



# SPEC® MPIM2007 Result

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## Intel Corporation

Endeavor (Intel Xeon X5560, 2.80 GHz, SMT off, Turbo off)

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = NC

MPI2007 license: 13  
Test sponsor: Intel Corporation  
Tested by: Pavel Shelepugin

Test date: Feb-2009  
Hardware Availability: Mar-2009  
Software Availability: Jun-2009

- Ranks
- 104.milc
- 107.leslie3d
- 113.GemsFDTD
- 115.fds4
- 121.pop2
- 122.tachyon
- 126.lammips
- 127.wrf2
- 128.GAPgeofem
- 129.tera\_tf
- 130.soc
- 132.zeusmp2
- 137.lu

Non-Compliant

### Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	32	NC	NC	NC	NC									
107.leslie3d	32	NC	NC	NC	NC									

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	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
113.GemsFDTD	32	NC	NC	NC	NC								
115.fds4	32	NC	NC	NC	NC								
121.pop2	32	NC	NC	NC	NC								
122.tachyon	32	NC	NC	NC	NC								
126.lammps	32	NC	NC	NC	NC								
127.wrf2	32	NC	NC	NC	NC								
128.GAPgeofem	32	NC	NC	NC	NC								
129.tera_tf	32	NC	NC	NC	NC								
130.socorro	32	NC	NC	NC	NC								
132.zeusmp2	32	NC	NC	NC	NC								
137.lu	32	NC	NC	NC	NC								

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  
 Interconnect: IB Switch  
 File Server Node: NFS  
 Total Compute Nodes: 4  
 Total Chips: 8  
 Total Ranks: 32  
 Total Threads: 32  
 Total Memory: 72 GB  
 Base Ranks Run: 32  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

#### Software Summary

C Compiler: Intel C++ Compiler 11.1 for Linux  
 C++ Compiler: Intel C++ Compiler 11.1 for Linux  
 Fortran Compiler: Intel Fortran Compiler 11.1 for Linux  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: Intel MPI Library 3.2 for Linux  
 Other MPI Info: None  
 Pre-processors: No  
 Other Software: Intel MPI Library 3.2 for Linux Multi-Purpose Daemon (MPD)



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### Node Description: Endeavor Node

Hardware		Software	
Number of nodes:	4	Adapter:	Mellanox MHQH29-XTC
Uses of the node:	compute	Adapter Driver:	OFED 1.3.1
Vendor:	Intel	Adapter Firmware:	2.5.9
Model:	Supernano X8DTN+	Operating System:	Red Hat EL 5.2, kernel 2.6.18-53
CPU Name:	Intel Xeon X5560	Local File System:	Linux/ext2
CPU(s) orderable:	1-2 chips	Shared File System:	Lustre FS
Chips enabled:	2	System State:	Multi-User
Cores enabled:	8	Other Software:	PBS Pro 8.0
Cores per chip:	4		
Threads per core:	1		
CPU Characteristics:	Intel Turbo Boost Technology disabled, 6.4 GT/s QPI, Hyper-Threading disabled		
CPU MHz:	2800		
Primary Cache:	32 KB I + 32 KB D on chip per core		
Secondary Cache:	256 KB I+D on chip per core		
L3 Cache:	8 MB I+D on chip per chip, 8 MB shared / 4 cores		
Other Cache:	None		
Memory:	18 GB (ECC DIMM 6x2-GB, 1066 MHz DDR3-1066 MHz)		
Disk Subsystem:	Seagate 300 GB ST3500320NS		
Other Hardware:	None		
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: LFS

Hardware		Software	
Number of nodes:	8	Adapter:	Mellanox MHGH28-XTC
Uses of the node:	fileserver	Adapter Driver:	OFED 1.3.1
Vendor:	DataDirect Networks	Adapter Firmware:	2.5.0
Model:	SR1560SF	Operating System:	Red Hat EL 5.2
CPU Name:	Intel Xeon E5462	Local File System:	None

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**Software Availability:** Jun-2009

### Node Description: LFS

CPU(s) orderable: 1-2 chips  
Chips enabled: 2  
Cores enabled: 8  
Cores per chip: 4  
Threads per core: 1  
CPU Characteristics: 1600 MHz FSB  
CPU MHz: 2800  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores  
L3 Cache: None  
Other Cache: None  
Memory: 16 GB DDR2 16x1-667 MHz  
Disk Subsystem: 160 disks, 300GB/disk, 48TB total, 25TB available  
Other Hardware: None  
Adapter: Mellanox MHGH28-XTC  
Number of Adapters: 1  
Slot Type: PCIe x8 Gen 2  
Data Rate: InfiniBand 4x QDR  
Ports Used: 1  
Interconnect Type: InfiniBand

Shared File System: Lustre FS  
System State: Multi-User  
Other Software: None

### Interconnect Description: IB Switch

**Hardware**  
Vendor: Mellanox  
Model: Mellanox MTS3600Q-1UNC  
Switch Model: Mellanox MTS3600Q-1UNC  
Number of Switches: 9  
Number of Ports: 36  
Data Rate: InfiniBand 4x QDR  
Firmware: 7.1.000  
Topology: Fat tree  
Primary Use: MPI traffic, FS traffic

**Software**



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### Submit Note

The config file option 'submit' was used.

### General Note

BIOS settings notes:

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

Intel Turbo Boost Technology (Turbo): Disabled (default is Enabled)

RAM configuration notes: compute nodes have

1x2-GB and 1x1-GB RDIMM on each memory channel,

2-GB RDIMM is closer to the CPU.

Network notes: nine 36-port switches, 3 core switches and 6 leaf switches.

Each leaf has 6 links to each core. Remaining 18 ports on 5 of 6 leaves are

used for compute nodes. On the sixth leaf 8 ports are used for FS nodes,

remaining 10 ports are open.

PBS Pro was used for job submission. It has no impact on performance.

Can be found at <http://www.altair.com>

Lustre File System 2.6.4 was used. Download from:

<http://www.sun.com/software/products/lustre>

### Base Compiler Invocation

mpicc

C++ benchmarks:

126.lammps: mpiicpc

Fortran benchmarks:

mpiifort

Benchmarks using both Fortran and C:

mpiicc mpiifort



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## Base Portability Flags

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

## 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

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

[http://www.spec.org/mpim2007/flags/EM64T\\_Intel111\\_flags.html](http://www.spec.org/mpim2007/flags/EM64T_Intel111_flags.html)

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

[http://www.spec.org/mpim2007/flags/EM64T\\_Intel111\\_flags.xml](http://www.spec.org/mpim2007/flags/EM64T_Intel111_flags.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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