

Intermediate MPI

Login information:

Username: tra0xx
Password: XXXXXXXXXXXX
Hostname: bwbay.ncsa.illinois.edu

Requesting Resources:

```
$ qsub -I -l nodes=4:ppn=32:xe,walltime=01:30:00 -l \
advres=bwintern
```

COPY FILES:

```
$ cp -r ~instr004/BW_Institute/Examples/MPI/ .
```

Go to MPI directory:

```
$ cd MPI
```

Make sure you are in MPI directory:

```
$ pwd
```

Use the 'ls -l' command to make sure you have the following files:

```
$ ls -l
```

```
total 6148
-rwxr-xr-x 1 instr003 TRAIN_jpy 6963701 May 29 07:59 pi_integration_mpi
-rwxr-xr-x 1 instr003 TRAIN_jpy    2181 May 29 07:59 pi_integration_mpi.c
-rwxr-xr-x 1 instr003 TRAIN_jpy    1682 May 29 07:59 pi_MonteCarlo.c
```

Example 1: Computing Pi MPI Collective Operations

Compile:

```
$ cc pi_integration_mpi.c -o pi_integration_mpi
```

Run:

```
$ aprun -n 8 ./pi_integration_mpi
```

Please enter the number of iterations used to compute pi:
10000000000

Output:

```
computed pi value is = 0.392699 (0.392699082319260)
PI accurate value from math.h is: 3.141592653589793
difference between computed pi and math.h PI_VALUE =
2.748893571270533
Time to computer = 1.48563 seconds
```

Rows 1 and 2:

Run the program 4 times with same problem size, but each run with 8 cores, 16 cores, 32 cores, 64 cores, 128 cores

Rows 3 and 4:

Run the program on 64 cores with problem sizes:
1000, 10000, 100000, 1000000, 1000000000