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What's New in SAS[®] Enterprise Guide[®] 4.2?

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Abstract

SAS[®] Enterprise Guide[®] 4.2 offers new features around almost every aspect of the application, including the process flow interface; use of ODS statistical graphics; new tasks for reporting, graphing, and data management; SAS[®] report integration; enhancements for the SAS programmer; and manageability for the SAS administrator. This paper will highlight the new features and show examples of how they can make using SAS more fun and productive than it already is.

About SAS Enterprise Guide 4.2

As the desktop interface to SAS 9.2, SAS Enterprise Guide 4.2 has something to offer for everyone. For business analysts, it offers easy-to-use tasks to query data and create reports with multiple graphical ways to look at data. For statisticians, it offers access to advanced analytical tasks such as regression, ANOVA, and forecasting. And for SAS programmers, it offers a development environment to organize SAS programs, submit the programs and review the results, and integrate those programs into larger business processes.

The latest release of SAS Enterprise Guide adds new tasks, improved usability and flow, and increased integration with other SAS enterprise-level software.

Easier to Learn

SAS Enterprise Guide 4.2 has a simplified menu structure that makes it easier for new users to find their way around. The new interface contains just 7 top-level menu items (whereas previous releases had 13 top-level menu items). All of the tasks can be found under the new **Tasks** menu, but you can also access them quickly from the main content pane in the application. The content pane—the window that contains what you're working on—features a contextual menu toolbar that provides access to the appropriate tasks for the type of content that has focus.

For example, if you are viewing a data table, you can click **Query Builder** on the context toolbar to begin the process of subsetting your data. Or you can click **Describe** to find the list of descriptive tasks, such as Summary Statistics, to run with this data. Figure 1 shows an example of the data view with the context toolbar and the program editor view with a different context toolbar.

