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ActiveX

Enhancements to the Graphical User Interface for the SAS System on Personal Computers

Thin Client for the Windows Platform - Enterprise Guide

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Abstract

Enterprise Guide is a new Windows Thin Client that is available with the Nashville release. Enterprise Guide provides a point and click, code based user interface to all the Version 7 SAS System servers. Enterprise Guide provides transparent data access to both SAS and non-SAS data, interactive dialogs that lead you through dozens of analytical and reporting tasks, the ability to export results to other Windows applications and to the Web, and the ability to schedule your project to run at a later time.

Introduction

This thin-client Windows application provides transparent, simultaneous access to all Version 7 SAS System platforms, including Windows, Unix and mainframe systems. Enterprise Guide is a separate Windows application that communicates with the SAS System to access data, execute code and generate results. 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 7 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.

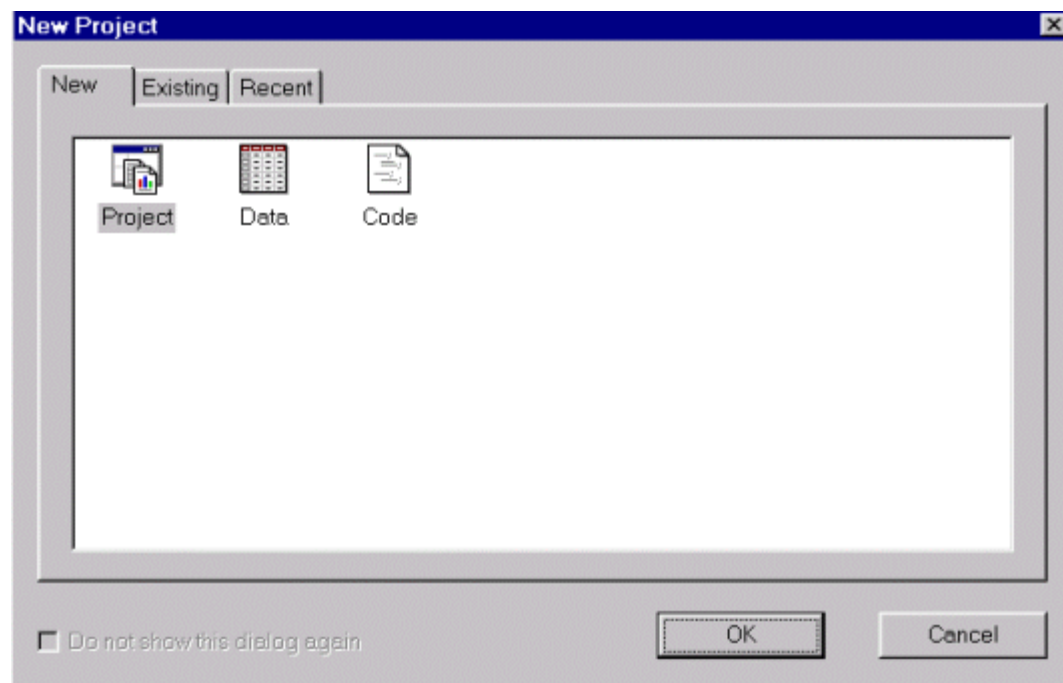
SAS System ACCESS

Enterprise Guide can simultaneously use the SAS System for Windows, Version 7, that is installed on your local PC as well as any Version 7 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 7 or greater SAS server. Enterprise Guide 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 as long as you have a SAS System available.

User Interface

Enterprise Guide uses a project-centric user interface like many other Windows products. Data, tasks, and results for a particular project display in a project tree.

When you first start Enterprise Guide, you can choose to create a new project, new data or new code. Here is the initial splash screen:



The tasks in a project are data-centric. The data can be either SAS or non-SAS data that can be stored either locally or remotely. Enterprise Guide provides a set of dialogs, wizards and property sheets to front-end the power of the SAS System.

Here is an example of a Enterprise Guide project that contains SAS and non-SAS data, a "Frequency and Table Analysis" task, a "Bar Chart" task and the results that each task generated:

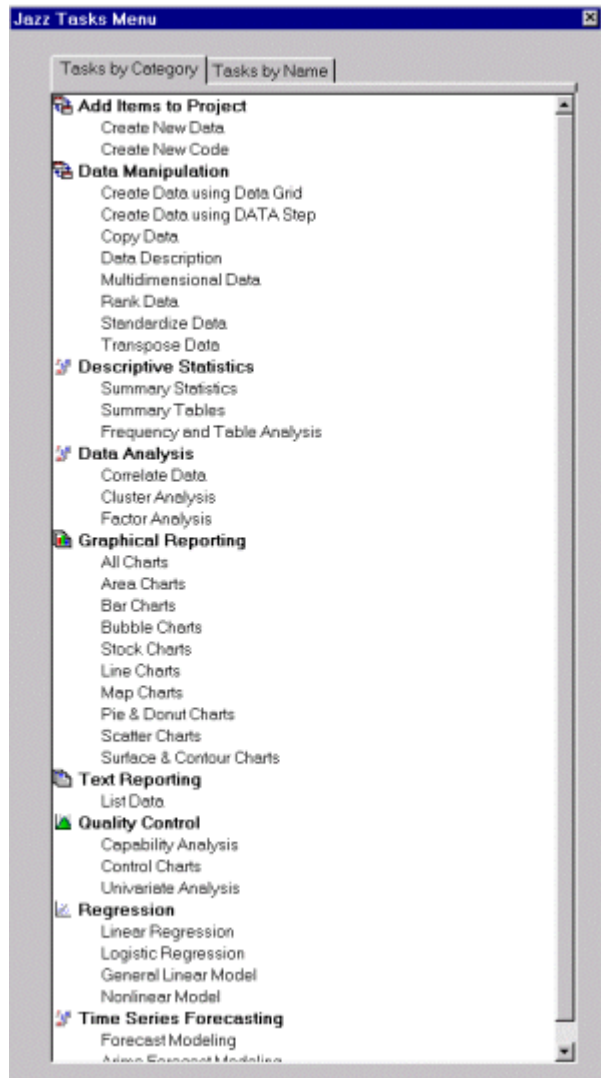
The screenshot displays the SAS Enterprise Guide interface for a project named 'Jazz'. The interface is divided into several panes:

