



# SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## Intel Corporation

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 44.0

MPI2007 license: 13

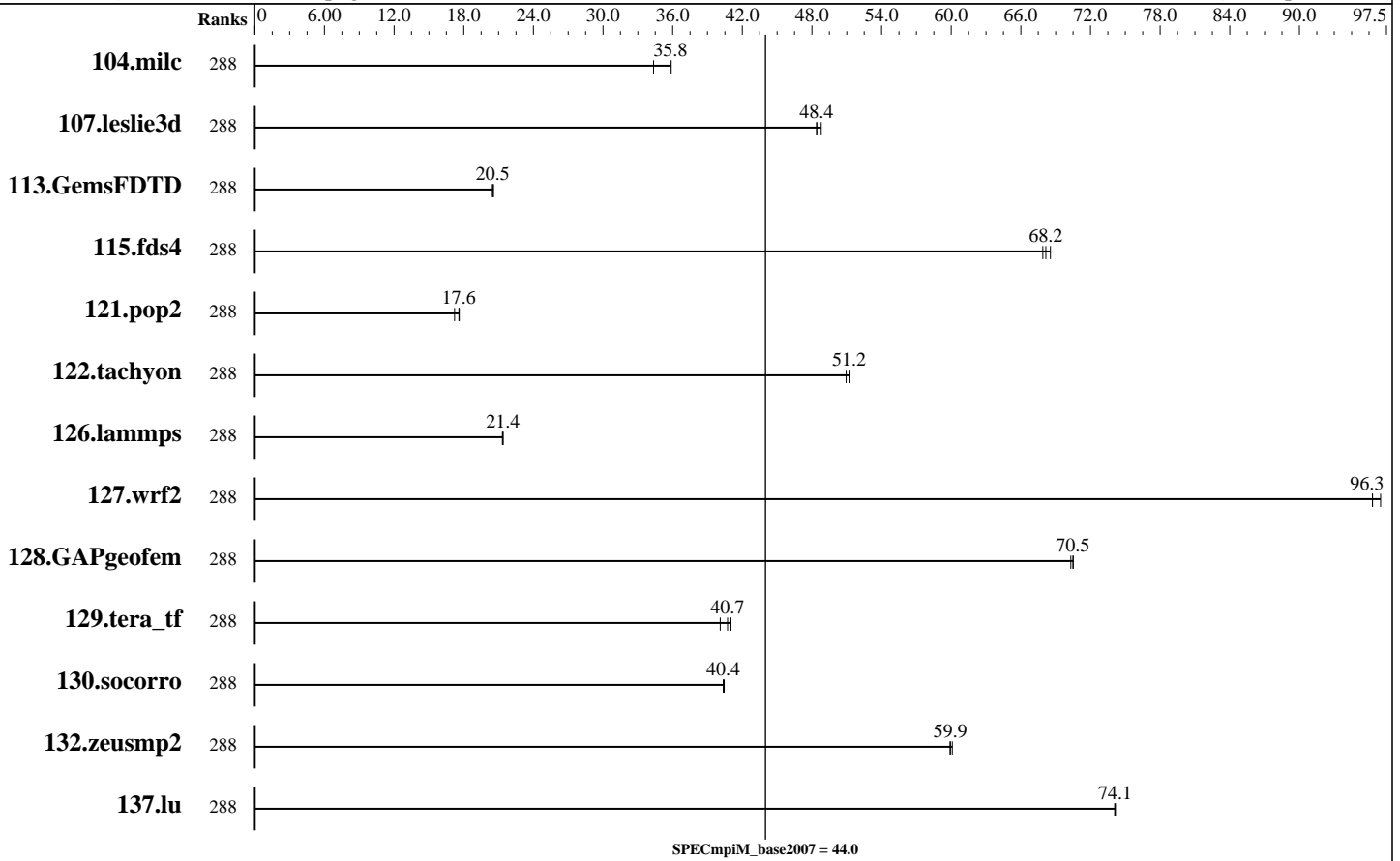
Test sponsor: Intel Corporation

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		
104.milc	288	45.6	34.4	<b>43.7</b>	<b>35.8</b>	43.6	35.9									
107.leslie3d	288	107	48.8	<b>108</b>	<b>48.4</b>	108	48.4									
113.GemsFDTD	288	309	20.4	307	20.6	<b>308</b>	<b>20.5</b>									
115.fds4	288	28.7	67.9	<b>28.6</b>	<b>68.2</b>	28.5	68.5									
121.pop2	288	240	17.2	234	17.6	<b>235</b>	<b>17.6</b>									
122.tachyon	288	54.5	51.3	54.9	50.9	<b>54.6</b>	<b>51.2</b>									
126.lammps	288	<b>136</b>	<b>21.4</b>	137	21.3	136	21.4									
127.wrf2	288	80.4	97.0	81.0	96.3	<b>81.0</b>	<b>96.3</b>									
128.GAPgeofem	288	29.3	70.5	<b>29.3</b>	<b>70.5</b>	29.4	70.3									
129.tera_tf	288	67.5	41.0	69.0	40.1	<b>68.0</b>	<b>40.7</b>									

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



# SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## Intel Corporation

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 44.0

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 (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	288	94.6	40.4	<b><u>94.5</u></b>	<b><u>40.4</u></b>	94.4	40.4							
132.zeusmp2	288	51.8	59.9	<b><u>51.8</u></b>	<b><u>59.9</u></b>	51.6	60.1							
137.lu	288	49.6	74.1	49.6	74.1	<b><u>49.6</u></b>	<b><u>74.1</u></b>							

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: 4  
 Total Chips: 16  
 Total Cores: 288  
 Total Threads: 576  
 Total Memory: 2 TB  
 Base Ranks Run: 288  
 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: 4  
 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 disabled, 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

### 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

Continued on next page



# SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## Intel Corporation

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 44.0

MPI2007 license: 13

Test sponsor: Intel Corporation

Tested by: Pavel Shelepugin

Test date: May-2015

Hardware Availability: May-2015

Software Availability: Apr-2015

### Node Description: Endeavor Node

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

### 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



# SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## Intel Corporation

SPECmpiM\_peak2007 = Not Run

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

SPECmpiM\_base2007 = 44.0

MPI2007 license: 13

Test date: May-2015

Test sponsor: Intel Corporation

Hardware Availability: May-2015

Tested by: Pavel Shelepugin

Software Availability: Apr-2015

### 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	

### 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

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 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  
Continued on next page



# SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

**Intel Corporation**

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 44.0

**MPI2007 license:** 13

**Test sponsor:** Intel Corporation

**Tested by:** Pavel Shelepugin

**Test date:** May-2015

**Hardware Availability:** May-2015

**Software Availability:** Apr-2015

## 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 72/144/288/576 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

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-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



# SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

**Intel Corporation**

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 44.0

**MPI2007 license:** 13

**Test sponsor:** Intel Corporation

**Tested by:** Pavel Shelepugin

**Test date:** May-2015

**Hardware Availability:** May-2015

**Software Availability:** Apr-2015

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](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](http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20140908.xml)

SPEC and SPEC MPI are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC MPI2007 v2.0.1.  
Report generated on Wed Jun 10 11:39:52 2015 by SPEC MPI2007 PS/PDF formatter v1463.  
Originally published on 10 June 2015.