



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Intel Corporation

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

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 41.9

MPI2007 license: 13

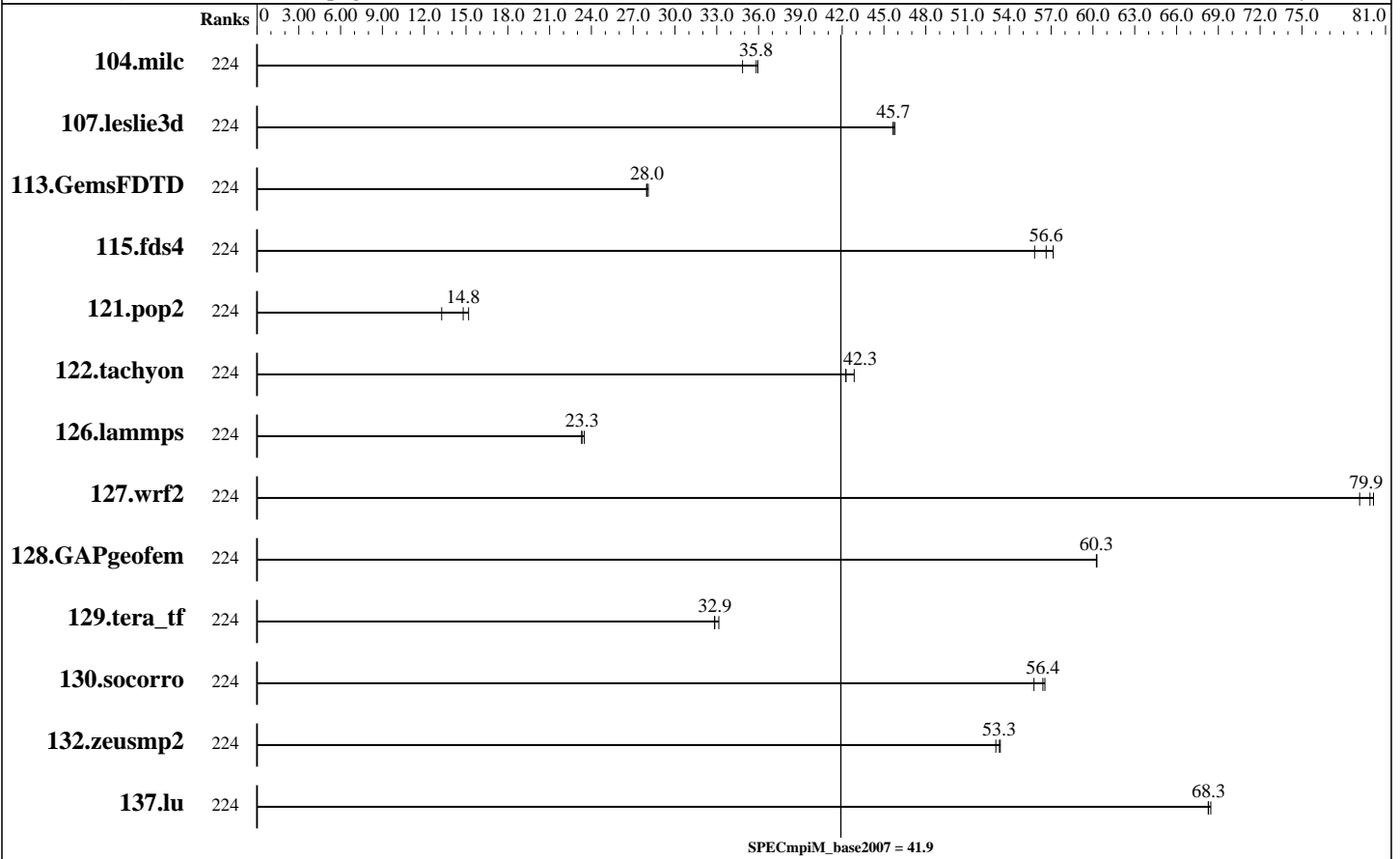
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: Aug-2014

Hardware Availability: Sep-2014

Software Availability: May-2014



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	224	44.9	34.9	43.7	35.8	43.5	35.9							
107.leslie3d	224	114	45.8	114	45.7	114	45.7							
113.GemsFDTD	224	225	28.1	225	28.0	226	28.0							
115.fds4	224	34.1	57.1	34.4	56.6	35.0	55.8							
121.pop2	224	279	14.8	272	15.2	311	13.3							
122.tachyon	224	66.2	42.3	65.3	42.9	66.2	42.3							
126.lammps	224	125	23.3	124	23.5	125	23.3							
127.wrf2	224	98.5	79.1	97.6	79.9	97.3	80.1							
128.GAPgeofem	224	34.3	60.3	34.3	60.3	34.3	60.2							
129.tera_tf	224	84.3	32.8	84.2	32.9	83.5	33.1							

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	224	67.5	56.6	<u>67.7</u>	<u>56.4</u>	68.4	55.8							
132.zeusmp2	224	58.2	53.4	<u>58.2</u>	<u>53.3</u>	58.5	53.0							
137.lu	224	53.7	68.5	53.8	68.3	<u>53.8</u>	<u>68.3</u>							

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: 8
 Total Chips: 16
 Total Cores: 224
 Total Threads: 448
 Total Memory: 512 GB
 Base Ranks Run: 224
 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: 8
 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 disabled, 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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Software Availability: May-2014

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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Software Availability: May-2014

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) : 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

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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

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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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