- Project Explorer (Left):** Shows a hierarchical view of the project structure, including 'Sales 98', 'CollegeMajors\$', 'Frequency and Table Analysis', 'Results', 'Code', 'Log', 'purchases', 'Bar Charts', and 'Results'.
- Data Table (Center):** Displays a table with columns 'ProductGroup' and 'Pro'. The data shows 26 rows of 'Small Toys' purchases, categorized by product groups like 'Plastic Bugs', 'Plastic Cars', 'Paper Poppo', 'Worms', 'Small Bag h', 'Pom Poms', and 'Paper Hats'.
- Task Selector (Bottom Left):** A list of tasks organized by category:
 - Data Manipulation:** Copy Data, Data Description, Multidimensional Data, Rank Data, Standardize Data, Transpose Data.
 - Descriptive Statistics:** Summary Statistics, Summary Tables, Frequency and Table Analysis.
 - Data Analysis:** Correlate Data, Cluster Analysis.
 - Graphical Reporting:** All Charts, Area Charts, Bar Charts, Bubble Charts, Stock Charts, Line Charts, Map Charts.
- Results (Right):** A 3D bar chart titled 'Region' showing the frequency of purchases for different product groups. The y-axis is labeled 'Frequency' and ranges from 0 to 120. The bars represent different product groups, with 'Small Bag h' having the highest frequency.
- Code Editor (Bottom Right):** Contains SAS code for a frequency analysis:


```
option validvarname = any;
options validvarname = any;
ods html gpath = "sx/" file = OBJECTSERVER de
PROC SORT DATA=WORK.CollegeMajors_ OUT=WORK._
  BY Gender ;
PROC FREQ DATA=WORK._jzifreq_
  TITLE Frequency analysis of CollegeMajors$;
  BY Gender ;
TABLES CollegeMajor
  / NOCOL NOROW ;
RUN;
TITLE; FOOTNOTE; RUN;
```

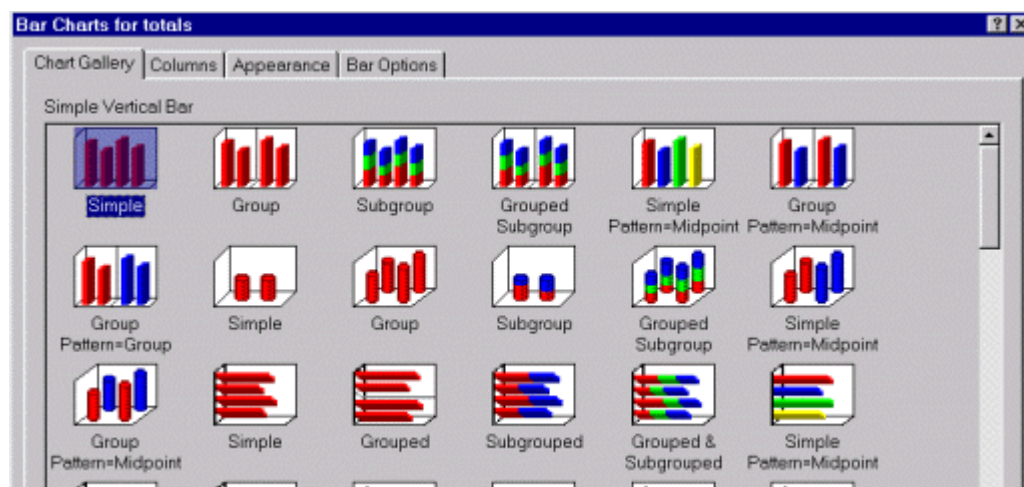
The Enterprise Guide interface is a point and click guide through the entire SAS language and all of the SAS System procedures. The task dialogs are organized by the tasks that you want to accomplish or by the reports that you want to generate. You can select a task using the menu bar, toolbar, or the 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 very complete graphics gallery is also available.

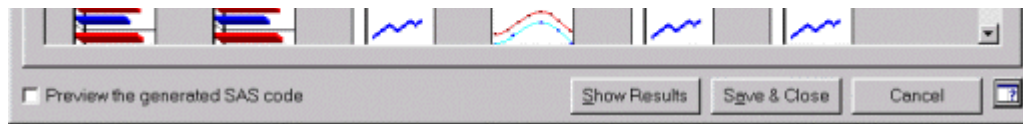
Here is the task selector with the tasks grouped by category:



Tasks generate SAS code and formatted results. The Version 7 ODS system generates the results information. You can also view the SAS System log for each task that you have run.

Here is an example of a graphics dialog that Enterprise Guide provides:





You can save the results from each task you run as HTML that can be used in any browser. The Enterprise Guide graphics results are interactive - you can click on a graph and modify the graph's presentation.

