## SPEC® MPIM2007 Result

**IBM Corporation**

**IBM Power 575**

**SPECmpiM_peak2007** = 8.07  
**SPECmpiM_base2007** = 8.07

---

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>104.milc</td>
<td>64</td>
<td>281.56</td>
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<td>107.leslie3d</td>
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<td>113.GemsFDTD</td>
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<td>408.15</td>
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<td>115.fds4</td>
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<td>121.pop2</td>
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<td>122.tachyon</td>
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<td>126.lammps</td>
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<td>382.76</td>
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<td>127.wrf2</td>
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<td>128.GAPgeofem</td>
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<td>129.tera_tf</td>
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<td>654.42</td>
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<td>654.42</td>
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<td>653.42</td>
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</table>

**Results Table**

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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**IBM Corporation**

**IBM Power 575**

**MPI2007 license:** 0005  
**Test date:** Jun-2008  
**Test sponsor:** IBM Corporation  
**Hardware Availability:** May-2008  
**Tested by:** IBM Corporation  
**Software Availability:** May-2008

---

**SPECmpiM_base2007** = 8.07  
**SPECmpiM_peak2007** = 8.07
SPEC MPI2007 Result

IBM Corporation
IBM Power 575

SPECMpiM_peak2007 = 8.07
SPECMpiM_base2007 = 8.07

MPI2007 license: 0005
Test date: Jun-2008
Test sponsor: IBM Corporation
Hardware Availability: May-2008
Tested by: IBM Corporation
Software Availability: May-2008

Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td>Base</td>
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<tr>
<td>Peak</td>
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</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Hardware Summary

Type of System: Homogeneous
Compute Nodes: IBM Power 575
Interconnects: InfiniBand
File Server Node: IBM Power 575
Head Node: IBM Power 575
Total Compute Nodes: 2
Total Chips: 32
Total Cores: 64
Total Threads: 64
Total Memory: 256 GB
Base Ranks Run: 64
Minimum Peak Ranks: 64
Maximum Peak Ranks: 64

Software Summary

C Compiler: IBM XL C/C++ Enterprise Edition V9.0
C++ Compiler: IBM XL C/C++ Enterprise Edition V9.0
Fortran Compiler: IBM XL Fortran Enterprise Edition V11.1
Base Pointers: 64-bit
Peak Pointers: 64-bit
MPI Library: IBM Parallel Environment for AIX
V4.3.2.2
Other MPI Info: --
Pre-processors: --
Other Software: None

Node Description: IBM Power 575

Hardware

Number of nodes: 1
Uses of the node: compute, head, fileserver
Vendor: IBM Corporation
Model: IBM Power 575
CPU Name: POWER6
CPU(s) orderable: 32 cores
Chips enabled: 16
Cores enabled: 32
Cores per chip: 2
Threads per core: 1
CPU Characteristics:
CPU MHz: 4700
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 4 MB I+D on chip per core
L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 128 GB (64x2 GB) DDR2 533 MHz
Disk Subsystem: 1x146 GB SFF SAS, 10K RPM
Other Hardware: None
Adapter: Integrated
Number of Adapters: 1

Software

Adapter: Integrated
Adapter Driver: fileset devices.chrp.IBM.lhea.rte 5.3.8.2
Adapter Firmware: --
Adapter Driver: fileset devices.common.IBM.ib.rte 5.3.8.2
Adapter Firmware: --
Operating System: IBM AIX V5.3
with the 5300-08-02 Technology Level
Local File System: AIX/JFS2
Shared File System: NFS over ethernet
System State: Multi-user
Other Software: APAR IZ26983
software update for InfiniBand adapter drivers
IBM LoadLeveler for AIX
V3.4.3.2

