

## Paper 302-2012

**Up Close and Personal with SAS® Enterprise Guide® 5.1**

Anand Chitale and Lina Clover, SAS Institute Inc., Cary, NC

**ABSTRACT**

SAS Enterprise Guide continues its evolution bringing great new capabilities enhancing usability and end user productivity. These capabilities range from enhanced capabilities for SAS Programmers, new data exploration capabilities with enhanced descriptive statistics, highly visual and interactive multidimensional data analysis, and enhanced query and analysis to achieve increased performance.

This paper brings you up close and personal with the key highlights of SAS Enterprise Guide 5.1, demonstrating the application of these capabilities helping you learn how to get more from your data in less time than ever before.

**INTRODUCTION**

This paper accompanies our SAS Global Forum presentation and provides an overview of what's new in SAS Enterprise Guide 5.1. We assume you are somewhat familiar with at least one previous release. However, users who have not used these applications should be able to gain a good overview as well.

Whether you are doing data manipulation, analysis, or reporting, there is something new and improved for everyone. We present some of the main new areas, starting with enhancements for SAS Programmers, enhancements to capabilities for ad hoc analysis, and the performance enhancements.

**SAS ENTERPRISE GUIDE 5.1**

SAS Enterprise Guide is an easy-to-use, project-oriented Windows application that provides access to the analytic power of SAS. Business analysts, statisticians, and SAS programmers can gather and manage the data they need, and perform meaningful analyses quickly.

The point-and-click interface guides users through the analytical process and makes it easy to create reports, graphs and charts, and to deliver the results throughout the organization.

SAS Enterprise Guide in its previous releases brought many enhancements to the user interface and added many new capabilities covering the needs for all user roles. SAS Enterprise Guide 5.1 is yet another step with a focus on providing end users with a richer user experience and enhanced capabilities utilizing the power of the platform for SAS Business Analytics.

Listed here are the key release objectives for SAS Enterprise Guide 5.1 released on top of SAS 9.3 platform, which brings enriched user experience and increased productivity with key features such as

- Easy leverage of SAS 9.3 Grid environment
- Enhanced program editor with autocomplete for data items
- Improved tooltip support for SAS keywords with help documents
- Enhanced Data Exploration and OLAP Analysis capabilities for enriched user experience
- Reusable queries increasing user productivity
- Enriched interface for creating Stored Processes

The next set of sections in this paper will walk you through the details of the aforementioned key capabilities.

**ENHANCEMENTS FOR SAS PROGRAMMERS**

In SAS Enterprise Guide 4.3, SAS introduced an intelligent and enhanced program editor with capabilities like Microsoft IntelliSense giving access to the complete library of SAS Keywords and SAS Functions right inside the program editor thereby providing a faster and more guided SAS programming experience.

The enhanced program editor in SAS Enterprise Guide 5.1 brings the ability to view the variables from the selected data set from a library (when connected to the SAS Server). This helps the users to correctly select the variables for analyzing without worrying about the exact name of the variable. This boosts the programming speed of the user and helps generate a syntactically correct code, right from the start.

Figure 1 shows the enhanced program editor with the ability to surface the data item variables from a selected data set.

