

# mpiP on iforge

mpiP lightweight scalable MPI profiling is available from [mpip.sourceforge.net](http://mpip.sourceforge.net) .

To setup mpiP in your \$HOME (so that it goes with the mpi implementation you prefer), follow steps similar to the ones below:

```
./configure --with-cc=mpiicc --with-f77=mpiifort --disable-libunwind --prefix=$HOME/mpip_3.3
# intel compiler versions of mpiicc and mpiif77 contain an extra "i" in them on iforge
make
make install
```

Then [compile/link with mpiP](#) (include -g for source line number information in the mpiP report ):

```
mpiicc -g cpi-sync.c -L ~/mpip_3.3/lib -lmpiP -lbfd
```

Run the code as usual. This example was run from within an interactive PBS batch job on iforge [ qsub -l -V -lnodes=2:ppn=4,walltime=00:30:00 ]:

```
[arnoldg@iforge116 src]$ mpirun -np 8 ./a.out
mpiP:
mpiP: mpiP: mpiP V3.3.0 (Build May 29 2012/12:57:33)
mpiP: Direct questions and errors to mpip-help@lists.sourceforge.net
mpiP:

...
Process 6 received "Hi, how are you?"
PI is approximately 3.1415926535896133
mpiP:
mpiP: Storing mpiP output in [./a.out.8.11834.1.mpiP].
mpiP:
```

View the resulting text file report. The default format is shown, but there are many options to mpiP profiling available through the [MPIP environment variable](#) . Note that the ID number under the callsites will be the Site number in all the report sections that follow. Also, there are measurements for each rank (task) and averages are denoted by '\*' .

```
@ mpiP
@ Command : ./a.out
@ Version : 3.3.0
@ MPIP Build date : May 29 2012, 12:57:33
@ Start time : 2012 05 29 13:47:20
@ Stop time : 2012 05 29 13:47:21
@ Timer Used : PMPI_Wtime
@ MPIP env var : [null]
@ Collector Rank : 0
@ Collector PID : 11834
@ Final Output Dir : .
@ Report generation : Single collector task
@ MPI Task Assignment : 0 iforge116
@ MPI Task Assignment : 1 iforge116
@ MPI Task Assignment : 2 iforge116
@ MPI Task Assignment : 3 iforge116
@ MPI Task Assignment : 4 iforge115
@ MPI Task Assignment : 5 iforge115
@ MPI Task Assignment : 6 iforge115
@ MPI Task Assignment : 7 iforge115
```

```
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@--- MPI Time (seconds) -----
-----
```

| Task | AppTime | MPITime | MPI% |
|------|---------|---------|------|
| 0    | 0.418   | 0.00967 | 2.31 |
| 1    | 0.41    | 0.00196 | 0.48 |
| 2    | 0.413   | 0.00436 | 1.05 |

|   |       |         |      |
|---|-------|---------|------|
| 3 | 0.413 | 0.0047  | 1.14 |
| 4 | 0.413 | 0.00386 | 0.94 |
| 5 | 0.413 | 0.00376 | 0.91 |
| 6 | 0.413 | 0.00365 | 0.89 |
| 7 | 0.418 | 0.00348 | 0.83 |
| * | 3.31  | 0.0354  | 1.07 |

@--- Callsites: 5 -----

| ID | Lev | File/Address | Line | Parent_Funct | MPI_Call |
|----|-----|--------------|------|--------------|----------|
| 1  | 0   | cpi-sync.c   | 31   | calc_pi      | Bcast    |
| 2  | 0   | cpi-sync.c   | 93   | main         | Bcast    |
| 3  | 0   | cpi-sync.c   | 84   | main         | Recv     |
| 4  | 0   | cpi-sync.c   | 46   | calc_pi      | Reduce   |
| 5  | 0   | cpi-sync.c   | 79   | main         | Send     |

@--- Aggregate Time (top twenty, descending, milliseconds) -----

| Call   | Site | Time | App% | MPI%  | COV  |
|--------|------|------|------|-------|------|
| Bcast  | 2    | 18.5 | 0.56 | 52.31 | 0.52 |
| Reduce | 4    | 8.57 | 0.26 | 24.19 | 2.45 |
| Send   | 5    | 5.96 | 0.18 | 16.82 | 0.60 |
| Recv   | 3    | 1.98 | 0.06 | 5.58  | 0.00 |
| Bcast  | 1    | 0.39 | 0.01 | 1.10  | 0.50 |

@--- Aggregate Sent Message Size (top twenty, descending, bytes) -----

| Call   | Site | Count | Total | Avrg | Sent% |
|--------|------|-------|-------|------|-------|
| Bcast  | 2    | 8     | 199   | 24.9 | 41.72 |
| Send   | 5    | 7     | 182   | 26   | 38.16 |
| Reduce | 4    | 8     | 64    | 8    | 13.42 |
| Bcast  | 1    | 8     | 32    | 4    | 6.71  |

