SPEC® MPIM2007 Result

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Intel Corporation

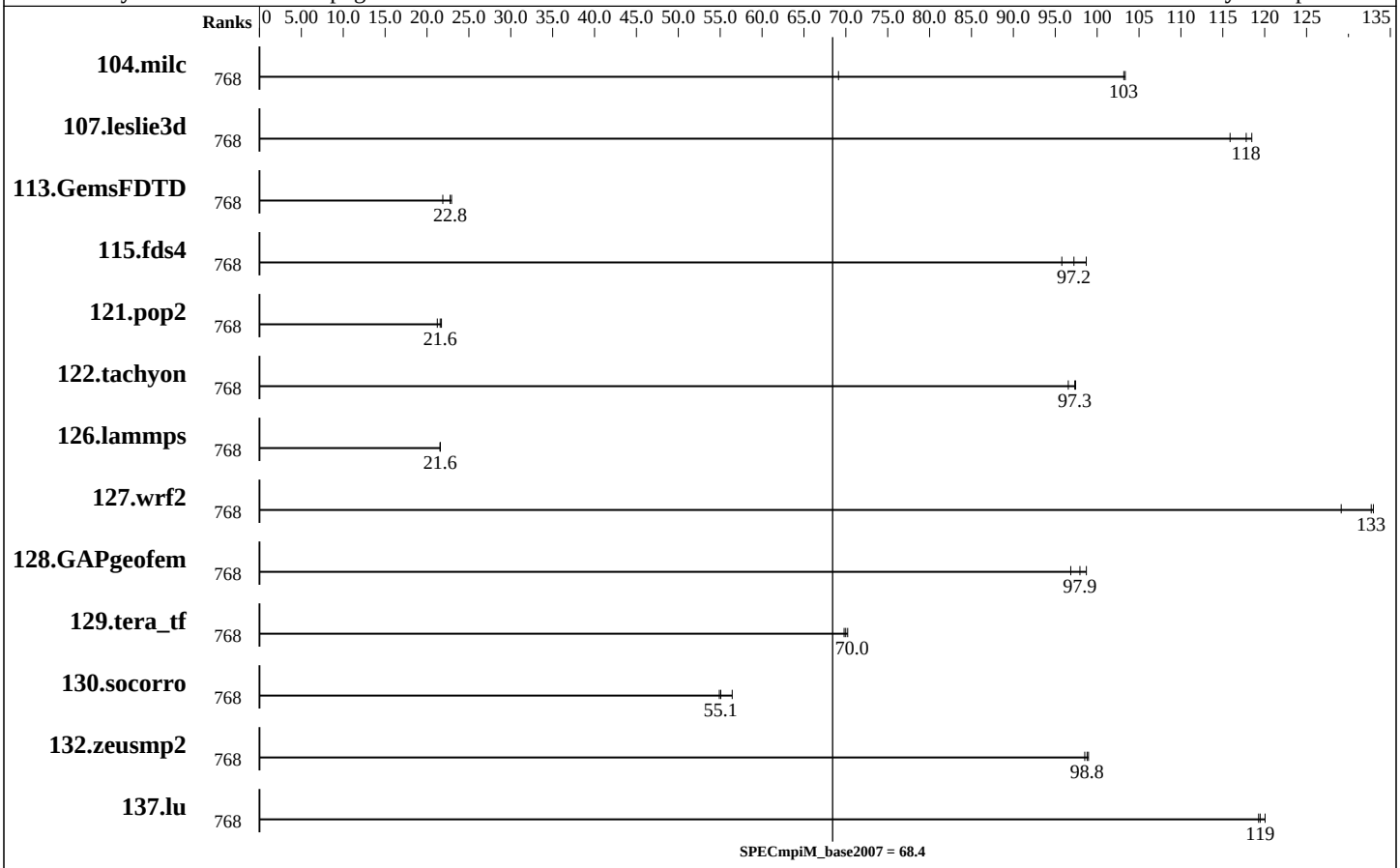
Endeavor (Intel Xeon E5-2670, 2.60 GHz,
DDR3-1333 MHz, SMT on, Turbo off)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 68.4