Projects may also contain log information as well as "yellow sticky" note information. For documentation purposes, you can also add existing files to your project such as Microsoft Word or PowerPoint files.

Enterprise Guide provides a color-coded, syntax-checking SAS language editor. You can use the editor if you want to view and/or edit existing SAS programs that you have added to your project. You can use the editor to write new SAS code and add that code to your project. You can use the editor to view the SAS code or SAS log that Enterprise Guide has generated for you. The editor uses different colors to indicate the various SAS language keywords. Colors are used to indicate comments contained in the SAS code. In addition, if you have mismatched quotes in your code, you can quickly recognize where the missing quote belongs because of the text coloration. You can control all of the text coloration using the Options dialog. You can view your code steps by using the collapse and expand tools.

Here is the Enterprise Guide editor:

```

/* define a fileref for the destination for graphics output */
filename odsout 'external-location';

/* define the destination for the ODS graphics output and the
PROC PRINT output */
/* assign a frame file and a contents file */
/* assign a body file for the first bar chart */
ods html frame='sales_frame.html'
contents='sales_contents.html'
body='sales_body1.html'
qpath=odsout nogtitle;

***** first bar chart and report *****

/* define title and footnote for vertical bar chart */
title1 'Total Sales By Quarter';
footnote1 j=r h=3 'salesqtr ';

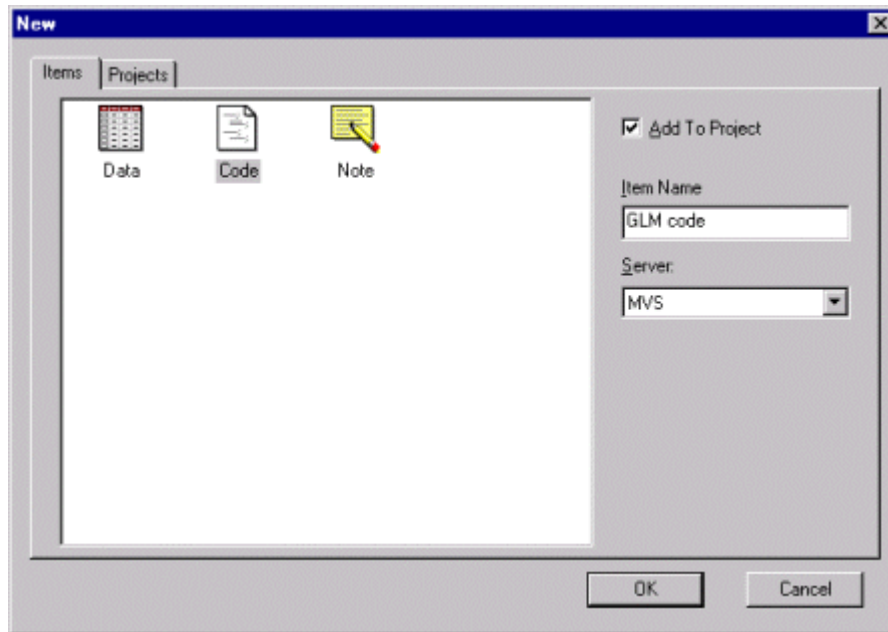
/* define axis characteristics */
axis1 order=(0 to 60000 by 20000)
minor=(number-1)
label=none;
axis2 label=none length=70pct value=({'1q' '2q' '3q' '4q'});
legend1 label=none shape=bar(4,4);

/* generate vertical bar chart of quarterly sales */
proc gchart data=reflib.totals gout=reflib.odscat;
format sales dollar8.;
vbar3d quarter / discrete
sumvar=sales
shape=cylinder
subgroup=site
cframe=grayaa
caxis=black
width=8
space=4
legend=legend1
maxis=axis2
raxis=axis1
des='Total Quarterly Sales'
name='salesqtr';
run;

```

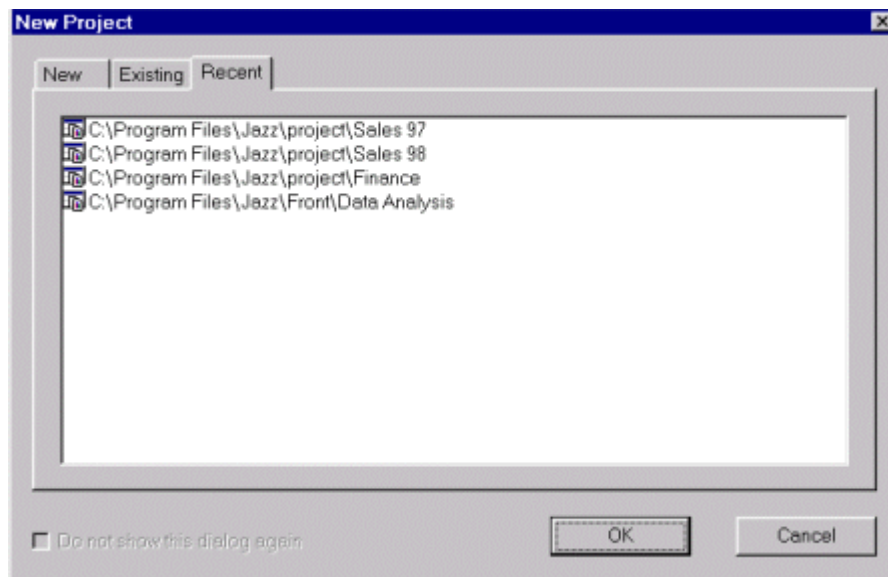
By default, new or existing code is run on your default server. If you want to run your code on a different server, you can select the server from the list of available servers when you add your code to your project. Also you can change the designated server using the Properties dialog.

