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Using SAS® Enterprise Guide® the Same Way as Base SAS®

and More

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ABSTRACT

This paper talks about a customized usage of SAS® Enterprise Guide® that will enable us to use SAS® Enterprise Guide® the same way as Base SAS®; and some more unique usage of SAS® Enterprise Guide® that can benefit SAS® programmers of all skill levels.

INTRODUCTION

Some people may have pre-conceived notion that SAS Enterprise Guide is just a GUI (Graphical User Interface) which can help the users to get their basic work done without getting into coding, however, in reality it is a way more powerful tool than we think. In fact, everything we can perform using Base SAS can also be achieved in SAS Enterprise Guide via coding.

When I was first introduced with SAS Enterprise Guide, I was reluctant to use it as I was very comfortable doing programming in Base SAS. My initial experience with SAS Enterprise Guide was not good enough to claim SAS Enterprise Guide as a substitute of Base SAS; however, eventually I was proved wrong! I would like to briefly share my early days' experience with SAS Enterprise Guide which motivated me to write this paper.

It was sometime in 2006 and at that time I was with a renowned Telco; we were asked to transition from Base SAS to SAS Enterprise Guide. We had only 2 months to convert and test our production code to make sure that all the jobs run smoothly in SAS Enterprise Guide environment. During the test phase, we realized that SAS Enterprise Guide had some limitations (e.g. 'PROC IMPORT / EXPORT' would not work via coding) that impeded some Base SAS code from working in SAS Enterprise Guide environment. Therefore, we had to follow some alternative ways (e.g. 'ftp' Excel file to UNIX) to make sure that all the programs worked in SAS Enterprise Guide.

However, a couple of years later, in 2008, I was able to bypass these limitations of SAS Enterprise Guide by customizing the way it gets connected to the remote server.

This paper talks about the following topics:

1) Setting up SAS Enterprise Guide in a way so that it can access remote data from 'Local' (in other words, creating a bridge between 'Local' and 'UNIX' server via SAS Enterprise Guide)

2) Some unique usage of SAS Enterprise Guide

SETTING UP SAS ENTERPRISE GUIDE TO ACCESS REMOTE DATA FROM 'LOCAL'

TYPICAL SCENARIO FOR SERVER VERSION OF SAS ENTERPRISE GUIDE

Normally the followings are true for SAS Enterprise Guide (if we are using UNIX server):

❖ We connect to UNIX using Metadata Server

❖ It runs on remote mode - we do not need to write 'RSUBMIT' and 'ENDRSUBMIT' before and after each piece of code

❖ However, SAS Enterprise Guide has some limitations that may impede us from a 100% execution of Base SAS code in SAS Enterprise Guide. For example:

➢ 'PROC UPLOAD' and 'PROC DOWNLOAD' do not work if we like to perform the job via coding. If we try to run 'PROC UPLOAD' or 'PROC DOWNLOAD' from SAS Enterprise Guide, a warning message will appear in the log saying -

'WARNING: PROC UPLOAD must be invoked with the RSUBMIT command'

➢ DDE functionality cannot be used, as "X" command usually does not work in SAS Enterprise Guide and the tool does not recognize the local machine (local and network drives)

➢ 'PROC EXPORT' and 'PROC IMPORT' do not work from UNIX to 'Local' and vice versa

But the good news is that there is a way to make all the above 'PROC' work in SAS Enterprise Guide and the following sections will describe how it is possible.

USING 'SAS/CONNECT' FROM SAS ENTERPRISE GUIDE -
(WAY OF PERFORMING EVERYTHING IN SAS ENTERPRISE GUIDE THE SAME WAY WE PERFORM IN BASE SAS)

First we need to open a program node in SAS Enterprise Guide and write the following piece of code:

Figure 1: Code to be run to connet to UNIX

'TCPUNIX.SCR' is the 'autoexec' file that Base SAS typically uses to connect to the remote server. We would need to locate this file in our computer. The file ('tcpunix.scr') is usually found at this location: '*C:\Program Files\SAS92\SASFoundation\9.2\connect\saslink*'

We have to update the following section of the file with a valid *'userid'* and *'password'*:

```
 /*- Update 'TCPUNIX.SCR' file in the highlighted spots (in blue) below */
/*----------------------    UNIX LOGON       -----------------------*/
/*-- for some reason, it needs a LF to turn the line around      --*/
/*--  After the login name has been typed. (A CR will not do)   --*/
/*-----------------------------------------------------------------*/
   /*input 'Userid?';*/
   type "&ruser" LF;
   waitfor 'Password', 30 seconds : nolog;
                  /* input nodisplay 'Password?';*/
   type "&rpwd" LF;
```

