SPEC® MPIM2007 Result

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Indiana University

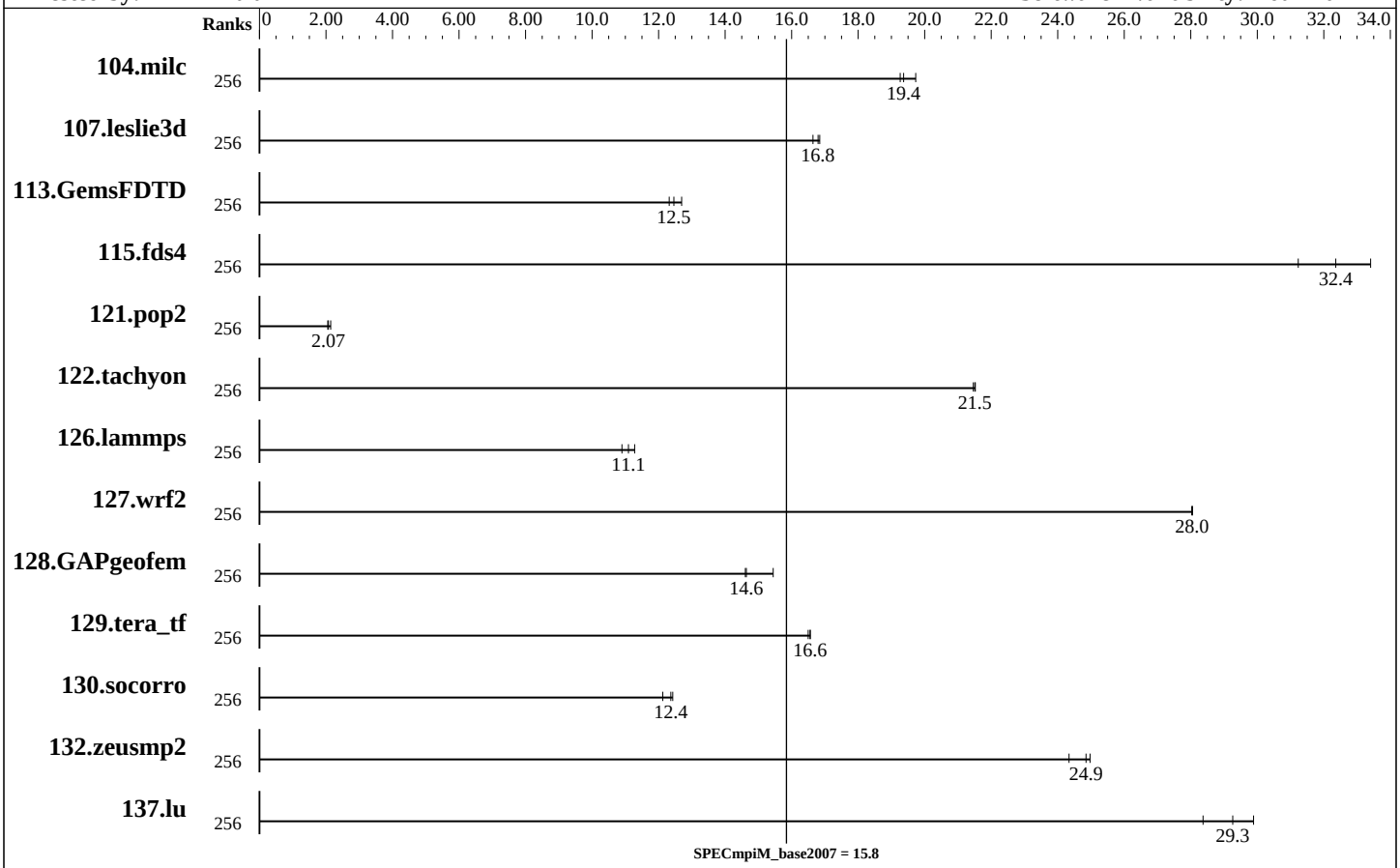
Mason (Intel Xeon L7555, base frequency 1.87 GHz,
PC3-10600R, ECC, running at 1066 MHz and CL9,
Turbo on,
Max Turbo Frequency 2.53 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 15.8

MPI2007 license: 3440
Test sponsor: Indiana University
Tested by: Huian Li

Test date: Dec-2011
Hardware Availability: Jun-2010
Software Availability: Jan-2011



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	256	**80.8**	**19.4**	81.2	19.3	79.3	19.7							
107.leslie3d	256	**311**	**16.8**	310	16.8	314	16.6							
113.GemsFDTD	256	**506**	**12.5**	512	12.3	497	12.7							
115.fds4	256	58.4	33.4	**60.3**	**32.4**	62.5	31.2							
121.pop2	256	1928	2.14	2011	2.05	**1991**	**2.07**							
122.tachyon	256	130	21.5	**130**	**21.5**	130	21.5							
126.lammps	256	**263**	**11.1**	258	11.3	267	10.9							
127.wrf2	256	278	28.0	278	28.1	**278**	**28.0**							
128.GAPgeofem	256	**141**	**14.6**	134	15.4	141	14.6							
129.tera_tf	256	**167**	**16.6**	168	16.5	167	16.6							