Here is the New Code dialog where a new code node named "GLM code" is being created to run on the server "MVS":



Another feature of Enterprise Guide is the ability to save your project and reopen it at a later time. All of your data, tasks and results are saved in your project. Once you have saved your project, you can quickly get to back to your work by "double clicking" your project name in the Windows Explorer. You can also use the Existing or Recent tab in the Jazz splash screen to access your saved project.

Here is the Recent tab in the Jazz splash screen:



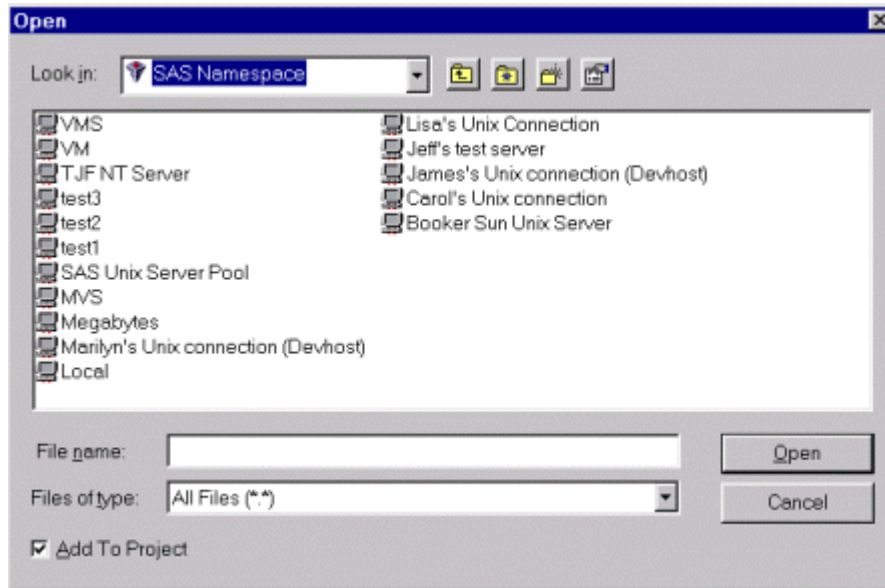
Data Access

Enterprise Guide provides transparent access to both SAS and non-SAS data. For example, suppose you add a data set from your MVS system and a Microsoft Excel spreadsheet from your PC to your project. You can view either file with the Enterprise Guide data grid. You can use the variables from either file in any of the Enterprise Guide tasks. By default, tasks run on the server where your data is located.

Moving data and accessing remote data is also easy within Enterprise Guide. You can drag an Excel file and

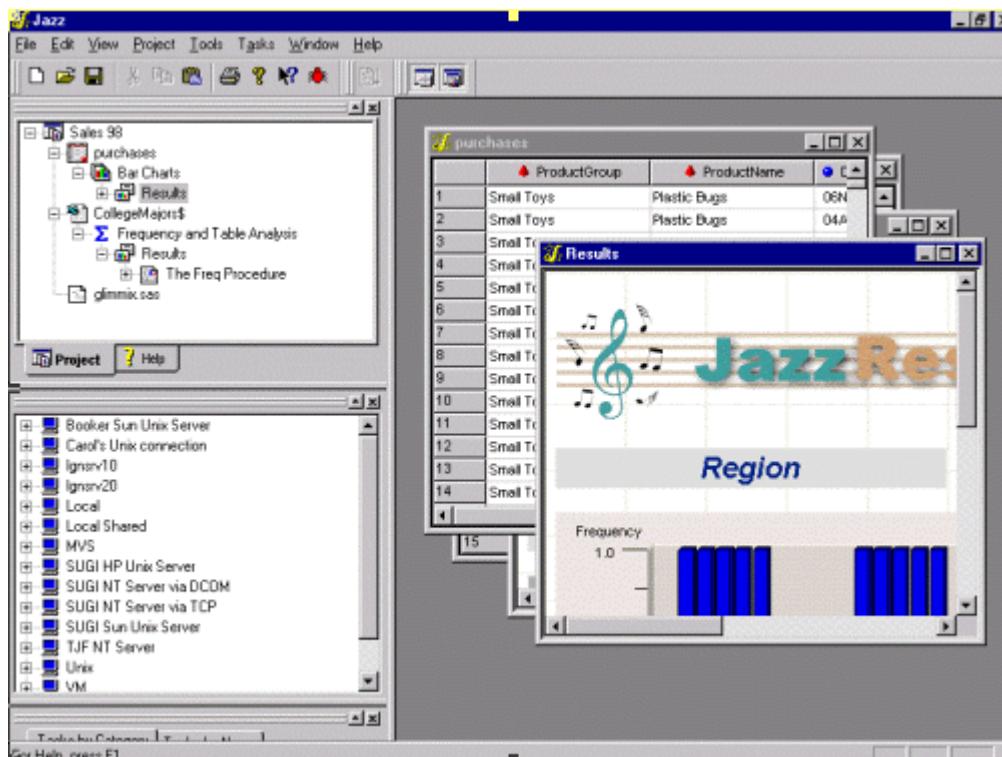
Moving data and accessing remote data is also easy within Enterprise Guide. You can drag an Excel file and drop it on one of the systems where you have your SAS System installed, like MVS, to move the contents of the Excel file from your PC to the MVS system. From the Enterprise Guide Open dialog, you can navigate the native file systems of all machines where you have the SAS System installed.