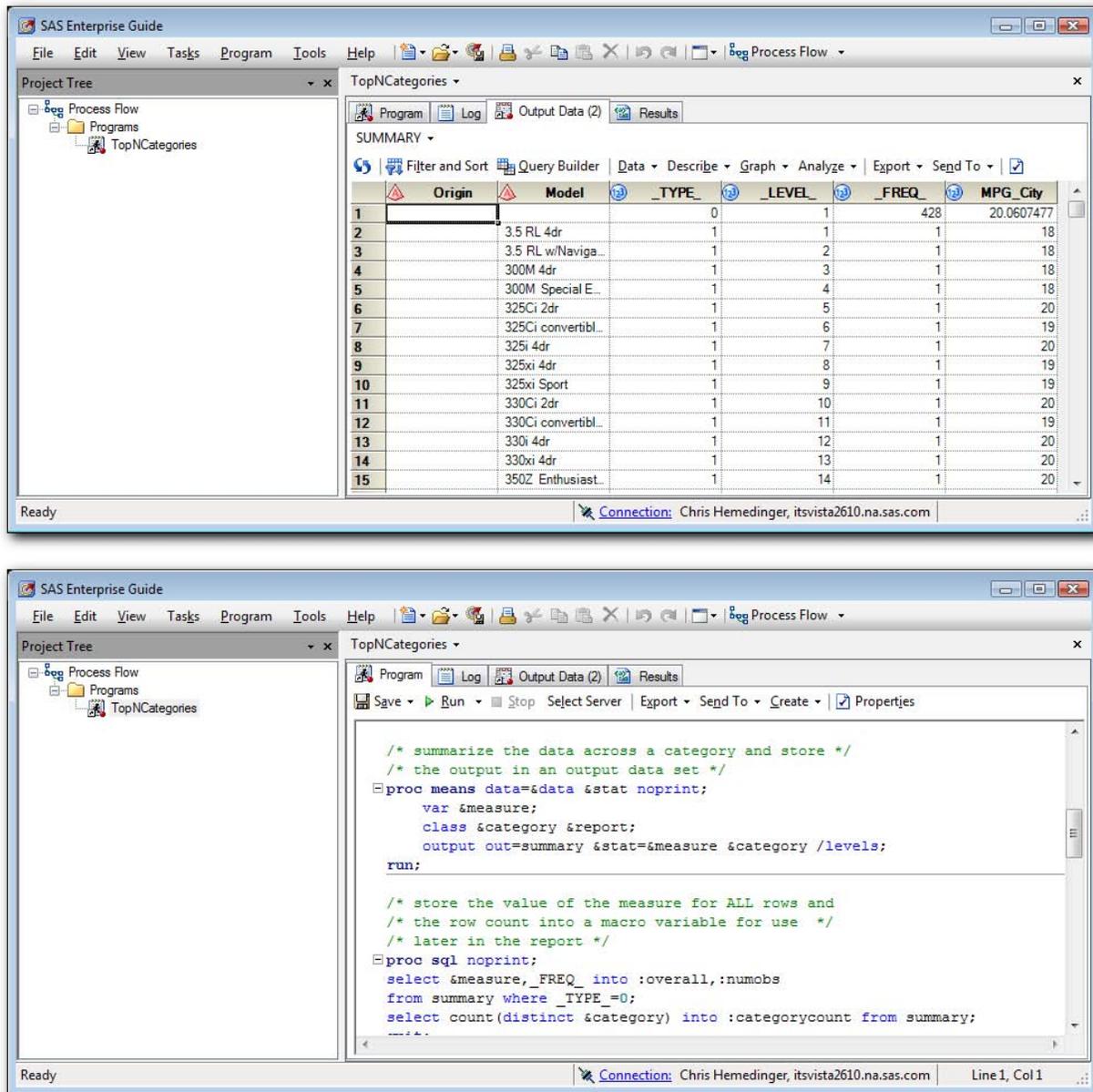


Figure 1. Top: Data View with Its Context Toolbar. Bottom: Program Editor View with a Different Context Toolbar.

The Plots Thicken with ODS Graphics

ODS statistical graphics are a major new feature of SAS 9.2, and SAS Enterprise Guide takes advantage of them wherever possible. With ODS graphics, the SAS analytical procedures can automatically produce appropriate, easy-to-read, professional plots to accompany the traditional tabular output. When you use the tasks in SAS Enterprise Guide to drive your analysis, these new plots are available for selection and, in some cases, are provided by default. Over twenty of the built-in analytical tasks support ODS graphics, including Correlations, Linear Regression, and the ANOVA tasks. Figure 2 shows an example of the new scatter plot matrix produced by the Correlations task, which uses the CORR procedure.

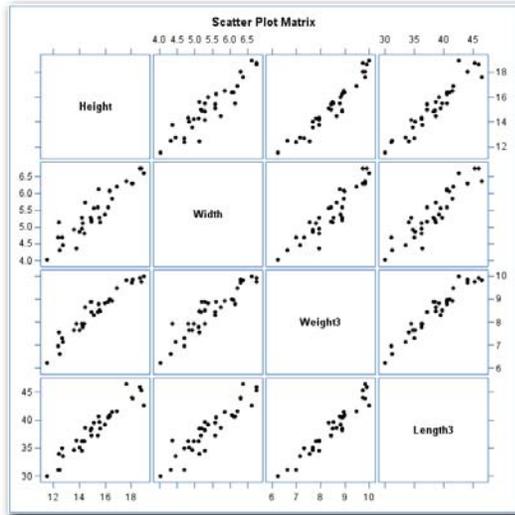


Figure 2. Output of Correlations Task

SAS Report to the Forefront

SAS Report is a new output format that was introduced with SAS 9.1.3 and was supported in SAS Enterprise Guide 4.1. You can think of it as the *lingua franca* of SAS business analytics because it is a shared language between ODS, SAS Enterprise Guide, SAS® Add-In for Microsoft Office, and SAS® Web Report Studio. We like to say that it “views like HTML” and “prints like PDF.” This means that you can review your output similar to the way you view Web pages: in a continuous form within a browsing window. But when you print it, SAS Enterprise Guide intelligently breaks large tables into page-size chunks, repeating column and row headers as appropriate.

SAS Enterprise Guide also provides a built-in report builder interface that lets you combine your SAS Report output and arrange your output just the way you want it, including support for side-by-side panels of content, custom text, and custom image annotations. All of this was supported in release 4.1 and is further enhanced in release 4.2.

