

Piping Using MP Connect

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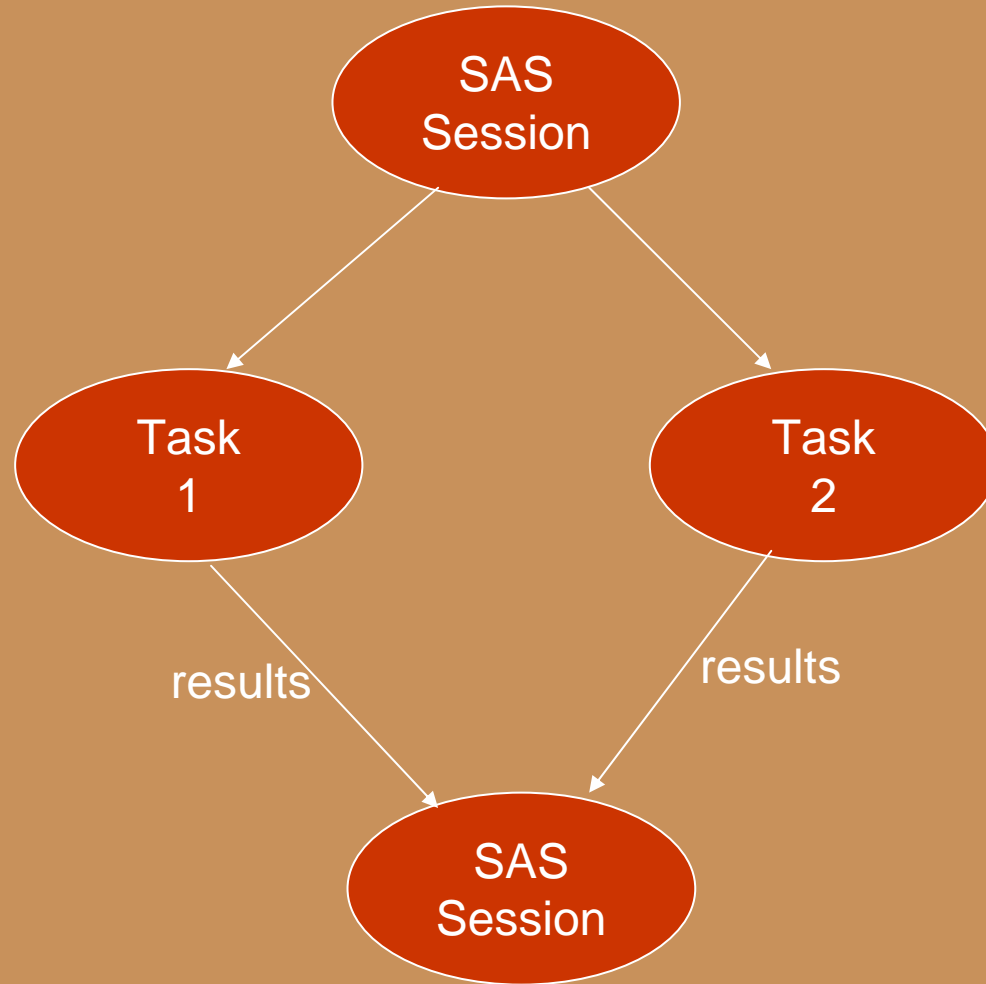
Introduction

- Parallel Processing
- Piping
- Implementation
 - Sample Program
 - Program Log
- Pipe Naming
- Some Conclusions

Parallel Processing

- Also known as Multiprocessing or Asynchronous Processing
- Allows Parallel Processing of self contained tasks
- Requires a SAS/Connect Software license
- Supported in SAS V8
- Objective: to reduce elapsed time of a job