Here is the Enterprise Guide Open dialog with several SAS servers:



You can add data to your project using the Enterprise Guide Open dialog. In addition, you can drag local data files from your Windows Explorer into your Enterprise Guide project. Using the Server View control bar, you can drag files from any remote server into your project.

Here is the Enterprise Guide application with an active Server View control bar:

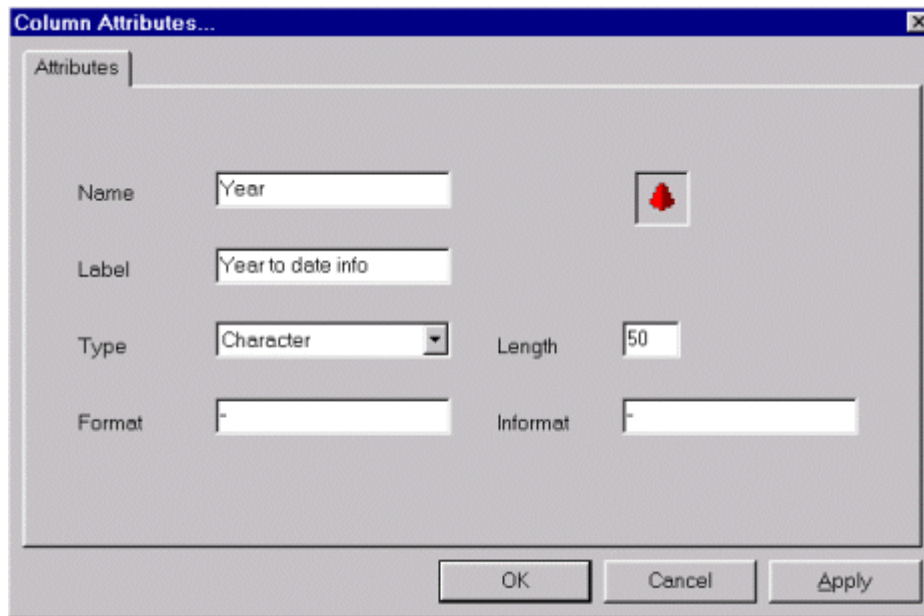


Data Grid

You can use the Enterprise Guide data grid to browse and manipulate existing data. You can sort the data columns, view either the column or label names, view column attributes or add comments to a particular column. You can also hide columns of data.

Using the data grid, you also can create a new data source and store the data on any of your SAS servers. You enter data by simply typing information in the data grid cells. In addition, you can also copy data from an existing grid using copy and paste or drag and drop. Using the Column Attributes dialog, you can change a column name, label, type, length, or format.

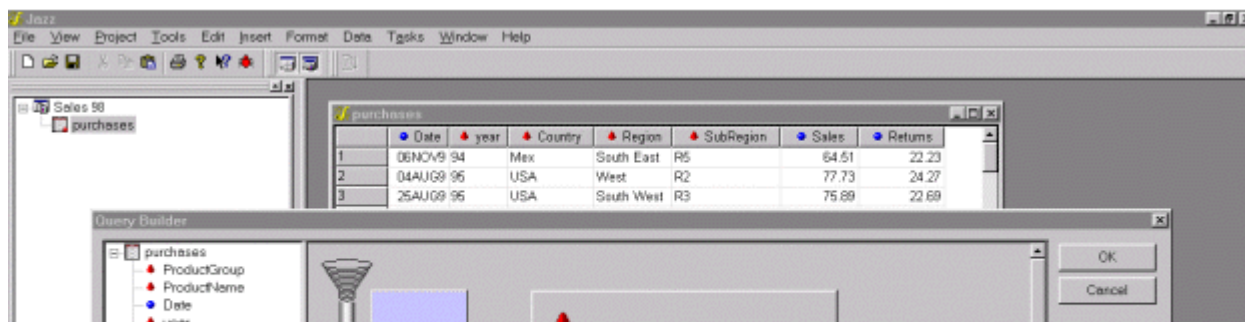
Here is the Column Attributes dialog:

