



SPEC® MPIL2007 Result

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Intel Corporation

Endeavor (Intel Xeon E5-2670, 2.60 GHz, DDR3-1600 MHz, SMT on, Turbo on)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 2.76

MPI2007 license: 13

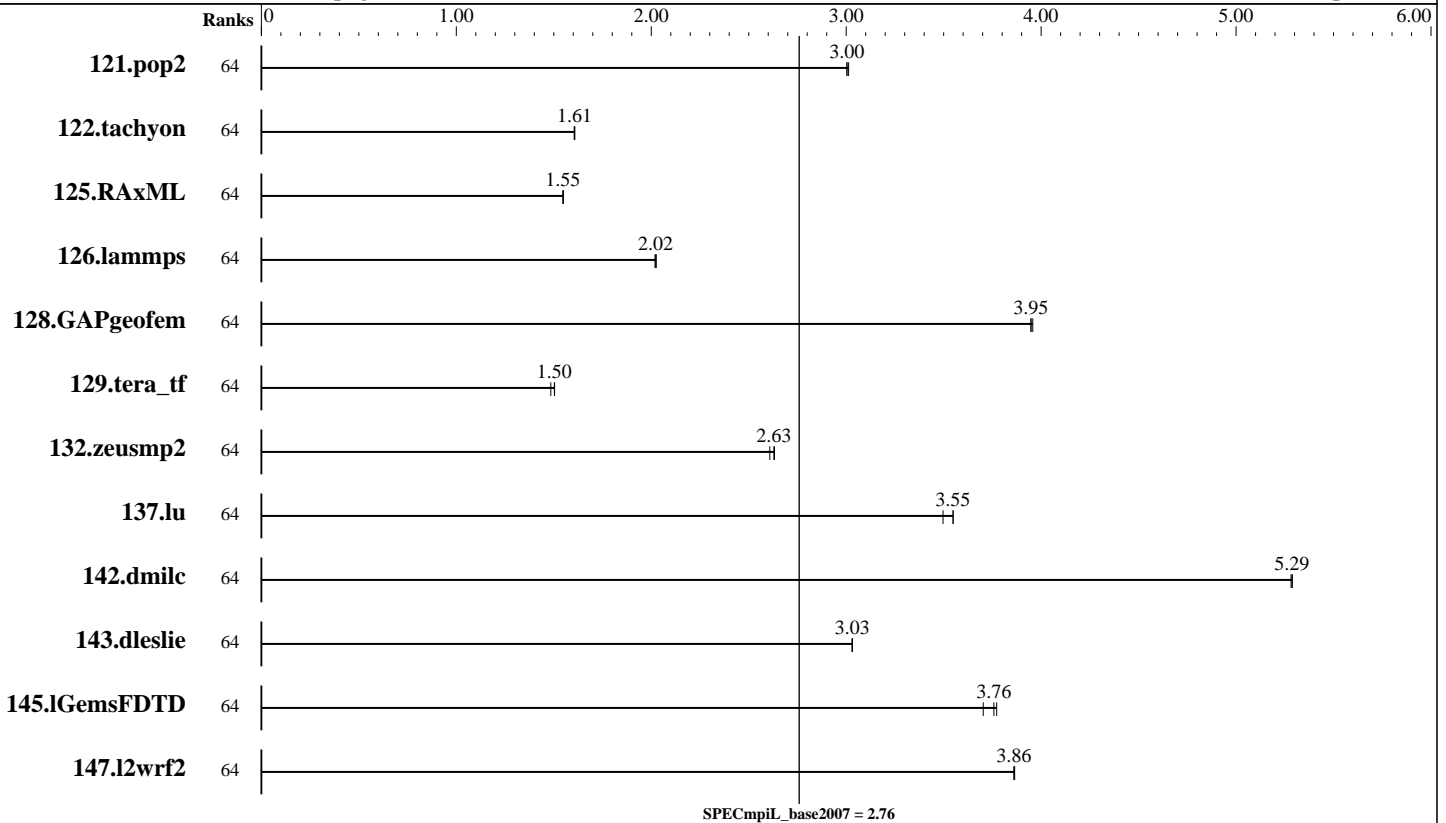
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: Feb-2012