## Up Close and Personal with SAS® Enterprise Guide® 5.1

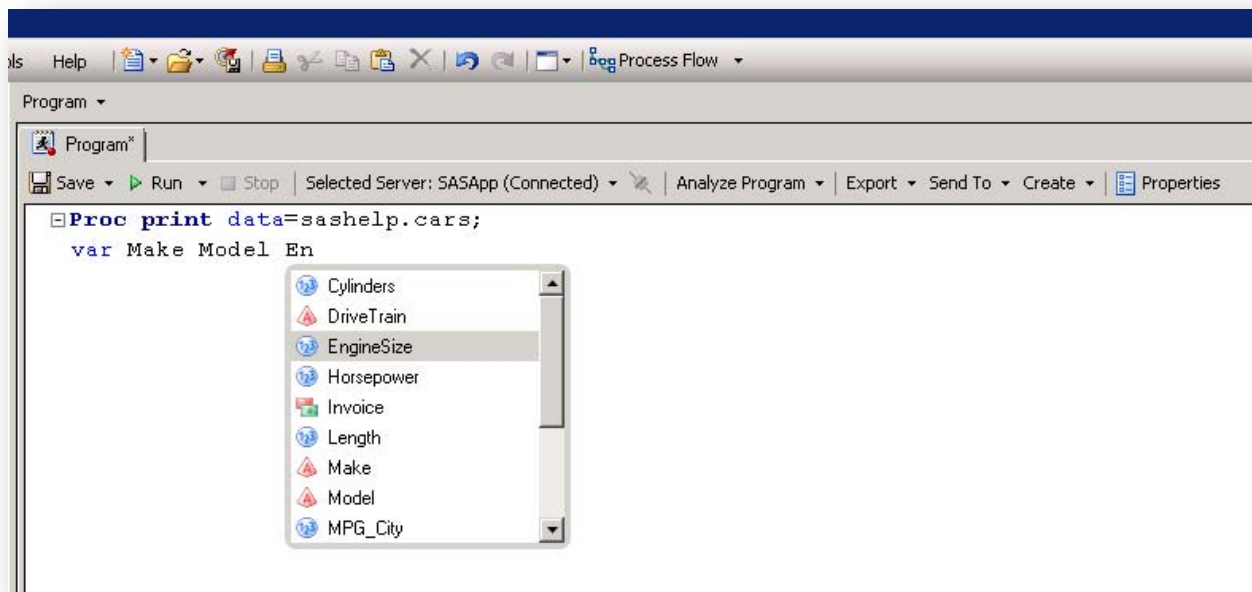


Figure 1. Enhanced Program Editor with Data Set Variables

The optional tooltips for SAS keywords were introduced in SAS Enterprise Guide 4.3 and are also enhanced, enabling programmers to access SAS documentation over the Web for the associated SAS keyword and stay focused within their working environment. Figure 2 shows the SAS keyword tooltip with the options to link to online documentations such as Samples, SAS Notes, and Papers that would help the user with additional information.

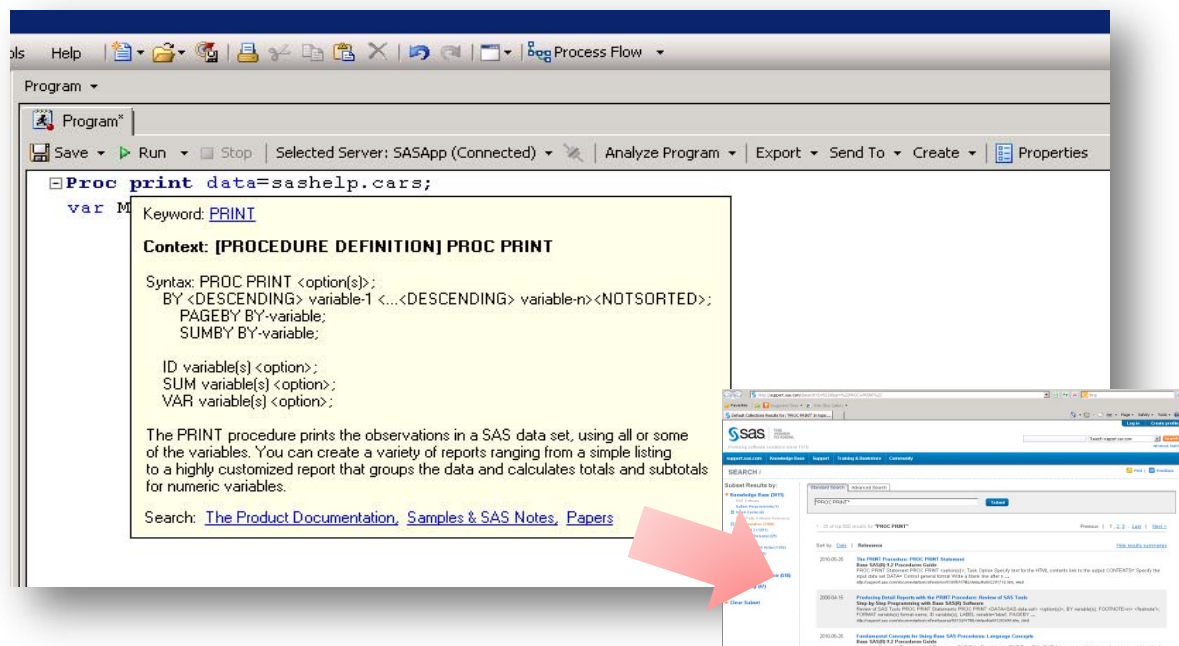


Figure 2. Enhanced SAS Keyword Tooltip in the Program Editor.

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## ENHANCEMENTS FOR AD-HOC ANALYSIS

