



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 = 18.9

MPI2007 license: 13

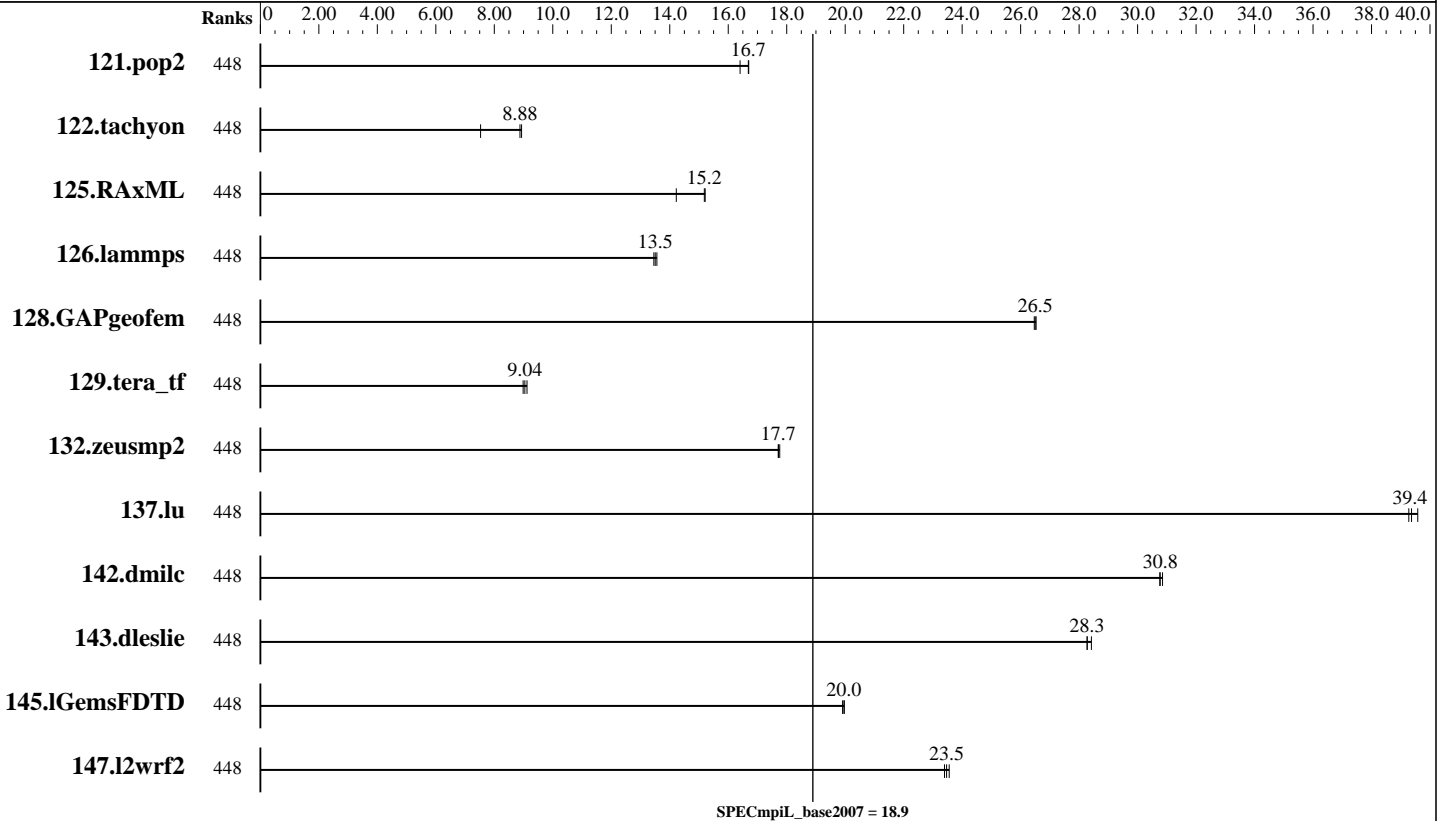
Test sponsor: Intel Corporation

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		
121.pop2	448	237	16.4	233	16.7	233	16.7									
122.tachyon	448	258	7.53	218	8.93	219	8.88									
125.RAxML	448	192	15.2	192	15.2	205	14.2									
126.lammps	448	183	13.5	182	13.5	181	13.6									
128.GAPgeofem	448	224	26.5	224	26.5	224	26.5									
129.tera_tf	448	122	8.99	121	9.12	122	9.04									
132.zeusmp2	448	120	17.7	120	17.7	119	17.8									
137.lu	448	107	39.3	107	39.4	106	39.6									
142.dmilc	448	120	30.8	119	30.9	120	30.8									
143.dleslie	448	109	28.4	110	28.3	110	28.3									
145.lGemsFDTD	448	221	20.0	221	20.0	222	19.9									
147.l2wrf2	448	348	23.6	350	23.5	351	23.4									

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: 16
 Total Chips: 32
 Total Cores: 448
 Total Threads: 896
 Total Memory: 1 TB
 Base Ranks Run: 448
 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: 16
 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/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 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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