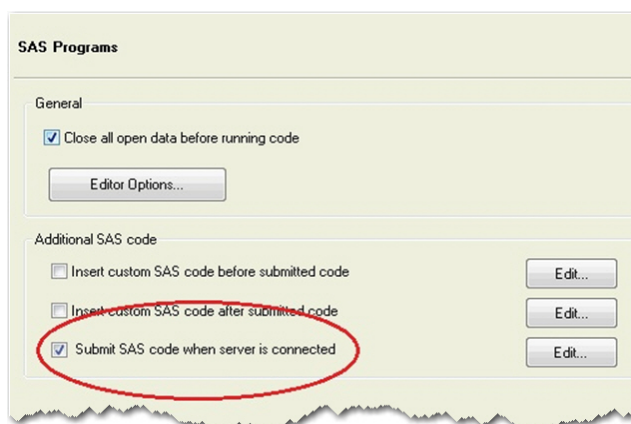
You might need to execute certain SAS statements every time you invoke SAS Enterprise Guide in order to set up your working environment. For example, you might want to define libraries, submit ODS statements, or define custom macros. However, running all of the programs each time you open a project can be cumbersome and time consuming.

Running Autoexec Statements in SAS® Enterprise Guide®

In SAS Enterprise Guide 4.1, you can add your code to a file named called EGAuto.sas. With this file, your code is submitted when SAS Enterprise Guide first connects to the SAS server. In SAS Enterprise Guide 4.2 and later, there is no EGAuto.sas file. Instead, you use the option **submit SAS code when server is connected**.

To enable this option, follow these steps:

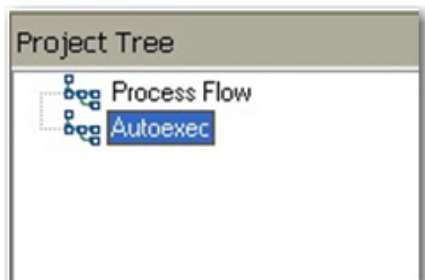
1. Select **Tools ► Options ► SAS Programs**.
2. In the **General** section of the pane, select the option **Submit SAS code when server is connected**.



3. Then click the **Edit** button to open an editor window, where you can add your code statements.

This particular option functions more like a global option in that no matter what project you are working with, all of the statements that you add to the **Submit SAS code when server is connected** option are submitted whenever SAS Enterprise Guide connects to a server.

In SAS Enterprise Guide 4.3, another method is available if you have code statements that you want to submit only within a particular project. Projects can contain multiple process flows. Therefore, you can create another flow named **Autoexec** and add any code, tasks, or macros that you want to run before to the rest of the project. To create the flow, select **File ► New ► Process Flow**. By default, the new process flow is named **Process Flow 1**, but you can right-click the new flow in the **Project Tree** and rename the flow **Autoexec**.

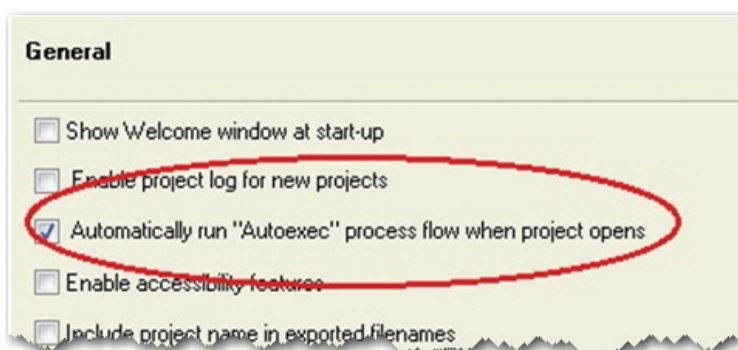


SAS Enterprise Guide recognizes this special process flow in a project, and by default, you are prompted as to whether you want to run the flow.

Running an Autoexec Process Flow Automatically in SAS® Enterprise Guide® 4.3

If you have an Autoexec process flow in a project, you can set an option that runs the flow automatically. To set this option, follow these steps:

1. Select **Tools ► Options ► General**.
2. In the **General** section of the pane, enable select the option **Automatically run "Autoexec" process flow when project opens**. Then click **OK** to close the pane.



LOGGING

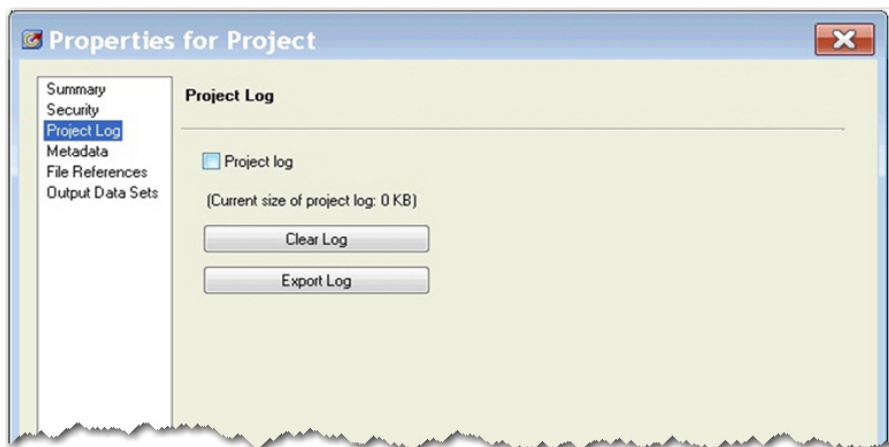
This section helps answer the two most common questions that SAS Technical Support consultants receive about SAS Enterprise Guide logging.