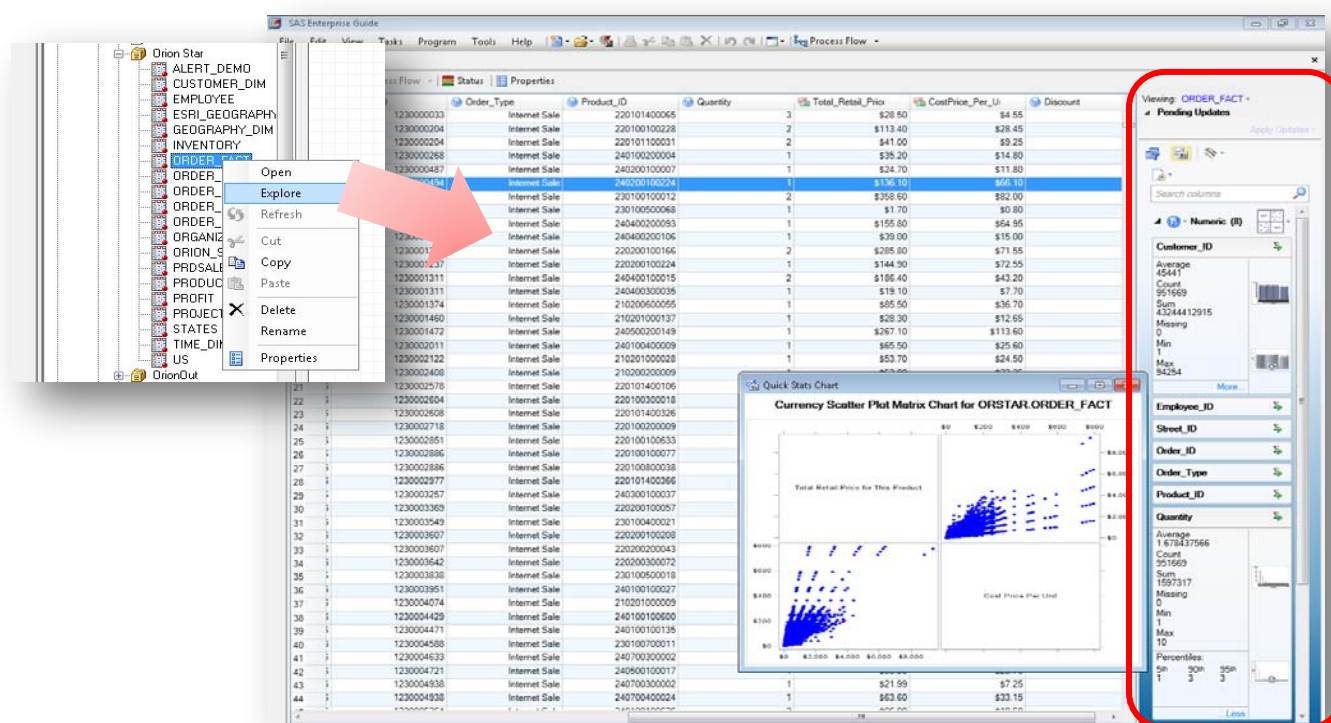
## DATA EXPLORATION

A typical data analysis process involves viewing and understanding some basic statistics of the data, and users have been using various SAS Tasks that help generate descriptive statistics. As this is a very common user action, SAS Enterprise Guide 5.1 brings these descriptive statistics in a more interactive environment with the capability to view data as a data grid. This data grid, that is available using the Explore option as shown, is similar to what classic SAS programmers users know from the use of SAS Display Manager or those using SAS Data Integration Studio to view and manage data.

## Key Highlights

- Obtain quick descriptive statistics
- Filter and Sort Data on focused columns
- Generate data views for Process Flow

Figure 3 shows the new Explore option available for data sets that generates the data grid as shown. Users can then use the options to run the descriptive statistics for each individual data column or all the columns together.



**Figure 3. Explore Option for SAS Data Sets Opening the Data Grid and Whowing Descriptive Statistics**

From an administrative perspective, the user interface allows options to set the appropriate statistics of their choice as default and can also limit the running of these statistics based on a particular size of data set.

Figure 4 shows the various descriptive statistics that the user can select to apply to the data source under analysis. This gives a wide range of statistics grouped by different data types from the default selection of Standard Statistics to the other options from Distribution Statistics and Percentiles.

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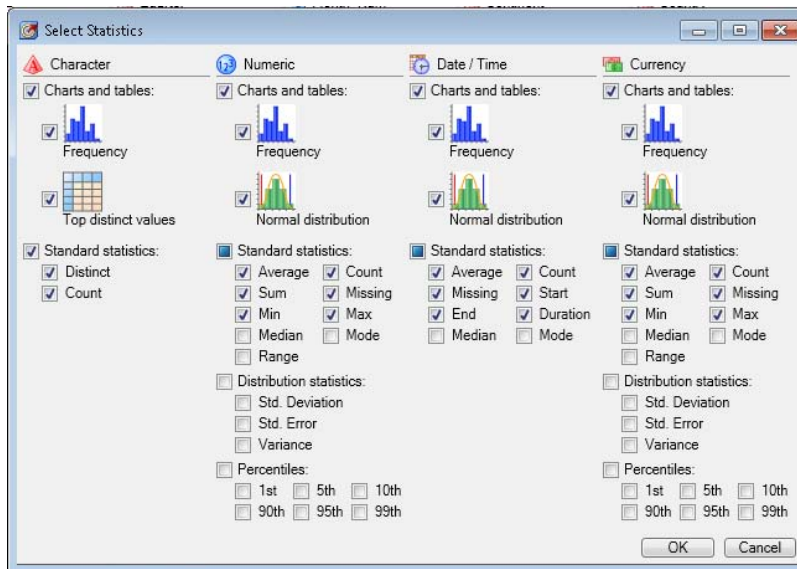


Figure 4. Various Descriptive Statistics Options

## REUSABLE QUERIES

SAS Enterprise Guide 5.1 brings the capability to the Query Builder to save queries as templates. This brings a big advantage of reusing the existing queries as sub-queries and hence avoids the efforts to re-create an existing business logic once again for a new query. This not only provides enriched user experience but also saves time and improves user productivity.