Continued on next page
<table>
<thead>
<tr>
<th>Node Description: IBM Power 575</th>
<th>Node Description: IBM Power 575</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware</strong></td>
<td><strong>Software</strong></td>
</tr>
<tr>
<td>Number of nodes: 1</td>
<td>Adapter: Integrated</td>
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<tr>
<td>Uses of the node: compute</td>
<td>Adapter Driver: fileset devices.chrp.IBM.lhea.rte 5.3.8.2</td>
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<tr>
<td>Vendor: IBM Corporation</td>
<td>Adapter Firmware: --</td>
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<tr>
<td>Model: IBM Power 575</td>
<td>IBM Dual 2-port 4x DDR Host Channel Adapter</td>
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<tr>
<td>CPU Name: POWER6</td>
<td>Adapter: --</td>
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<tr>
<td>CPU(s) orderable: 32 cores</td>
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<tr>
<td>Chips enabled: 16</td>
<td>IBM Dual 2-port 4x DDR Host Channel Adapter</td>
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<tr>
<td>Cores enabled: 32</td>
<td>Adapter Firmware: --</td>
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<tr>
<td>Cores per chip: 2</td>
<td>Software: --</td>
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<tr>
<td>Threads per core: 1</td>
<td>Operating System: IBM AIX V5.3</td>
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<tr>
<td>CPU Characteristics:</td>
<td>with the 5300-08-02 Technology Level</td>
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<tr>
<td>CPU MHz: 4700</td>
<td>Local File System: AIX/JFS2</td>
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<tr>
<td>Primary Cache: 64 KB I + 64 KB D on chip per core</td>
<td>Shared File System: NFS over ethernet</td>
</tr>
<tr>
<td>Secondary Cache: 4 MB I+D on chip per core</td>
<td>System State: Multi-user</td>
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<tr>
<td>L3 Cache: 32 MB I+D off chip per chip</td>
<td>Other Software: APAR IZ26983 software update for InfiniBand adapter drivers</td>
</tr>
<tr>
<td>Other Cache: None</td>
<td>IBM LoadLeveler for AIX</td>
</tr>
<tr>
<td>Memory: 128 GB (64x2 GB) DDR2 533 MHz</td>
<td>V3.4.3.2</td>
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<tr>
<td>Disk Subsystem: 1x146 GB SFF SAS, 10K RPM</td>
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<td>Other Hardware: None</td>
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<tr>
<td>Adapter: Integrated</td>
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<td>Number of Adapters: 1</td>
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<td>Slot Type: --</td>
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<tr>
<td>Data Rate: 1 Gbps</td>
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<tr>
<td>Ports Used: 1</td>
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<tr>
<td>Interconnect Type: Gigabit Ethernet</td>
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<tr>
<td>Adapter: IBM Dual 2-port 4x DDR Host Channel Adapter</td>
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<tr>
<td>Number of Adapters: 2</td>
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<tr>
<td>Slot Type: GX++</td>
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<tr>
<td>Data Rate: 4x DDR 20 Gbps</td>
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<tr>
<td>Ports Used: 4</td>
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<tr>
<td>Interconnect Type: DDR InfiniBand</td>
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</table>

**IBM Corporation**

IBM Power 575

**SPECmpimM_peak2007 = 8.07**

**SPECmpimM_base2007 = 8.07**

MPI2007 license: 0005

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jun-2008

Hardware Availability: May-2008

Software Availability: May-2008

Node Description: IBM Power 575

Slot Type: --

Data Rate: 1 Gbps

Ports Used: 1

Interconnect Type: Gigabit Ethernet

Adapter: IBM Dual 2-port 4x DDR Host Channel Adapter

Number of Adapters: 2

Slot Type: GX++

Data Rate: 4x DDR 20 Gbps

Ports Used: 4

Interconnect Type: DDR InfiniBand

Node Description: IBM Power 575

Slot Type: --

Data Rate: 1 Gbps

Ports Used: 1

Interconnect Type: Gigabit Ethernet

Adapter: IBM Dual 2-port 4x DDR Host Channel Adapter

Number of Adapters: 2

Slot Type: GX++

Data Rate: 4x DDR 20 Gbps

Ports Used: 4

Interconnect Type: DDR InfiniBand

---

Software

Adapter: Integrated

Adapter Driver: fileset devices.chrp.IBM.lhea.rte 5.3.8.2

Adapter Firmware: --

Adapter: IBM Dual 2-port 4x DDR Host Channel Adapter

Adapter Driver: --

Adapter Firmware: --

Operating System: IBM AIX V5.3

with the 5300-08-02 Technology Level

Local File System: AIX/JFS2

Shared File System: NFS over ethernet

System State: Multi-user

Other Software: APAR IZ26983 software update for InfiniBand adapter drivers

IBM LoadLeveler for AIX

V3.4.3.2

---

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/
**IBM Corporation**

**IBM Power 575**

**SPEC mpiM**

**SPEC mpiM peak2007 = 8.07**

**SPEC mpiM base2007 = 8.07**

**MPI2007 license:** 0005

**Test sponsor:** IBM Corporation

**Tested by:** IBM Corporation

**Test date:** Jun-2008

**Hardware Availability:** May-2008

**Software Availability:** May-2008

### Interconnect Description: InfiniBand

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<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td><strong>Vendor:</strong> QLogic</td>
<td></td>
</tr>
<tr>
<td><strong>Model:</strong></td>
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</tr>
<tr>
<td><strong>Switch Model:</strong> QLogic SilverStorm 9024</td>
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<td><strong>Number of Switches:</strong> 2</td>
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<td><strong>Number of Ports:</strong> 24</td>
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<tr>
<td><strong>Data Rate:</strong> InfiniBand 4x DDR 20 Gbps</td>
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<tr>
<td><strong>Firmware:</strong> 4.2.1.1.1</td>
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<tr>
<td><strong>Topology:</strong> linear</td>
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<tr>
<td><strong>Primary Use:</strong> MPI Communication</td>
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</table>

### Interconnect Description: Gigabit Ethernet

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td><strong>Vendor:</strong> IBM Corporation</td>
<td></td>
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<tr>
<td><strong>Model:</strong> Cisco Systems WS-C6509-E Catalyst 6500 9-slot Chassis System</td>
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<tr>
<td><strong>Switch Model:</strong> Cisco Systems WS-X6748-GE-TX CEF720-48 port 10/100/1000mb Ethernet card Cisco Systems WS-SUP720-3B 2 ports Supervisor Engine 720 Rev. 5.2</td>
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<td><strong>Number of Switches:</strong> 1</td>
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<td><strong>Number of Ports:</strong> 48</td>
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<td><strong>Firmware:</strong> 01ES330_034_034</td>
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<tr>
<td><strong>Topology:</strong> --</td>
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<tr>
<td><strong>Primary Use:</strong> File system</td>
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### General Notes