USE A PROJECT LOG

Experienced Base SAS programmers are used to having a log file in Base SAS software that shows results in real time as their programs run. However, logging is a different in SAS Enterprise Guide. SAS Enterprise Guide has a log for each task, program, or query. Each time that you run a task, code, or a query, the log file is overwritten (as opposed to appending the new information to the previous log). However, you can enable a project log that shows a complete log of all activity for the entire project.

To enable the project log, follow these steps:

1. Select **File ► Project Properties** to open the Properties for Project dialog box.
2. In the **Project Log** section, select **Project Log** to enable logging. You can also choose to clear or export the project log from this location.

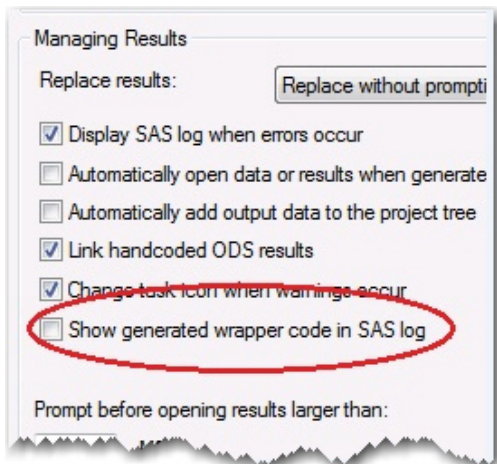


DECLUTTER YOUR SAS LOG

When you work in SAS Enterprise Guide, a lot of extraneous, wrapper code that is generated by the application is written to the log file in addition to the actual code that you submit. This extra wrapper code includes ODS statements, %LET statements, and any other code that is automatically generated by SAS. The extra code clutters the log, making it more difficult to read.

You can choose not to show the extra code in the log by following these steps:

1. Select **Tools ► Options ► Results ► Results General** to open the Results General pane.
2. In the **Managing Results** section, deselect the option **Show generated wrapper code in SAS log**. Then click **OK** to close the Results General pane.



DATA SOURCE MANAGEMENT

This section illustrates how you can best work with different data sources in a project, whether it's an external data file, a SAS data set, or a database table.

CHANGING THE INPUT DATA SOURCE

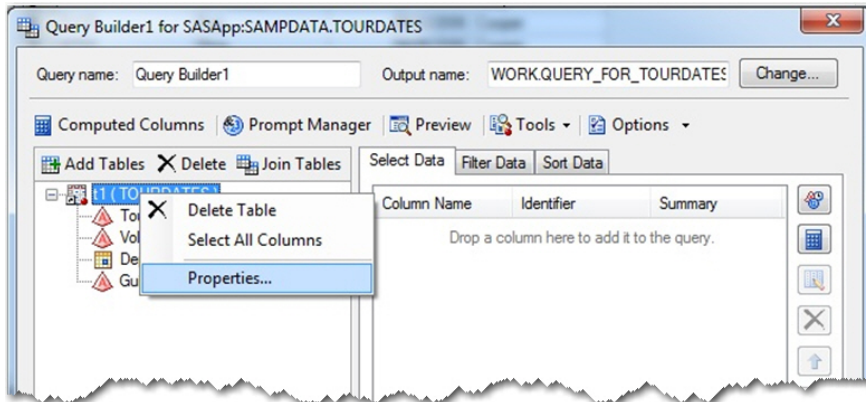
As you work in SAS Enterprise Guide and create your projects, you might have a process flow consisting of tasks and queries that gives you the results you want, based on a particular input data source. But suppose that you want to

use a new data source as input, and you do not want to re-create the entire process flow again. You can do that by changing the data source for a query or task, as explained in the following sections.

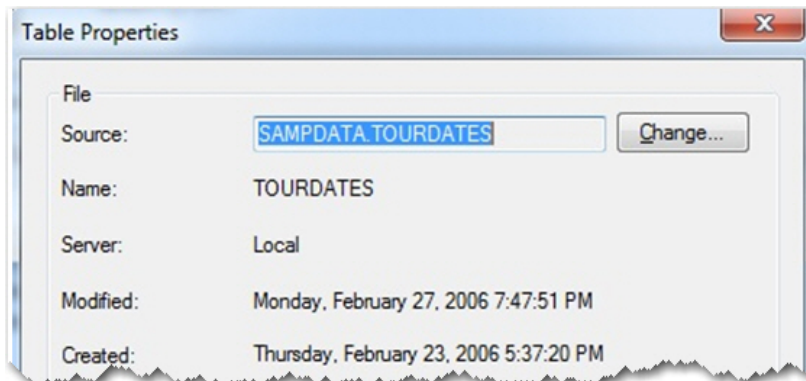
Changing the Input Data Source for a Query

You can change your input data source from the Table and Joins window that is available from the SAS Enterprise Guide Query Builder, as follows:

