



SPEC® MPIL2007 Result

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Intel Corporation

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

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 9.78

MPI2007 license: 13

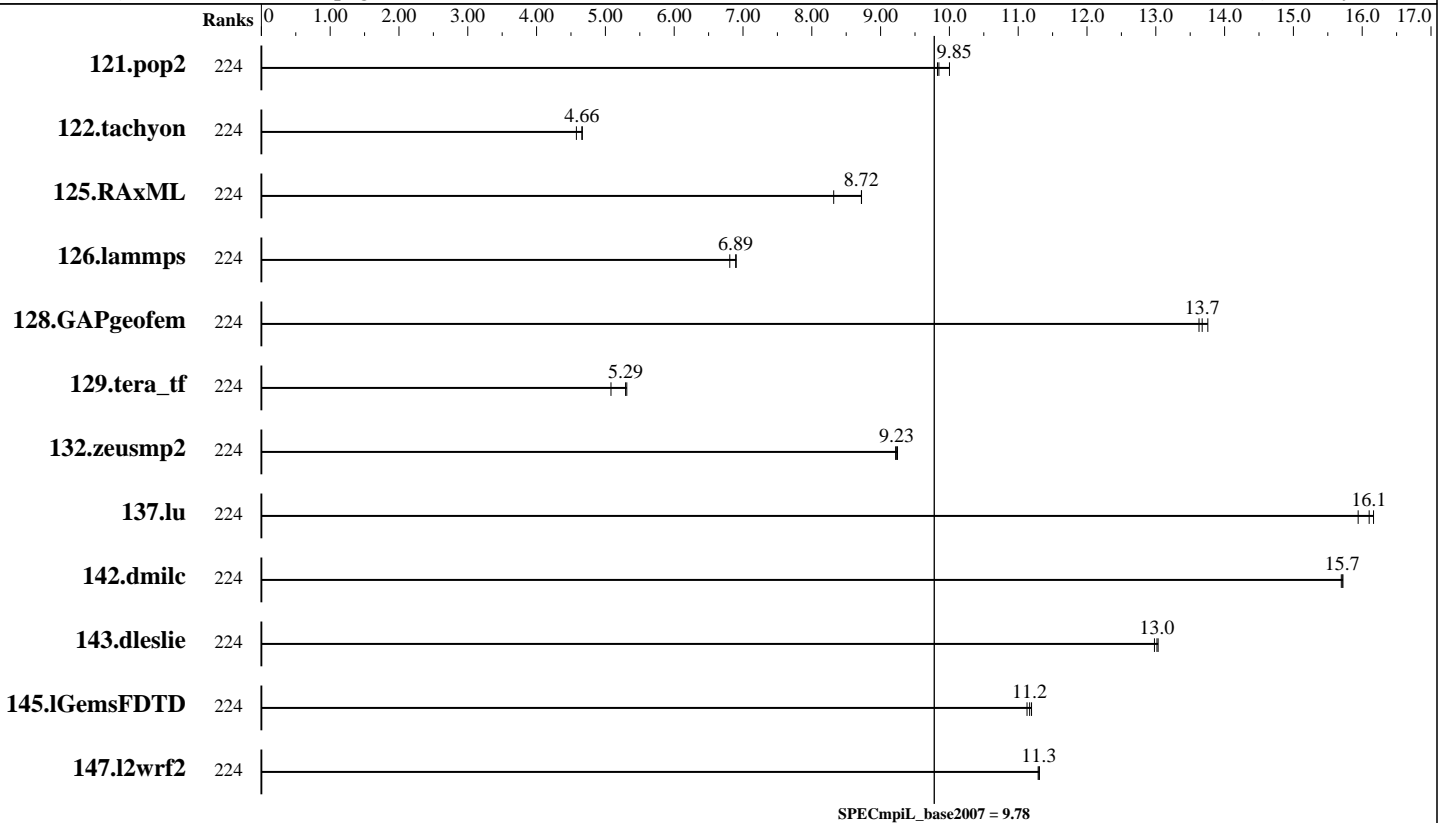
Test sponsor: Intel Corporation

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		
121.pop2	224	396	9.83	389	10.0	<u>395</u>	<u>9.85</u>									
122.tachyon	224	425	4.58	417	4.67	<u>417</u>	<u>4.66</u>									
125.RAxML	224	<u>335</u>	<u>8.72</u>	351	8.32	335	8.72									
126.lammgs	224	356	6.90	<u>357</u>	<u>6.89</u>	361	6.81									
128.GAPgeofem	224	435	13.6	<u>434</u>	<u>13.7</u>	431	13.8									
129.tera_tf	224	216	5.08	207	5.31	<u>208</u>	<u>5.29</u>									
132.zeusmp2	224	229	9.25	230	9.22	<u>230</u>	<u>9.23</u>									
137.lu	224	260	16.2	264	15.9	<u>261</u>	<u>16.1</u>									
142.dmilc	224	235	15.7	234	15.7	<u>235</u>	<u>15.7</u>									
143.dleslie	224	239	13.0	238	13.0	<u>238</u>	<u>13.0</u>									
145.lGemsFDTD	224	394	11.2	396	11.1	<u>395</u>	<u>11.2</u>									
147.l2wrf2	224	<u>726</u>	<u>11.3</u>	727	11.3	725	11.3									

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: 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
 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/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: 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 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 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

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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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