113.GemsFDTD (base): Applied maxprocandstop src.alt
129.tera_tf (base): Applied fixbuffer src.alt
127.wrf2 (base): Applied fixcalling src.alt
all ulimits set to unlimited
"petaskbind.sh" script used to bind each task to a unique processor
POE Environment variables set before executing benchmarks:

```
CWD = /specmpi/mpi2007-1.0
MP_ADAPTER_USE = shared
MP_EUILIB = us
MP_EUIDEOVICE = sn_all
MP_SHARED_MEMORY = yes
MP_SINGLE_THREAD = yes
MP_WAIT_MODE = poll
MP_EAGER_LIMIT = 65536
MP_BUFFER_MEM = 67108864
MP_POLLING_INTERVAL = 80000000
MP_USE_BULK_XFER = yes
```

Continued on next page
IBM Corporation
IBM Power 575

SPECmpI_M_peak2007 = 8.07
SPECmpI_M_base2007 = 8.07

MPI2007 license: 0005
Test sponsor: IBM Corporation
Tested by: IBM Corporation
Test date: Jun-2008
Hardware Availability: May-2008
Software Availability: May-2008

General Notes (Continued)

MP_BULK_MIN_MSG_SIZE=65536
MP_STDINMODE =none
MP_LABELIO =no
MP_HOSTFILE =$CWD/r35.64-2node
Other Environment variables
MEMORY_AFFINITY =MCM
LDR_CNTRL =DATAPSIZE=64K@TEXTPSIZE=64K@STACKPSIZE=64K
XLFRTEOTPS =intrinthds=1

submit command uses petaskbind.sh script to bind logical processors to ranks
poe $CWD/petaskbind.sh $command -procs $ranks
The Gigabit ethernet switch is shared among many nodes, not just the cluster used in this benchmark.

Base Compiler Invocation

C benchmarks:
/usr/bin/mpcc_r

C++ benchmarks:
126.lammps: /usr/bin/mpCC_r

Fortran benchmarks:
/usr/bin/mpxlf95_r

Benchmarks using both Fortran and C:
/usr/bin/mpcc_r /usr/bin/mpxlf95_r

Base Portability Flags

107.leon3d: -qfixed
115.fds4: -DSPEC_MPI_LC_NO_TRAILING_UNDERSCORE -qfixed
121.pop2: -DSPEC_MPI_AIX
127.wrf2: -DNOUNDERSCORE -DSPEC_MPI_AIX
130.socorro: -DSPEC_NO_UNDERSCORE -qcpluscmt
132.zeusmp2: -qfixed -DSPEC_SINGLE_UNDERSCORE
137.lu: -qfixed

Base Optimization Flags

C benchmarks:
-O4 -qarch=pwr6 -qtune=pwr6 -q64

C++ benchmarks:
126.lammps: -O4 -qarch=pwr6 -qtune=pwr6 -qstrict -q64

Continued on next page
## Base Optimization Flags (Continued)

For Fortran benchmarks:
- `-O4 -qarch=pwr6 -qtune=pwr6 -qalias=nostd -q64`

For benchmarks using both Fortran and C:
- `-O4 -qarch=pwr6 -qtune=pwr6 -qalias=nostd -q64`

### Base Other Flags

#### C benchmarks:
- `-w -qs suppress=1500-036 -qipa=noobject -qipa=threads`

#### C++ benchmarks:
- `126.lammps: -w -qs suppress=1500-036 -qipa=noobject -qipa=threads`

#### Fortran benchmarks:
- `-w -qs suppress=1500-036 -qs suppress=cmpmsg -qipa=noobject -qipa=threads`

For benchmarks using both Fortran and C:
- `-w -qs suppress=1500-036 -qs suppress=cmpmsg -qipa=noobject -qipa=threads`

## Peak Optimization Flags

#### C benchmarks:
- `104.milc: basepeak = yes`
- `122.tachyon: basepeak = yes`

#### C++ benchmarks:
- `126.lammps: basepeak = yes`

#### Fortran benchmarks:
- `107.leslie3d: basepeak = yes`
- `113.GemsFDTD: basepeak = yes`
- `129.tera_tf: basepeak = yes`
- `137.lu: basepeak = yes`

For benchmarks using both Fortran and C:
- Continued on next page
IBM Corporation
IBM Power 575

SPECmpiM_peak2007 = 8.07
SPECmpiM_base2007 = 8.07

Peak Optimization Flags (Continued)

115.fds4: basepeak = yes
121.pop2: basepeak = yes
127.wrf2: basepeak = yes
128.GAPgeofem: basepeak = yes
130.socorro: basepeak = yes
132.zeusmp2: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/MPI2007_flags.0.20080828.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/MPI2007_flags.0.20080828.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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