1. In the Query Builder, right-click the table header and select **Properties**.

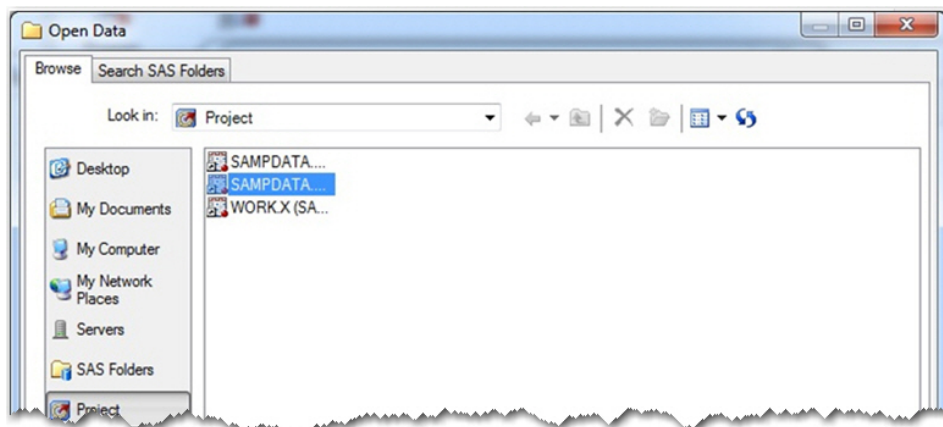


2. In the Table Properties dialog box, click the **Change** button next to the table name.

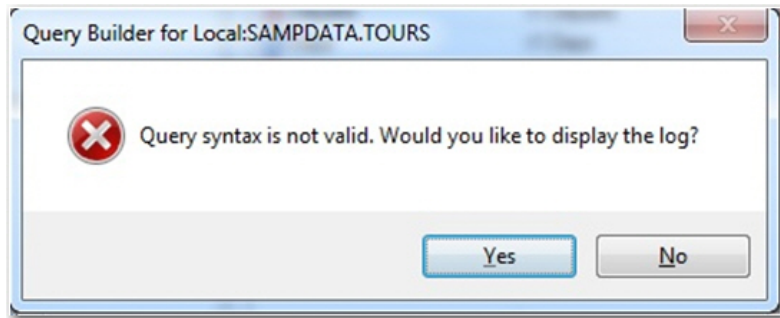


This selection opens the Open Data dialog box.

3. In the Open Data dialog box, browse to the location of the new table that you want to use in the join. Then click **Open** at the bottom of the dialog box.

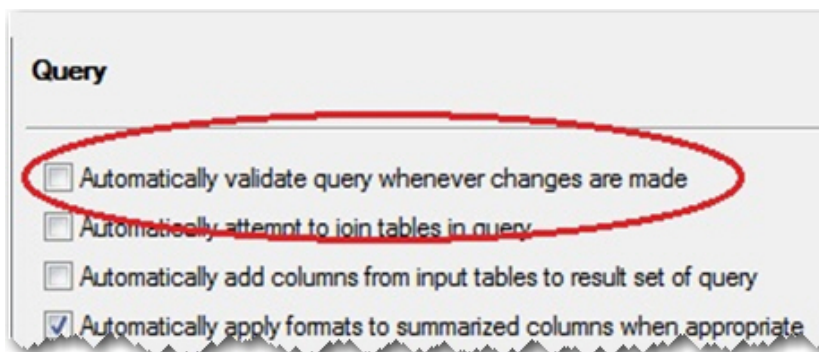


After you change the input data source, the Query Builder attempts, by default, to validate the query syntax, even if you have not yet submitted the query. As a result of the data source change and validation, you might see an error similar to the following:



You can prevent this error, as follows:

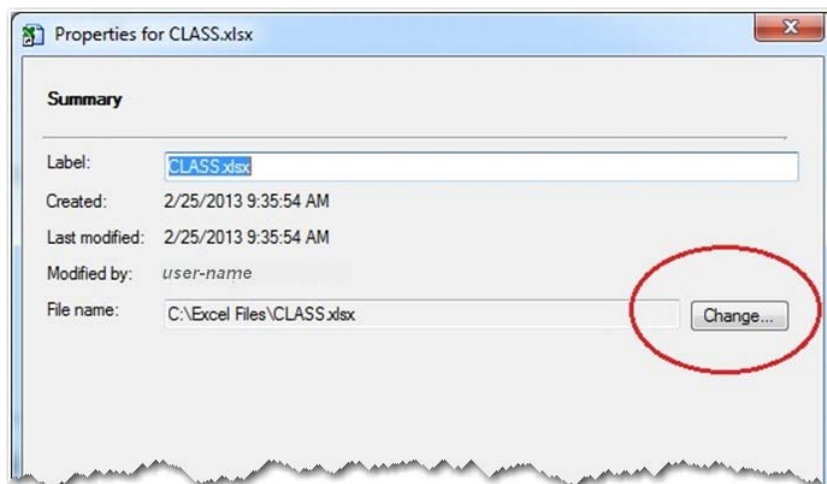
1. Select **Tools ► Options ► Query** to open the Query option pane.
2. In the pane, deselect the option **Automatically validate query whenever changes are made**.



