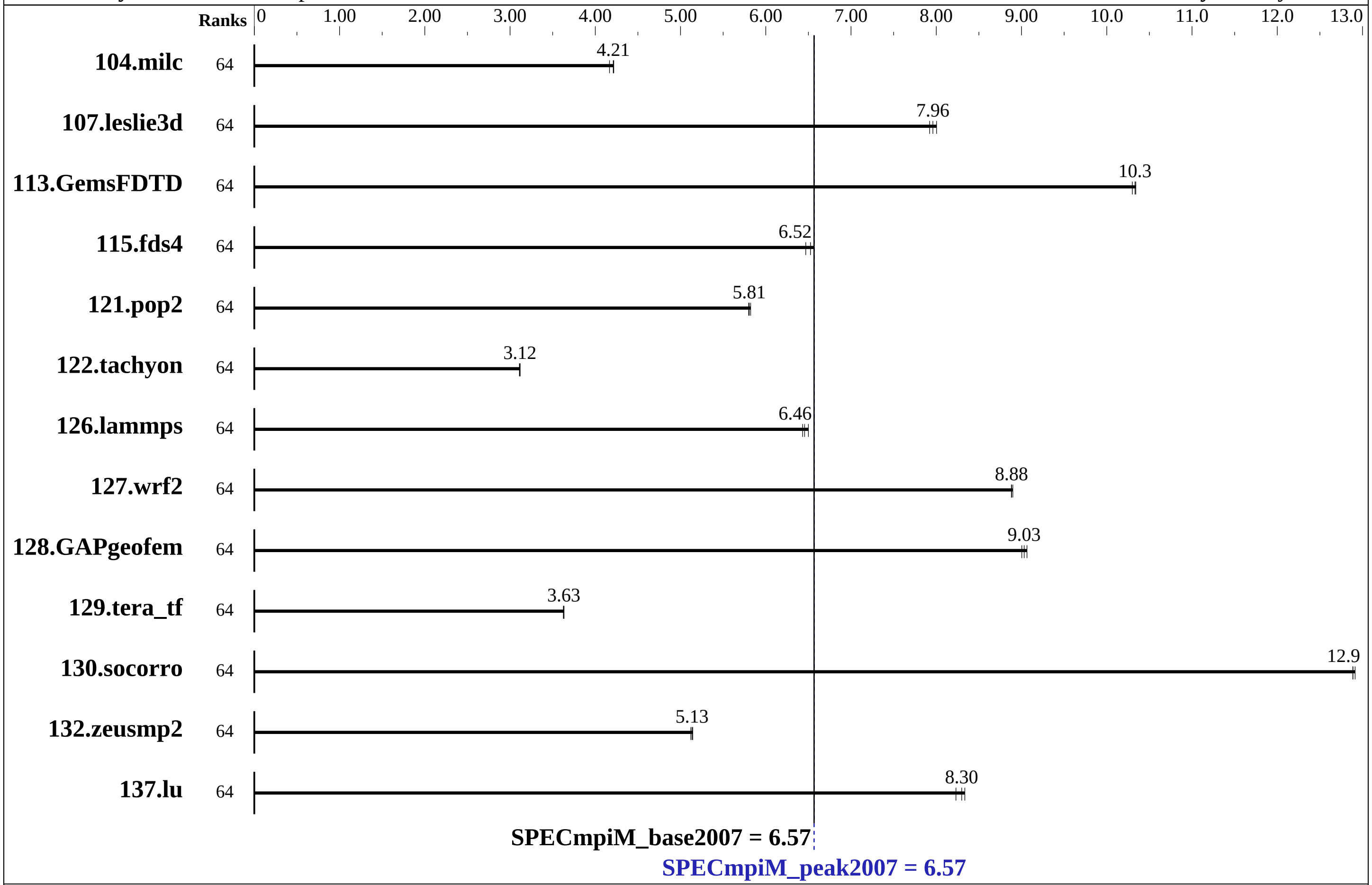
SPEC® MPIM2007 Result

IBM Corporation
IBM Power 575

SPECmpiM_peak2007 = 6.57

SPECmpiM_base2007 = 6.57

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 Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
104.milc	64	371	4.22	376	4.17	**372**	**4.21**	64	371	4.22	376	4.17	**372**	**4.21**
107.leslie3d	64	652	8.00	659	7.92	**656**	**7.96**	64	652	8.00	659	7.92	**656**	**7.96**
113.GemsFDTD	64	610	10.3	**611**	**10.3**	612	10.3	64	610	10.3	**611**	**10.3**	612	10.3
115.fds4	64	297	6.56	302	6.47	**299**	**6.52**	64	297	6.56	302	6.47	**299**	**6.52**
121.pop2	64	**711**	**5.81**	709	5.82	712	5.80	64	**711**	**5.81**	709	5.82	712	5.80
122.tachyon	64	899	3.11	897	3.12	**897**	**3.12**	64	899	3.11	897	3.12	**897**	**3.12**
126.lammps	64	448	6.50	**452**	**6.46**	453	6.43	64	448	6.50	**452**	**6.46**	453	6.43
127.wrf2	64	878	8.88	876	8.90	**878**	**8.88**	64	878	8.88	876	8.90	**878**	**8.88**
128.GAPgeofem	64	**229**	**9.03**	228	9.06	229	9.00	64	**229**	**9.03**	228	9.06	229	9.00
129.tera_tf	64	763	3.63	762	3.63	**762**	**3.63**	64	763	3.63	762	3.63	**762**	**3.63**

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	64	296	12.9	**296**	**12.9**	296	12.9	64	296	12.9	**296**	**12.9**	296	12.9
132.zeusmp2	64	603	5.14	**604**	**5.13**	606	5.12	64	603	5.14	**604**	**5.13**	606	5.12
137.lu	64	**443**	**8.30**	441	8.33	447	8.23	64	**443**	**8.30**	441	8.33	447	8.23

Results appear in the order in which they were run. Bold underlined text indicates a 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:	64
Total Memory:	128 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 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:	0
Number of Adapters:	0
Slot Type:	0
Data Rate:	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

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/mpi2007-1.0
 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
 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
 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`

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Base Compiler Invocation (Continued)

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 -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`

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`

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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`

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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Tested with SPEC MPI2007 v1.0.
Report generated on Tue Jul 22 13:34:45 2014 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 27 August 2008.