



# SPEC<sup>®</sup> MPIM2007 Result

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## Indiana University

SPECmpiM\_peak2007 = Not Run

Mason (Intel Xeon L7555, base frequency 1.87 GHz,  
PC3-10600R, ECC, running at 1066 MHz and CL9,  
Turbo on,  
Max Turbo Frequency 2.53 GHz)

SPECmpiM\_base2007 = 15.8

MPI2007 license: 3440

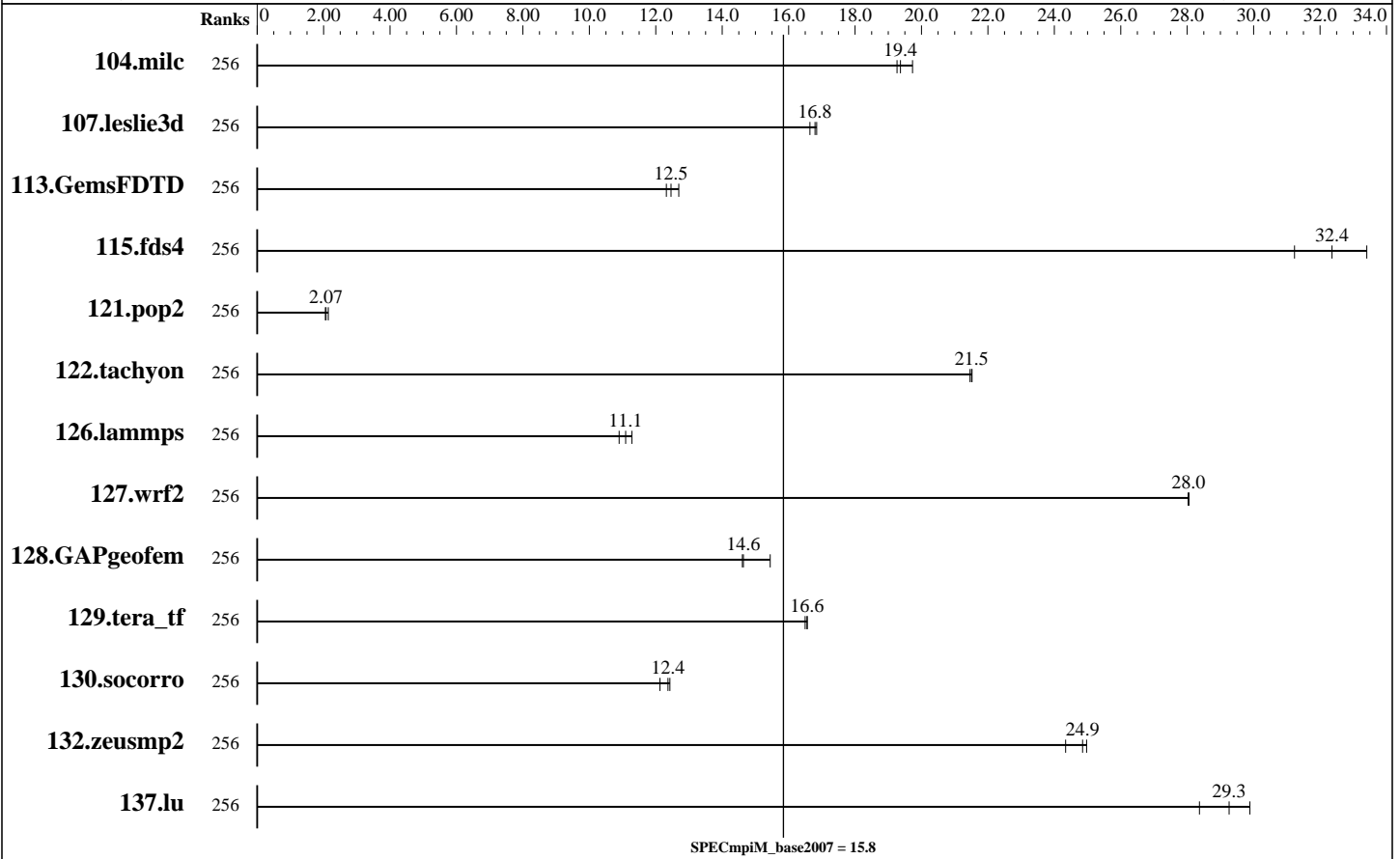
Test date: Dec-2011

Test sponsor: Indiana University

Hardware Availability: Jun-2010

Tested by: Huian Li

Software Availability: Jan-2011



## Results Table

Benchmark	Base								Peak					
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	256	<b>80.8</b>	<b>19.4</b>	81.2	19.3	79.3	19.7							
107.leslie3d	256	<b>311</b>	<b>16.8</b>	310	16.8	314	16.6							
113.GemsFDTD	256	<b>506</b>	<b>12.5</b>	512	12.3	497	12.7							
115.fds4	256	58.4	33.4	<b>60.3</b>	<b>32.4</b>	62.5	31.2							
121.pop2	256	1928	2.14	2011	2.05	<b>1991</b>	<b>2.07</b>							
122.tachyon	256	130	21.5	<b>130</b>	<b>21.5</b>	130	21.5							
126.lammps	256	<b>263</b>	<b>11.1</b>	258	11.3	267	10.9							
127.wrf2	256	278	28.0	278	28.1	<b>278</b>	<b>28.0</b>							
128.GAPgeofem	256	<b>141</b>	<b>14.6</b>	134	15.4	141	14.6							
129.tera_tf	256	<b>167</b>	<b>16.6</b>	168	16.5	167	16.6							

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	256	315	12.1	<b>309</b>	<b>12.4</b>	307	12.4							
132.zeusmp2	256	<b>125</b>	<b>24.9</b>	127	24.3	124	25.0							
137.lu	256	130	28.4	123	29.9	<b>126</b>	<b>29.3</b>							

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

#### Hardware Summary

Type of System: Homogeneous  
 Compute Node: Mason Node  
 Interconnects: 10Gigabit Ethernet  
 Gigabit Ethernet  
 File Server Node: HOME  
 Total Compute Nodes: 8  
 Total Chips: 32  
 Total Cores: 256  
 Total Threads: 256  
 Total Memory: 4 TB  