Figure 2: Update the file 'tcpunix.scr'

Once the **'tcpunix.scr'** file is updated, we need to make sure that the **'Select Server'** option for the **'Program'** in Figure 1' above is set to **'Local'**:
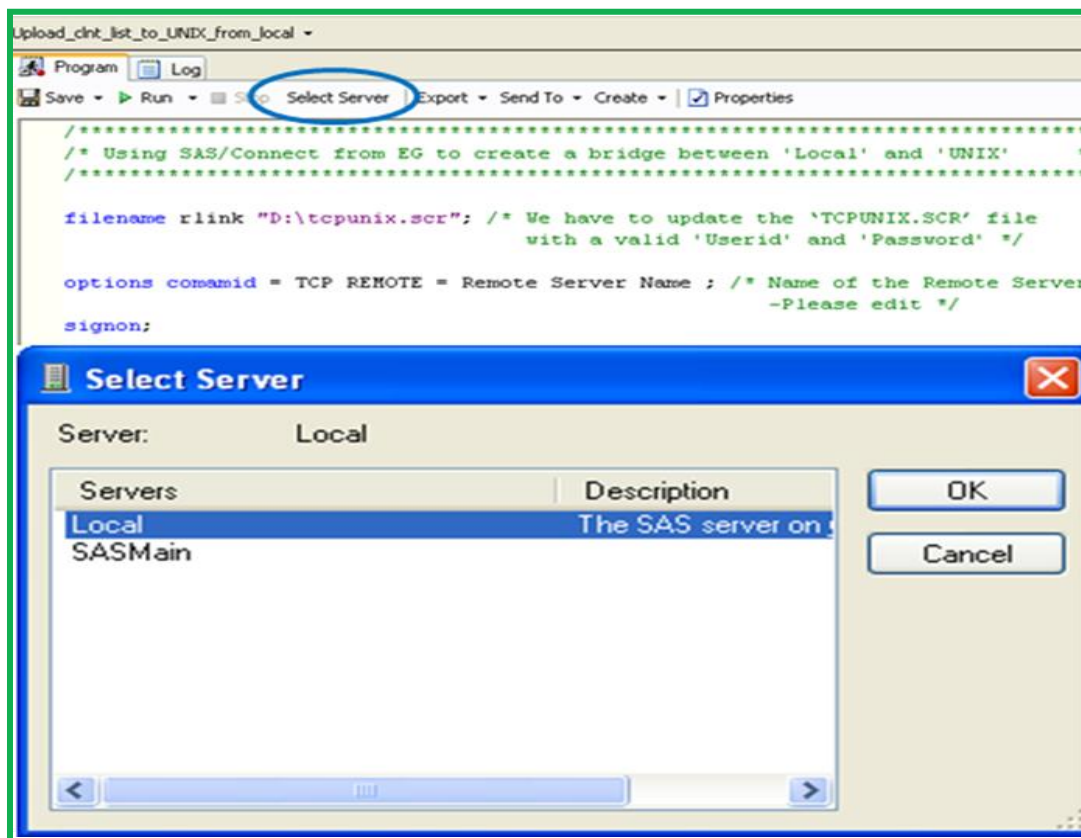

Figure 3: Selecting 'Local' from 'Server List'

SAS Enterprise Guide will be connected with both the 'UNIX' and 'Local' server when the code in 'Figure 1' above completes running without showing any error messages in the log. In other words, a bridge will be created between the 'Local' and 'UNIX' server via SAS Enterprise Guide.

Now, how do we know for sure that the above step was successful? We can test the connection by running the following code:

```
libname pc "T:\Input\repot";      /* Local Data location */

%let my_dir = /sas/r_server/data;  /* Remote Data location */

libname r_server "&my_dir." server = Remote Server Name;
```

