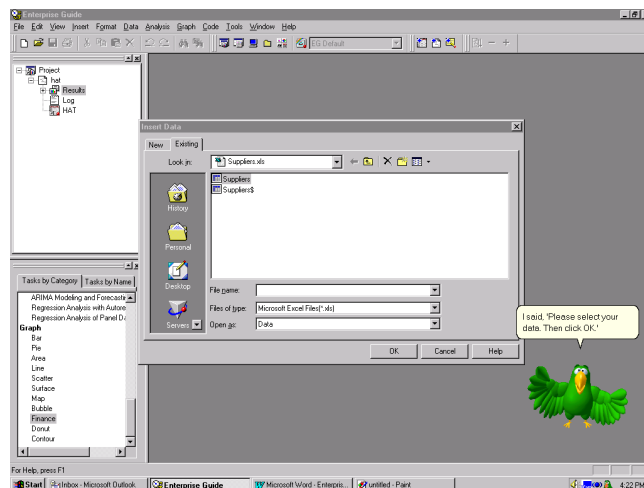**Paper 142-25**

# Enterprise Guide™ White Paper
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## ABSTRACT

SAS® Enterprise Guide™ is a point-and-click native Windows application for accessing SAS data, executing SAS code, and generating results. This true thin-client interface to the SAS System is designed specifically to run on Microsoft® Windows platforms, including Windows 95 and 98, Windows NT 4.0, and Windows 2000. This state-of-the-art Windows interface offers users repeatability and provides transparent access to local and remote data (either SAS or non-SAS) and to the computation engines serviced by the SAS System residing on any Windows, UNIX, or MVS server.



## INTRODUCTION

Traditionally complex operations are reduced to a few simple point-and-click and drag-and-drop actions. For example, you can move your Excel data to an MVS server simply by dragging the file icon to the server icon. In addition, you can create complex queries with the visual Query Builder tool.

Dozens of standard reporting and analysis "dialogs" are provided, each designed to lead you through the steps of creating meaningful results from your analysis. Because these tasks generate the SAS program code needed to reproduce your results, it is easy to modify the SAS programs to fit your own special requirements.
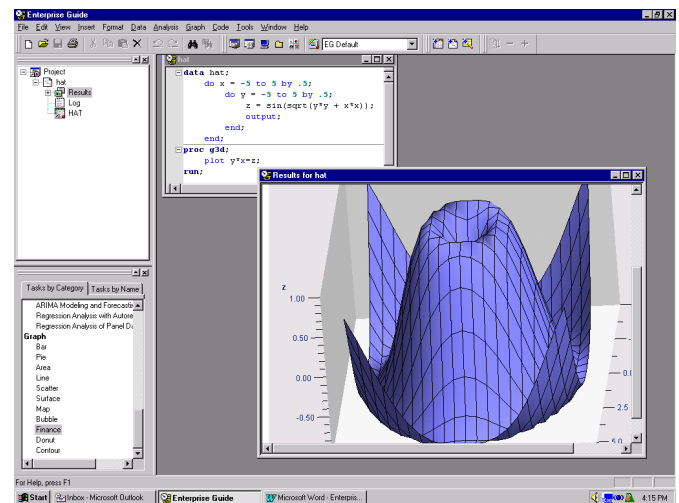
Enterprise Guide takes advantage of the SAS System's output delivery system (ODS) to create appealing formatted results. The Enterprise Clients family of software includes an Administrator component that allows you to define how users can access data and run computations on the various SAS servers that you might have installed. System administrators will feel at home with the level of control afforded at the user, group, and server level.

Enterprise Guide can simultaneously use the Version 8 SAS System for Windows that is installed on your local PC as well as any Version 8 SAS System for Windows, Unix, or the mainframe that is installed on these machines. In order to provide this access, Enterprise Guide requires a Version 8 or greater SAS

server. This is a true thin-client application—there is no need for the SAS System to be installed on the same machine where Enterprise Guide is installed.

Interactive dialogs, wizards, and property sheets lead you through dozens of analytical and reporting tasks. You have the ability to export results to other Windows applications and to the Web, as well as the ability to schedule your project to run at a later time. Behind the scenes, the SAS System does all the work so you get a native Windows user interface with the power, stability, and scalability of the SAS System. The results generated by the SAS System take advantage of Version 8 Output Delivery System (ODS) to format and present results. You can save your results either with your Enterprise Guide projects or export them individually using e-mail or your favorite browser. Once you have created a project, you can schedule it to run periodically to create results that reflect changes that have occurred with your data. For documentation purposes, you can also add existing files to your project such as Microsoft Word or PowerPoint files.