In SAS Enterprise Guide 4.2, SAS Report replaces HTML as the default output format for your task and program output. Why now? Because with the 4.2 release, you can now export SAS Report content as HTML and PDF. This means that even though the SAS Report format is proprietary to SAS, you can easily share your results with others using standard formats. Figure 3 shows an example project that combines two SAS Report results into a single composite report and then sends it to a PDF file.

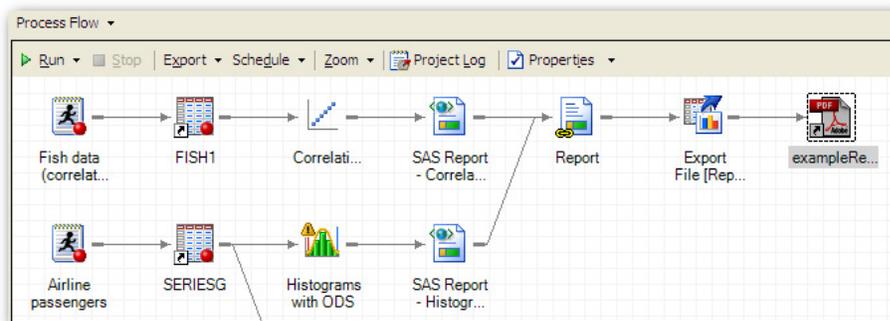


Figure 3. Example Process Flow with Custom Report That Exports to PDF

To Run or Not to Run: Apply Conditions to Your Tasks

SAS Enterprise Guide 4.2 provides a new way to control how your project is run. Every object in the project that can be run (for example, SAS programs, tasks, queries, and export steps) can examine one or more conditions before

they are actually run. By defining these conditions, you can implement an if-then-else processing structure within your projects.

Figure 4 shows an example process flow with some conditions applied.

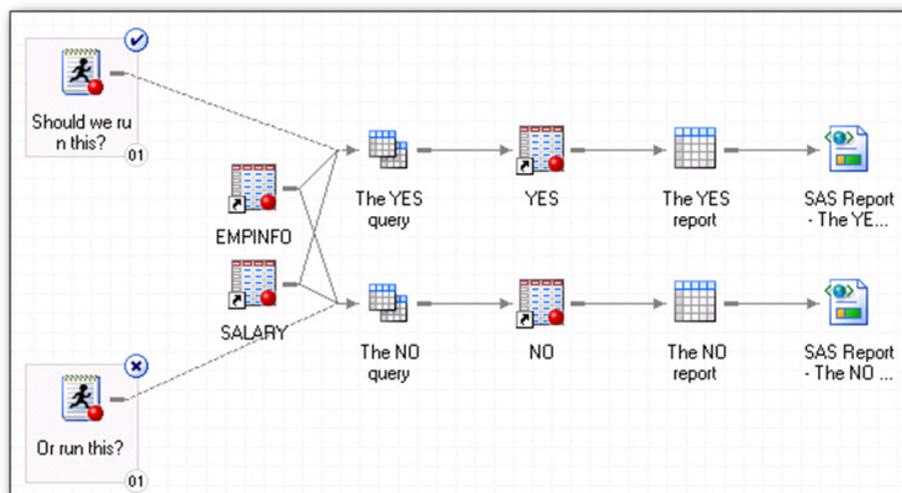


Figure 4. Example Process Flow That Contains Conditions

In the example (as shown in Figure 4), the decision as to which process flow branch to run depends on the response to a project prompt. If you select **Yes** when the process runs, SAS Enterprise Guide runs the top **Yes** branch. Otherwise, the bottom **No** branch is run instead. The check mark and **x** icons that you see at the decision points indicate which path was followed. The check mark indicates that the connected path was run (the condition was met), and the **x** indicates that the path was not run (condition was not met).

In addition to project prompt values, you can design conditions that are based on date or time values or on values that are read from a SAS data set. You can also combine conditions to create sophisticated decision points within your project. For example, you can design parts of your process flow that run only once a week on a specific day, or only when a certain data value falls out of a specified range.