 Base Ranks Run: 256  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

#### Software Summary

C Compiler: Intel C Composer XE 2011 for Linux  
 Version 12.0, Build 20110112  
 C++ Compiler: Intel C++ Composer XE 2011 for Linux  
 Version 12.0, Build 20110112  
 Fortran Compiler: Intel Fortran Composer XE 2011 for Linux  
 Version 12.0, Build 20110112  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: OpenMPI-1.4.3  
 Other MPI Info: None  
 Pre-processors: No  
 Other Software: None

### Node Description: Mason Node

#### Hardware

Number of nodes: 8  
 Uses of the node: compute  
 Vendor: HP  
 Model: Proliant DL580 G7 Server Series  
 CPU Name: Intel Xeon L7555  
 CPU(s) orderable: 1-4 chips  
 Chips enabled: 4  
 Cores enabled: 32  
 Cores per chip: 8  
 Threads per core: 1  
 CPU Characteristics: Intel Turbo Boost Technology enabled,  
 5.86 GT/s QPI  
 CPU MHz: 1866  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 24 MB I+D on chip per chip, 24 MB shared / 8 cores  
 Other Cache: None  
 Memory: 512 GB (64 x 8 GB 2Rx4 PC3-10600R, ECC  
 running at 1066 MHz and CL9)  
 Disk Subsystem: Two 500 GB 7200 RPM 2.5" SAS hard drives, in RAID  
 1 mirror  
 Other Hardware: None  
 Adapter: HP NC375i 1G w/NC524SFP 10G Module  
 Number of Adapters: 1

#### Software

Adapter: HP NC375i 1G w/NC524SFP 10G Module  
 Adapter Driver: netxen\_nic v 4.0.75  
 Adapter Firmware: 4.0.544  
 Adapter: HP NC375i 1G  
 Adapter Driver: netxen\_nic v 4.0.75  
 Adapter Firmware: 4.0.544  
 Operating System: RHEL6.0 (x86\_64) 2.6.32-71.14.1.el6  
 Kernel 2.6.32-71.14.1.el6  
 Local File System: Linux/ext2  
 Shared File System: NFS  
 System State: Multi-User  
 Other Software: TORQUE-2.5.7

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### Node Description: Mason Node

