



SPEC[®] MPIM2007 Result

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IBM Corporation
IBM Power 575

SPECmpiM_peak2007 = 11.4

SPECmpiM_base2007 = 11.4

MPI2007 license: 0005

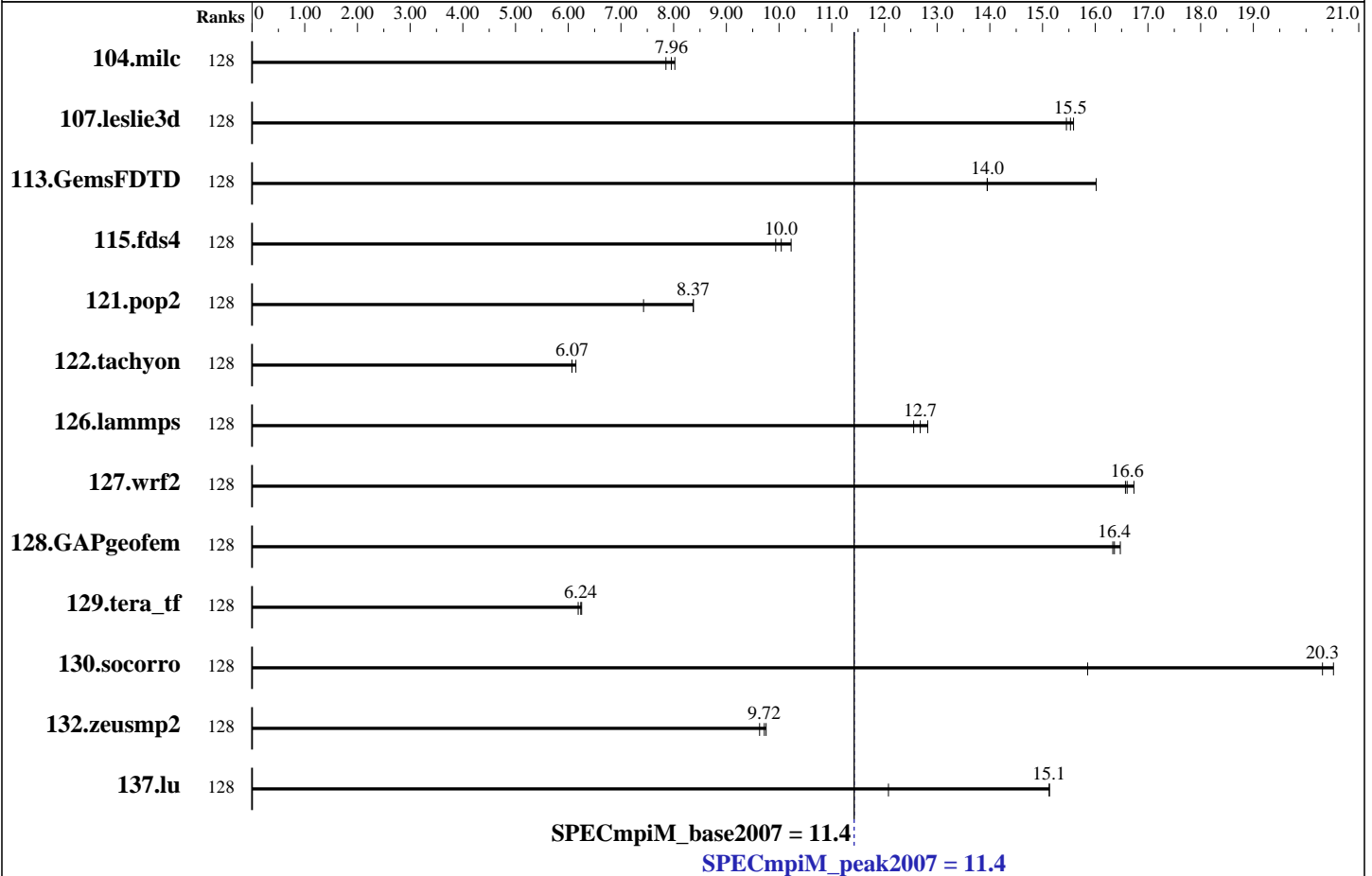
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jun-2008

