SPEC® MPIM2007 Result

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Intel Corporation

Endeavor (Intel Xeon E5-2697 v3, 2.60 GHz, DDR4-2133 MHz, SMT on, Turbo on)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 =   14.8

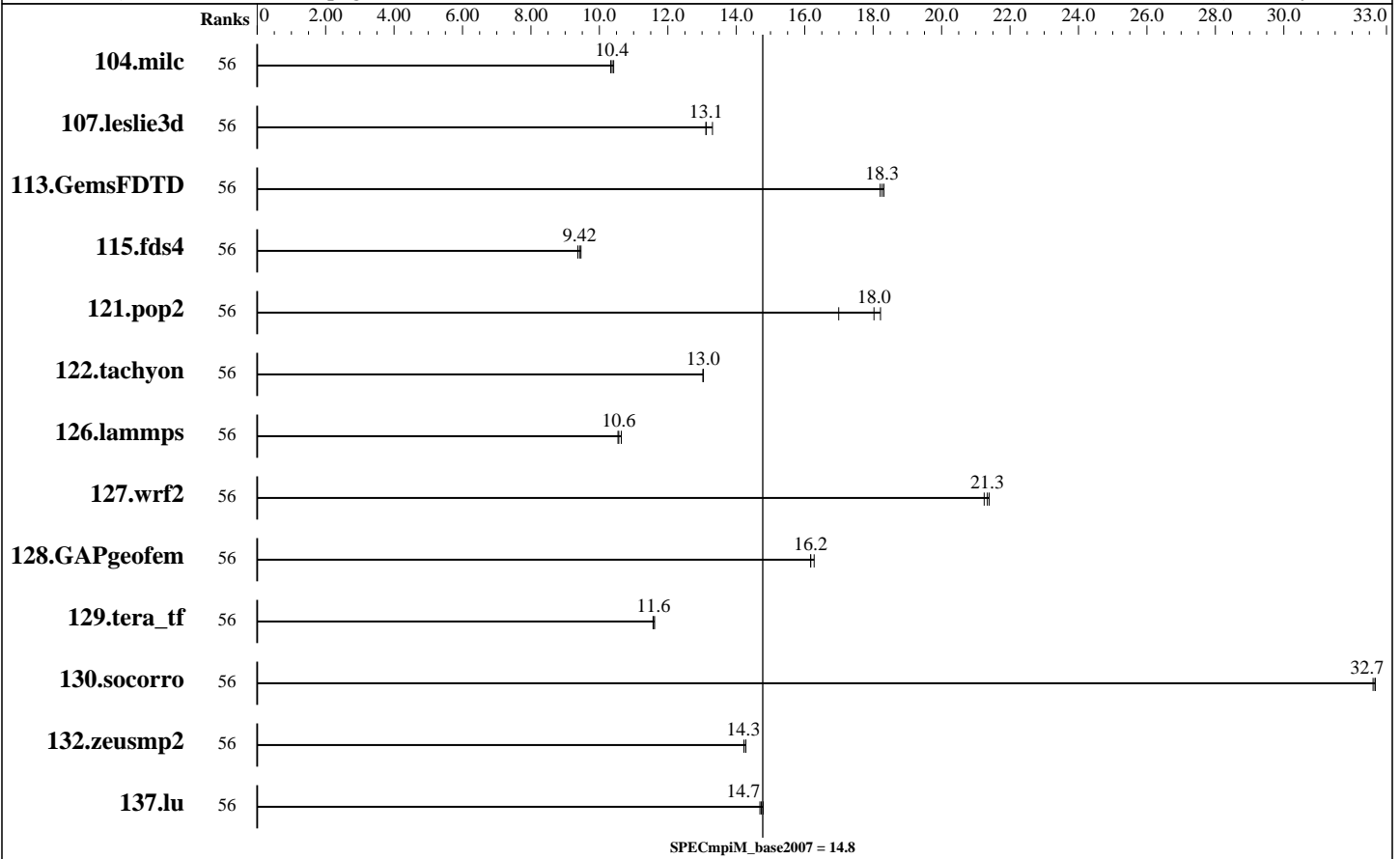SPECmpiM_base2007 = 14.8

Results Table

Benchmark	Base						Peak					
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	56	151	10.3	150	10.4	**151**	**10.4**							
107.leslie3d	56	398	13.1	392	13.3	**398**	**13.1**							
113.GemsFDTD	56	344	18.3	**345**	**18.3**	346	18.2							
115.fds4	56	208	9.37	206	9.46	**207**	**9.42**							
121.pop2	56	**229**	**18.0**	227	18.2	243	17.0							
122.tachyon	56	214	13.0	**215**	**13.0**	215	13.0							
126.lammps	56	276	10.5	274	10.6	**276**	**10.6**							
127.wrf2	56	367	21.2	**365**	**21.3**	364	21.4							
128.GAPgeofem	56	**128**	**16.2**	128	16.2	127	16.3							
129.tera_tf	56	**239**	**11.6**	238	11.6	239	11.6							