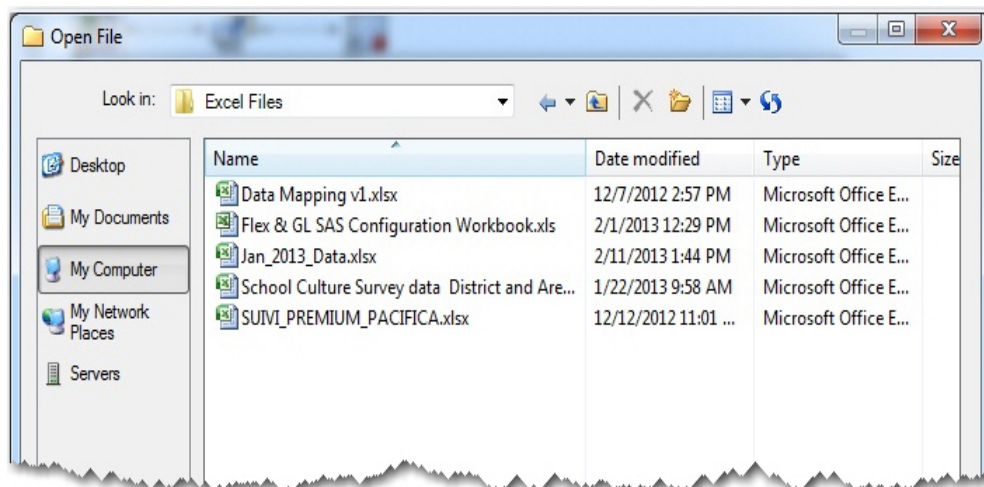
Changing the Data Source for the Import Data Task

At times, you might import a Microsoft Excel file into your project and use the resulting data set to create a particular report. But suppose you want to create the report using a new Excel file with the same structure as your original Excel file but that contains new data. Rather than creating a new branch in the process flow, you need to change the data source for the **Import Data** task, as follows:

1. Right-click the file icon in your process flow and select **Properties** to open the properties dialog box for your file, as shown in this example:



2. In the dialog box, click the **Change** button (shown in step 1) to open the Open File dialog box.



3. Select the new Excel file that you want to import. Then click **Open** to add the new file path to the File Properties dialog box.
4. Click **OK** to close the File Properties dialog box.

USE THE EXPLICIT PASS-THROUGH QUERY OPTION TO QUERY DATABASE TABLES

A common task that users perform with the Query Builder is to query data that is stored in relational databases such as Oracle, DB2, Teradata, and Netezza. Traditional SAS programmers often use the SQL procedure to query the database in order to use SAS/ACCESS® software to move the data back into SAS. You can accomplish this task by using either of two methods: implicit pass-through processing (using a LIBNAME engine that corresponds to the relational database) and explicit pass-through processing.

When you use the LIBNAME engine (implicit pass-through processing), you write SAS programs and refer to the database tables as if they are SAS tables. SAS builds an SQL query and passes it to the database server. When you use implicit pass-through processing, SAS attempts to generate a query that enables the database server to do most of the work. However, not all SAS syntax can be converted to DBMS-specific syntax. When you use syntax that is specific to SAS, the query cannot be passed to the database. Instead, SAS Enterprise Guide copies the database table to the SAS server for processing, which is inefficient.

To ensure that your query is always sent to the database for processing, you should use the explicit pass-through method. Using this method, you write the DBMS-specific query in your SAS program, and the query is passed as is to the DBMS server.

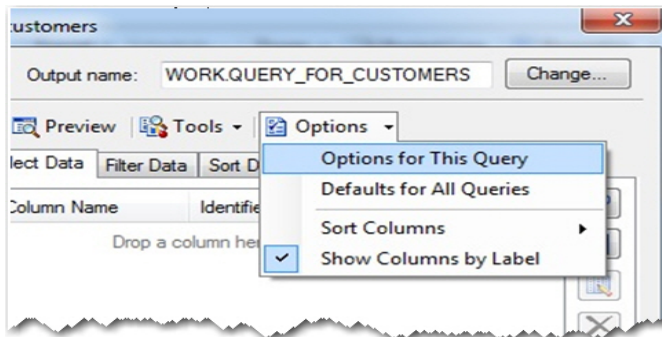
The following SQL procedure illustrates how to use the explicit pass-through method:

```
proc sql;
    connect to odbc(dsn=data-source-name user=user-ID pw=password);
    create table sasuser.test as select * from connection to odbc
        (select * from....rest of query);
quit;
```

In releases of SAS Enterprise Guide prior to 4.3, the Query Builder always uses implicit pass-through processing. However, SAS Enterprise Guide 4.3 offers a new option to generate explicit pass-through code in the Query Builder. With this new option, the code is processed on the database server rather than on the SAS server.

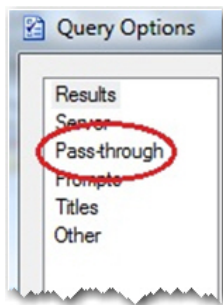
To access this new option, follow these steps:

1. In the Query Builder, click the **Options** menu and select **Options for This Query**.

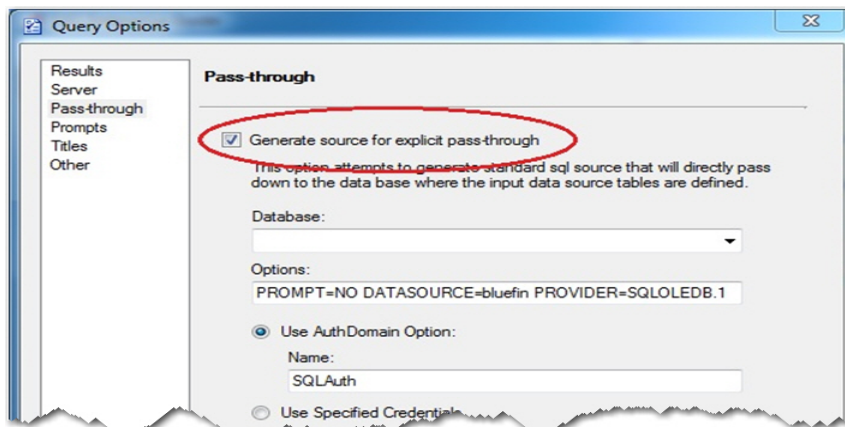


This action displays the Query Options dialog box.

