SPEC® 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

$SPECmpiM\_base2007 =$ 28.3

MPI2007 license: 13	**Test date:** Feb-2010
Test sponsor: Intel Corporation	**Hardware Availability:** Mar-2010
Tested by: Pavel Shelepugin	**Software Availability:** Feb-2010

	Ranks	104.milc	27.8
107.leslie3d	192	26.8
113.GemsFDTD	192	25.8
115.fds4	192	30.9
121.pop2	192	18.5
122.tachyon	192	23.5
126.lammps	192	20.0
127.wrf2	192	48.6
128.GAPgeofem	192	30.8
129.tera_tf	192	21.4
130.socorro	192	31.9
132.zeusmp2	192	33.8
137.lu	192	41.0

SPECmpiM_base2007 = 28.3

Results Table

Benchmark	Ranks	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	192	63.4	24.7	**56.3**	**27.8**	56.2	27.8							
107.leslie3d	192	195	26.8	194	26.9	**195**	**26.8**							
113.GemsFDTD	192	**245**	**25.8**	244	25.8	245	25.8							
115.fds4	192	**63.0**	**30.9**	62.8	31.0	68.2	28.6							
121.pop2	192	223	18.5	**223**	**18.5**	223	18.5							
122.tachyon	192	119	23.5	**119**	**23.5**	119	23.5							
126.lammps	192	**146**	**20.0**	145	20.1	146	20.0							
127.wrf2	192	160	48.8	161	48.5	**160**	**48.6**							
128.GAPgeofem	192	**67.0**	**30.8**	67.0	30.8	66.9	30.9							
129.tera_tf	192	**129**	**21.4**	130	21.2	128	21.6							

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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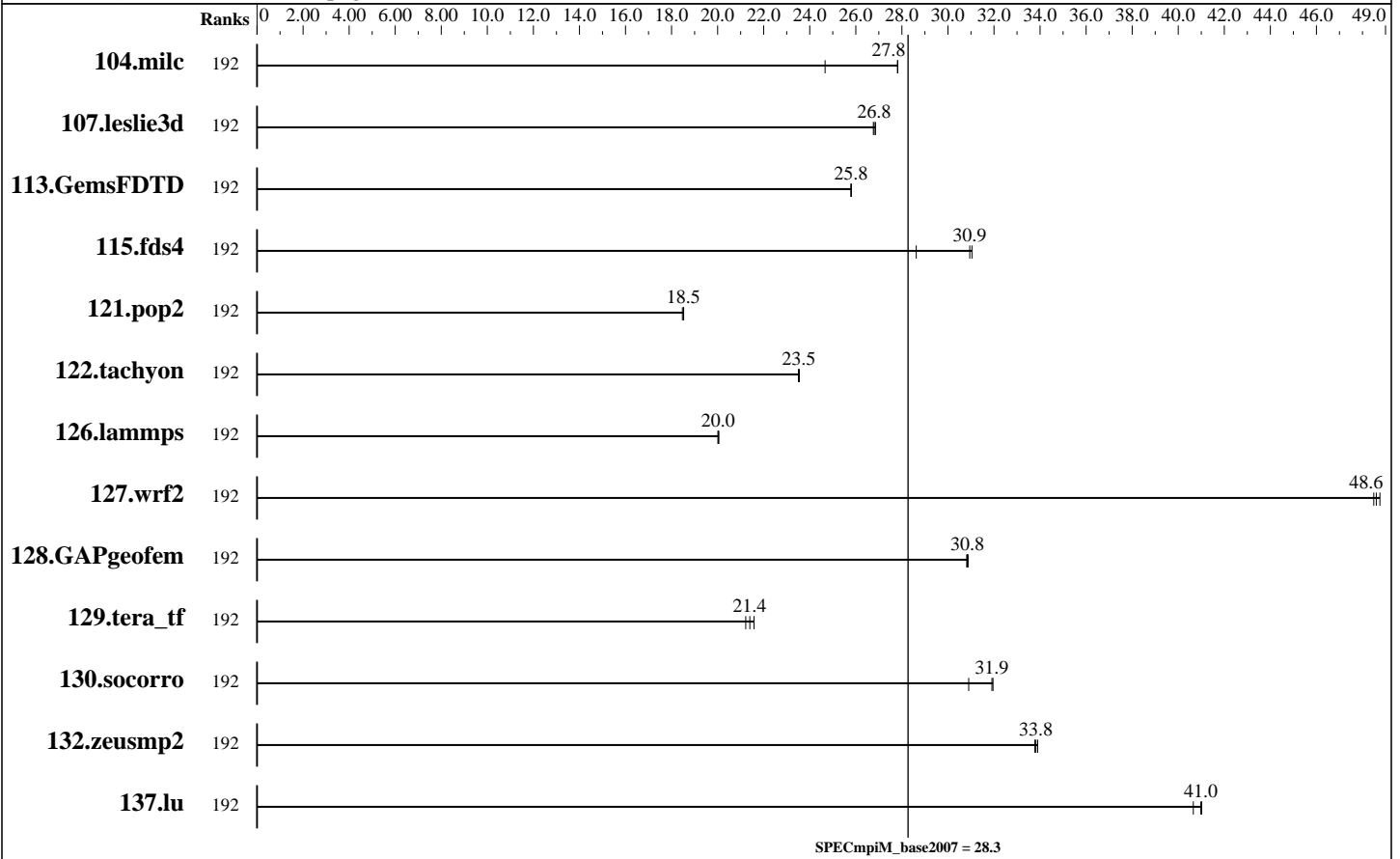
SPECmpiM_base2007 =   28.3

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Results Table (Continued)

Benchmark	Ranks	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	192	**120**	**31.9**	124	30.9	119	32.0							
132.zeusmp2	192	91.5	33.9	**91.7**	**33.8**	91.9	33.8							
137.lu	192	**89.7**	**41.0**	90.4	40.7	89.6	41.0							

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:	16
Total Chips:	32
Total Cores:	192
Total Threads:	192
Total Memory:	384 GB
Base Ranks Run:	192
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:	16
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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MPI2007 license:	13	**Test date:**	Feb-2010
Test sponsor:	Intel Corporation	**Hardware Availability:**	Mar-2010
Tested by:	Pavel Shelepugin	**Software Availability:**	Feb-2010

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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Test date: Feb-2010
Hardware Availability: Mar-2010
Software Availability: Feb-2010

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

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20100202.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC MPI2007 v2.0.
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