



SPEC[®] MPIL2007 Result

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Intel Corporation

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

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 22.1

MPI2007 license: 13

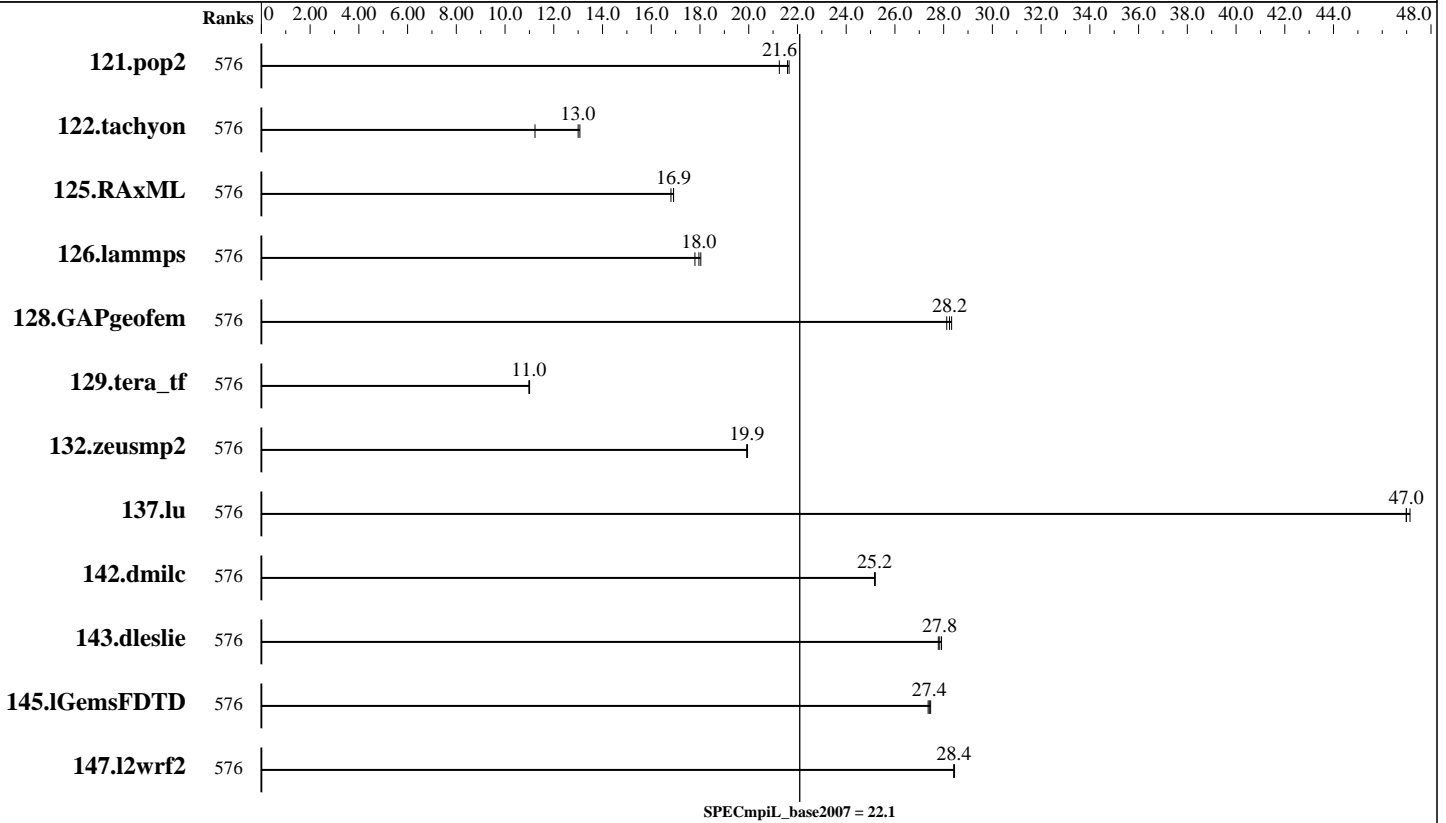
Test sponsor: Intel Corporation

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	576	183	21.3	180	21.7	180	21.6							
122.tachyon	576	173	11.2	150	13.0	149	13.1							
125.RAxML	576	173	16.9	174	16.8	173	16.9							
126.lammps	576	138	17.8	136	18.0	137	18.0							
128.GAPgeofem	576	210	28.2	209	28.3	211	28.1							
129.tera_tf	576	100	11.0	99.8	11.0	100	11.0							
132.zeusmp2	576	106	19.9	106	19.9	106	20.0							
137.lu	576	89.4	47.0	89.4	47.0	89.1	47.1							
142.dmilc	576	146	25.2	146	25.2	146	25.2							
143.dleslie	576	111	27.8	111	27.9	112	27.8							
145.lGemsFDTD	576	161	27.5	161	27.4	161	27.4							
147.l2wrf2	576	289	28.4	288	28.4	289	28.4							

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: 32
 Total Cores: 576
 Total Threads: 1152
 Total Memory: 4 TB
 Base Ranks Run: 576
 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: 8
 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 up to 3.3 GHz, 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/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) : Enabled (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

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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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