2. Select **Pass-through**. This action displays pass-through options in the right pane.



3. Select the option **Generate source for explicit pass-through**. You can also enter any other options necessary for explicit pass-through processing (for example, the database name, user ID, and password).



Many users are interested in learning more about the new explicit pass-through option in the SAS Enterprise Guide Query Builder. It is important to understand that the Query Builder is designed to work with many different databases, so it does not recognize options that are specific to a particular database. When you use the **Pass-through** option in the Query Builder, the builder tries to automatically detect the options from the metadata that you need for the **CONNECT TO** statement. If your library is configured with information that does not work in PROC SQL, the Query Builder cannot determine which options are valid.

In the case where the metadata does not provide sufficient or correct information for the **CONNECT TO** statement, you need to specify your own connection information in the dialog box. Alternatively, administrators are encouraged to define a library in metadata with the correct options that will be used specifically with the explicit pass-through option.

PROJECT FILES

This section details how to work with your projects in the most efficient manner in the following areas: organization, layout, backups, and scheduling.

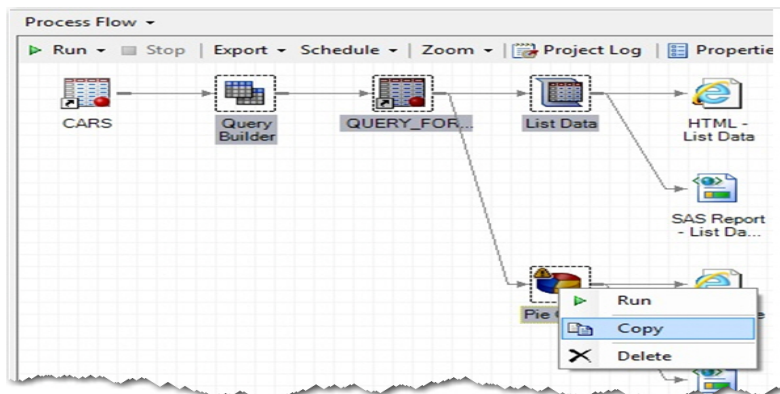
ORGANIZE YOUR PROJECTS

This section illustrates how you can better organize your SAS Enterprise Guide projects to help you work more efficiently.

Using Multiple Process Flows in a Project

Projects can become messy very quickly. For example, in a complex project, it can become difficult to find a particular task, query, or program in the flow without doing a lot of scrolling. You can alleviate this problem by using multiple process flows to break up the large flow. To create new flows from a larger flow, select **File ► New ► Process Flow** from the main SAS Enterprise Guide window. You can also rename each flow to something meaningful, and you can order the process flows in the **Project** tree so that they run in the order that you want.

If you are already working with a complex project, you can cut and paste icons from the larger flow into the new process flow.



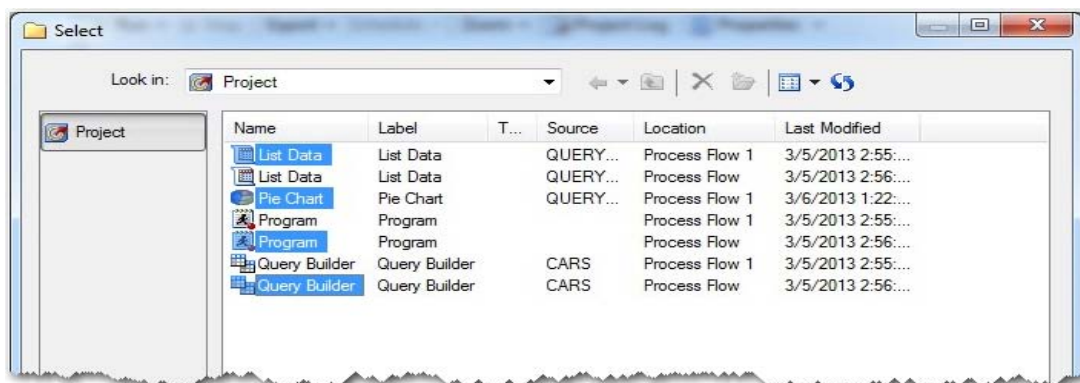
From the original process flow, press and hold the Ctrl key while you click each task node that you want to copy.

Note: You cannot copy results icons.