Once the above code runs successfully, we will see two servers namely '**PC**' (Local) and '**R_SERVER**' (UNIX) in the server list (please refer to 'Figure 4' below):
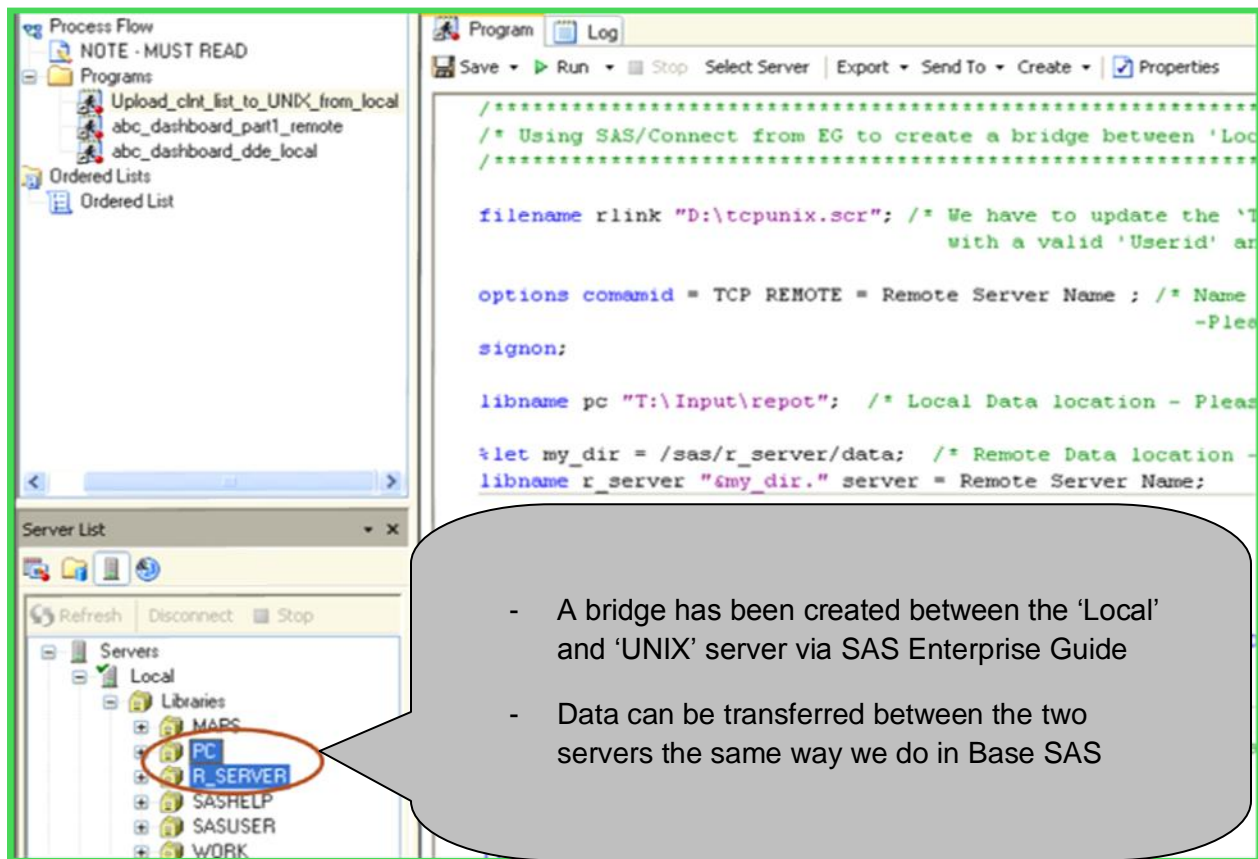
Figure 4: Bridge is being created between 'Local' and 'UNIX' server

Finally, SAS Enterprise Guide is connected with both the 'Local' and 'Remote' servers and the following code will work:

```
rsubmit;
%let my_dir = /sas/r_server/data;
libname r_server "&my_dir." ;
proc upload data = pc.client_list
out = r_server.client_list;
run;
endrsubmit;
```

SOME UNIQUE USAGE OF SAS ENTERPRISE GUIDE

At this stage, I would like to briefly discuss a couple of unique usage of SAS Enterprise Guide that can make any SAS programmer's day to day life easier. It is even true for an advanced Base SAS user who may like to try SAS Enterprise Guide.

SAS ENTERPRISE GUIDE USAGE (WITH CUSTOMIZED CONNECTION)

- We can connect to the remote server the same way as Base SAS using 'SAS/CONNECT' spawner
- We can toggle between code that can be run from 'Local' and 'UNIX' server and can get our job done
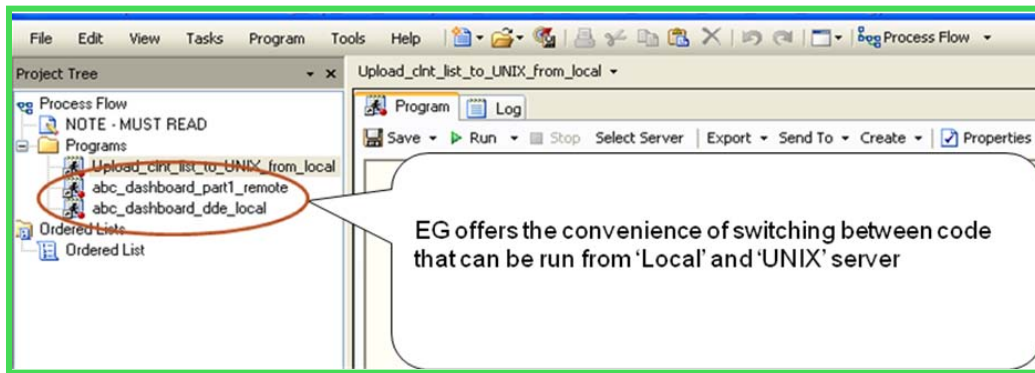
Figure 5: Switching between 'Local' and 'UNIX' code is possible

