SPEC® MPIM2007 Result

IBM Corporation
IBM Power 575

SPECmpiM_peak2007 = NC

SPECmpiM_base2007 = NC

MPI2007 license: 0005
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Jun-2008
Hardware Availability: May-2008
Software Availability: May-2008

Ranks
104.milc
107.leslie3d
113.GemsFDTD
115.fds4
121.pop2
122.tachyon
126.lammps
127.wrf2
128.GAPgeofem
129.tera_tf
130.socorro
132.zeusmp2
137.lu

Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
107.leslie3d	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
113.GemsFDTD	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
115.fds4	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
121.pop2	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
122.tachyon	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
126.lammps	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
127.wrf2	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
128.GAPgeofem	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC

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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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
129.tera_tf	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
130.socorro	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
132.zeusmp2	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
137.lu	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC

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

Hardware Summary

Type of System:	SMP
Compute Node:	IBM Power 575
File Server Node:	IBM Power 575
Head Node:	IBM Power 575
Total Compute Nodes:	1
Total Chips:	16
Total Cores:	32
Total Threads:	32
Total Memory:	128 GB
Base Ranks Run:	32
Minimum Peak Ranks:	32
Maximum Peak Ranks:	32

Software Summary

Compiler:	IBM XL C/C++ Enterprise Edition V9.0 Updated with the Oct2007 PTF
C++ Compiler:	IBM XL C/C++ Enterprise Edition V9.0 Updated with the Oct2007 PTF
Fortran Compiler:	IBM XL Fortran Enterprise Edition V11.1 Updated with the Oct2007 PTF
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, file server
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:	0
Number of Adapters:	0

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Software

Adapter:	0
Adapter Driver:	0
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

Node Description: IBM Power 575

Slot Type:	0
Data Rate:	0
Ports Used:	0
Interconnect Type:	0

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/mpi2007-1.1
 MP_ADAPTER_USE      =shared
 MP_EUILIB           =us
 MP_EUIDEVICE        =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 =800000000
 MP_USE_BULK_XFER    =yes
 MP_BULK_MIN_MSG_SIZE=65536
 MP_STDINMODE        =none
 MP_LABELIO          =no
 MP_HOSTFILE         =$CWD/r35.32-1node
Other Environment variables
 MEMORY_AFFINITY     =MCM
 LDR_CNTRL           =DATAPSIZE=64K@TEXTPSIZE=64K@STACKPSIZE=64K
 XLFRTEOPTS          =intrinthds=1
submit command uses petaskbind.sh script to bind logical processors to ranks
 poe $CWD/petaskbind.sh $command -procs $ranks
The 2gigbit 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

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Base Compiler Invocation (Continued)

Fortran benchmarks:
/usr/bin/mpxlf95_r

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

Base Portability Flags

107.leslie3d: -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 -qnoluscmp
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

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

Benchmarks using both Fortran and C:
-O4 -qarch=pwr6 -qtune=pwr6 -qalias=nostd -q64

Base Other Flags

C benchmarks:
-w -qsuppress=1500-036 -qipa=noobject -qipa=threads

C++ benchmarks:

126.lammps: -w -qsuppress=1500-036 -qipa=noobject -qipa=threads

Fortran benchmarks:
-w -qsuppress=1500-036 -qsuppress=cmpmsg -qipa=noobject -qipa=threads

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Base Other Flags (Continued)

Benchmarks using both Fortran and C:
-w -qsuppress=1500-036 -qsuppress=cmpmsg -qipa=noobject -qpp=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

Benchmarks using both Fortran and C:

115.fds4: basepeak = yes

121.pop2: basepeak = yes

127.wrf2: basepeak = yes

128.GAPgeofem: basepeak = yes

basepeak = yes

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.20080828.html
http://www.spec.org/mpi2007/flags/MPI2007_flags.0.20080828.html
http://www.spec.org/mpi2007/flags/MPI2007_flags.1.html

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You can also download the XML flags sources by saving the following links:

```
http://www.spec.org/mpi2007/flags/MPI2007_flags.20080828.xml
http://www.spec.org/mpi2007/flags/MPI2007_flags.0.20080828.xml
http://www.spec.org/mpi2007/flags/MPI2007_flags.1.xml
```


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

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