



SPEC[®] MPIL2007 Result

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Intel Corporation

Endeavor (Intel Xeon X5670, 2.93 GHz,
DDR3-1333 MHz, SMT off, Turbo off)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 25.9

MPI2007 license: 13

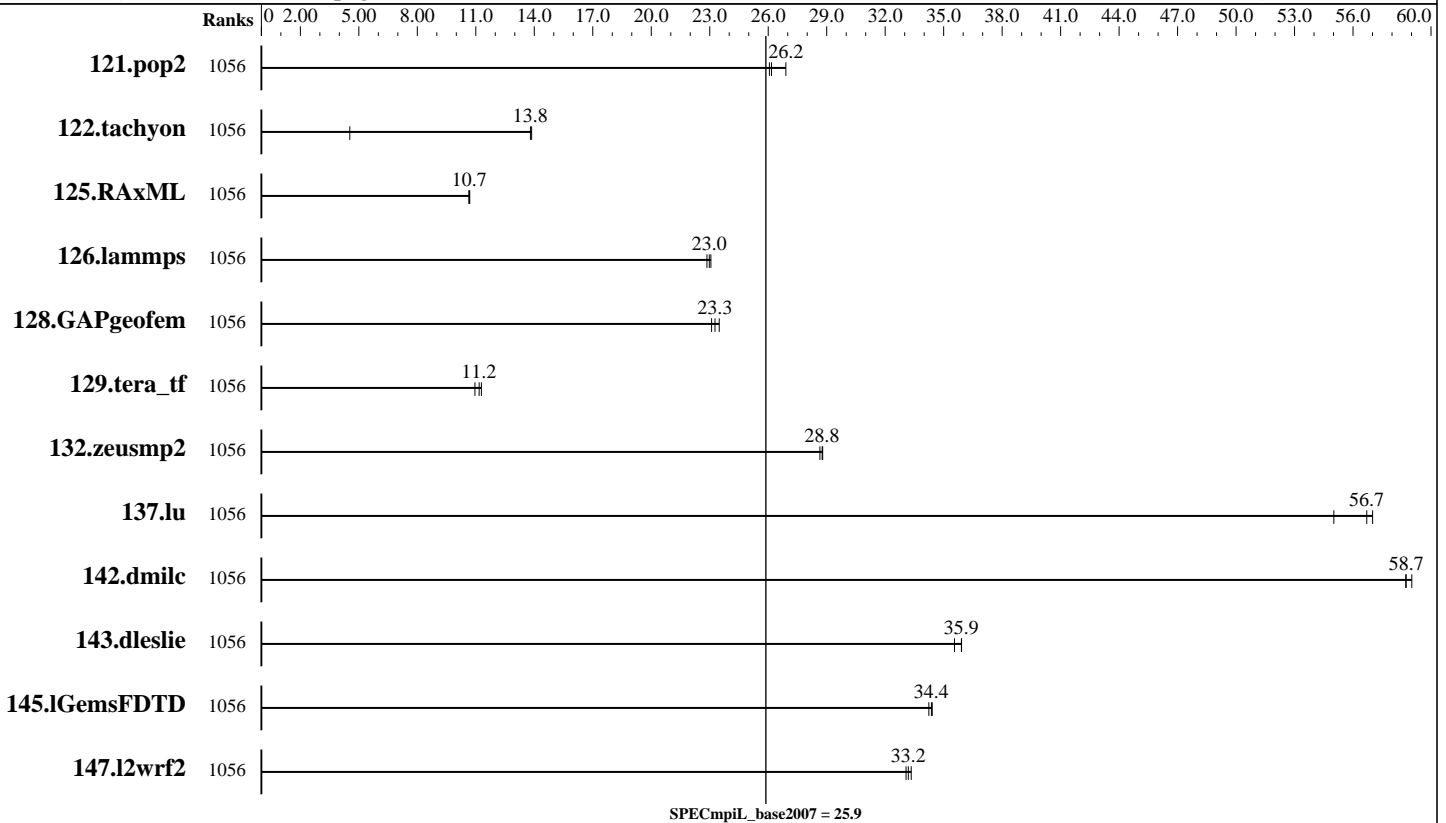
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: Mar-2010