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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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	256	315	12.1	**309**	**12.4**	307	12.4							
132.zeusmp2	256	**125**	**24.9**	127	24.3	124	25.0							
137.lu	256	130	28.4	123	29.9	**126**	**29.3**							

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:	Mason Node
Interconnects:	10Gigabit Ethernet Gigabit Ethernet
File Server Node:	HOME
Total Compute Nodes:	8
Total Chips:	32
Total Cores:	256
Total Threads:	256
Total Memory:	4 TB
Base Ranks Run:	256
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C Composer XE 2011 for Linux Version 12.0, Build 20110112
C++ Compiler:	Intel C++ Composer XE 2011 for Linux Version 12.0, Build 20110112
Fortran Compiler:	Intel Fortran Composer XE 2011 for Linux Version 12.0, Build 20110112
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	OpenMPI-1.4.3
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: Mason Node

Hardware

Number of nodes:	8
Uses of the node:	compute
Vendor:	HP
Model:	Proliant DL580 G7 Server Series
CPU Name:	Intel Xeon L7555
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	32
Cores per chip:	8
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology enabled, 5.86 GT/s QPI
CPU MHz:	1866
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	24 MB I+D on chip per chip, 24 MB shared / 8 cores
Other Cache:	None
Memory:	512 GB (64 x 8 GB 2Rx4 PC3-10600R, ECC running at 1066 MHz and CL9)
Disk Subsystem:	Two 500 GB 7200 RPM 2.5" SAS hard drives,in RAID 1 mirror
Other Hardware:	None
Adapter:	HP NC375i 1G w/NC524SFP 10G Module
Number of Adapters:	1

Continued on next page

Software

Adapter:	HP NC375i 1G w/NC524SFP 10G Module
Adapter Driver:	netxen_nic v 4.0.75
Adapter Firmware:	4.0.544
Adapter:	HP NC375i 1G
Adapter Driver:	netxen_nic v 4.0.75
Adapter Firmware:	4.0.544
Operating System:	RHEL6.0 (x86_64) 2.6.32-71.14.1.el6 Kernel 2.6.32-71.14.1.el6
Local File System:	Linux/ext2
Shared File System:	NFS
System State:	Multi-User
Other Software:	TORQUE-2.5.7

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Node Description: Mason Node

Slot Type:	PCIe x8 Gen2
Data Rate:	10Gbps
Ports Used:	1
Interconnect Type:	10 Gigabit Ethernet
Adapter:	HP NC375i 1G
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	1Gbps
Ports Used:	1
Interconnect Type:	1 Gigabit Ethernet

Node Description: HOME

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	IBM
Model:	IBM N5500 NAS
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	32
Cores per chip:	8
Threads per core:	1
CPU Characteristics:	--
CPU MHz:	1866
Primary Cache:	32 KB I + 32 KB D on chip per chip
Secondary Cache:	256 KB I+D on chip per core
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: 10Gigabit Ethernet

Hardware		Software
Vendor:	HP	
Model:	HP NC375i 1G w/NC524SFP 10G Module	
Switch Model:	Cisco 7018 (Line card module: N7K-M132XP-12)	
Number of Switches:	1	
Number of Ports:	16	
Data Rate:	10 Gbps Ethernet	
Firmware:	EPLD 5.0.2	
Topology:	switched	
Primary Use:	MPI traffic and NFS traffic	

Interconnect Description: Gigabit Ethernet

Hardware		Software
Vendor:	HP	
Model:	Cisco SGE2010	
Switch Model:	Cisco SGE2010	
Number of Switches:	1	
Number of Ports:	48	
Data Rate:	1 Gbps Ethernet	
Firmware:	3.0.0.18	
Topology:	switched	
Primary Use:	Network management	

Submit Notes

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

General Notes

```
MPI startup command:
  mpirun command was used to start MPI jobs.
  eth0 (10 GigE) was specified at the mpirun command line for MPI message passing
  eth3 (1 GigE) was specified for non-MPI communication.
BIOS settings:
  Intel Turbo Boost Technology (Turbo)  : Enabled (the default)
RAM configuration:
  Each compute node has 64x8-GB RDIMMs.
Network:
  Four compute nodes connect to one Cisco Nexus 7018 switch
  via 10 GigE port.
Job placement:
  Each MPI job was assigned to a topologically compact set of nodes, i.e.
  the minimal needed number of compute nodes was used for each job:
  1 compute node for 32 ranks, 2 for 64 ranks, 4 for 128 ranks, and 8 for 256 ranks
```

Continued on next page

General Notes (Continued)

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:
mpicc

C++ benchmarks:

126.lammps: mpicxx

Fortran benchmarks:
mpif90

Benchmarks using both Fortran and C:
mpicc mpif90

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
126.lammps: -DMPICH_IGNORE_CXX_SEEK
127.wrf2: -DSPEC_MPI_LINUX -DSPEC_MPI_CASE_FLAG

Base Optimization Flags

C benchmarks:
-O3 -xSSE4.1 -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xSSE4.1 -no-prec-div

Fortran benchmarks:
-O3 -xSSE4.1 -no-prec-div

Benchmarks using both Fortran and C:
-O3 -xSSE4.1 -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.20120720.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.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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