

Chapter 7

Saving and Restoring

There are several ways to save information about the simulation. You can save a picture of the model as a SAS Graph object, save the sample path of a simulation, and save a representation of the simulation model or a piece of the model. Each of these saved representations can be reused, each in its own special way.

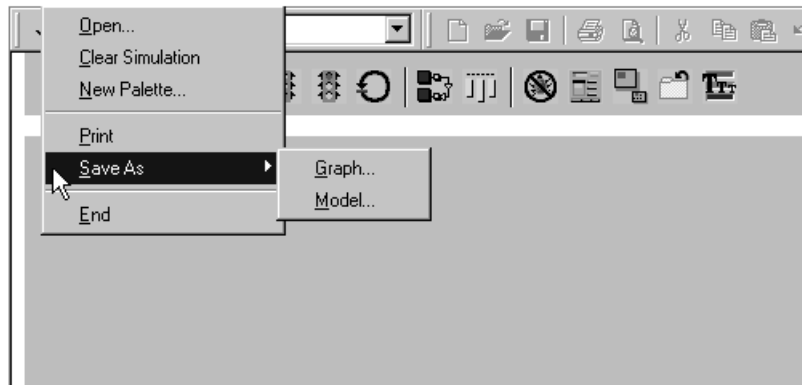


Figure 7.1. The Save As Selection on the Simulation Window

Figure 7.1 shows the pull-down menu on the Simulation window from which you choose whether you want to save a graph or a model.

Models

A model of the simulation includes the values of all parameters and settings, and the logical and physical structure of the model. It does not include information on transactions in service or those waiting for service. Nor does it include information on which windows and panels are open. When you select **Model...** from the pull-down menu in Figure 7.1, the Save Model window in Figure 7.2 opens. The model is saved in a SAS data set whose name you enter in the Save Model window. You can restore a model by selecting **Open...** from the pull-down menu in Figure 7.1.

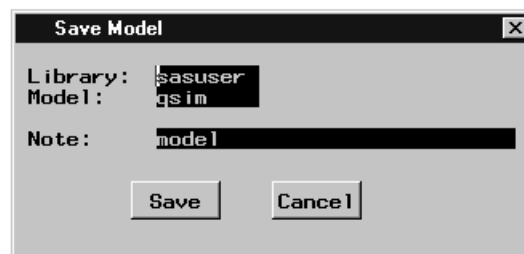


Figure 7.2. Save the Simulation Model

Since a model is saved in a SAS data set, it is possible to edit the model. However, this should not be done since it will result in errors when reading the model back into the simulation.

Palettes

The palette contains the default components that are discussed in Chapter 2, “Building a Model with Elementary Components,” and any compound components that you have assembled and added. As discussed above, these are dragged and dropped into the Simulation window when building simulation models. There are several features for manipulating and maintaining palettes.

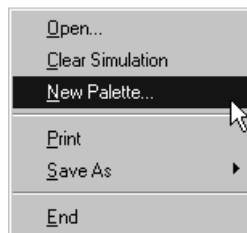


Figure 7.3. The Simulation File Pull-down Menu

Figure 7.3 shows the **File** ► **New Palette...** pull-down menu on the Simulation window. This will open a new palette. You can have multiple palettes open at any time. Notice the **File** ► **Clear Palette** pull-down menu on the palette, shown in Figure 7.4. This empties the palette of all components. This enables you to bring up a new palette, clear it, and add whatever components you have built to it. You have created a customized palette.

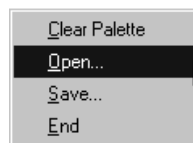


Figure 7.4. The Palette File Pull-down Menu

The palette **File** pull-down menu also has an **Open...** and **Save...** With these selections you can save all the templates in a palette into a SAS data set which can then, in another invocation of the QSIM Application, be opened and loaded into a palette.



Figure 7.5. Save Palette Window

In Figure 7.5 the palette is saved into a data set named SASUSER.BASE.