Enterprise Guide also provides a color-coded, syntax-checking SAS language editor for editing new or existing SAS programs in your project. The editor uses different colors to indicate the various SAS language keywords as well as embedded comments and quoted strings among other things. The colors and attributes of the text are all controlled via options. Very handy collapse and expand tools are provided to allow you to collapse your SAS code to the step level.



By default, code is run on your default server. If you would prefer to run your code on a different server, you can select the server from the list of available servers when you add your code to your project. Also you can change the designated server using the Properties dialog or the Run -> Designate server dialog.

You can create a custom report from your results using the Document Builder. You select which tables and graphs you want to save as well as the order in which you want them to appear. Once you have created your document, you can save it as an HTML file.
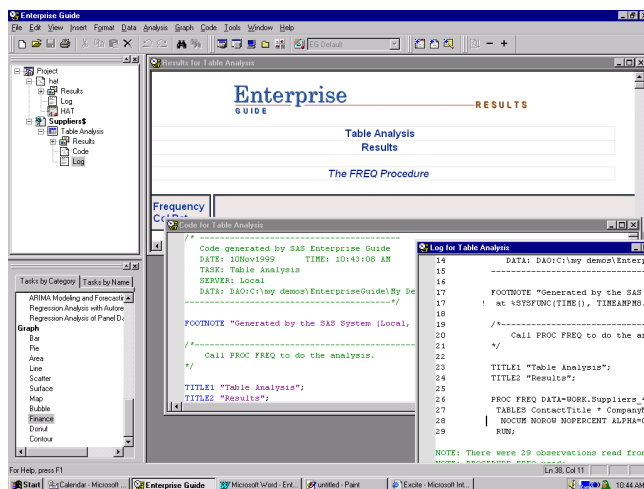
The appearance of Enterprise Guide is customizable through a Customize dialog, which allows you to modify menus, toolbars,

and accelerators as well as add tools to your Tools menu.

Through an Options dialog you can configure the way the Enterprise Guide application behaves. For instance, you can control the presentation of your project view by suppressing the code and log nodes under each task. Many other options exist to control the appearance and behavior of the application.

## DATA ACCESS

Enterprise Guide provides transparent access to both SAS and non-SAS data. For example, you can report on or analyze data that resides on your MVS system as well as a Microsoft Excel spreadsheet that is located on your PC. Data sources residing on different servers and of different architectures can be used in the same report or reside in the same project.  The logistics are handled transparently by the Enterprise Guide. By default, data is processed and tasks are run on the server where the data is located.  Moving data and accessing remote data is also easy within the Enterprise Client environment. Copying the contents of an Excel file from your PC to MVS is a simple drag-and-drop operation. The File Open dialog allows you to navigate the native file systems of all machines where the SAS System is installed.



In addition to file selection through the File Open dialog, you can drag local data files from your Windows Explorer directly into your projects and reports. Enterprise Guide also provides a Server List control bar making it convenient to drag files from any remote server into a project, from Windows Explorer to any remote server, or from server to server.

The Enterprise Guide interface is a point-and-click guide through the entire SAS language and all of the SAS System procedures. The task dialogs are organized by the tasks that you want to accomplish or by the reports that you want to generate. You can select a task using the menu bar, toolbar, or the task selector. Using the task selector, you can select a task either by category or by name. If you are familiar with the SAS language, you can choose your task by procedure name or task description. You can browse through the list of task descriptions and choose the appropriate one. There is a broad spectrum of tasks ranging from simple data listings to the most complex analytical procedures. A complete graphics gallery is also available.

The data types supported by Enterprise Guide V.1.0 are summarized as follows:

**Tabular Data**
SAS Data:
- All SAS Datasets (V6 – V8)      *Create/Read/Update*
- SAS DBMS Engines (DB2- Oracle)   *Read Only*
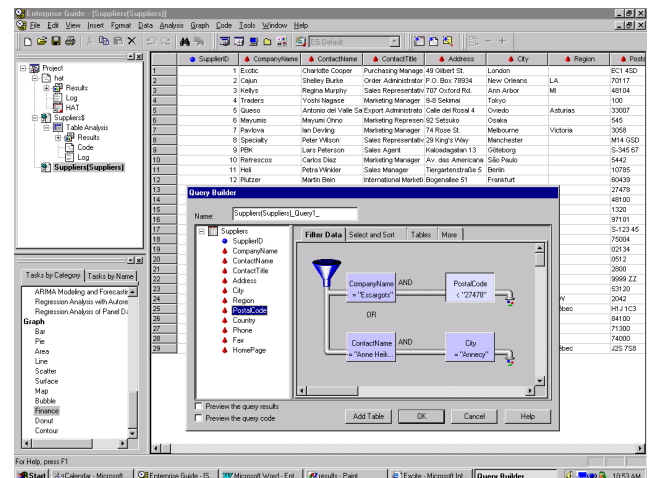
Non-SAS Data:
- Excel-Access-DB2-Lotus-Paradox-Text-HTML   *Create/Read*
- ODBC-OLE/DB-MS Exchange Folders      *Read Only*