The set of figures below shows a typical process where a user would generate a specific business query and save that as a query template and later use the same query as sub-query as business logic required another query.

In the example below, the user has selected a data set in the Query Builder to get a commonly used Mean of Quantity Ordered calculation for his business queries (See Figure 5a)

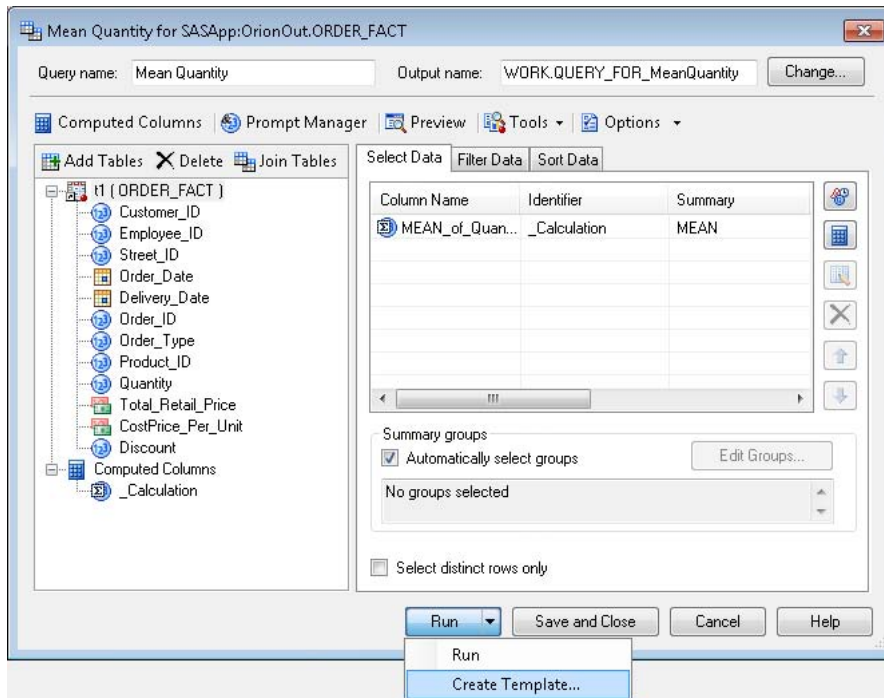


Figure 5a. Option to Save a Query from Query Builder As a Template.



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The user interface then guides the user to save this query as a template in a desired shared location. See Figure 5b.

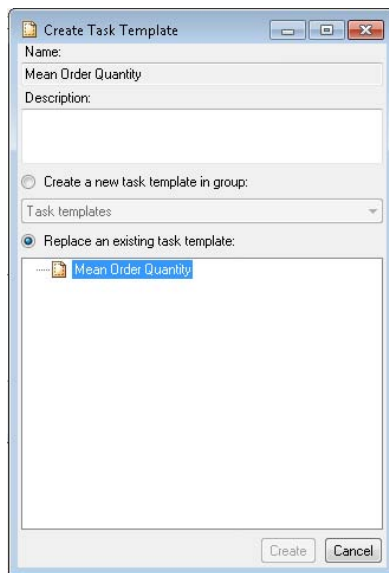


Figure 5b. User Interface to Save the Business Query As Reusable Query Template

Once the query is saved, it is available for users to reuse as part of their new or existing queries. Figure 5c below shows the user interface for selecting saved queries as subqueries available to the user via the filter option from the Query Builder user interface.