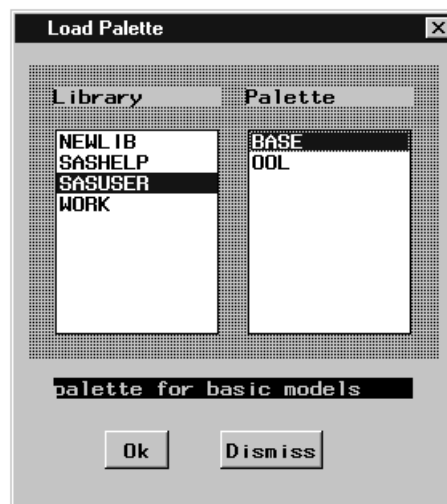


Figure 7.6. Load Palettes Window

In Figure 7.6, SASUSER and BASE are selected so that when the **OK** button is pushed, the palette will be populated with the templates that were saved in SASUSER.BASE.

Graphs

A graph is a visual representation of the model. There is no structural information about the model saved in the graph of the model. When you select **Graph...** from the pull-down menu in Figure 7.1, the Save Graph window opens.

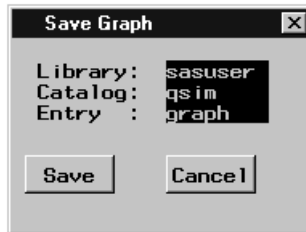


Figure 7.7. Save the Graph of the Simulation

In this window you enter the name of the entry in a catalog into which the graph representation is stored as a SAS/GRAPH grseg.

Sample Paths

There are two ways of accumulating sample path data. One is from the perspective of the components and the other is from the perspective of the transactions. Each of these puts the sampled data into a SAS data set that can be analyzed by your own programs. One relies on another SAS data set named DICT, which contains a dictionary for tying together components and unique component ids.

Unlike the other pieces that are saved (models, templates, and graphs), the sample paths cannot be reconstituted by the QSIM application or by other applications or procedures within the SAS System. However, this information can be useful in user-written SAS programs to further analyze these data.

The Component Dictionary Data Set

The component dictionary data set is always in WORK.DICT. It has two variables, CMPONENT and ID. Figure 7.8 shows a printout of the data set for a simple M/M/1 model.

Obs	cmponent	id
1	Sampler 0	0
2	FifoQueue 1	1
3	Server 2	2

Figure 7.8. An M/M/1 Example Dictionary Data Set

The value of the CMPONENT variable will be whatever label is associated with the component. Note that only elementary components will appear in this data set.

Component State Sample Paths

The component state information is saved in the data set WORK.SAMPLE. For each change of state in the simulation, a new observation is added. This data set contains three variables: TIMENOW, the simulation time when the state change occurred; ID, the id of the component that is changing state; and STATE, the value of the new state. Figure 7.9 shows an example. Notice that the ID corresponds to either the server or the queue as given in the dictionary in Figure 7.8.

Obs	TIMENOW	id	state
1	0.18227	2	1
2	0.65860	1	1
3	1.24356	2	0
4	1.24356	1	0
5	1.24356	2	1
6	1.52718	2	0
7	1.92766	2	1
8	2.43294	2	0
9	4.15865	2	1
10	4.53893	2	0

Figure 7.9. An M/M/1 Component State Sample Path Data Set

Sample path data are not saved to WORK.SAMPLE until the **Collect Data** check box in the Simulation control panel (see Figure 1.5) is selected.

Transaction Sample Paths

The state information on the components in a transaction's sample path can be saved to a data set in a Bucket. Figure 8.8 shows the **Collect Data** check box, which must be set to start saving data on the transactions arriving to that Bucket. These data are placed in a data set named for the number of Bucket's. You can see and change the default name in the Bucket control panel.

Obs	name	value
1	age	1.06129
2	age	0.86858
3	age	0.50527
4	age	0.38027
5	age	0.23192
6	age	0.14350
7	age	0.79510
8	age	0.25593
9	age	0.36469
10	age	0.93915

Figure 7.10. An M/M/1 Transaction State Sample Path Data Set

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