**Cube Data:**
- OLE/DB for OLAP Provider       SAS and Non-SAS Data

## QUERY

In addition to using data "as is" from the table, you can use the graphical Query Builder to join tables, filter data, select columns, set ranges and sort data before you use it for a task. This interactive tool lets you build queries without being an SQL expert. When joining one or more tables, the Query Builder performs a "smart join" by automatically connecting common columns between the tables. You also have the option of connecting the columns yourself through the drag-and-drop interface. The Query Builder provides dialogs to define both inner and outer joins.



Producing a subset of your data that meets certain conditions is easy to do with the graphical filtering feature of the Query Builder. This capability allows you to create filters on data by choosing the column and using a simple dialog to define the condition. Creating exact match conditions is made easier with distinct value lists. The "AND and OR" relationships between the conditions can be changed by dragging the filters around to change the "flow" of data that is filtered. If, at any point while creating your query, you wish to view the SQL code being generated, the Query Builder provides a preview window that displays the current query code.

The Query Builder of Enterprise Guide V.1.0 are summarized as follows:

Filtering of Columns
- Based on Constants
- Distinct Column Values Available

Selection of Columns

Join Features
- Across Multiple Servers
- SAS and NON-SAS Data
- Automatic
- Multiple Keys

Join Functions
> ➢ Inner Joins
> ➢ Outer Joins
> ➢ Left Outer Joins
> ➢ Right Outer Joins
> ➢ Unions All

Sorting

Column and Table Alias Support

Generating SQL Code
> ➢ Create
> ➢ Modify
> ➢ View

Previewing Results

Intelligent Data-Sensitive GUI

## REPEATABILITY

One of the strengths of the SAS System is the ability to repeat tasks. Once you have created a project in Enterprise Guide, you can schedule either the entire project or a portion of that project to run in batch at a later time. The generated results or reports can then be published as HTML files, automatically e-mailed, or printed or published to a specific web server.

You control Enterprise Guide applications by creating a script to automate the application. Any script language that supports automation will work, such as VB or Java scripts. Applications such as Wscript, Cscript, and Microsoft Visual Basic can also be used to run these scripts. Your script can be automated using various system schedulers such as AT on Windows NT or the Task scheduler provided by Internet Explorer.

Here is a sample VB script for automating an Enterprise Guide project named "c:\sales.seg". The entire contents of the project runs when this script executes. The output of the run is saved in "c:\salesout.seg".

```
' Start up guide using the project
name
Dim obj
Set obj =
WScript.GetObject(c:\sales.seg,
"SASEGuide.Project" )
' Run the tasks
obj.Run()
' Save the new project
obj.SaveAs("c:\salesout.seg")
```

## ADMINISTRATION

If you have a SAS System installed on your local PC, by default Enterprise Guide can automatically connect to that SAS System and use it as the default server. If you want to connect to other SAS System servers, you need to tell Enterprise Guide where the servers are located. Using the Administrator, you can set up the servers for groups of users at your site. For each server, you specify a name like "Finance server on MVS" and a description like "MVS Server for Finance data". You specify either the actual domain name like "mvs.sas.com" or the IP address like "10.10.3.255". You specify the type of protocol used to connect to the server - either DCOM or TCP/IP. You can either specify user login information or you can choose to be prompted for the user login name and/or password when an actual SAS System server connection is established. You can designate the default server.

For each server, you can set up SAS libraries that will be created when you establish a connection to that server. Using the Administrator, you can set up users and groups. You can use groups to control user access to servers, libraries, and folders. Using the Administrator, you can set up folders that can contain files, shortcuts, and other folders. Files can be SAS and non-SAS data. Shortcuts can point to other folders and files. The folders can be located on the local PC, the PC network, and any of the remote SAS servers. These folders will be accessible via the Open File dialog to allow you to easily find your favorite data. On a site, group, or user level, you can set up SAS server access, SAS libraries, and folders.

## REFERENCES

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