



SPEC® MPIL2007 Result

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Intel Corporation

Endeavor (Intel Xeon E7-8890 v3, 2.50 GHz, DDR4-2133 MHz, SMT on, Turbo off)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 11.6

MPI2007 license: 13

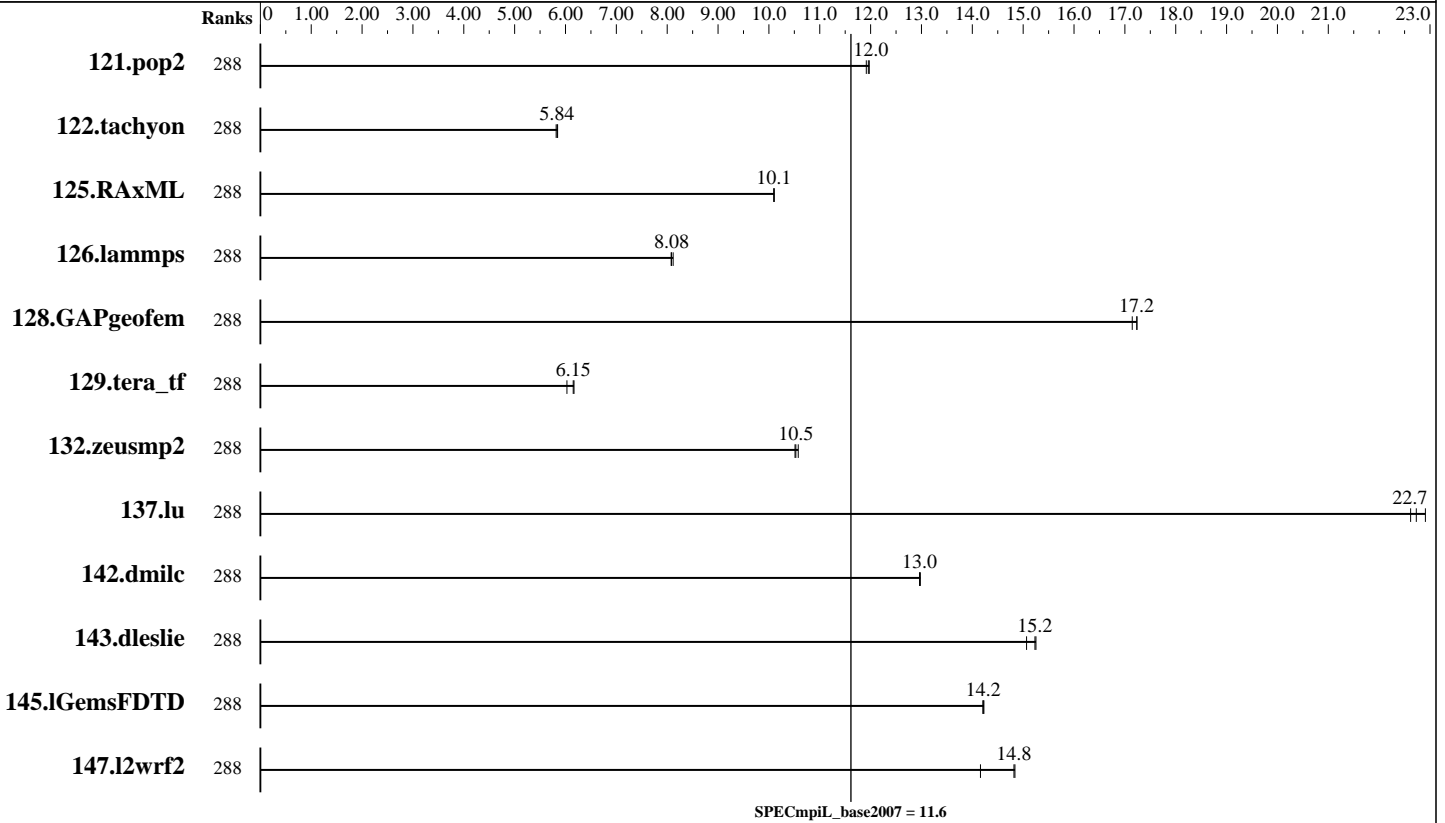
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: May-2015