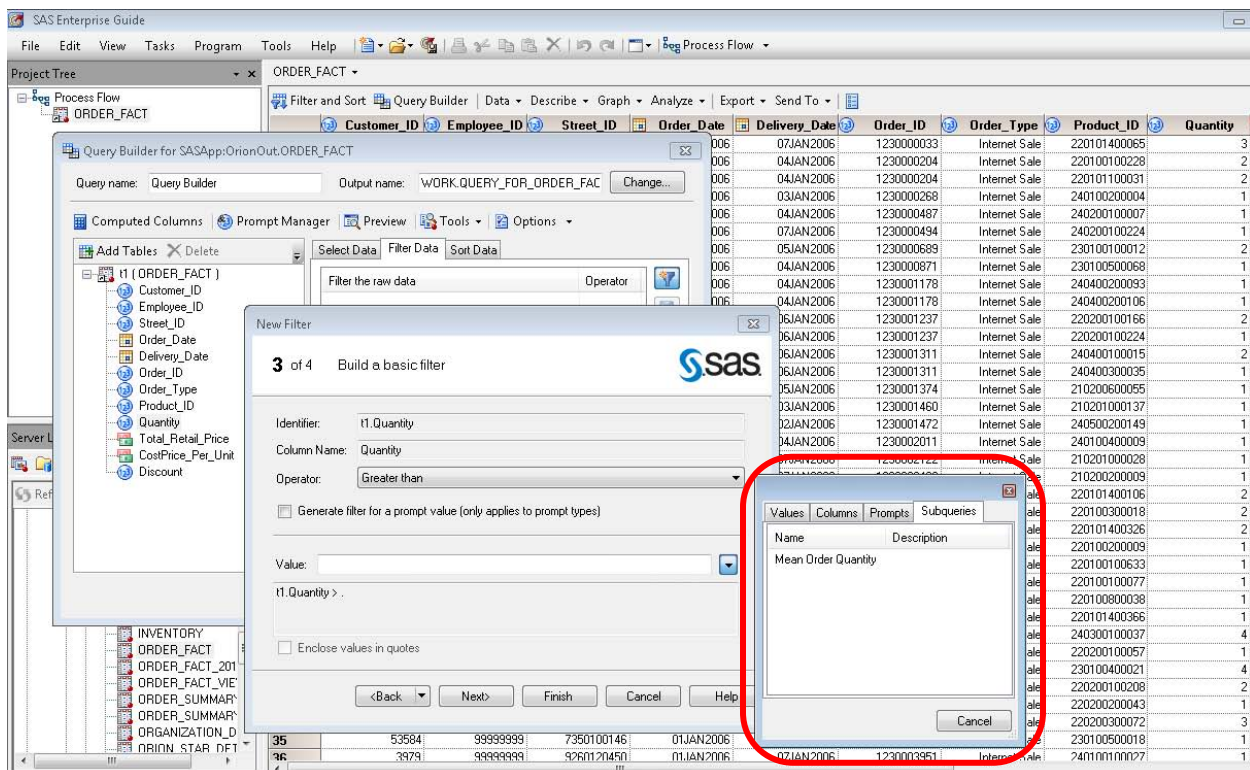


Figure 5c. User Interface to Reuse Existing Queries As Subqueries

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## AD HOC OLAP ANALYSIS

Further adding to the rich set of capabilities for OLAP Analysis provided by the SAS OLAP Analyzer, SAS Enterprise Guide 5.1 adds new enhancements to make the ad hoc analysis capabilities even richer.

Users can make use of most commonly required pre-defined calculations based on time series analysis as shown in Figure 6

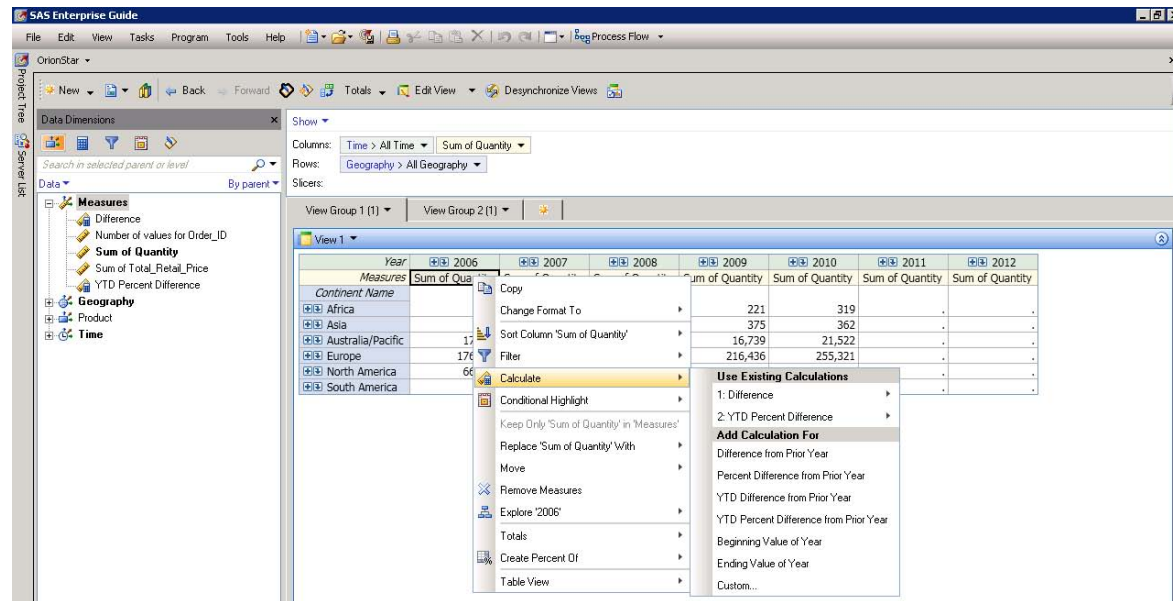


Figure 6. Contextual Menu Providing Pre-defined Calculations for Time Series Analysis.