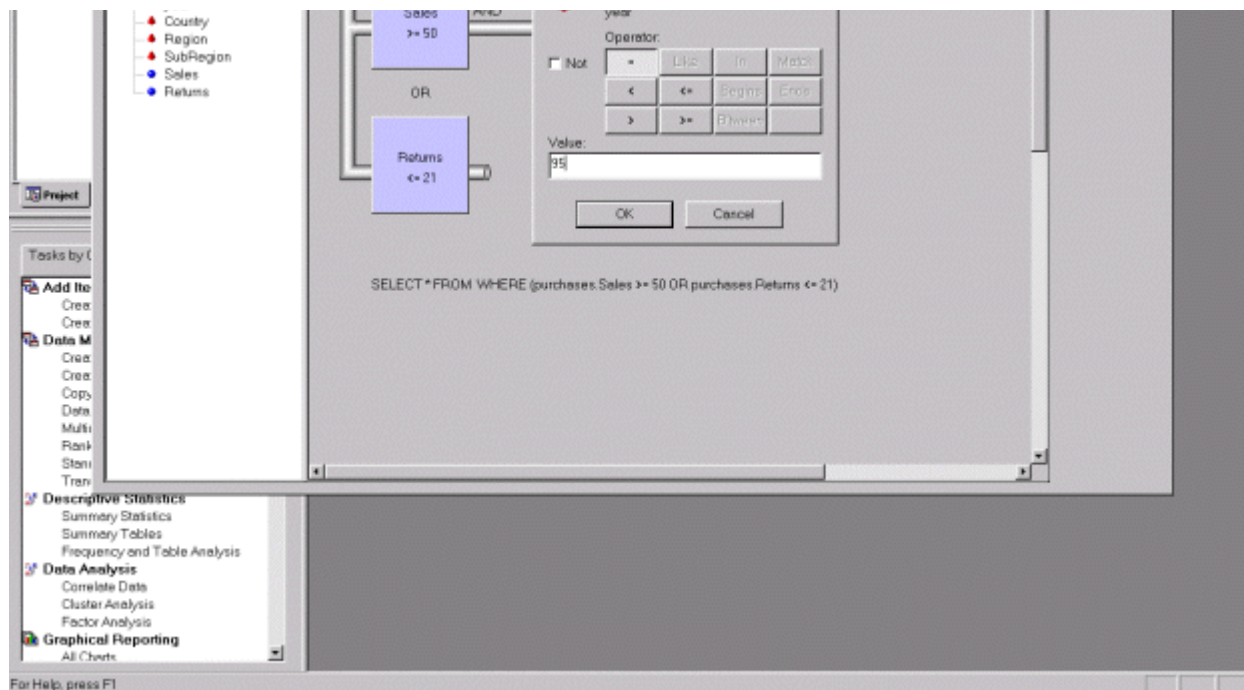


Query Builder

In addition to using data "as is" from the table, you can use the graphical Query Builder to filter data, select columns, set ranges and sort your data before you use it for a task. You can also join one or more data tables. This interactive tool lets you build queries without being an SQL expert. The AND and OR relationships can be changed by dragging the column objects around to change the "flow" of the data that is filtered. To create expressions, point and click on column objects and use the simple dialog to set the filtering conditions.

Here is an example query created using the Query Builder.

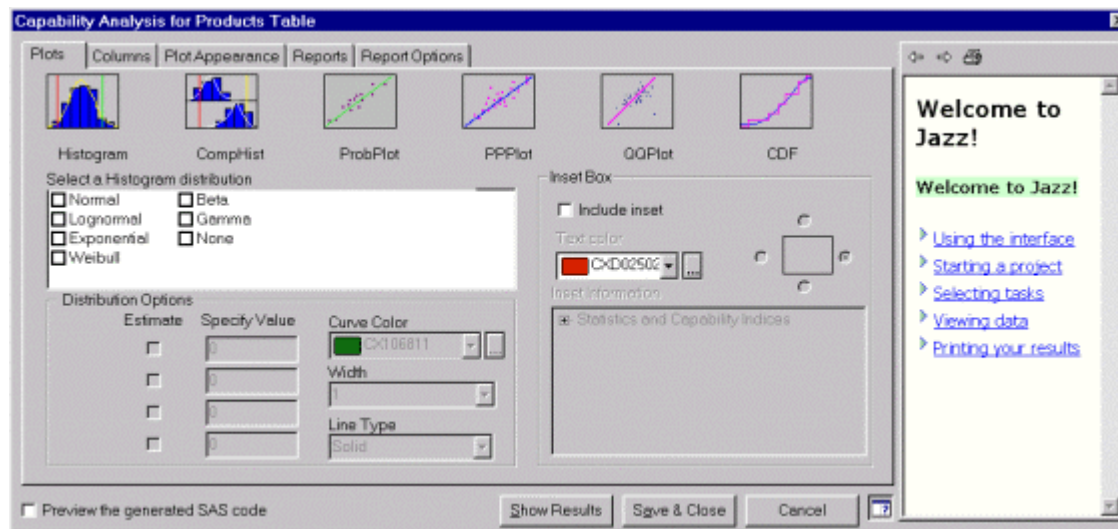




Integrated Help

Enterprise Guide provides user assistance through a combination of a standard help system and innovative integrated aids. For example, the help topics that describe the details about performing a particular task are attached directly to the task window so that you can view the topic as you navigate the task.

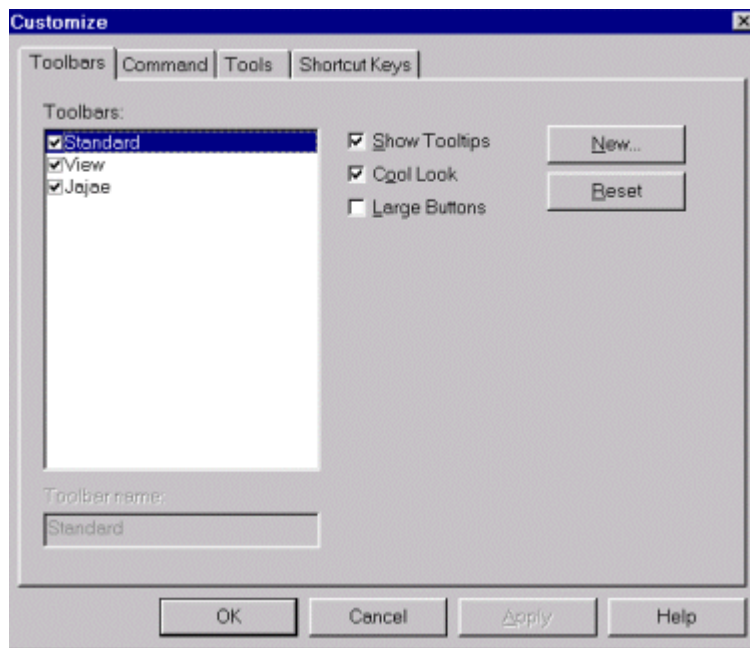
Here is an example from the Capability Analysis task:



Customizable User Interface

Enterprise Guide is fully customizable at the user and site level. At the user level, you can customize the appearance of Enterprise Guide using the Customize dialog. This dialog allows you to customize the menus, toolbars, and accelerators. You can add custom tools to your Tools menu. You can access the Customize dialog by using the menu and selecting Tools->Customize, or by pressing your right mouse button in the toolbar area.