ORDERED LIST

In SAS Enterprise Guide**,** we can organize our project very well as we can create **'Ordered List'** that gives us the control to choose the sequence in which the code needs to be run. We can have a project consisting of 16 different code; a few of them may need to be run from **'Local'** while the rest need to be run from **'UNIX'**. SAS Enterprise Guide can handle such a project with ease by just clicking a button → **'Run Ordered List'.** Here is an example of a simple project which contains code that needs to be run from both (Local & UNIX) environments and a certain sequence also needs to be followed:
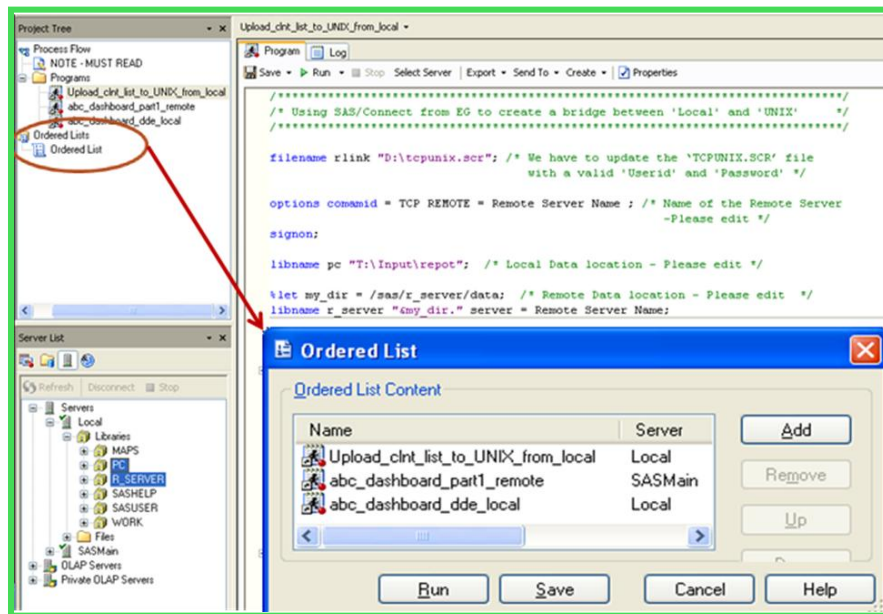

Figure 6: Ordered List

SCHEDULING JOBS IN SAS ENTERPRISE GUIDE 4.2

SAS Enterprise Guide has the capability of scheduling project/job when it does not require any manual intervention. This way, we can free up resources to take care of other businesses. Here are the simple steps that need to be followed to schedule jobs in SAS Enterprise Guide 4.2:

- Open SAS Enterprise Guide project that we want to schedule and click

  'File' → Schedule and followed by -'Project Name'.

- It should take us to the left screen below (final step of Windows Task Scheduler – first tab → **'Task'**). Make sure to check both the boxes as shown below in the tab 'Task'.