When the users drills down into hierarchy or expands the hierarchy or in the case of large number of measures and members in the selected dimension, the interface provides dotted border lines for the tabular information indicating availability of more data than what is displayed with vertical and horizontal scroll bars appearing on mouse-over at the dotted border lines as shown in Figure 7.

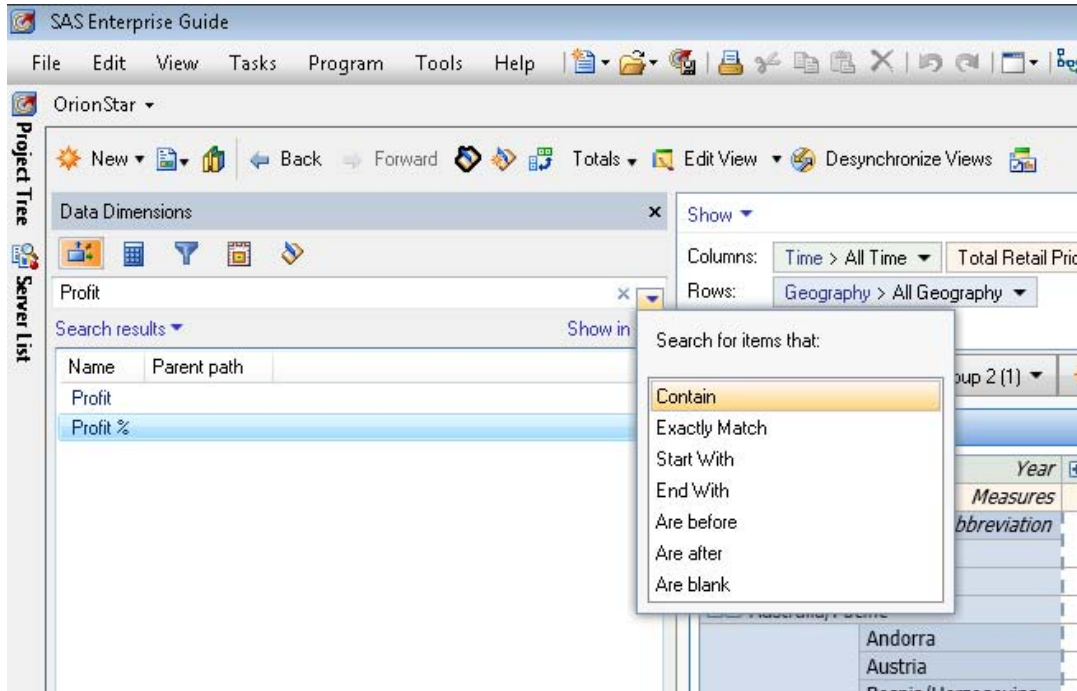
Year		2006	2007	2008	2009	2010	2011
Measures		Orders	Total Retail Price	Orders	Total Retail Price	Orders	Total Retail Price
Continent Name	Country Abbreviation						
Africa		159	\$34,781	169	\$26,666	136	\$21,372
Asia		244	\$49,174	216	\$44,395	210	\$45,692
Australia/Pacific		11,243	\$1,558,531	11,933	\$1,714,276	12,971	\$1,419,200
Europe		12	\$2,997	19	\$5,160	23	\$1,996
	Austria	301	\$42,710	317	\$42,958	314	\$35,684
	Bosnia/Herzegovina						
	Belgium		\$611,696	4,802	\$702,773	5,536	\$806,030
	Bulgaria	2	\$310	2	\$472	6	\$158
	Switzerland	328	\$69,832	318	\$69,275	335	\$56,223
	Czech Republic	7	\$1,064	3	\$2,755	5	\$1,337
	Germany	22,156	\$3,946,723	25,541	\$4,433,156	28,035	\$3,868,064
	Denmark	3,379	\$462,618	3,349	\$544,002	3,952	\$476,154
	Estonia	5	\$381	5	\$384	5	\$39
	Spain	18,130	\$2,064,741	16,466	\$2,725,604	20,330	\$2,334,923
	Finland	244	\$21,404	233	\$22,920	265	\$24,950
	France	18,619	\$3,096,095	23,911	\$3,145,089	23,689	\$2,801,749
	United Kingdom	16,565	\$2,288,762	18,454	\$3,258,028	26,471	\$2,618,256
	Greece	43	\$5,350	48	\$3,860	43	\$5,205
	Croatia	15	\$2,074	16	\$1,300	14	\$660
	Hungary	40	\$3,911	31	\$2,502	28	\$5,794
	Ireland	24	\$3,216	27	\$3,439	29	\$3,805
	Italy	14,396	\$2,504,248	17,004	\$3,203,978	22,155	\$2,865,474
	Lithuania	4	\$457	3	\$354	2	\$533
	Luxembourg						

Figure 7. Scroll Bars for Easy Navigation to View Information with Freezed Columns and Row Header

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Users can view the Row and Column Headers along with their data when scrolling to see data, making it easier to understand the data in the right context.