Here is the Customize dialog:

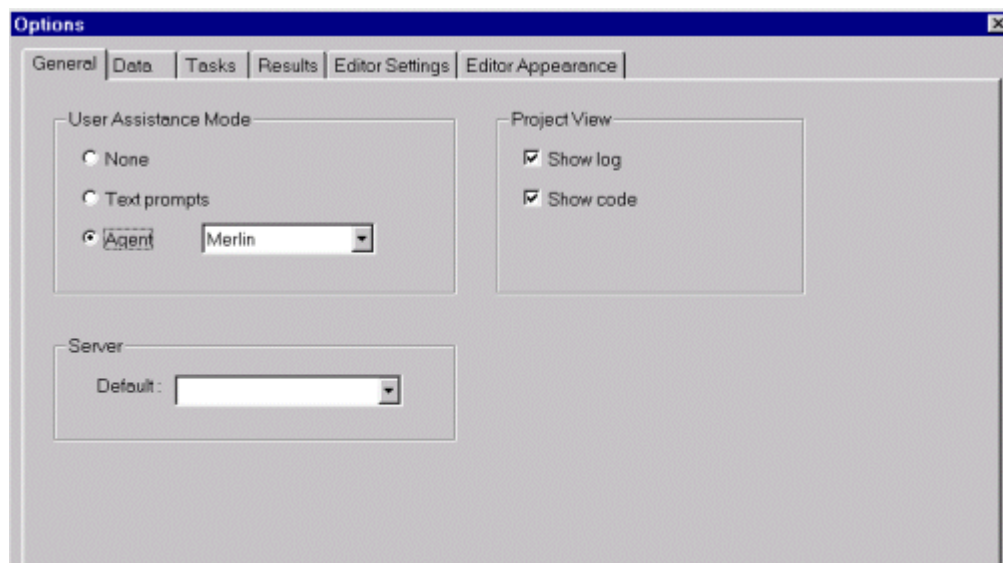


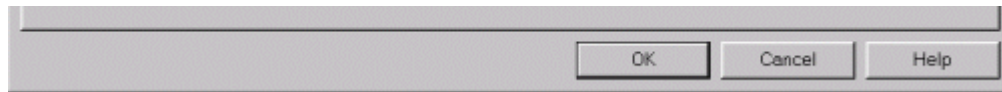
Existing tasks can be extended with user modifications. Once you have created an extended task, you can save this task as a Custom task.

Using the "Jazz Administrator", you can customize the list of available tasks that Enterprise Guide provides to a particular user or a group of users.

You can use the Options dialog to configure the way the Enterprise Guide application behaves. You can change your default server. You can control the presentation of your project view - you can suppress the code and log nodes under each task. You can control the appearance of the Data Grid. You can override the results' appearance with various ODS styles. You can specify whether your HTML graphics will use the ActiveX control or GIF files. You can set the colors used for displaying the SAS code in the editor windows.

Here is the Options dialog:

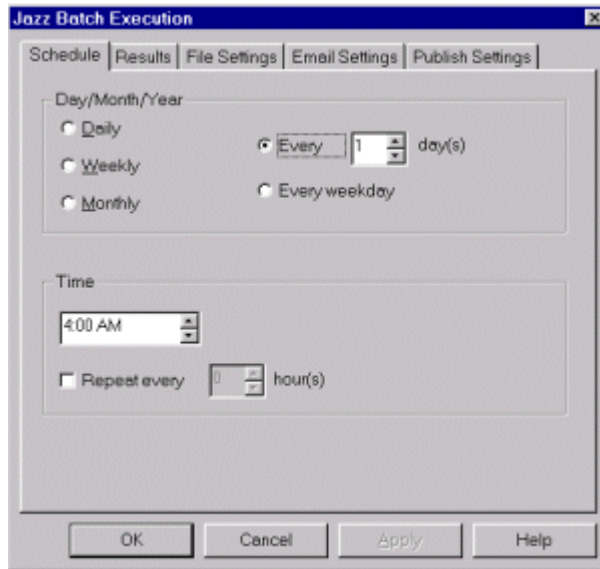




Scheduler

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. You can specify that the generated results be published as an HTML file. You can automatically e-mail or print your results. Additionally, you can automatically publish your results to a specific web server.

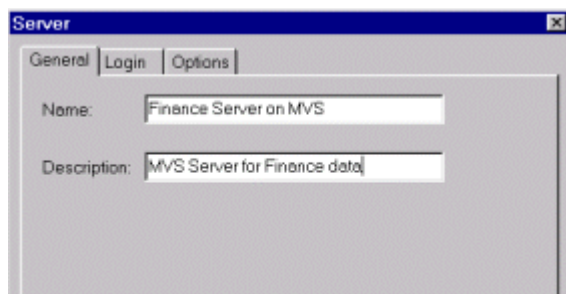
Here is the Scheduler dialog:

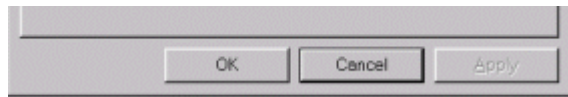


Administration

If you have a SAS System installed on your local PC, by default Enterprise Guide will 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 "Jazz Administrator", you can set up the servers for your company. 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.

