SPEC® MPIM2007 Result

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Intel Corporation

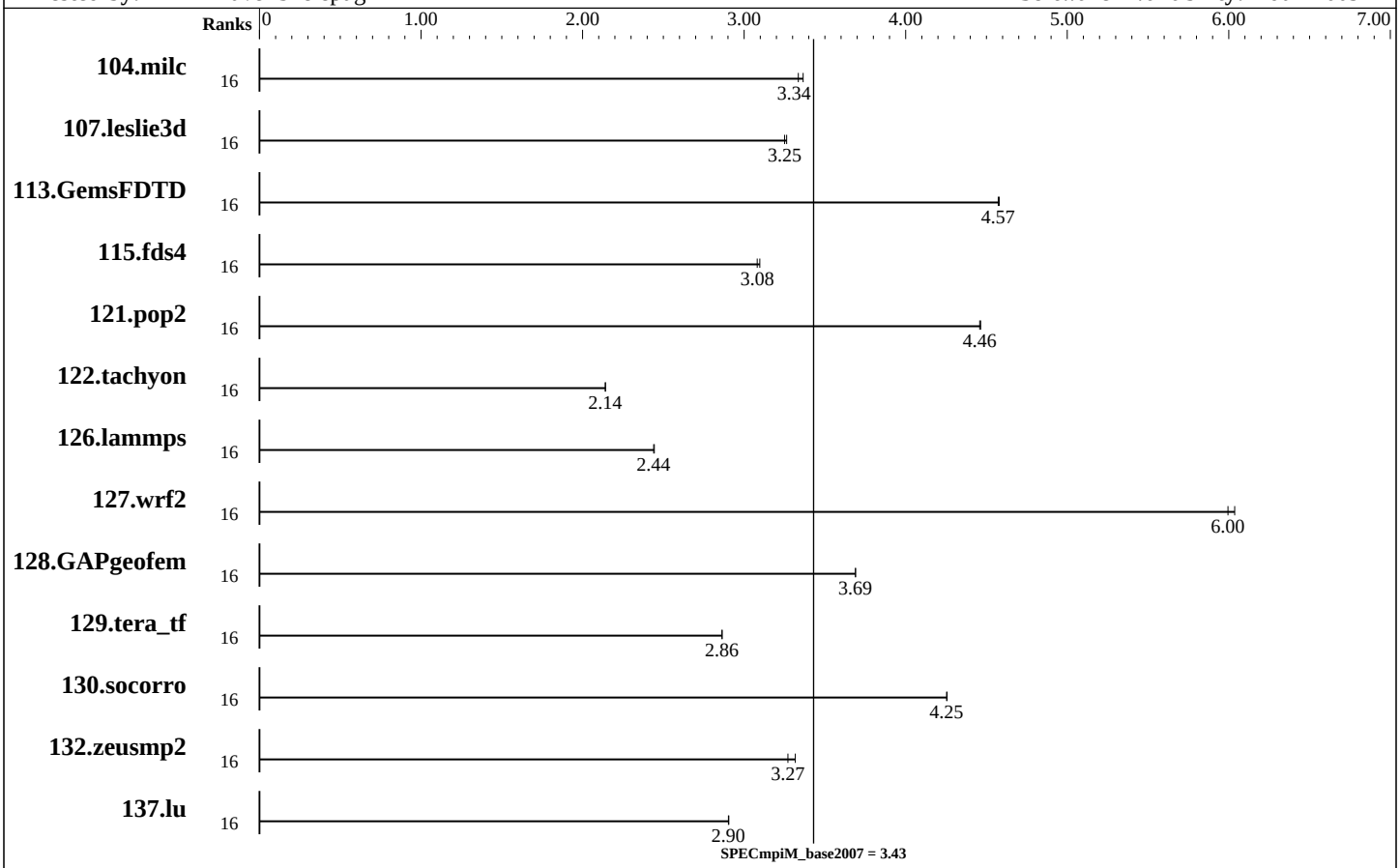
Endeavor (Intel Xeon X5560, 2.80 GHz, SMT off, Turbo on)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 3.43

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

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



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	16	**469**	**3.34**	465	3.37									
107.leslie3d	16	1600	3.26	**1606**	**3.25**									
113.GemsFDTD	16	1377	4.58	**1379**	**4.57**									
115.fds4	16	**633**	**3.08**	630	3.10									
121.pop2	16	925	4.46	**926**	**4.46**									
122.tachyon	16	1306	2.14	**1307**	**2.14**									
126.lammps	16	**1195**	**2.44**	1193	2.44									
127.wrf2	16	**1300**	**6.00**	1291	6.04									
128.GAPgeofem	16	560	3.69	**560**	**3.69**									
129.tera_tf	16	**967**	**2.86**	967	2.86									

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	16	**897**	**4.25**	897	4.26									
132.zeusmp2	16	936	3.32	**949**	**3.27**									
137.lu	16	**1266**	**2.90**	1265	2.91									

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:	LFS
Total Compute Nodes:	2
Total Chips:	4
Total Cores:	16
Total Threads:	16
Total Memory:	36 GB
Base Ranks Run:	16
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)

Node Description: Endeavor Node

Hardware

Number of nodes:	2
Uses of the node:	compute
Vendor:	Intel
Model:	Supermicro X8DTN+
CPU Name:	Intel Xeon X5560
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	8
Cores per chip:	4
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 3.2 GHz, 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 (RDIMM 6x2-GB, 6x1-GB DDR3-1066 MHz)
Disk Subsystem:	Seagate 500 GB ST3500320NS
Other Hardware:	None
Adapter:	Mellanox MHQH29-XTC
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x QDR

Continued on next page

Software

Adapter:	Mellanox MHQH29-XTC
Adapter Driver:	OFED 1.3.1
Adapter Firmware:	2.5.9
Operating System:	Red Hat EL 5.2, kernel 2.6.18-53
Local File System:	Linux/ext2
Shared File System:	Lustre FS
System State:	Multi-User
Other Software:	PBS Pro 8.0

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Node Description: Endeavor Node

Ports Used:	1
Interconnect Type:	InfiniBand

Node Description: LFS

Hardware

Number of nodes:	8
Uses of the node:	fileserver
Vendor:	DataDirect Networks
Model:	SR1560SF
CPU Name:	Intel Xeon E5462
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-GB 667 MHz
Disk Subsystem:	160 disks, 300GB/disk, 48TB total, 35TB available
Other Hardware:	None
Adapter:	Mellanox MHGH28-XTC
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x DDR
Ports Used:	1
Interconnect Type:	InfiniBand

Software

Adapter:	Mellanox MHGH28-XTC
Adapter Driver:	OFED 1.3.1
Adapter Firmware:	2.5.0
Operating System:	Red Hat EL 5.2
Local File System:	None
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 Notes

```
The config file option 'submit' was used.
```

General Notes

```
BIOS settings notes:
  Intel Hyper-Threading Technology (SMT): Disabled (default is Enabled)
  Intel Turbo Boost Technology (Turbo)  : Enabled (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 leafs 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 1.6.6 was used. Download from:
  http://www.sun.com/software/products/lustre
```

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`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.html`

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

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