“Save Your Faves” with Task Templates

SAS Enterprise Guide has over 90 built-in tasks, some of them offering dozens of options for analysis and reporting. Task templates enable you to save your favorite combinations of tasks and options for later, thus saving you time when you want to perform similar steps. For example, suppose you always want to see the mode statistic in your Summary Statistics output, or you want to always see the residuals output from the Linear Regression task. You can save those settings in a template, which then appears in your task menu as a special version of the task.

You can organize your templates into groups to make them easy to find. You can also share templates with colleagues by importing and exporting them. This allows you to use templates as a way to standardize on certain options for tasks that multiple people need to perform in your organization.

Figure 5 shows a few task templates as they would appear in the task list view. They also appear in the **Tasks** menu in a special submenu named **Task Templates**.

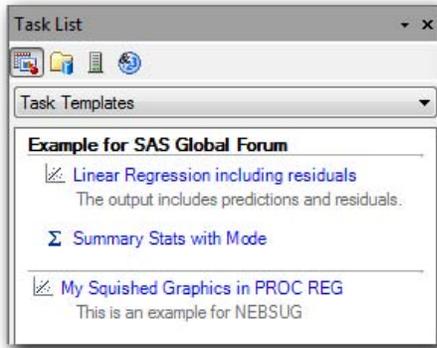


Figure 5. Task Template Definitions in the Task List

The power of shared metadata enables the task templates that you create in SAS Enterprise Guide to also be available to users of the SAS Add-In for Microsoft Office.

Work Where You Are: Filter Data in Tasks

Most of the SAS tasks now allow you to subset the data within the task itself, or change the input data source altogether without needing to exit the task first. This is an oft-requested feature from SAS Enterprise Guide enthusiasts, even making a prominent appearance on the SASWare Ballot[®]. SAS listens to its customers!

Figure 6 shows a Random Sample task with a filter applied to the input data. You can see the current data and filter near the top of the window.

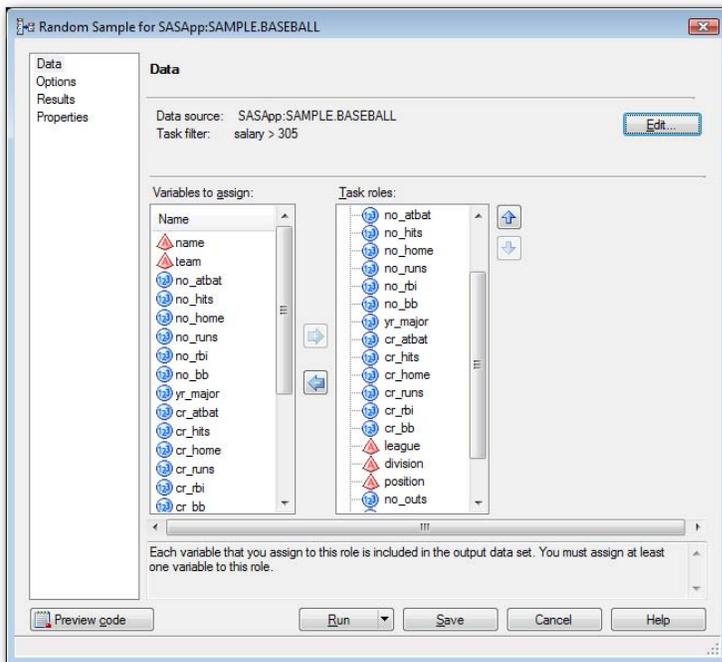


Figure 6. A SAS Task with a Built-in Data Filter

Filter Faster with “Filter and Sort”

Traditionally, the Query Builder has been the one-stop shop for data filtering in SAS Enterprise Guide. It’s powerful and flexible, but sometimes it’s more than you need. SAS Enterprise Guide 4.2 includes a new Filter and Sort task that provides just the basics for filtering: select the columns you want, apply simple filter conditions, and optionally

specify how to sort the output. The same Filter and Sort window appears in the SAS Add-In for Microsoft Office, so users of that product can transfer some of their knowledge to SAS Enterprise Guide.

BUILD COMPLEX QUERIES WITH EASE

If you decide to use the full-featured Query Builder (and many customers do use it extensively), you will find that you can define and modify query definitions more quickly than ever. Many of the operations that used to take multiple steps to accomplish are now reduced to single-click steps. For example, you can specify filter operations and sort sequence by clicking in-place on the window, rather than having to visit a separate dialog box.

