



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Intel Corporation

Endeavor (Intel Xeon E5-2697 v2, 2.70 GHz, DDR3-1600 MHz, SMT on, Turbo off)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 68.5

MPI2007 license: 13

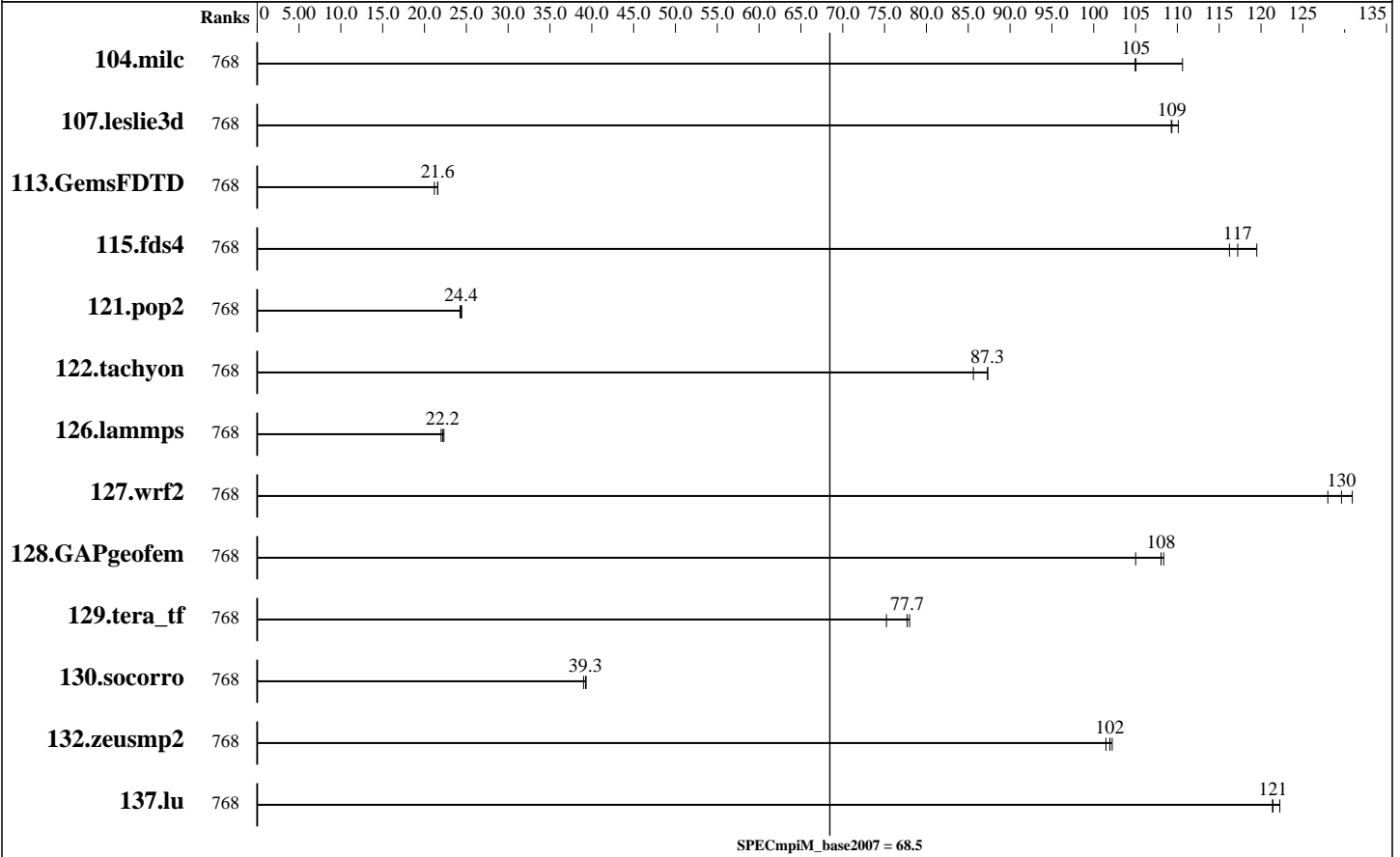
Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: Aug-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	768	14.9	105	14.1	111	<u>14.9</u>	<u>105</u>							
107.leslie3d	768	47.8	109	<u>47.7</u>	<u>109</u>	47.4	110							
113.GemsFDTD	768	298	21.2	292	21.6	<u>292</u>	<u>21.6</u>							
115.fds4	768	<u>16.6</u>	<u>117</u>	16.3	119	16.8	116							
121.pop2	768	170	24.2	169	24.4	<u>169</u>	<u>24.4</u>							
122.tachyon	768	32.7	85.6	32.0	87.3	<u>32.0</u>	<u>87.3</u>							
126.lammps	768	131	22.3	133	22.0	<u>131</u>	<u>22.2</u>							
127.wrf2	768	<u>60.1</u>	<u>130</u>	60.9	128	59.5	131							
128.GAPgeofem	768	19.1	108	19.7	105	<u>19.1</u>	<u>108</u>							
129.tera_tf	768	<u>35.6</u>	<u>77.7</u>	36.8	75.2	35.5	78.0							

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.



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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	768	<u>97.2</u>	<u>39.3</u>	97.8	39.0	97.1	39.3							
132.zeusmp2	768	30.6	101	<u>30.4</u>	<u>102</u>	30.4	102							
137.lu	768	30.3	121	30.1	122	<u>30.3</u>	<u>121</u>							

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Hardware Summary

Type of System: Homogeneous
 Compute Node: Endeavor Node
 Interconnects: IB Switch
 Gigabit Ethernet
 File Server Node: NFS
 Total Compute Nodes: 32
 Total Chips: 64
 Total Cores: 768
 Total Threads: 1536
 Total Memory: 2 TB
 Base Ranks Run: 768
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
 C++ Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
 Fortran Compiler: Intel Fortran Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: Intel MPI Library 4.1.1.036 for Linux
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: Endeavor Node

Hardware

Number of nodes: 32
 Uses of the node: compute
 Vendor: Intel
 Model: R2208GZ4GC
 CPU Name: Intel Xeon E5-2697 v2
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 24
 Cores per chip: 12
 Threads per core: 2
 CPU Characteristics: Intel Turbo Boost Technology disabled, 8.0 GT/s QPI, Hyper-Threading enabled
 CPU MHz: 2700
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 30 MB I+D on chip per chip, 30 MB shared / 12 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

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 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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Software Availability: Sep-2013

Node Description: Endeavor Node

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

Node Description: NFS

	Hardware
Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	S7000FC4UR
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	16
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

	Software
Adapter:	Intel 82563GB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000e
Adapter Firmware:	N/A
Operating System:	RedHat EL 5 Update 4
Local File System:	None
Shared File System:	NFS
System State:	Multi-User
Other Software:	None



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Software Availability: Sep-2013

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: 7.2.0 Topology: Fat tree Primary Use: MPI traffic	

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

130.socorro (base): "nullify_ptrs" src.alt was used.

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

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General Notes (Continued)

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 24/48/96/192/384 ranks, 2 switches for 768 ranks, 4 switches for 1536 ranks, 8 switches for 3072 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

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
127.wrf2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX
130.socorro: -assume nostd_intent_in

Base Optimization Flags

C benchmarks:
-O3 -xCORE-AVX-I -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xCORE-AVX-I -no-prec-div

Fortran benchmarks:

-O3 -xCORE-AVX-I -no-prec-div

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-O3 -xCORE-AVX-I -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.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel140_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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