

Data Exchange and Sharing between Mainframe and PC Hosts

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INTRODUCTION

Being predominately a mainframe SAS® company, the director of our MIS department wanted to study the feasibility of using OS/2™ SAS. Since I had the greatest PC knowledge in the department with different types of software, I was assigned the task of developing the use of OS/2 SAS. The main reasons were, one, to lift some of the testing of programs from our mainframe, and two, to test the feasibility of having some of our users write their own programs. No one in my department had any knowledge of OS/2 SAS or any of the requirements for moving data between the mainframe and PC hosts. Thus I set out on a mission to not only test the feasibility of using OS/2 SAS, but also learning all the nuances of SAS on the OS/2 platform. This paper will discuss the areas that I looked at and my findings. When development began, version 6.06 was running on OS/2 and version 6.07 was on the mainframe. It should be noted that CMS was the system on the mainframe.

DOWNLOADING A PERMANENT DATASET

The first area I looked at was downloading one of our permanent datasets to the PC. This created an interesting situation considering that different versions were on the different platforms. The first method was to use PROC CPORT in CMS creating a transport file. Perform a binary download. And use PROC CIMPORT in OS/2. Due to version differences, this did not work as expected. What was

settled upon was the following:

```
CMS:
LIBNAME SL V607 '**';
LIBNAME SL1 V606 'V606FILE G';
PROC COPY IN=SL OUT=SL1;
  SELECT SL6MON92; /
  MEMTYPE=DATA;
RUN;

CMS:
FILENAME SASCAT 'PORT FILE G';
LIBNAME OUT V606 'V606FILE G';
PROC CPORT
  LIBRARY=OUT;
RUN;

OS/2 WINDOW:
(PERFORM A BINARY DOWNLOAD)

OS/2:
LIBNAME NEW 'D:\SAS\SASUSER';
FILENAME OLD
'D:\SAS\SASUSER\PORT.FIL';
PROC CIMPORT LIBRARY=NEW
  INFILE=OLD;
RUN;
```

By running the proc copy with the v6.06 engine, this insured that a version 6.06 dataset would be downloaded for use by OS/2 SAS. This was the only way I could ensure a workable dataset for downloading. I even tried using PROC DOWNLOAD (available with SAS/CONNECT®), but this also proved to be unusable. With the issuance of a beta copy of release 6.08 for OS/2, I was able to perform the PROC CPORT without having to use PROC COPY first. Also, I was able to use PROC DOWNLOAD with no unexpected results.

REMOTE SUBMITTING WITH SAS/CONNECT

The next area of investigation was to test remote submitting of the SAS code. This involves invoking the appropriate options for your particular emulator and running the script file appropriate for your mainframe environment (in my case the options were comamid=ehllapi and remote=mctr1601(terminal node) script file cms.scr). This then links the two hosts together. Any code can then be submitted using a remote submit. This will cause all execution to be performed on the mainframe with all output being returned to the PC session.

There are a few prerequisites before the linkage can take place. SAS/CONNECT contains files used in establishing the links to the mainframe called script files. There is a script file for each type of mainframe host (CMS, TSO, etc.). The script file needs to be edited to adjust for the appropriate command to invoke an interactive mainframe session (I had to adjust in the 3270 emulation section of the script file from "type 'sas to "type 'sas607"), memory for that particular mainframe session should be increased to handle the amount of work needed to be done, and if any data comes from another source (a CMS mindisk for example) all links to your mainframe session need to be performed.

This function worked quite well with no unexpected results. I have determined that this probably is not a way that you would want to use the software. No processing takes place on the PC. Therefore, you could have performed the same function by running the session on the mainframe. But a mix of running on both platforms would be ideal. The next

section will discuss this.

The change for version 6.08 is that the script file will be changed in the EHLLAPI section instead of the 3270 emulation section. No other difference exists between the versions.

DISTRIBUTED PROCESSING BETWEEN HOSTS

With the release of version 6.08, distributed processing can take place with ease. Data can be moved between the hosts by issuing a PROC DOWNLOAD or a PROC UPLOAD. My testing involved the processing of the large amount of data by the mainframe, issuing a PROC DOWNLOAD, and finishing on the PC.

To perform this, start SAS code with an RSUBMIT, write applicable code that is to be performed on the mainframe side, code a PROC DOWNLOAD (by issuing a straight PROC DOWNLOAD with no options, the most current work file will be downloaded and placed in the work directory), and end the section with and ENDRSUBMIT. Then processing can continue on the downloaded work dataset to attain the desired final output.

Performing this function is particularly useful if data resides on both platforms. Thought should be given to where processing should take place depending on the amount of data to be processed and where the data resides.

VSAM Files

Several of our master files reside in a VSAM file format. This format prevents straight downloading of the file to the PC. There are two ways to handle this situation. One, create a SAS dataset

from the file and download to the PC. This is very cumbersome if there is a lot of data and the file is volatile. Or two, perform the distributive processing function described above. I found that this serves our purpose well since our master files are very volatile.

CONCLUSION

Data movement is quite easy to perform with or without the use of SAS/CONNECT. But by bringing SAS/CONNECT into use, the movement of data becomes even more powerful and distributed processing can take place. As noted above, this is extremely useful if the data to be processed resides on both hosts, or the data is in a format that cannot be moved to the PC. I have found that a combination of all of the above is useful depending on the circumstances for that particular situation. How you use it is all up to you.

I hope that I have given you some ideas and a head start in adapting the use to your situation. There is no one correct way to use it, just many variations.

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