@--- Callsite Time statistics (all, milliseconds): 32 -----

| Name   | Site | Rank | Count | Max   | Mean   | Min   | App% | MPI%  |
|--------|------|------|-------|-------|--------|-------|------|-------|
| Bcast  | 1    | 0    | 1     | 0.072 | 0.072  | 0.072 | 0.02 | 0.74  |
| Bcast  | 1    | 1    | 1     | 0.055 | 0.055  | 0.055 | 0.01 | 2.80  |
| Bcast  | 1    | 2    | 1     | 0.044 | 0.044  | 0.044 | 0.01 | 1.01  |
| Bcast  | 1    | 3    | 1     | 0.02  | 0.02   | 0.02  | 0.00 | 0.43  |
| Bcast  | 1    | 4    | 1     | 0.082 | 0.082  | 0.082 | 0.02 | 2.12  |
| Bcast  | 1    | 5    | 1     | 0.066 | 0.066  | 0.066 | 0.02 | 1.76  |
| Bcast  | 1    | 6    | 1     | 0.038 | 0.038  | 0.038 | 0.01 | 1.04  |
| Bcast  | 1    | 7    | 1     | 0.013 | 0.013  | 0.013 | 0.00 | 0.37  |
| Bcast  | 1    | *    | 8     | 0.082 | 0.0488 | 0.013 | 0.01 | 1.10  |
|        |      |      |       |       |        |       |      |       |
| Bcast  | 2    | 0    | 1     | 0.042 | 0.042  | 0.042 | 0.01 | 0.43  |
| Bcast  | 2    | 1    | 1     | 1.72  | 1.72   | 1.72  | 0.42 | 87.82 |
| Bcast  | 2    | 2    | 1     | 3.74  | 3.74   | 3.74  | 0.91 | 85.91 |
| Bcast  | 2    | 3    | 1     | 3.81  | 3.81   | 3.81  | 0.92 | 81.09 |
| Bcast  | 2    | 4    | 1     | 2.15  | 2.15   | 2.15  | 0.52 | 55.58 |
| Bcast  | 2    | 5    | 1     | 2     | 2      | 2     | 0.48 | 53.18 |
| Bcast  | 2    | 6    | 1     | 2.59  | 2.59   | 2.59  | 0.63 | 71.03 |
| Bcast  | 2    | 7    | 1     | 2.48  | 2.48   | 2.48  | 0.59 | 71.30 |
| Bcast  | 2    | *    | 8     | 3.81  | 2.32   | 0.042 | 0.56 | 52.31 |
|        |      |      |       |       |        |       |      |       |
| Recv   | 3    | 0    | 7     | 1.45  | 0.282  | 0.006 | 0.47 | 20.44 |
| Recv   | 3    | *    | 7     | 1.45  | 0.282  | 0.006 | 0.06 | 5.58  |
|        |      |      |       |       |        |       |      |       |
| Reduce | 4    | 0    | 1     | 7.58  | 7.58   | 7.58  | 1.81 | 78.38 |
| Reduce | 4    | 1    | 1     | 0.095 | 0.095  | 0.095 | 0.02 | 4.84  |
| Reduce | 4    | 2    | 1     | 0.051 | 0.051  | 0.051 | 0.01 | 1.17  |
| Reduce | 4    | 3    | 1     | 0.333 | 0.333  | 0.333 | 0.08 | 7.09  |
| Reduce | 4    | 4    | 1     | 0.18  | 0.18   | 0.18  | 0.04 | 4.66  |
| Reduce | 4    | 5    | 1     | 0.223 | 0.223  | 0.223 | 0.05 | 5.93  |
| Reduce | 4    | 6    | 1     | 0.08  | 0.08   | 0.08  | 0.02 | 2.19  |
| Reduce | 4    | 7    | 1     | 0.035 | 0.035  | 0.035 | 0.01 | 1.00  |
| Reduce | 4    | *    | 8     | 7.58  | 1.07   | 0.035 | 0.26 | 24.19 |
|        |      |      |       |       |        |       |      |       |
| Send   | 5    | 1    | 1     | 0.089 | 0.089  | 0.089 | 0.02 | 4.53  |
| Send   | 5    | 2    | 1     | 0.519 | 0.519  | 0.519 | 0.13 | 11.91 |

|      |   |   |   |       |       |       |      |       |
|------|---|---|---|-------|-------|-------|------|-------|
| Send | 5 | 3 | 1 | 0.535 | 0.535 | 0.535 | 0.13 | 11.40 |
| Send | 5 | 4 | 1 | 1.45  | 1.45  | 1.45  | 0.35 | 37.64 |
| Send | 5 | 5 | 1 | 1.47  | 1.47  | 1.47  | 0.36 | 39.13 |
| Send | 5 | 6 | 1 | 0.94  | 0.94  | 0.94  | 0.23 | 25.74 |
| Send | 5 | 7 | 1 | 0.952 | 0.952 | 0.952 | 0.23 | 27.32 |
| Send | 5 | * | 7 | 1.47  | 0.851 | 0.089 | 0.18 | 16.82 |

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@--- Callsite Message Sent statistics (all, sent bytes) -----  
-----

| Name   | Site | Rank | Count | Max | Mean  | Min | Sum |
|--------|------|------|-------|-----|-------|-----|-----|
| Bcast  | 1    | 0    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 1    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 2    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 3    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 4    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 5    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 6    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | 7    | 1     | 4   | 4     | 4   | 4   |
| Bcast  | 1    | *    | 8     | 4   | 4     | 4   | 32  |
|        |      |      |       |     |       |     |     |
| Bcast  | 2    | 0    | 1     | 17  | 17    | 17  | 17  |
| Bcast  | 2    | 1    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 2    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 3    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 4    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 5    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 6    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | 7    | 1     | 26  | 26    | 26  | 26  |
| Bcast  | 2    | *    | 8     | 26  | 24.88 | 17  | 199 |
|        |      |      |       |     |       |     |     |
| Reduce | 4    | 0    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 1    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 2    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 3    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 4    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 5    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 6    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | 7    | 1     | 8   | 8     | 8   | 8   |
| Reduce | 4    | *    | 8     | 8   | 8     | 8   | 64  |
|        |      |      |       |     |       |     |     |
| Send   | 5    | 1    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 2    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 3    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 4    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 5    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 6    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | 7    | 1     | 26  | 26    | 26  | 26  |
| Send   | 5    | *    | 7     | 26  | 26    | 26  | 182 |

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@--- End of Report -----  
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