SPEC® MPIM2007 Result

Indiana University

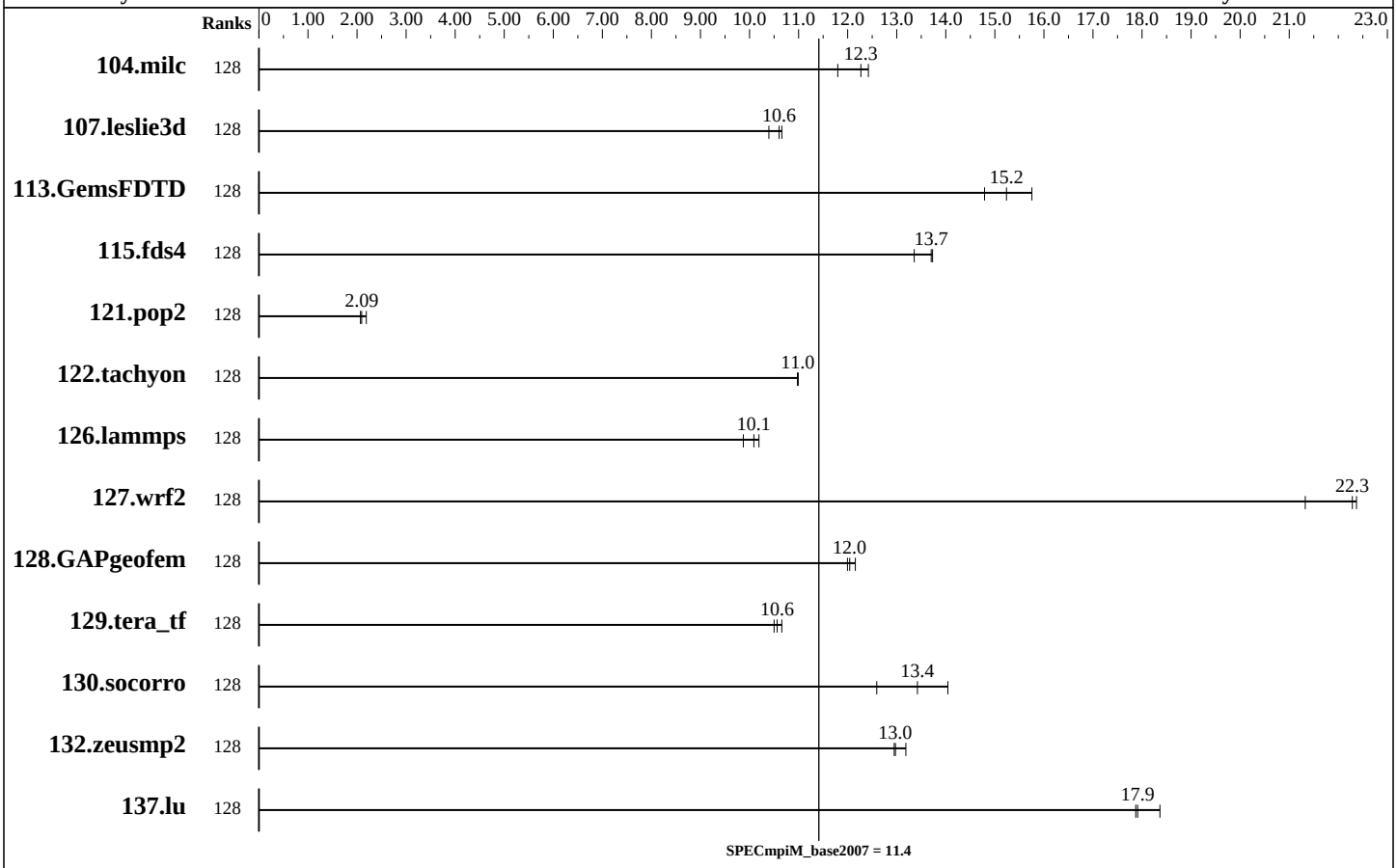
Mason (Intel Xeon L7555, base frequency 1.87 GHz, PC3-10600R, ECC, running at 1066 MHz and CL9, Turbo on, Max Turbo Frequency 2.53 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 11.4

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	128	126	12.4	**128**	**12.3**	133	11.8							
107.leslie3d	128	502	10.4	490	10.7	**492**	**10.6**							
113.GemsFDTD	128	426	14.8	400	15.8	**414**	**15.2**							
115.fds4	128	146	13.4	142	13.7	**142**	**13.7**							
121.pop2	128	1996	2.07	1886	2.19	**1971**	**2.09**							
122.tachyon	128	**255**	**11.0**	255	11.0	254	11.0							
126.lammps	128	**289**	**10.1**	295	9.87	286	10.2							
127.wrf2	128	**350**	**22.3**	348	22.4	366	21.3							
128.GAPgeofem	128	170	12.2	172	12.0	**171**	**12.0**							
129.tera_tf	128	**262**	**10.6**	264	10.5	260	10.7							

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	128	272	14.0	**284**	**13.4**	303	12.6							
132.zeusmp2	128	**239**	**13.0**	240	12.9	235	13.2							
137.lu	128	200	18.4	206	17.9	**205**	**17.9**							

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:	4
Total Chips:	16
Total Cores:	128
Total Threads:	128
Total Memory:	2 TB
Base Ranks Run:	128
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:	4
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

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

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

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

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

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

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