Hardware Availability: Mar-2010

Software Availability: Feb-2010



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	1056	149	<u>26.2</u>	145	26.9	149	26.1							
122.tachyon	1056	429	4.54	141	<u>13.8</u>	140	13.9							
125.RAxML	1056	274	<u>10.7</u>	274	10.6	273	10.7							
126.lammps	1056	107	23.1	108	22.9	107	<u>23.0</u>							
128.GAPgeofem	1056	257	23.1	253	23.5	255	<u>23.3</u>							
129.tera_tf	1056	100	11.0	97.4	11.3	98.4	<u>11.2</u>							
132.zeusmp2	1056	73.6	28.8	74.0	28.7	73.7	<u>28.8</u>							
137.lu	1056	73.7	57.0	74.1	<u>56.7</u>	76.4	55.0							
142.dmilc	1056	62.7	<u>58.7</u>	62.4	59.0	62.8	58.7							
143.dleslie	1056	86.3	<u>35.9</u>	87.2	35.6	86.3	35.9							
145.IGemsFDTD	1056	129	34.2	128	<u>34.4</u>	128	34.4							
147.l2wrf2	1056	247	<u>33.2</u>	248	33.1	246	33.3							

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: HOME
 Total Compute Nodes: 88
 Total Chips: 176
 Total Cores: 1056
 Total Threads: 1056
 Total Memory: 2112 GB
 Base Ranks Run: 1056
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Compiler 11.1.064 for Linux
 C++ Compiler: Intel C++ Compiler 11.1.064 for Linux
 Fortran Compiler: Intel Fortran Compiler 11.1.064 for Linux
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: MVAPICH 1.1
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: Endeavor Node

Hardware

Number of nodes: 88
 Uses of the node: compute
 Vendor: Intel
 Model: SR1600UR
 CPU Name: Intel Xeon X5670
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 12
 Cores per chip: 6
 Threads per core: 1
 CPU Characteristics: Intel Turbo Boost Technology disabled, 6.4 GT/s QPI, Hyper-Threading disabled
 CPU MHz: 2934
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 12 MB I+D on chip per chip, 12 MB shared / 6 cores
 Other Cache: None
 Memory: 24 GB (RDIMM 6x4-GB DDR3-1333 MHz)
 Disk Subsystem: Seagate 400 GB ST3400755SS
 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 1.4.2
 Adapter Firmware: 2.7.000
 Operating System: Red Hat EL 5.4, kernel 2.6.18-164
 Local File System: Linux/ext2
 Shared File System: NFS
 System State: Multi-User
 Other Software: PBS Pro 10.1



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Node Description: HOME

Hardware		Software	
Number of nodes:	1	Adapter:	Intel 82546GB Dual-Port Gigabit Ethernet Controller
Uses of the node:	fileserver	Adapter Driver:	e1000
Vendor:	Intel	Adapter Firmware:	N/A
Model:	SSR212CC	Operating System:	RedHat EL 4 Update 4
CPU Name:	Intel Xeon CPU	Local File System:	None
CPU(s) orderable:	2 chips	Shared File System:	NFS
Chips enabled:	2	System State:	Multi-User
Cores enabled:	2	Other Software:	None
Cores per chip:	1		
Threads per core:	1		
CPU Characteristics:	--		
CPU MHz:	2800		
Primary Cache:	12 KB I + 16 KB D on chip per chip		
Secondary Cache:	1 MB I+D on chip per chip		
L3 Cache:	None		
Other Cache:	None		
Memory:	6 GB		
Disk Subsystem:	10 disks, 320GB/disk, 2.6TB total		
Other Hardware:	None		
Adapter:	Intel 82546GB 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:	7.1.000		
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:

mpirun command was used to start MPI jobs.

BIOS settings:

Intel Hyper-Threading Technology (SMT): Disabled (default is Enabled)

Intel Turbo Boost Technology (Turbo) : Disabled (default is Enabled)

RAM configuration:

Compute nodes have 1x4-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 96/192 ranks, 2 switches for 384 ranks, 4 switches for 768 ranks, 8 switches for 1536 ranks.

PBS Pro was used for job submission. It has no impact on performance.

Can be found at: <http://www.altair.com>

Base Compiler Invocation

C benchmarks:

mpicc

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Base Compiler Invocation (Continued)

C++ benchmarks:

126.lammps: mpicxx

Fortran benchmarks:

mpif90

Benchmarks using both Fortran and C:

mpicc mpif90

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
126.lammps: -DMPICH_IGNORE_CXX_SEEK

Base Optimization Flags

C benchmarks:

-O3 -xSSE4.2 -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xSSE4.2 -no-prec-div

Fortran benchmarks:

-O3 -xSSE4.2 -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xSSE4.2 -no-prec-div

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

http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.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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