The Query Builder also has new wizards to make it easier to recode columns, define new columns with expressions, and define new filters. In addition to the additional usability, the Query Builder can provide additional diagnostic information when you design queries to access DBMS data sources, such as Teradata, Oracle, or DB2. By using a new feature in the SQL procedure for SAS 9.2, the Query Builder can tell you when a designed query will push down to the database layer (most efficient) or be brought back into SAS to process (less efficient).

MANAGING FEATURES FOR THE END USER

SAS Enterprise Guide offers hundreds of features, and not every user necessarily needs access to every feature. A site administrator might want to restrict the features that are surfaced to help end users to be more productive with the features that they do need. Or an administrator might want to “turn off” certain functions to help enforce IT policies on data use.

With the SAS 9.2 framework in place, you can now control which users have access to which features. You can use SAS Management Console to define roles that contain lists of appropriate SAS Enterprise Guide features, and then place users and groups within those roles. When an end user logs on to SAS Enterprise Guide, the user interface automatically adjusts to show only the relevant menu items and functions that the user is permitted to perform, according to his or her role.

For example, suppose that your site does not license the SAS/QC[®] product. Without SAS/QC, there are several tasks within SAS Enterprise Guide that you won't be able to use (such as Capability Analysis and p-Charts). You can use the role-based permissions to remove the SAS/QC tasks from the SAS Enterprise Guide menu so that your end users are not distracted by tasks that they cannot use.

Or suppose that you support novice users that you want to deter from creating database queries that are resource intensive. You have the option of turning off access to the Query Builder window, leaving them only the simpler Filter and Sort method to subset data. Or you can allow access to the Query Builder, but turn off the ability to join multiple tables (a frequent cause of expensive queries).

SAS Enterprise Guide displays a special indicator in the status area when your session has restricted functions. This serves as a cue to the end user that an administrator has turned off certain features. Figure 7 shows an example.

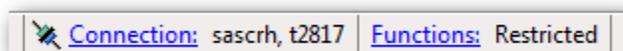


Figure 7. A SAS Enterprise Guide Session with Restricted Functions

Getting Data into SAS: More Formats, More Choices

The revised Import Data task supports all popular data formats that you find on the desktop: Microsoft Excel (including Office 2007 formats), Microsoft Access (including Office 2007 formats), text files (delimited and fixed-width columns), and other legacy formats such as dBase and Lotus 1-2-3. In SAS Enterprise Guide 4.2, the Import Data task provides better support for native Microsoft Excel files by leveraging the Microsoft Excel application, if you have it installed. This enables the task to provide better information and more control over the import process. The task can also use SAS/ACCESS[®] to PC Files (the IMPORT procedure) to drive the process, providing more direct access from your SAS session to the data source.

SAS Enterprise Guide also has new tasks to import data from other statistical packages, including JMP, SPSS, and Stata. These tasks also use the IMPORT procedure and SAS/ACCESS to PC Files to provide this support.

Finally, you can easily move SAS data set files between your SAS session and your local PC with the new Upload and Download SAS Data Set tasks. Use these tasks to copy your local SAS data set files (.sas7bdat type) to your SAS libraries and back again.

Information Map Access Grows Up

In the previous release of SAS Enterprise Guide, access to information maps was a subset of what you could find in other SAS applications, such as SAS Web Report Studio. In release 4.2, with improvements in the SAS 9.2 INFOMAPS library engine, the feature set in SAS Enterprise Guide has caught up.

The main advances include the following:

- support for prompted filters
- the ability to combine and group filters with AND/OR/NOT operators
- the ability to request aggregated results as well as detailed results

OLAP Analyzer Improvements

The user interface for the OLAP Analyzer has been redesigned to help you manage your views on OLAP data. The OLAP Analyzer can now support multiple independent views of a cube.

You can use the OLAP Analyzer to open OLAP data sources that reside in SAS folders, registered in the SAS metadata repository. You can still use the OLAP Analyzer to open ad hoc data sources as well, including SAS OLAP sources and those from third parties, such as Microsoft Analysis Services.