Here is a sample property sheet for a MVS server:

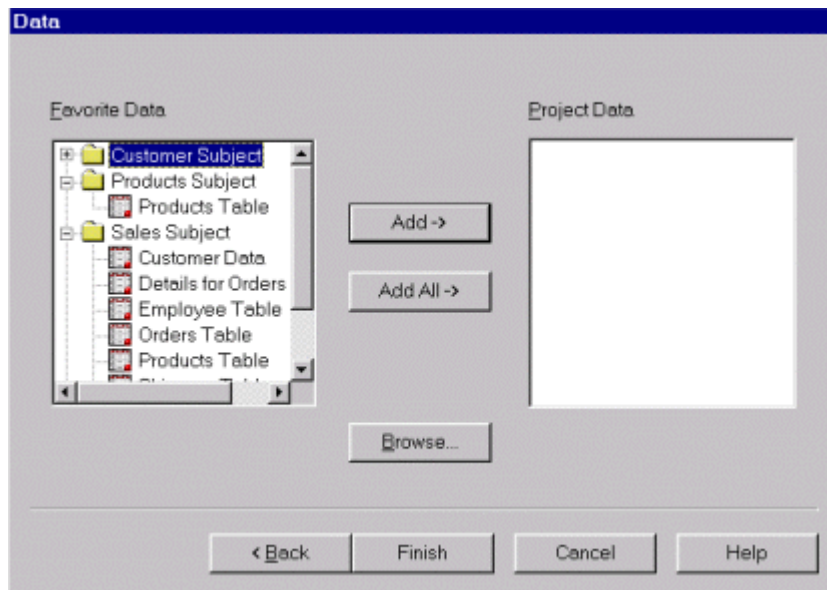




For each server, you can set up SAS libraries that will be created when you establish a connection to that server.

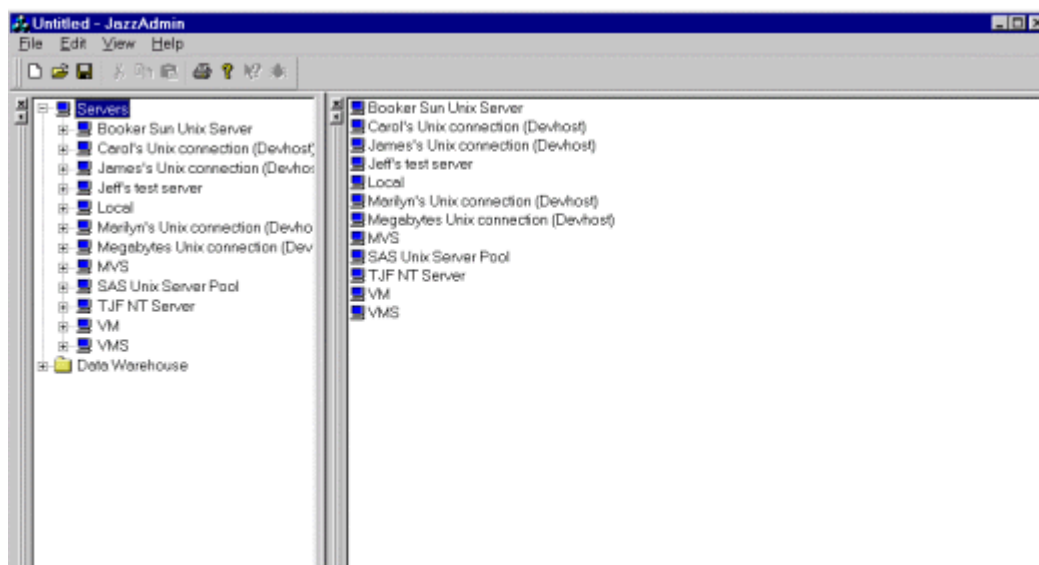
Using the "Jazz Administrator", you can set up a list of Favorite Data sources. This list can contain SAS and non-SAS data. The data can be located on the local PC as well as any of the remote SAS servers. This list will appear in Enterprise Guide as a quick way to select data.

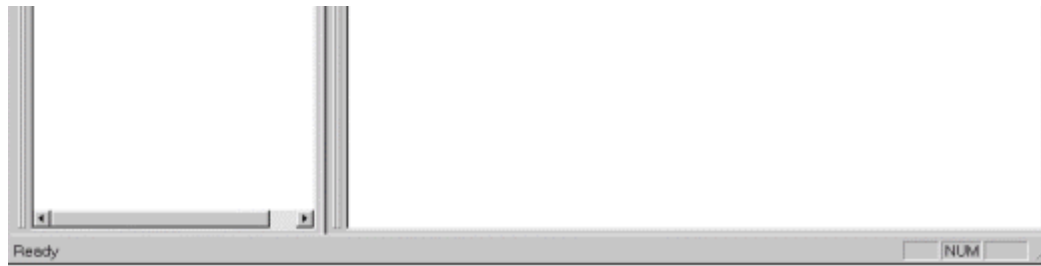
Here is the Favorite Data list that is used in the Enterprise Guide New Project Wizard:



On a site, group or user level, you can set up SAS server access, SAS libraries and Favorite Data sources. Additionally, you can customize the task dialogs that appear on the Enterprise Guide menus.

Here is the "Jazz Administrator" application.





Conclusions

The official name of this application is Enterprise Guide (it was formerly known by the code name "Jazz Front")

References

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