



SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Intel Corporation

Endeavor (Intel Xeon E5-2697 v2, 2.70 GHz, DDR3-1866 MHz, SMT on, Turbo off)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 7.94

MPI2007 license: 13

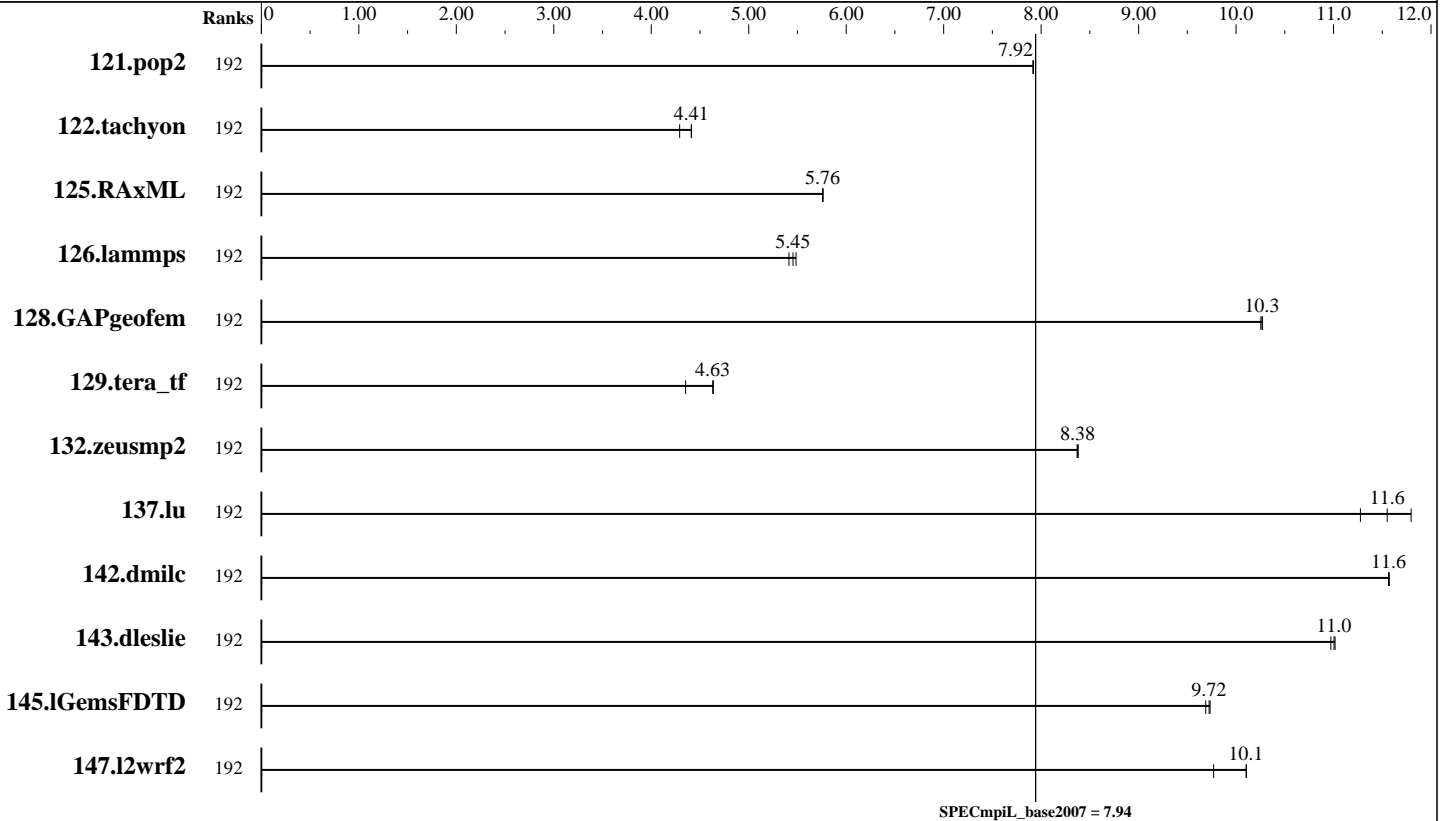
Test sponsor: Intel Corporation

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 | | |
| 121.pop2 | 192 | 491 | 7.92 | 491 | 7.92 | 492 | 7.92 | | | | | | | | | |
| 122.tachyon | 192 | 453 | 4.29 | 441 | 4.41 | 441 | 4.41 | | | | | | | | | |
| 125.RAxML | 192 | 507 | 5.76 | 507 | 5.76 | 507 | 5.76 | | | | | | | | | |
| 126.lammps | 192 | 448 | 5.49 | 454 | 5.41 | 451 | 5.45 | | | | | | | | | |
| 128.GAPgeofem | 192 | 578 | 10.3 | 579 | 10.3 | 578 | 10.3 | | | | | | | | | |
| 129.tera_tf | 192 | 237 | 4.63 | 237 | 4.64 | 253 | 4.35 | | | | | | | | | |
| 132.zeusmp2 | 192 | 253 | 8.38 | 253 | 8.37 | 253 | 8.38 | | | | | | | | | |
| 137.lu | 192 | 373 | 11.3 | 364 | 11.6 | 356 | 11.8 | | | | | | | | | |
| 142.dmilc | 192 | 319 | 11.6 | 318 | 11.6 | 318 | 11.6 | | | | | | | | | |
| 143.dleslie | 192 | 283 | 11.0 | 281 | 11.0 | 282 | 11.0 | | | | | | | | | |
| 145.lGemsFDTD | 192 | 453 | 9.73 | 455 | 9.69 | 454 | 9.72 | | | | | | | | | |
| 147.l2wrf2 | 192 | 812 | 10.1 | 812 | 10.1 | 840 | 9.77 | | | | | | | | | |

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: 8
 Total Chips: 16
 Total Cores: 192
 Total Threads: 384
 Total Memory: 512 GB
 Base Ranks Run: 192
 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: 8
 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 PC3-14900R-13, 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 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 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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Test date: Aug-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013

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: | 7.2.0 | | |
| Topology: | Fat tree | | |
| Primary Use: | MPI traffic | | |



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Software Availability: Sep-2013

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) : 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 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

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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-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

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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