Hardware Availability: May-2008

Software Availability: May-2008



Results Table

Benchmark	Base								Peak					
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	128	199	7.85	<u>197</u>	<u>7.96</u>	195	8.02	128	199	7.85	<u>197</u>	<u>7.96</u>	195	8.02
107.leslie3d	128	<u>336</u>	<u>15.5</u>	335	15.6	338	15.5	128	<u>336</u>	<u>15.5</u>	335	15.6	338	15.5
113.GemsFDTD	128	452	13.9	394	16.0	<u>452</u>	<u>14.0</u>	128	452	13.9	394	16.0	<u>452</u>	<u>14.0</u>
115.fds4	128	196	9.94	<u>194</u>	<u>10.0</u>	191	10.2	128	196	9.94	<u>194</u>	<u>10.0</u>	191	10.2
121.pop2	128	493	8.37	556	7.43	<u>493</u>	<u>8.37</u>	128	493	8.37	556	7.43	<u>493</u>	<u>8.37</u>
122.tachyon	128	461	6.07	455	6.15	<u>461</u>	<u>6.07</u>	128	461	6.07	455	6.15	<u>461</u>	<u>6.07</u>
126.lammps	128	227	12.8	<u>230</u>	<u>12.7</u>	232	12.6	128	227	12.8	<u>230</u>	<u>12.7</u>	232	12.6
127.wrf2	128	<u>469</u>	<u>16.6</u>	466	16.7	470	16.6	128	<u>469</u>	<u>16.6</u>	466	16.7	470	16.6
128.GAPgeofem	128	<u>126</u>	<u>16.4</u>	126	16.3	125	16.5	128	<u>126</u>	<u>16.4</u>	126	16.3	125	16.5
129.tera_tf	128	447	6.19	<u>444</u>	<u>6.24</u>	443	6.25	128	447	6.19	<u>444</u>	<u>6.24</u>	443	6.25

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
130.socorro	128	188	20.3	241	15.9	186	20.5	128	188	20.3	241	15.9	186	20.5
132.zeusmp2	128	318	9.75	319	9.72	322	9.63	128	318	9.75	319	9.72	322	9.63
137.lu	128	243	15.1	243	15.1	304	12.1	128	243	15.1	243	15.1	304	12.1

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
 Gigabit Ethernet
 File Server Node: IBM Power 575
 Head Node: IBM Power 575
 Total Compute Nodes: 2
 Total Chips: 32
 Total Cores: 64
 Total Threads: 128
 Total Memory: 256 GB
 Base Ranks Run: 128
 Minimum Peak Ranks: 128
 Maximum Peak Ranks: 128

Software Summary

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

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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

Hardware	
Number of nodes:	1
Uses of the node:	compute
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:	2
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
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:	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



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Software Availability: May-2008

Interconnect Description: InfiniBand

Hardware		Software
Vendor:	QLogic	
Model:	--	
Switch Model:	QLogic SilverStorm 9024	
Number of Switches:	2	
Number of Ports:	24	
Data Rate:	InfiniBand 4x DDR 20 Gbps	
Firmware:	4.2.1.1.1	
Topology:	linear	
Primary Use:	MPI Communication	

Interconnect Description: Gigabit Ethernet

Hardware		Software
Vendor:	IBM Corporation	
Model:	Cisco Systems WS-C6509-E Catalyst 6500 9-slot Chassis System	
Switch Model:	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	
Number of Switches:	1	
Number of Ports:	48	
Data Rate:	1 Gbps	
Firmware:	01ES330_034_034	
Topology:	--	
Primary Use:	File system	

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_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 =80000000
MP_USE_BULK_XFER   =yes

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General Notes (Continued)

```
MP_BULK_MIN_MSG_SIZE=65536
MP_STDINMODE          =none
MP_LABELIO            =no
MP_HOSTFILE           =$CWD/r35.128-2node
Other Environment variables
MEMORY_AFFINITY       =MCM
LDR_CNTRL              =DATASIZE=64K@TEXTPSIZE=64K@STACKPSIZE=64K
XLFRTTEOTPS           =intrinths=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/mpicc_r

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

Fortran benchmarks:
/usr/bin/mpxlf95_r

Benchmarks using both Fortran and C:
/usr/bin/mpicc_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 -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

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Base Optimization Flags (Continued)

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

Benchmarks using both Fortran and C:

-w -qsuppress=1500-036 -qsuppress=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

Benchmarks using both Fortran and C:

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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.20080828.html

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

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

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

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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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