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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MPI2007 license: 13	**Test date:** Aug-2014
Test sponsor: Intel Corporation	**Hardware Availability:** Sep-2014
Tested by: Pavel Shelepugin	**Software Availability:** May-2014

Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	56	117	32.6	**117**	**32.7**	117	32.7							
132.zeusmp2	56	217	14.3	218	14.2	**217**	**14.3**							
137.lu	56	**250**	**14.7**	250	14.7	249	14.8							

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:	2
Total Chips:	4
Total Cores:	56
Total Threads:	112
Total Memory:	128 GB
Base Ranks Run:	56
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
C++ Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Fortran Compiler:	Intel Fortran Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library 4.1.3.049 for Linux
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: Endeavor Node

Hardware

Number of nodes:	2
Uses of the node:	compute
Vendor:	Intel
Model:	R2208WTTYC1
CPU Name:	Intel Xeon E5-2697 v3
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	28
Cores per chip:	14
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.6 GHz, 9.6 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:	35 MB I+D on chip per chip, 35 MB shared / 14 cores
Other Cache:	None
Memory:	64 GB (8 x 8 GB 2Rx4 PC4-17000R-15, ECC)
Disk Subsystem:	ATA INTEL SSDSA2BZ20, SSDSC2BB80
Other Hardware:	None
Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller

Software

Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000
Adapter Firmware:	None
Adapter:	Mellanox MCX353A-FCAT ConnectX-3
Adapter Driver:	OFED 3.5-2-MIC-rc1
Adapter Firmware:	2.31.5050
Operating System:	Red Hat EL 6.5, kernel 2.6.32-358
Local File System:	Linux/xfs
Shared File System:	NFS
System State:	Multi-User
Other Software:	IBM Platform LSF Standard 9.1.1.1

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Node Description: Endeavor Node

Number of Adapters:	1
Slot Type:	PCI-Express x8
Data Rate:	1Gbps Ethernet
Ports Used:	2
Interconnect Type:	Ethernet
Adapter:	Mellanox MCX353A-FCAT ConnectX-3
Number of Adapters:	1
Slot Type:	PCIe x8 Gen3
Data Rate:	InfiniBand 4x FDR
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 MSX6025F-1BFR	
Switch Model:	Mellanox MSX6025F-1BFR	
Number of Switches:	46	
Number of Ports:	36	
Data Rate:	InfiniBand 4x FDR	
Firmware:	9.2.8000	
Topology:	Fat tree	
Primary Use:	MPI traffic	

Interconnect Description: Gigabit Ethernet

Hardware		**Software**
Vendor:	Force10 Networks, Cisco Systems	
Model:	Force10 S50N, Force10 C300, Cisco WS-C4948E-F	
Switch Model:	Force10 S50N, Force10 C300, Cisco WS-C4948E-F	
Number of Switches:	13	
Number of Ports:	48	
Data Rate:	1Gbps Ethernet, 10Gbps Ethernet	
Firmware:	8.3.2.0, 12.2(54)WO	
Topology:	Star	
Primary Use:	Cluster File System	

Submit Notes

The config file option 'submit' was used.

General Notes

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) : Enabled (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

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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 28/56/112/224/448 ranks, 2 switches for 896 ranks, 4 switches for 1792 ranks,
       8 switches for 3584 ranks.

     IBM Platform LSF was used for job submission. It has no impact on performance.
       Information can be found at: http://www.ibm.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
    130.socorro: -assume nostd_intent_in

Base Optimization Flags

C benchmarks:
     -O3 -xCORE-AVX2 -no-prec-div

C++ benchmarks:

     126.lammps: -O3 -xCORE-AVX2 -no-prec-div

Fortran benchmarks:
     -O3 -xCORE-AVX2 -no-prec-div

Continued on next page

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
```
-O3 -xCORE-AVX2 -no-prec-div
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20140908.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20140908.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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