Hardware Availability: Mar-2012

Software Availability: Sep-2011



Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
121.pop2	64	<u>1295</u>	<u>3.00</u>	1295	3.00	1292	3.01									
122.tachyon	64	1209	1.61	<u>1210</u>	<u>1.61</u>	1211	1.60									
125.RAxML	64	1886	1.55	1885	1.55	<u>1886</u>	<u>1.55</u>									
126.lammps	64	1218	2.02	1214	2.03	<u>1216</u>	<u>2.02</u>									
128.GAPgeofem	64	1503	3.95	<u>1503</u>	<u>3.95</u>	1500	3.96									
129.tera_tf	64	731	1.50	<u>731</u>	<u>1.50</u>	740	1.48									
132.zeusmp2	64	813	2.61	<u>806</u>	<u>2.63</u>	805	2.63									
137.lu	64	<u>1184</u>	<u>3.55</u>	1184	3.55	1202	3.50									
142.dmilc	64	697	5.28	<u>697</u>	<u>5.29</u>	697	5.29									
143.dleslie	64	<u>1023</u>	<u>3.03</u>	1023	3.03	1022	3.03									
145.lGemsFDTD	64	1191	3.70	<u>1174</u>	<u>3.76</u>	1169	3.77									
147.l2wrf2	64	2125	3.86	<u>2125</u>	<u>3.86</u>	2123	3.86									

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: 8
 Total Cores: 64
 Total Threads: 128
 Total Memory: 256 GB
 Base Ranks Run: 64
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
 C++ Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
 Fortran Compiler: Intel Fortran Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: Intel MPI Library 4.0.3.008 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: R1208GLBPP
 CPU Name: Intel Xeon E5-2670
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 16
 Cores per chip: 8
 Threads per core: 2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.3 GHz, 8.0 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: 20 MB I+D on chip per chip, 20 MB shared / 8 cores
 Other Cache: None
 Memory: 64 GB (8 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: Seagate 600 GB SSD ST9600205SS
 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 MHQH29-XTC
 Number of Adapters: 1
 Slot Type: PCIe x8 Gen2
 Data Rate: InfiniBand 4x QDR
 Ports Used: 1
 Interconnect Type: InfiniBand

Software

Adapter: Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
 Adapter Driver: e1000
 Adapter Firmware: None
 Adapter: Mellanox MHQH29-XTC
 Adapter Driver: OFED 1.5.3.1
 Adapter Firmware: 2.10.0
 Operating System: Red Hat EL 6.1, kernel 2.6.32-131
 Local File System: Linux/ext2
 Shared File System: NFS
 System State: Multi-User
 Other Software: Platform LSF 8.0



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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 MTS3600Q-1UNC		
Switch Model:	Mellanox MTS3600Q-1UNC		
Number of Switches:	46		
Number of Ports:	36		
Data Rate:	InfiniBand 4x QDR		
Firmware:	7.2.0		
Topology:	Fat tree		
Primary Use:	MPI traffic		



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Interconnect Description: Gigabit Ethernet

	Hardware	Software
Vendor:	Force10 Networks	
Model:	Force10 S50, Force10 C300	
Switch Model:	Force10 S50, Force10 C300	
Number of Switches:	15	
Number of Ports:	48	
Data Rate:	1Gbps Ethernet, 10Gbps Ethernet	
Firmware:	8.2.1.0	
Topology:	Fat tree	
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 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 16/32/64/128/256 ranks, 2 switches for 512 ranks, 4 switches for 1024 ranks, 8 switches for 2048 ranks.

Platform LSF was used for job submission. It has no impact on performance.

Information can be found at: <http://www.platform.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 -xAVX -no-prec-div -ipo

C++ benchmarks:

126.lammps: -O3 -xAVX -no-prec-div -ipo

Fortran benchmarks:

-O3 -xAVX -no-prec-div -ipo

Benchmarks using both Fortran and C:

-O3 -xAVX -no-prec-div -ipo

The flags file that was used to format this result can be browsed at

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.html

You can also download the XML flags source by saving the following link:

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.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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