



# SPEC® 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 = 7.01

MPI2007 license: 3440

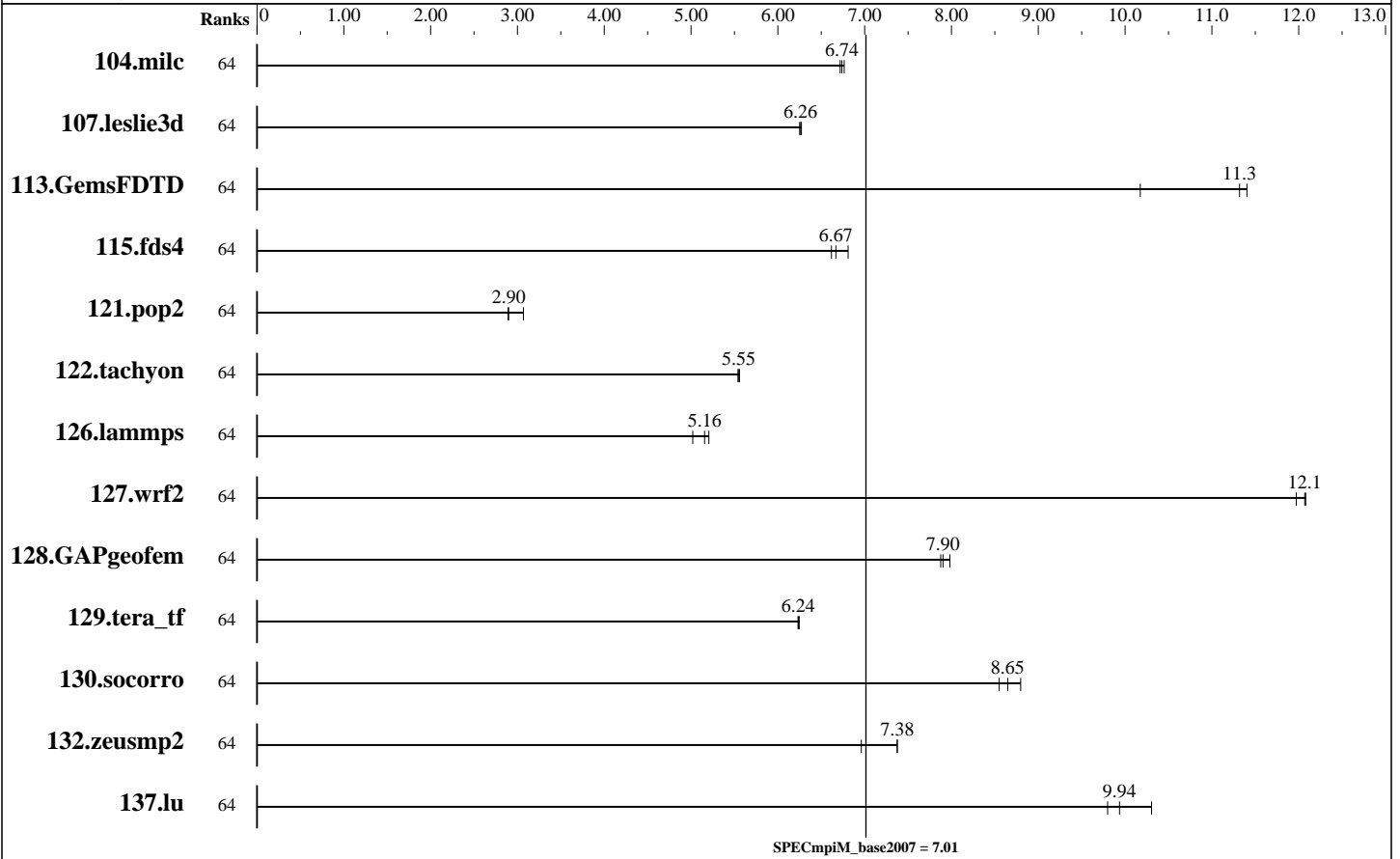
Test date: Dec-2011

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	64	<u>232</u>	<b>6.74</b>	233	6.72	231	6.76									
107.leslie3d	64	835	6.25	832	6.27	<b>834</b>	<b>6.26</b>									
113.GemsFDTD	64	553	11.4	620	10.2	<b>557</b>	<b>11.3</b>									
115.fds4	64	295	6.62	<b>293</b>	<b>6.67</b>	287	6.81									
121.pop2	64	<b>1424</b>	<b>2.90</b>	1427	2.89	1345	3.07									
122.tachyon	64	<b>504</b>	<b>5.55</b>	505	5.54	503	5.56									
126.lammps	64	581	5.02	<b>565</b>	<b>5.16</b>	560	5.21									
127.wrf2	64	<b>646</b>	<b>12.1</b>	645	12.1	651	12.0									
128.GAPgeofem	64	259	7.98	<b>261</b>	<b>7.90</b>	262	7.88									
129.tera_tf	64	443	6.25	<b>444</b>	<b>6.24</b>	444	6.23									

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	446	8.55	<b>441</b>	<b>8.65</b>	434	8.80							
132.zeusmp2	64	<b>421</b>	<b>7.38</b>	421	7.38	446	6.96							
137.lu	64	375	9.80	<b>370</b>	<b>9.94</b>	357	10.3							

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: 2  
 Total Chips: 8  
 Total Cores: 64  
 Total Threads: 64  
 Total Memory: 1 TB  
 Base Ranks Run: 64  
 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: 2  
 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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