In addition to creating filters that are based on a ranking function or on a range of values, you can now filter by member caption and member property. You can also create filters that can be used by multiple queries.

New and Enhanced Tasks

SAS Enterprise Guide 4.2 extends its offering of built-in tasks with these additions and enhancements:

- **Tile chart:** This task uses the new GTILE procedure to provide an easy way to visualize hierarchical data. An example of the tile chart output is shown in Figure 8.
- **Bar-line plot:** In release 4.2, the Bar-line plot supports multiple plot lines, thanks to new enhancements in the GBARLINE procedure.
- **Multiple measures bar charts:** This special variation of the bar chart task allows you to plot multiple measure variables across a response. There are two versions of the task: one each for horizontal and vertical orientation.
- **Update Library Metadata:** This task allows you to add or update table definitions in the SAS metadata repository. It uses the METALIB procedure to register table definitions.
- **JMP Stored Process Packager:** This task allows you to add special content to a SAS stored process that you intend to run within JMP. You can specify additional SAS data sets to open and JMP scripts to run when executed within JMP.

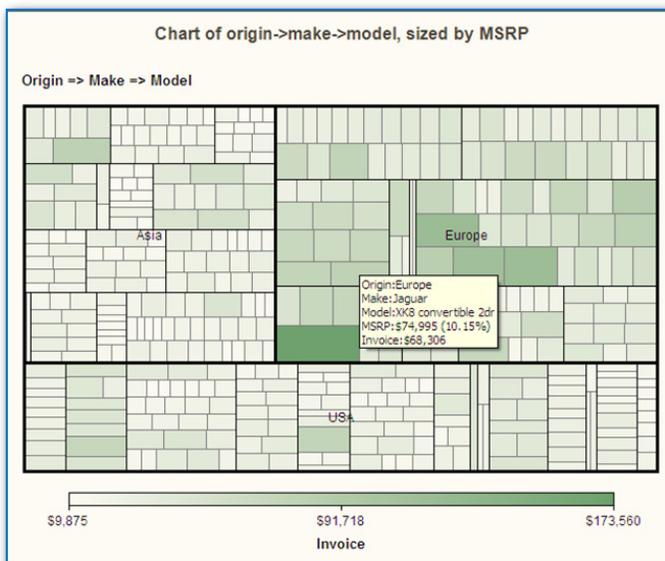


Figure 8. Example Output from the Tile Chart Task.

Extending Support for Custom Tasks

You can extend SAS Enterprise Guide with your own custom tasks. Custom tasks are a great way to add new features to the application to facilitate the business needs of your own organization. They work just like the built-in tasks, and so they can be easy for end users to learn and integrate with existing processes.

To build custom tasks, you need to build an add-in module using the Microsoft .NET Framework in a programming language such as C# or Visual Basic. With the 4.2 release, building custom tasks has never been easier thanks to these enhancements:

- SAS Enterprise Guide ships with a task toolkit module, which makes it easier to implement custom tasks with less user-written code.
- You can create custom tasks that use any current version of the Microsoft .NET Framework, including 2.0, 3.0, or 3.5. Tasks that use .NET 1.1 are still supported as well.
- You can use the Microsoft Visual C# Express or Microsoft Visual Basic Express Editions to create the custom tasks. These development tools are available as free downloads from the Microsoft Web site.

There are many examples of custom tasks available from the SAS Enterprise Guide support site at <http://support.sas.com/eguide>.

Conclusion

This paper highlights just some of the new features in SAS Enterprise Guide 4.2. When you add these to the hundreds of existing features, SAS Enterprise Guide becomes an even more compelling productivity tool for business analysts, SAS programmers, and statisticians.

References

Hemedinger, Chris. 2008. "Find Out What You're Missing: SAS[®] Enterprise Guide[®] for SAS Programmers." *Proceedings of the SAS Global Forum 2008 Conference*. Cary, NC: SAS Institute Inc. Available at support.sas.com/resources/papers/sgf2008/eguide.pdf.

Recommended Reading

Looking for a community of other SAS Enterprise Guide users, including SAS programmers? Visit the SAS Enterprise Guide discussion forum at <http://support.sas.com/forums>.

Contact Information

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