SAS Enterprise Guide 5.1 has further enhanced the search capability provided within the interface. For ease of identifying the measures and dimensions of interest within the cube structure, the interface provides a search dialog as shown in Figure 8 below.



**Figure 8. Search Data Items by Different Search Criteria within the Cube Structure.**

The user can type the text in search box and select the type of search with different options. The interface then presents all the items that match the search criteria and displays the search results. These results can be viewed as a list (as shown in Figure 8) or can also be viewed as Tree View with the highlighted item.

## CHANGES TO STORED PROCESS WIZARD

SAS 9.3 allows for greater flexibility and easier portability of stored processes. SAS 9.3 provides convergence of the Workspace and Stored Process Servers, which relieves the stored process author from having to match requirements with server capabilities. The stored process code can now optionally be persisted in the SAS Metadata Server, which enhances portability and makes system upgrades and maintenance easier.

SAS Enterprise Guide 5.1 provides concurrent support for both SAS 9.2 and SAS 9.3 environments. Figure 9a below shows the options which allow the user to save the same stored process compatible with SAS 9.2 and SAS 9.3 server environments.

## Up Close and Personal with SAS® Enterprise Guide® 5.1

Create New Stored Process

1 of 6 Name and Description

Name:

Location:

(Example: /My Folder/SPs/Proc One)

Description:

Keywords (one per line):

Responsibilities:

Name	Role
------	------

☐ Make 9.2 compatible version

☐ Hide from user

Specify one or more users who are responsible for this stored process. These users are the people you would contact if you had questions or needed to make changes to the stored process. [More \[F1\]...](#)

**Figure 9a. Stored Process Wizard with an Option to Create a SAS 9.2 Compatible Version of Stored Process**

This allows SAS Enterprise Guide users to interact with mixed SAS versions for easy validation of a SAS 9.3 test environment while still relying on 9.2 for production activities. Stored process version creation and consumption is controlled by the version of the SAS Server connected to, allowing Administrators to upgrade in a more controlled and targeted fashion.



## Up Close and Personal with SAS® Enterprise Guide® 5.1

**Create New Stored Process**

3 of 6 Execution Options

Application server: SASApp

Server type:

- ☒ Default server  
Select this option to allow the client application to specify the server.
- ☐ Stored process server only  
Select this option if the stored process uses sessions or if it uses replay (for example, to produce graphics in streaming output).
- ☐ Workspace server only  
Select this option if the stored process must be run under the client identity.

Source code location and execution:

- ☐ Allow execution on other application servers (store source code in metadata)
- ☒ Allow execution on selected application server only
  - ☐ Store source code in metadata
  - ☒ Store source code on application server

Source code repository: Select a repository Manage...

Source file:

☐ Overwrite existing file

Result capabilities: ☐ Stream ☒ Package

More [F1]...

<Back Next> Finish Cancel

**Figure 9b. Stored Process Wizard options for Stored Process Storing and Execution**

As part of the Stored Process Wizard steps, the interface provides options to store the stored process directly in the SAS Metadata Server. As shown in Figure 9b above, the user can select the server type and source code location and execution options.

## PERFORMANCE ENHANCEMENTS

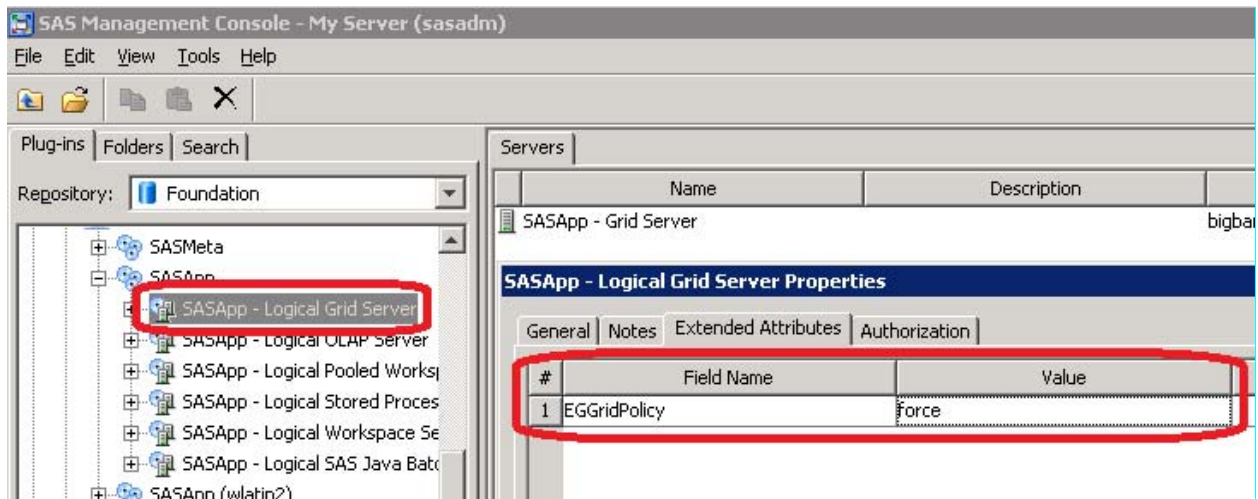
In previous releases of SAS Enterprise Guide, setting up a process flow to run in the SAS Grid environment was a painstaking effort with unpredictable success. In the 5.1 release many features were added to allow users to both easily leverage SAS Grid computing power and leverage their server machine computing power.