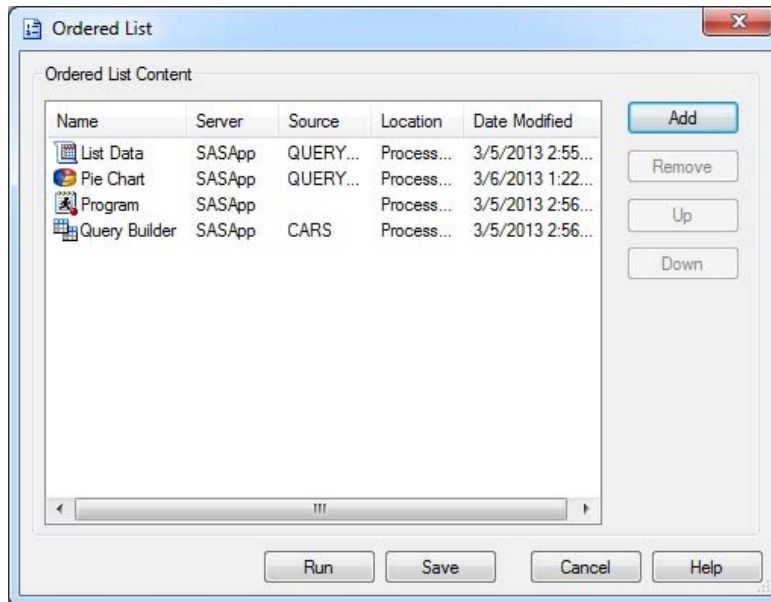
Using Ordered Lists

In a project that contains multiple process flows, where each process flow contains many branches, you might want certain tasks and programs to run in a particular order. However, these items might not be linked, and you do not want to have to change their positions in the flow or their relationships to one another. The solution is to create an ordered list, as follows:

1. Select **File ► New ► Ordered List** to open the Ordered List dialog box.
2. Click the **Add** button to open the Select dialog box. You can select tasks that are contained in the project to include in your ordered list, as shown below.



- Click the **Open** button to display the Ordered List dialog box.



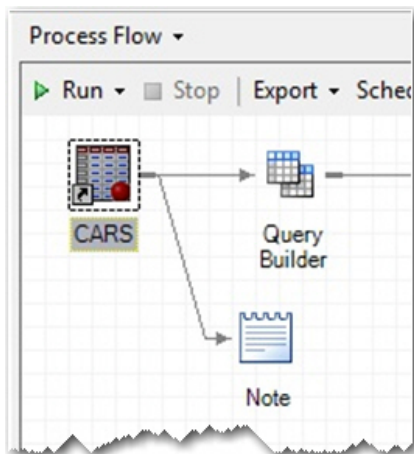
- Click **Save** to save the ordered list, or click **Run** if you want to execute the list.

Making Your Process Flow More Descriptive

If you share projects with multiple users, you might find that the default names given to each item are not clear and that you have to open an item to determine its purpose. To solve this problem, ensure that the names of your process flows, programs, and queries are sufficiently descriptive and use descriptive notes for the items. These steps make your projects more beneficial for you and others who use your projects.

To create descriptive notes, follow these steps:

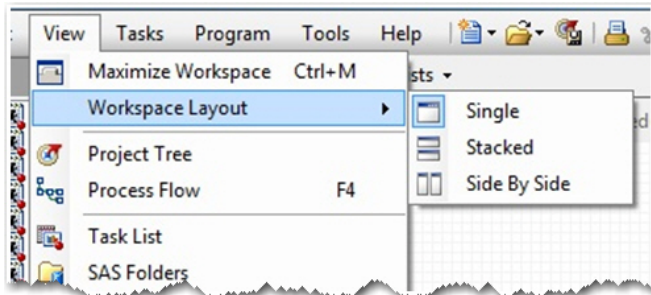
- Select **File ► New ► Note**, or right-click the process flow and select **New – Note** to open the Process Flow editor.
- Enter your descriptive comments. The note is saved as part of the project, as shown below.



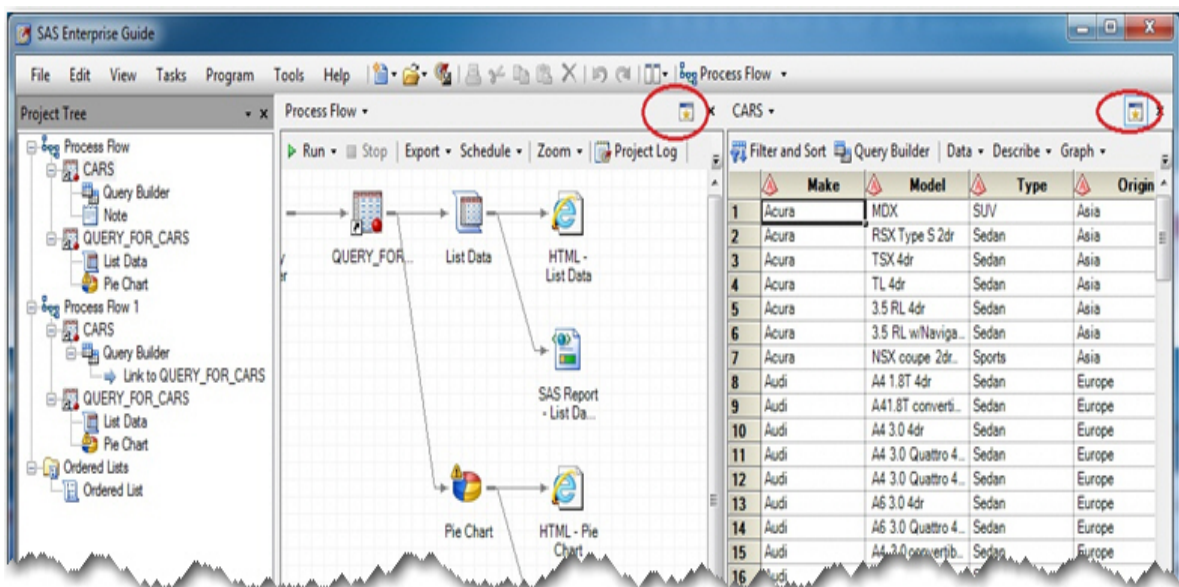
CUSTOMIZE YOUR WORKSPACE LAYOUT

In SAS Enterprise Guide, the workspace is the main area in which you can view your data, tasks, queries, and results. By default, the workspace layout displays only one item from the project at a time. However, you can customize the layout to suit your personal preferences. For example, you might prefer to see the contents of a data set at the same time that you are viewing the entire process flow. Or perhaps you want to see the program code paired with the results of that same program.