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

Test date: Feb-2012
Hardware Availability: Mar-2012
Software Availability: Sep-2011



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	768	22.6	69.1	**15.2**	**103**	15.1	103							
107.leslie3d	768	**44.3**	**118**	44.1	118	45.1	116							
113.GemsFDTD	768	275	22.9	**277**	**22.8**	288	21.9							
115.fds4	768	19.8	98.7	20.4	95.8	**20.1**	**97.2**							
121.pop2	768	194	21.2	**191**	**21.6**	190	21.7							
122.tachyon	768	29.0	96.6	28.7	97.4	**28.7**	**97.3**							
126.lammps	768	135	21.6	**135**	**21.6**	135	21.6							
127.wrf2	768	60.4	129	**58.7**	**133**	58.6	133							
128.GAPgeofem	768	**21.1**	**97.9**	21.3	96.8	20.9	98.7							
129.tera_tf	768	39.7	69.8	**39.5**	**70.0**	39.4	70.2							

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	768	69.5	54.9	67.6	56.4	**69.3**	**55.1**							
132.zeusmp2	768	31.4	99.0	31.5	98.5	**31.4**	**98.8**							
137.lu	768	30.8	119	30.6	120	**30.8**	**119**							

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:	NFS
Total Compute Nodes:	48
Total Chips:	96
Total Cores:	768
Total Threads:	1536
Total Memory:	3 TB
Base Ranks Run:	768
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
C++ Compiler:	Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
Fortran Compiler:	Intel Fortran Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library 4.0.3.008 for Linux
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: Endeavor Node

Hardware

Number of nodes:	48
Uses of the node:	compute
Vendor:	Intel
Model:	R1208GLBPP
CPU Name:	Intel Xeon E5-2670
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	16
Cores per chip:	8
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology disabled, 8.0 GT/s QPI, Hyper-Threading enabled
CPU MHz:	2600
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	20 MB I+D on chip per chip, 20 MB shared / 8 cores
Other Cache:	None
Memory:	64 GB (8 x 8 GB 2Rx4 PC3-12800R, ECC, running at 1333MHz and CL9)
Disk Subsystem:	Seagate 600 GB SSD ST9600205SS
Other Hardware:	None
Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
Number of Adapters:	1

Continued on next page

Software

Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000
Adapter Firmware:	None
Adapter:	Mellanox MHQH29-XTC
Adapter Driver:	OFED 1.5.3.1
Adapter Firmware:	2.10.0
Operating System:	Red Hat EL 6.1, kernel 2.6.32-131
Local File System:	Linux/ext2
Shared File System:	NFS
System State:	Multi-User
Other Software:	Platform LSF 8.0

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Software Availability: Sep-2011

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: NFS

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	S7000FC4UR
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	16
Cores per chip:	4
Threads per core:	2
CPU Characteristics:	--
CPU MHz:	2926
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	8 MB I+D on chip per chip, 4 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	64 GB
Disk Subsystem:	8 disks, 500GB/disk, 2.7TB total
Other Hardware:	None
Adapter:	Intel 82563GB 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 82563GB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000e
Adapter Firmware:	N/A
Operating System:	RedHat EL 5 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:	36	
Data Rate:	InfiniBand 4x QDR	
Firmware:	7.2.0	
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:	48	
Data Rate:	1Gbps Ethernet, 10Gbps 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

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130.socorro (base): "nullify_ptrs" src.alt was used.

 MPI startup command:
   mpiexec.hydra command was used to start MPI jobs.

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

 RAM configuration:
   Compute nodes have 2x8-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
```

Continued on next page

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 16/32/64/128/256 ranks, 2 switches for 512 ranks, 4 switches for 1024 ranks,
    8 switches for 2048 ranks.

  Platform LSF was used for job submission. It has no impact on performance.
    Information can be found at: http://www.platform.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 -xAVX -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xAVX -no-prec-div

Fortran benchmarks:
-O3 -xAVX -no-prec-div

Benchmarks using both Fortran and C:
-O3 -xAVX -no-prec-div

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel121_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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