For the SAS 9.3 Grid, a new SAS Enterprise Guide Grid policy was added to the 9.3 SAS Management Console to allow administrators control over code submission to the SAS Grid.

Figure 10 below shows the options in SAS Management Console for enabling a grid in SAS Enterprise Guide. Using the properties for Logical Grid Server (available in a grid environment), the administrator can type in the Field Name and the Value as shown in the figure.

The “Force” value in the “EGGridPolicy” setting supersedes all users’ client settings, forcing all code submitted from SAS Enterprise Guide to always run on the Grid.

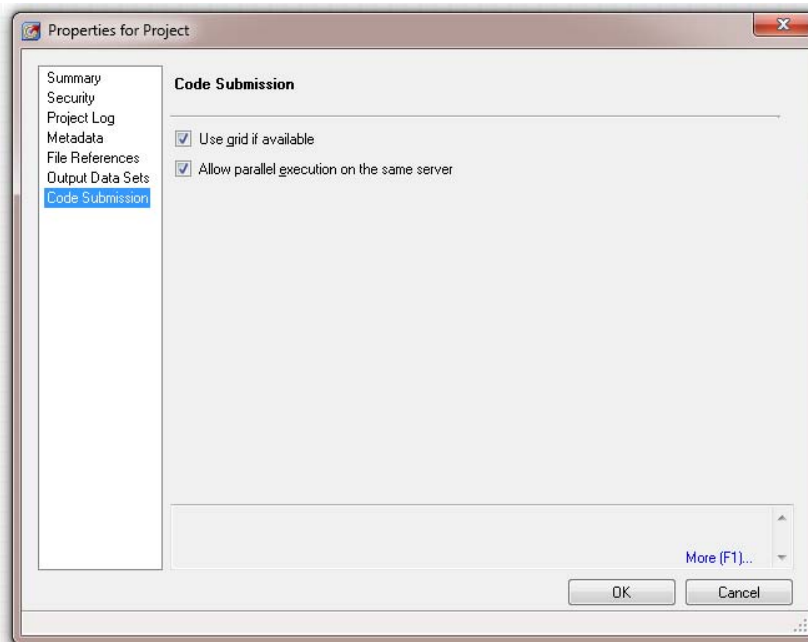
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**Figure 10. Option in SAS Management Console for Setting EGGridPolicy.**

Furthermore, when SAS Enterprise Guide connects to a Grid Server, a Library called "GRIDWORK" is created by default to allow SAS Enterprise Guide tasks and queries to run on the Grid environment.

Two new options were added to SAS Enterprise Guide projects to allow end users the choice of submitting code to the Grid if it is available, or parallel execution of project branches. See Figure 11. The parallel execution option does not require a Grid setup, it is an option that will cause SAS Enterprise Guide clients to submit jobs asynchronously via multiple connections to the same SAS server.



**Figure 11. Options in SAS Enterprise Guide for Code Submission**

When the queries are executed, a user can open the Task Pane and see the server where the code is executed. Figure 12 below shows the server doing the code execution. Notice that in SAS Enterprise Guide 5.1, a "Server Type" column was added to the Status view to let the user find out where the job executed.

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Task	Status	Queue	Server	Server Type
Program1	Connecting to server...		SASApp	Grid
Program2	Waiting on [Program1]...		SASApp	Workspace

Figure 12. The New Server Type Column in the Task Status Window

## CONCLUSION

SAS Enterprise Guide is a compelling productivity tool for business analysts, SAS programmers, and statisticians giving them the power to leverage the analysis and analytical capabilities of SAS platform using an easy-to-use and guided interface. SAS Enterprise Guide 5.1 release is yet another step with a focus on providing end users with richer user experience and enhanced capabilities utilizing the power of the platform for SAS Business Analytics.

## RECOMMENDED READING

SAS Online Documentation

<http://support.sas.com/documentation/cdl/en/whatsnew/64209/HTML/default/viewer.htm#egwhatsnew51.htm>

## CONTACT INFORMATION

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

Anand Chitale  
SAS Campus Drive  
SAS Institute Inc.  
E-mail: Anand.Chitale@sas.com

Lina Clover  
SAS Campus Drive  
SAS Institute Inc.  
E-mail: Lina.Clover@sas.com

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