To customize your workspace, select **View ► Workspace Layout**. By default, the workspace layout is defined with the **Single** selection. You can then choose either **Stacked** or **Side By Side**.



Either selection results in two workspaces. You can open specific content from the process flow to separate windows. When you open an item from the project, you can specify the particular workspace area in which to open it by clicking the active workspace icon in the top right corner of that area, as shown below.



BACK UP YOUR PROJECTS

Unfortunately, project corruption sometimes happens quite unexpectedly. Many factors can contribute to project corruption. For example, corruption can occur as a result of creating very large projects. A project might also be corrupted if a server disconnects while the project is open. In such cases, it is difficult for SAS Technical Support to replicate the cause of the corruption in order to solve the problem.

To guard against project corruption, **the most important step you can take is to back up your projects frequently**. It also helps if you can create smaller projects. There are also ways to recover items in a project or even to repair the project.

Because project files (which have an extension of .egp) are a form of ZIP file, you can use third-party software to repair the file. You change the project extension from .egp to .zip. Then repair the file, change the extension back to .egp, and try to open the file again in SAS Enterprise Guide.

If you are unable to repair the project file, change the file extension .egp to .zip and open the ZIP file with Microsoft WinZip. From there, you can see individual pieces of your project; for example, code nodes, logs, results files, and GIF files. You can recover the program files by extracting them with the WinZip tool.

Warning: While you can attempt to repair your project on your own, as described above, SAS Technical Support does not recommend that you do so. If you do attempt your own repair, be aware that SAS is not responsible for any problems that might occur as a result.

SCHEDULE YOUR PROJECTS

SAS Enterprise Guide uses the Microsoft Windows Task Scheduler to schedule a project so that it runs in batch mode. The following sections explain caveats to help ensure that your job is scheduled correctly, and it explains how to schedule your projects.

Verifying Microsoft Windows and Metadata Credentials

Before you schedule your job, take care of the following items. Doing so will help ensure that your job is scheduled successfully.

- The Windows user ID that you use to schedule the project must have administrative rights; in particular, it must have **Log on as a batch job** user permission. A Windows user needs to be able to access the Windows Task Scheduler and to execute Visual Basic script files outside of SAS Enterprise Guide.
- Metadata credentials must be cached in the user's connection profile. To verify that this is true in SAS Enterprise Guide, follow these steps:
 1. Select **Tools ► Options** to open the **Options** pane.
 2. Under the **Administration** section, click the **Modify** button to open the Connection dialog box.
 3. In the dialog box, select the active server, and click **Modify**. This action opens the Modify Profile dialog box. Make sure that the **Save login in profile** selection is checked.
 4. Click **Save**, and then click **Close** to exit the dialog box.
- User credentials must persist throughout the SAS Enterprise Guide session. To verify that your system is set for credentials to persist:
 1. Select **Tools ► Options** to open the **Options** pane.
 2. Under the **Security** section, verify that **Credentials Persistence** is set to **Persist during EG session**.
- Because SAS is not usually installed on the same machine as SAS Enterprise Guide, you might need a credentials.xml file. For more information about the credentials.xml file, see "Recommended Reading," later in this paper.

Scheduling Your Project

To schedule a project, follow these steps:

1. Select **File ► Schedule** to open the Schedule – Project dialog box.
2. On the **Task** tab, click the **Set Password** button. Then enter and confirm your password in the Set Password dialog box.
3. Next, click the **Schedule** tab and enter the appropriate information. The Windows Task Scheduler uses this information to determine when to execute the project and to create the VBS file that is necessary for running a project.
4. Save and close the project. The project must be closed for it to run successfully.

Note: It is recommended that you schedule a test project, keeping the caveats in the previous section in mind.

OPERATING-SYSTEM COMMANDS

Experienced SAS users are very familiar with the ability to submit statements such as X, SYSTASK, and FILENAME PIPE in Base SAS software. These statements enable you to run system commands on the SAS server. However, users quickly find out that these commands do not work when they are submitted in SAS Enterprise Guide.

Client applications can use system commands to perform potentially harmful operations such as file deletion. Therefore, by default, when the SAS server is invoked, SAS Enterprise Guide submits the option -NOXCMD in order

to prevent security risks that can occur when system commands are executed from a client application. As a result, errors similar to the following occur when you submit statements such as X or SYSTASK in SAS Enterprise Guide:

```
ERROR: Insufficient authorization to access PIPE.
```

OR:

```
ERROR: Shell escape is not valid in this SAS session.
```

Starting with SAS 9.3, when SAS Enterprise Guide connects to a local SAS server, the –NOXCMD option is no longer used. Therefore, the ability to submit system commands is allowed. If you run earlier releases of SAS or you connect to a remote SAS server (for example, the SAS® Metadata Server), there are steps that you can take to enable the use of system commands as well. For more information about using system commands when you connect to the metadata server, see "Recommended Reading," below.