Hardware Availability: May-2015

Software Availability: Apr-2015



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	288	327	11.9	325	12.0	<u>325</u>	<u>12.0</u>							
122.tachyon	288	<u>333</u>	<u>5.84</u>	334	5.82	333	5.84							
125.RAxML	288	<u>289</u>	<u>10.1</u>	289	10.1	289	10.1							
126.lammps	288	303	8.12	<u>304</u>	<u>8.08</u>	304	8.08							
128.GAPgeofem	288	344	17.2	346	17.1	<u>344</u>	<u>17.2</u>							
129.tera_tf	288	178	6.17	<u>179</u>	<u>6.15</u>	182	6.03							
132.zeusmp2	288	200	10.6	<u>201</u>	<u>10.5</u>	202	10.5							
137.lu	288	186	22.6	<u>185</u>	<u>22.7</u>	183	22.9							
142.dmilc	288	<u>284</u>	<u>13.0</u>	284	13.0	284	13.0							
143.dleslie	288	<u>204</u>	<u>15.2</u>	206	15.1	203	15.3							
145.lGemsFDTD	288	310	14.2	<u>310</u>	<u>14.2</u>	310	14.2							
147.l2wrf2	288	553	14.8	<u>554</u>	<u>14.8</u>	579	14.2							

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Hardware Summary

Type of System: Homogeneous
 Compute Node: Endeavor Node
 Interconnects: IB Switch
 Gigabit Ethernet
 File Server Node: NFS
 Total Compute Nodes: 4
 Total Chips: 16
 Total Cores: 288
 Total Threads: 576
 Total Memory: 2 TB
 Base Ranks Run: 288
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2015 for Linux, Version 15.0.3.187 Build 20150407
 C++ Compiler: Intel C++ Composer XE 2015 for Linux, Version 15.0.3.187 Build 20150407
 Fortran Compiler: Intel Fortran Composer XE 2015 for Linux, Version 15.0.3.187 Build 20150407
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: Intel MPI Library 5.0.3.048 for Linux
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: Endeavor Node

Hardware

Number of nodes: 4
 Uses of the node: compute
 Vendor: Intel
 Model: S4TR2KU1Q
 CPU Name: Intel Xeon E7-8890 v3
 CPU(s) orderable: 1-4 chips
 Chips enabled: 4
 Cores enabled: 72
 Cores per chip: 18
 Threads per core: 2
 CPU Characteristics: Intel Turbo Boost Technology disabled, 9.6 GT/s QPI, Hyper-Threading enabled
 CPU MHz: 2500
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 45 MB I+D on chip per chip, 45 MB shared / 18 cores
 Other Cache: None
 Memory: 512 GB (32 x 16 GB 2Rx4 PC4-17000R-15, ECC)
 Disk Subsystem: ATA INTEL SSDSA2BZ20, SSDSC2BB80
 Other Hardware: None
 Adapter: Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
 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

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/xfst
 Shared File System: NFS
 System State: Multi-User
 Other Software: IBM Platform LSF Standard 9.1.1.1



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Node Description: NFS

Hardware		Software	
Number of nodes:	1	Adapter:	Intel 82563GB Dual-Port Gigabit Ethernet Controller
Uses of the node:	fileserver	Adapter Driver:	e1000e
Vendor:	Intel	Adapter Firmware:	N/A
Model:	S7000FC4UR	Operating System:	RedHat EL 5 Update 4
CPU Name:	Intel Xeon CPU	Local File System:	None
CPU(s) orderable:	1-4 chips	Shared File System:	NFS
Chips enabled:	4	System State:	Multi-User
Cores enabled:	16	Other Software:	None
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		

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		



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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

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 4x16-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 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 144/288/576 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

Continued on next page

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Page 4



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Base Compiler Invocation (Continued)

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

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

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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