Slot Type:	PCIe x8 Gen2
Data Rate:	10Gbps
Ports Used:	1
Interconnect Type:	10 Gigabit Ethernet
Adapter:	HP NC375i 1G
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	1Gbps
Ports Used:	1
Interconnect Type:	1 Gigabit Ethernet

### Node Description: HOME

#### Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	IBM
Model:	IBM N5500 NAS
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	32
Cores per chip:	8
Threads per core:	1
CPU Characteristics:	--
CPU MHz:	1866
Primary Cache:	32 KB I + 32 KB D on chip per chip
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	None
Other Cache:	None
Memory:	6 GB
Disk Subsystem:	10 disks, 320GB/disk, 2.6TB total
Other Hardware:	None
Adapter:	Intel 82546GB Dual-Port Gigabit Ethernet Controller
Number of Adapters:	1
Slot Type:	PCI-Express x8
Data Rate:	1Gbps Ethernet
Ports Used:	1
Interconnect Type:	Ethernet

#### Software

Adapter:	Intel 82546GB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000
Adapter Firmware:	N/A
Operating System:	RedHat EL 4 Update 4
Local File System:	None
Shared File System:	NFS
System State:	Multi-User
Other Software:	None



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### Interconnect Description: 10Gigabit Ethernet

Hardware	Software
<b>Vendor:</b> HP <b>Model:</b> HP NC375i 1G w/NC524SFP 10G Module <b>Switch Model:</b> Cisco 7018 (Line card module: N7K-M132XP-12) <b>Number of Switches:</b> 1 <b>Number of Ports:</b> 16 <b>Data Rate:</b> 10 Gbps Ethernet <b>Firmware:</b> EPLD 5.0.2 <b>Topology:</b> switched <b>Primary Use:</b> MPI traffic and NFS traffic	

### Interconnect Description: Gigabit Ethernet

Hardware	Software
<b>Vendor:</b> HP <b>Model:</b> Cisco SGE2010 <b>Switch Model:</b> Cisco SGE2010 <b>Number of Switches:</b> 1 <b>Number of Ports:</b> 48 <b>Data Rate:</b> 1 Gbps Ethernet <b>Firmware:</b> 3.0.0.18 <b>Topology:</b> switched <b>Primary Use:</b> Network management	

### Submit Notes

The config file option 'submit' was used.

### General Notes

MPI startup command:

`mpirun` command was used to start MPI jobs.

`eth0` (10 GigE) was specified at the `mpirun` command line for MPI message passing

`eth3` (1 GigE) was specified for non-MPI communication.

BIOS settings:

Intel Turbo Boost Technology (Turbo) : Enabled (the default)

RAM configuration:

Each compute node has 64x8-GB RDIMMs.

Network:

Four compute nodes connect to one Cisco Nexus 7018 switch via 10 GigE port.

Job placement:

Each MPI job was assigned to a topologically compact set of nodes, i.e.

the minimal needed number of compute nodes was used for each job:

1 compute node for 32 ranks, 2 for 64 ranks, 4 for 128 ranks, and 8 for 256 ranks

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### General Notes (Continued)

PBS Pro was used for job submission. It has no impact on performance.  
Can be found at: <http://www.altair.com>

### Base Compiler Invocation

C benchmarks:  
mpicc

C++ benchmarks:  
126.lammps: mpicxx

Fortran benchmarks:  
mpif90

Benchmarks using both Fortran and C:  
mpicc mpif90

### Base Portability Flags

121.pop2: -DSPEC\_MPI\_CASE\_FLAG  
126.lammps: -DMPICH\_IGNORE\_CXX\_SEEK  
127.wrf2: -DSPEC\_MPI\_LINUX -DSPEC\_MPI\_CASE\_FLAG

### Base Optimization Flags

C benchmarks:  
-O3 -xSSE4.1 -no-prec-div

C++ benchmarks:  
126.lammps: -O3 -xSSE4.1 -no-prec-div

Fortran benchmarks:  
-O3 -xSSE4.1 -no-prec-div

Benchmarks using both Fortran and C:  
-O3 -xSSE4.1 -no-prec-div

The flags file that was used to format this result can be browsed at  
[http://www.spec.org/mpi2007/flags/EM64T\\_Intel111\\_flags.20120720.html](http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.html)

You can also download the XML flags source by saving the following link:  
[http://www.spec.org/mpi2007/flags/EM64T\\_Intel111\\_flags.20120720.xml](http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.xml)



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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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