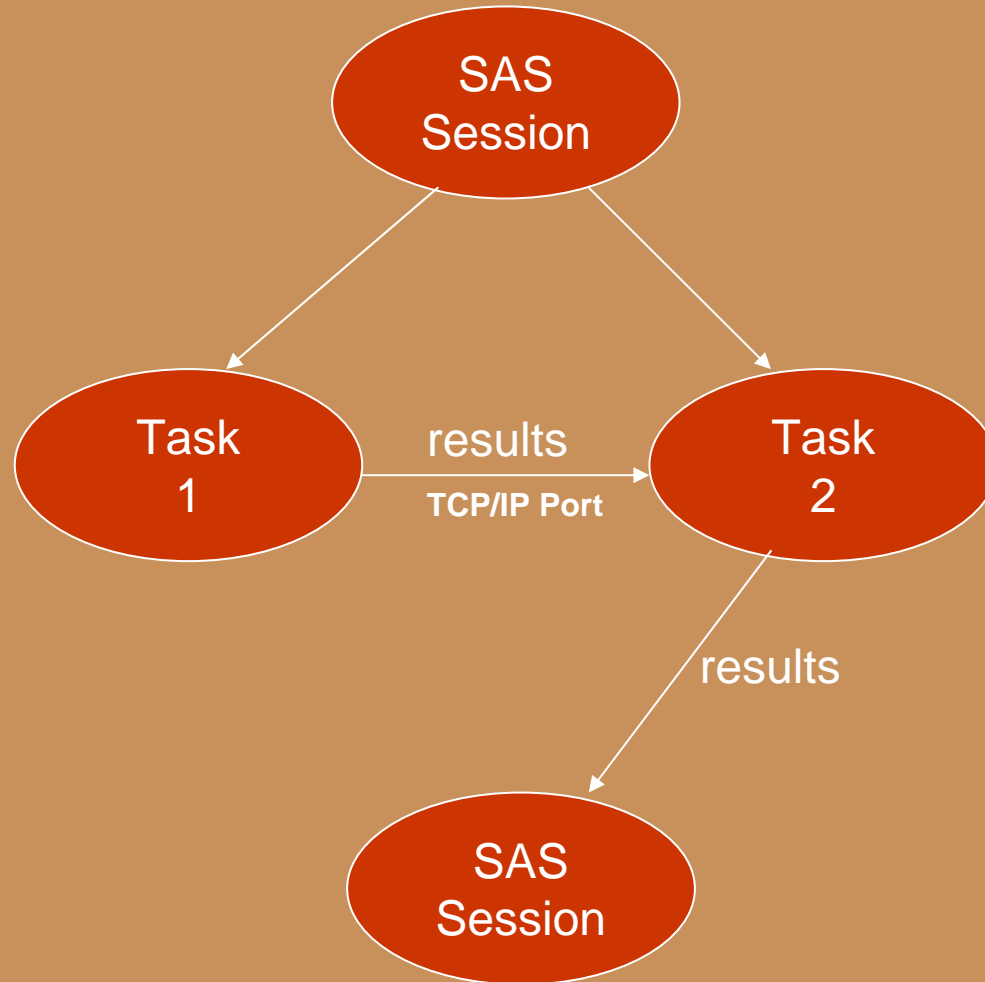
Parallel Processing



Piping

- Passes the output from one task to another task through a TCP/IP port
- Second task does not have to wait for the first task to end
- Data not written to disk
- Only available as of Version 9

Piping



Sample Program (Without Piping)

```
Libname lwf '\\BLMASAS2\sasdata\landry\lwf00\data';
```

```
Data starttime;  
time1 = time();
```

```
Data flags;  
set lwf.t4leap8300;
```

SAS Statements

```
*****  
* SORT THE MASTER FILE BY ID-BRID-YEAR.  
*****
```

```
Proc sort ; by id lbrid year;
```

```
*****  
* CALCULATE A CONSECUTIVE-YEAR FLAG  
*****
```

```
Data lwf.calcflag;  
set flags;
```

SAS Statements

```
Data _null_;  
set starttime;  
elapsedtime = time() - time1;  
put elapsedtime= mmss.;
```

```
run;
```



Log of Program (Without Piping)

NOTE: There were 40250204 observations read from the data set LWF.T4LEAP8300.

NOTE: The data set WORK.FLAGS has 40250204 observations and 18 variables.

NOTE: DATA statement used (Total process time):

real time	13:01.43
cpu time	4:11.59

NOTE: There were 40250204 observations read from the data set WORK.FLAGS.

NOTE: The data set WORK.FLAGS has 40250204 observations and 18 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	13:55.24
cpu time	5:39.10

NOTE: There were 40250204 observations read from the data set WORK.FLAGS.

NOTE: The data set LWF.CALCFLAG has 40250204 observations and 19 variables.

NOTE: DATA statement used (Total process time):

real time	9:39.65
cpu time	3:59.98

elapsedtime=36:36

NOTE: There were 1 observations read from the data set WORK.STARTTIME.

