



# SPEC<sup>®</sup> MPIM2007 Result

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## Intel Corporation

Endeavor (Intel Xeon X5670, 2.93 GHz, DDR3-1333 MHz, SMT off, Turbo off)

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 4.52

MPI2007 license: 13

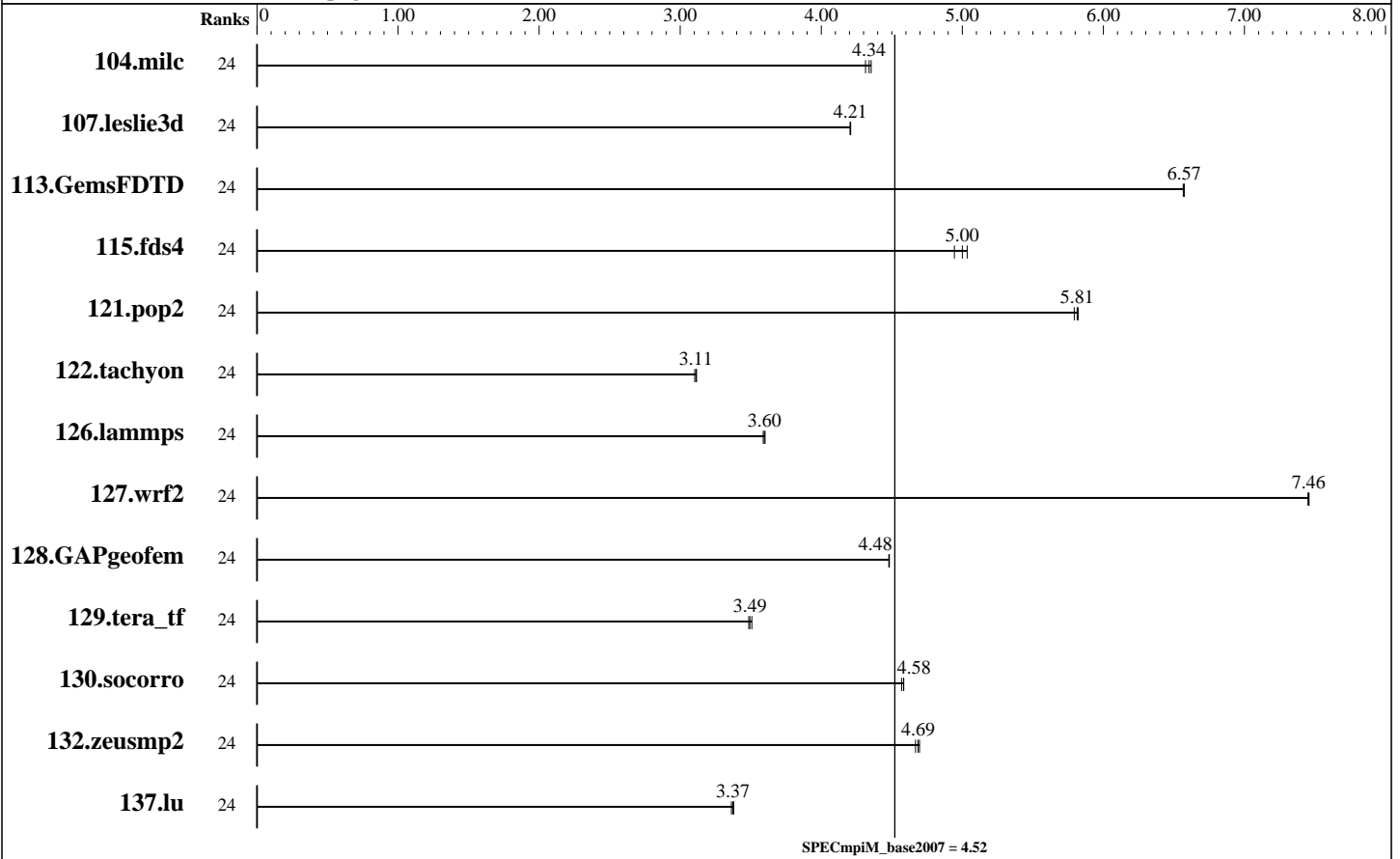
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: Feb-2010

Hardware Availability: Mar-2010

Software Availability: Feb-2010



## Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
104.milc	24	363	4.31	359	4.35	<b>361</b>	<b>4.34</b>									
107.leslie3d	24	1240	4.21	<b>1241</b>	<b>4.21</b>	1241	4.21									
113.GemsFDTD	24	961	6.57	<b>960</b>	<b>6.57</b>	960	6.57									
115.fds4	24	395	4.94	388	5.03	<b>390</b>	<b>5.00</b>									
121.pop2	24	713	5.79	709	5.82	<b>710</b>	<b>5.81</b>									
122.tachyon	24	898	3.12	901	3.10	<b>899</b>	<b>3.11</b>									
126.lammps	24	<b>811</b>	<b>3.60</b>	812	3.59	809	3.60									
127.wrf2	24	1045	7.46	<b>1046</b>	<b>7.46</b>	1046	7.45									
128.GAPgeofem	24	<b>461</b>	<b>4.48</b>	461	4.48	461	4.48									
129.tera_tf	24	<b>792</b>	<b>3.49</b>	794	3.49	789	3.51									