- In the tab **'Schedule'**, we can pick and choose the time and day of the week we want the job to run
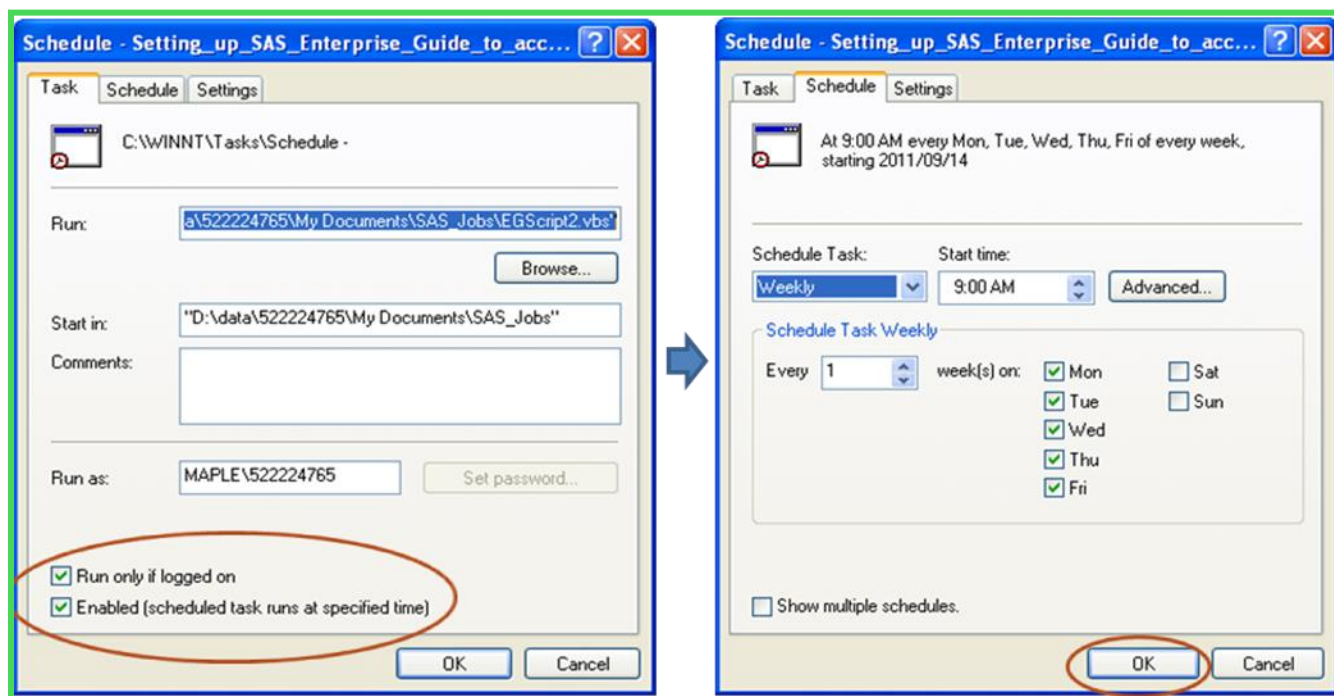
Figure 7: Scheduling jobs

Once we hit 'OK' in the tab 'Schedule' above, the job will be ready to run at a specific day and time. However, we need to be aware of the following prerequisites:

- ✓ The project has to be saved on the local drive

- ✓ Computer has to stay turned on at the scheduled time of the job, as SAS Enterprise Guide uses 'Windows Task Scheduler' at the back end in order to materialize this 'job scheduling'

GOOD TO HAVE CODE IN AUTOMATED/SCHEDULED JOB/PROJECT

The whole idea of scheduling a job is to free up some resources. At the same time we need confirm that the job has completed without any errors which necessitates reviewing the job log afterwards. We may want to add the following code at the beginning of the job which will send out the log for the job to a separate location so that it can be reviewed after the job is completed:

```
proc printto log =
"&logdir./&prog._%sysfunc(today(),yymmddn8.)_%sysfunc(compress(%sysfunc(time(),time6.)
,:)).log" new;
run;)
```

Now, how would we know that the job is completed running? If we add the following code at the end of the job, it will send out email confirmation notifying that the job is complete:

```
filename mail email "rahman.sarker@rbc.com"
subject="&sasjob. finished at &tt";
data _null_; file mail;
put "Hi Rahman,";
put "&sasjob. finished at &tt.";
put "Check the log here: ";
put "&logdir";
run;
```

CONCLUSION

I believe that SAS programmers of all skill levels (even Advanced Base SAS users) can be benefitted from using SAS Enterprise Guide. SAS Enterprise Guide is an amazing tool that offers us the followings:

- ✓ Flexibility of performing everything in SAS Enterprise Guide (via coding) the same way we perform in Base SAS (provided SAS Enterprise Guide is connected to the remote server via 'SAS/CONNECT' spawner)

- ✓ Ability to organize our project by creating 'Ordered List', which gives us the control to choose the sequence in which code needs to be run

- ✓ Ability to automate/schedule SAS job/project

REFERENCES

1. Usage Note 18249: Setting up SAS Enterprise Guide to access remote data from a SAS/Connect spawner or server.
http://support.sas.com/kb/18/249.html

2. Programming with Enterprise Guide 4 1 (Find Out What You're Missing: Programming with SAS Enterprise Guide
- presented in RBC SAS User Group Meeting Oct 21 2008 by Kamran Jafry)

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