CUSTOM TASKS AND TOOLS

In addition to the tips provided in the previous sections, this section briefly discusses some custom tasks that you can take advantage of. Along with the wide variety of tasks from which to choose in SAS Enterprise Guide, you also have the ability to create your own custom tasks. This capability enables you to fully customize SAS Enterprise Guide for your needs. A number of custom tasks have been written by SAS Research and Development, and they are available for you to download and install. A few of the most popular of these custom tasks are briefly described in the next sections. For more information about other custom tasks that are available, see "Recommended Reading," below.

THE EXPORT TO EXCEL 2007/2010 TASK

Until SAS Enterprise Guide 5.1, you could not export your data sets to an Excel 2007 (XLSX) file. The only option was to export your data to an Excel 2003 (XLS) file. This option presents limitations because Excel 2003 (XLS) files have a maximum of approximately 65,000 rows. Most users have data sets that are much larger; and Microsoft Office 2007 increased the maximum to 1 million rows for an xlsx file. The custom task **Export to Excel 2007/2010** takes care of this issue for files that you export to releases of Excel prior to the 2007. For more information about this task (including download information), see "Recommended Reading," later in this paper.

THE COPY FILES TASK

As a client/server application, SAS Enterprise Guide moves external files between the SAS server and a local PC. User-written code often fails when programs that reference external files are submitted. Failure occurs because the SAS server cannot locate the external files.

In the past, you had to use another method (FTP) to move external files to a location that the SAS server can access. Now, with the **Copy Files** task, you can move your external files between the SAS server and SAS Enterprise Guide within a project. For more information about this task (including download information), see "Recommended Reading," later in this paper.

THE EGPSEARCH TOOL

In large projects with multiple process flows, it can be very time-consuming to search for a particular reference or to open every log and use the **Find** menu item to search for a particular phrase. As a result, customers often call Technical Support to find out whether there is a way to determine what files or data sets are used in a project and how they can search a log or program for a particular word. Now, however, there is a custom tool that makes these tasks easy: the **EGPsearch** tool. The **EGPsearch** tool is available for releases 4.3 and 5.1 of SAS Enterprise Guide. For more information about this tool (including download information), see "Recommended Reading," below.

CONCLUSION

Over the years, SAS Technical Support consultants have handled many calls from users who want to know the best way to use SAS Enterprise Guide for everything from using the application to manipulate data to obtaining particular results. This paper discussed some of the most common tips and techniques from SAS Technical Support to help you become more proficient with SAS Enterprise Guide. These tips and techniques have proven to be the most applicable across a broad spectrum of users.

RECOMMENDED READING

Hemedinger, Chris. 2013. "Custom tasks for SAS Enterprise Guide." Blog post from "The SAS Dummy: A SAS® blog for the rest of us." Cary, NC: SAS Institute Inc. Available at blogs.sas.com/content/sasdummy/?s=custom+task.

Hemedinger, Chris. 2012. *Custom Tasks for SAS Enterprise Guide Using Microsoft .NET*. Cary, NC: SAS Institute Inc.

Hemedinger, Chris. 2012. "How to search your SAS Enterprise Guide project files." Blog post from "The SAS Dummy: A SAS® blog for the rest of us." Cary, NC: SAS Institute Inc. Available at blogs.sas.com/content/sasdummy/2012/06/07/egp-search-tool/. (EGPSEARCH tool)

Hemedinger, Chris. 2012. "There and back again: copying files in SAS Enterprise Guide." Blog post from "The SAS Dummy: A SAS® blog for the rest of us." Cary, NC: SAS Institute Inc. Available at blogs.sas.com/content/sasdummy/2012/12/06/copy-files-in-sas-eg/. (COPY FILES custom task)

McDaniel, Stephen, and Chris Hemedinger. 2010. *SAS® For Dummies®, 2nd Edition*. Hoboken, NJ: John Wiley & Sons Inc.

SAS Institute Inc. 2010. SAS Note 38876. "Differences between importing data in SAS® Enterprise Guide® 4.1 versus SAS Enterprise Guide 4.2." Cary, NC: SAS Institute Inc. Available at support.sas.com/kb/38/876.html. (Instructions for redirecting TMP directories)

SAS Institute Inc. 2010. SAS Note 41058. "Unable to submit X commands from SAS® Enterprise Guide® connecting to a SAS® Metadata Server when running SAS® 9.2 or later." Cary, NC: SAS Institute Inc. Available at support.sas.com/kb/41/058.html.

SAS Institute Inc. 2010. SAS Note 41132. "Unable to export data to an .xlsx file from SAS® Enterprise Guide®." Cary, NC: SAS Institute Inc. Available at support.sas.com/kb/41/132.html. (EXPORT TO EXCEL 2007/2010 custom task)

SAS Institute Inc. 2008. SAS Note 30917. "Scheduling projects in SAS® Enterprise Guide®." Cary, NC: SAS Institute Inc. Available at support.sas.com/kb/30/917.html. (credentials.xml file)

CONTACT INFORMATION

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

Jennifer Bjurstrom
SAS Technical Support
SAS Campus Drive
Cary, NC 27513:
E-mail: support@sas.com
Web: support.sas.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are trademarks of their respective companies.