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	24	<b>833</b>	<b>4.58</b>	835	4.57	833	4.58							
132.zeusmp2	24	665	4.67	661	4.70	<b>662</b>	<b>4.69</b>							
137.lu	24	1088	3.38	1093	3.36	<b>1090</b>	<b>3.37</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: Endeavor Node  
 Interconnects: IB Switch  
 Gigabit Ethernet  
 File Server Node: HOME  
 Total Compute Nodes: 2  
 Total Chips: 4  
 Total Cores: 24  
 Total Threads: 24  
 Total Memory: 48 GB  
 Base Ranks Run: 24  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

### Software Summary

C Compiler: Intel C++ Compiler 11.1.064 for Linux  
 C++ Compiler: Intel C++ Compiler 11.1.064 for Linux  
 Fortran Compiler: Intel Fortran Compiler 11.1.064 for Linux  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: Intel MPI Library 3.2.2.006 for Linux  
 Other MPI Info: None  
 Pre-processors: No  
 Other Software: None

## Node Description: Endeavor Node

### Hardware

Number of nodes: 2  
 Uses of the node: compute  
 Vendor: Intel  
 Model: SR1600UR  
 CPU Name: Intel Xeon X5670  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 12  
 Cores per chip: 6  
 Threads per core: 1  
 CPU Characteristics: Intel Turbo Boost Technology disabled, 6.4 GT/s QPI, Hyper-Threading disabled  
 CPU MHz: 2934  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 12 MB I+D on chip per chip, 12 MB shared / 6 cores  
 Other Cache: None  
 Memory: 24 GB (RDIMM 6x4-GB DDR3-1333 MHz)  
 Disk Subsystem: Seagate 400 GB ST3400755SS  
 Other Hardware: None  
 Adapter: Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller  
 Number of Adapters: 1

### Software

Adapter: Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller  
 Adapter Driver: e1000  
 Adapter Firmware: None  
 Adapter: Mellanox MHQH29-XTC  
 Adapter Driver: OFED 1.4.2  
 Adapter Firmware: 2.7.000  
 Operating System: Red Hat EL 5.4, kernel 2.6.18-164  
 Local File System: Linux/ext2  
 Shared File System: NFS  
 System State: Multi-User  
 Other Software: PBS Pro 10.1

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### Node Description: Endeavor Node

Slot Type:	PCI-Express x8
Data Rate:	1Gbps Ethernet
Ports Used:	2
Interconnect Type:	Ethernet
Adapter:	Mellanox MHQH29-XTC
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x QDR
Ports Used:	1
Interconnect Type:	InfiniBand

### Node Description: HOME

	Hardware
Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	SSR212CC
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	2 chips
Chips enabled:	2
Cores enabled:	2
Cores per chip:	1
Threads per core:	1
CPU Characteristics:	--
CPU MHz:	2800
Primary Cache:	12 KB I + 16 KB D on chip per chip
Secondary Cache:	1 MB I+D on chip per chip
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: IB Switch

Hardware	Software
Vendor: Mellanox Model: Mellanox MTS3600Q-1UNC Switch Model: Mellanox MTS3600Q-1UNC Number of Switches: 46 Number of Ports: 1656 Data Rate: InfiniBand 4x QDR Firmware: 7.1.000 Topology: Fat tree Primary Use: MPI traffic	

### Interconnect Description: Gigabit Ethernet

Hardware	Software
Vendor: Force10 Networks Model: Force10 S50, Force10 C300 Switch Model: Force10 S50, Force10 C300 Number of Switches: 15 Number of Ports: 748 Data Rate: 1Gbps Ethernet Firmware: 8.2.1.0 Topology: Fat tree Primary Use: Cluster File System	

### Submit Notes

The config file option 'submit' was used.

### General Notes

MPI startup command:

mpirun command was used to start MPI jobs. This command starts an independent ring of mpd daemons, launches an MPI job, and shuts down the mpd ring upon the job termination.

BIOS settings:

Intel Hyper-Threading Technology (SMT): Disabled (default is Enabled)  
Intel Turbo Boost Technology (Turbo) : Disabled (default is Enabled)

RAM configuration:

Compute nodes have 1x4-GB RDIMM on each memory channel.

Network:

Forty six 36-port switches: 18 core switches and 28 leaf switches. Each leaf has one link to each core. Remaining 18 ports on 25 of 28 leafs are used for compute nodes. On the remaining 3 leafs the ports are used

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## General Notes (Continued)

for FS nodes and other peripherals.

Job placement:

Each MPI job was assigned to a topologically compact set of nodes, i.e. the minimal needed number of leaf switches was used for each job: 1 switch for 24/48/96/192 ranks, 2 switches for 384 ranks, 3 switches for 504 ranks.

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:

mpiicc

C++ benchmarks:

126.lammps: mpiicpc

Fortran benchmarks:

mpiifort

Benchmarks using both Fortran and C:

mpiicc mpiifort

## Base Portability Flags

121.pop2: -DSPEC\_MPI\_CASE\_FLAG

126.lammps: -DMPICH\_IGNORE\_CXX\_SEEK

127.wrf2: -DSPEC\_MPI\_CASE\_FLAG -DSPEC\_MPI\_LINUX

## Base Optimization Flags

C benchmarks:

-O3 -xSSE4.2 -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xSSE4.2 -no-prec-div

Fortran benchmarks:

-O3 -xSSE4.2 -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xSSE4.2 -no-prec-div



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The flags file that was used to format this result can be browsed at

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel111\\_flags.20100202.html](http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20100202.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel111\\_flags.20100202.xml](http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20100202.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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