NOTE: DATA statement used (Total process time):

real time	0.03 seconds
cpu time	0.00 seconds



Sample Program

(With Piping)

```
options sascmd='c:\sasv9_1\sas_exe -nosyntaxcheck!';
libname lwf '\\BLMASAS2\sasdata\landry\lwf00\data';
```

```
Data starttime; time1 = time(); run;
*****;
```

```
signon p1;
rsubmit p1 wait=no;
libname outlib sasesock ":256";
libname lwf '\\BLMASAS2\sasdata\landry\lwf00\data';
data outlib.flags;
set lwf.t4leap8300;
```

SAS Statements

```
run;
endrssubmit;
*****;
```

```
signon p2 inheritlib=(work=locwork);
rsubmit p2 wait=no;
libname inlib sasesock ":256";
proc sort data=inlib.flags out=locwork.flags; by id lbrid year;
run;
endrssubmit;
*****;
```

```
waitfor _ALL_ p1 p2;
signoff p1; signoff p2;
*****;
```

```
Data lwf.calcflag;
set flags;
```

SAS Statements

```
data _null_;
set starttime;
elapsedtime = time() - time1;
put elapsedtime= mmss.;
run;
```



Log of Program (With Piping)

32 signon p1;
NOTE: Remote signon to P1 commencing (SAS Release 9.01.01M2P033104).

NOTE: SAS initialization used:
real time 0.62 seconds
cpu time 0.57 seconds

NOTE: Remote signon to P1 complete.
33 rsubmit p1 wait=no;

NOTE: Background remote submit to P1 in progress.
NOTE: Remote submit to P1 commencing.

39 signon p2 inheritlib=(work=locwork);
NOTE: Remote signon to P2 commencing (SAS Release 9.01.01M2P033104).

NOTE: SAS initialization used:
real time 0.48 seconds
cpu time 0.48 seconds

NOTE: Remote signon to P2 complete.
40 rsubmit p2 wait=no;

NOTE: Background remote submit to P2 in progress.
NOTE: Remote submit to P2 commencing.

1 libname outlib sassock ":256";
NOTE: Libref OUTLIB was successfully assigned as follows:
Engine: SASESOCK
Physical Name: 256

2 Libname lwf '\\BLMASAS2\sasdata\landry\lwf00\data';
NOTE: Libref LWF was successfully assigned as follows:
Engine: V9
Physical Name: \\BLMASAS2\sasdata\landry\lwf00\data
NOTE: There were 40250204 observations read from the data set LWF.T4LEAP8300.
NOTE: The data set OUTLIB.FLAGS has 40250204 observations and 18 variables.
NOTE: DATA statement used (Total process time):

real time	13:08.36
cpu time	3:50.46



Log of Program

(With Piping)

NOTE: Remote submit to P1 complete.

```
1 libname inlib sasesock ":256";
```

NOTE: Libref INLIB was successfully assigned as follows:

Engine: SASESOCK

Physical Name: 256

```
2
```

```
3 proc sort data=inlib.flags out=locwork.flags;
```

```
4 by sin lbrid year; run;
```

NOTE: There were 40250204 observations read from the data set INLIB.FLAGS.

NOTE: The data set LOCWORK.FLAGS has 40250204 observations and 18 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	17:17.30
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cpu time	6:05.64
----------	---------

Log of Program (With Piping)

NOTE: Remote submit to P2 complete.

```
42   waitfor _ALL_ p1 p2;  
43
```

```
44   signoff p1;
```

NOTE: Remote signoff from P1 commencing.

NOTE: The SAS System used:

real time	17:19.35
cpu time	3:51.12

NOTE: Remote signoff from P1 complete.

```
45   signoff p2;
```

NOTE: Remote signoff from P2 commencing.

NOTE: The SAS System used:

real time	17:18.07
cpu time	6:06.15

NOTE: Remote signoff from P2 complete.

NOTE: There were 40250204 observations read from the data set WORK.FLAGS.

NOTE: The data set LWF.CALCFLAG has 40250204 observations and 19 variables.

NOTE: DATA statement used (Total process time):

real time	3:37.56
cpu time	3:10.75

elapsedtime=20:58



Reference

- <http://support.sas.com>
 - Communities > Scalability & Performance

Naming a Pipe

- C:\WINNT\SYSTEM32\DRIVERS\ETC\SERVICES
- Specify Service Name, Port Number, Protocol



Some Conclusions

- More programming complexity
- Data not written to Disk
- Processor load
- Workstations