SPEC® MPIL2007 Result

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Intel Corporation

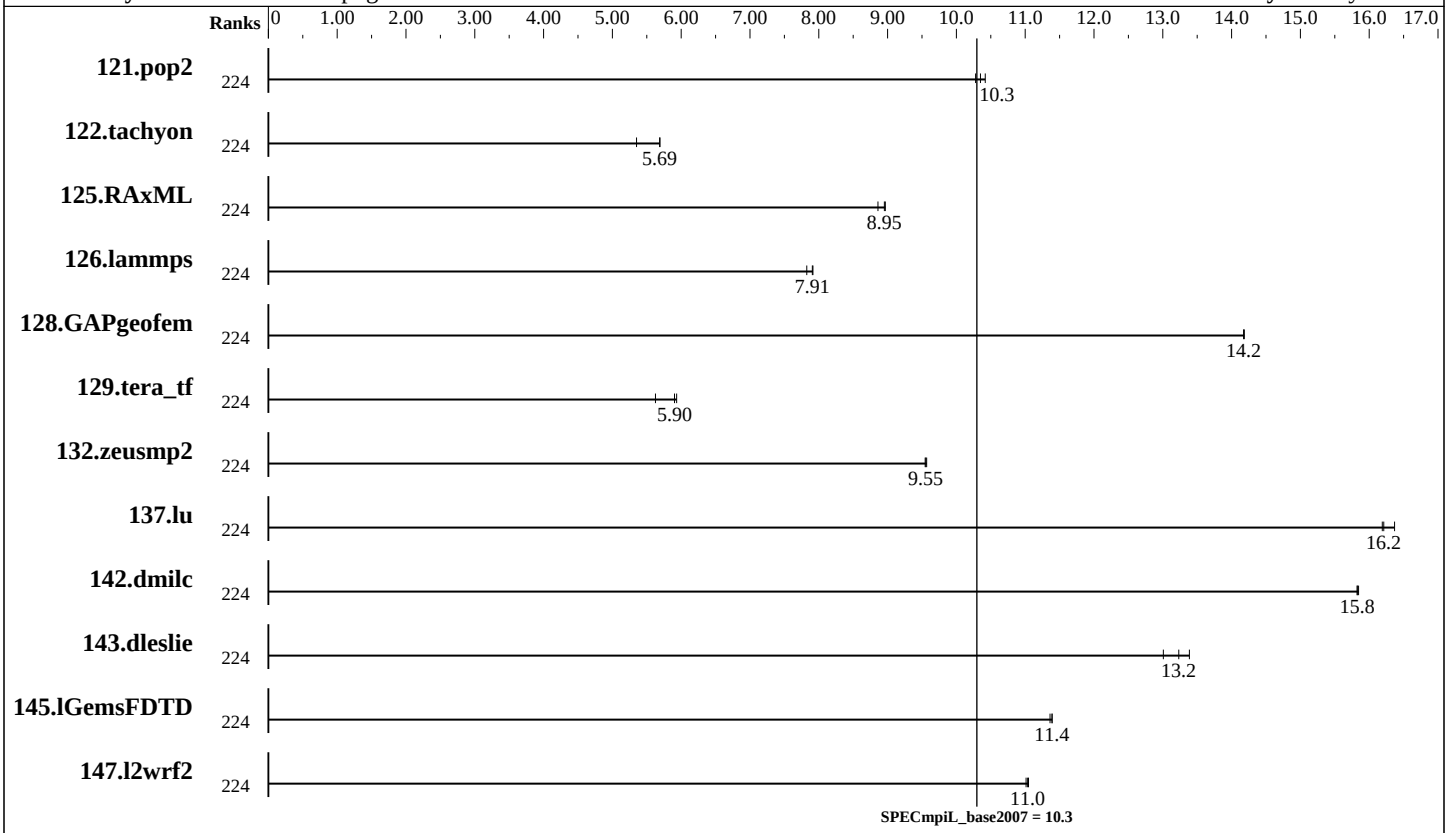
Endeavor (Intel Xeon E5-2697 v3, 2.60 GHz, DDR4-2133 MHz, SMT on, Turbo on)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 10.3

MPI2007 license: 13
Test sponsor: Intel Corporation
Tested by: Pavel Shelepugin

Test date: Aug-2014
Hardware Availability: Sep-2014
Software Availability: May-2014



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	224	379	10.3	**376**	**10.3**	373	10.4							
122.tachyon	224	363	5.35	342	5.69	**342**	**5.69**							
125.RAxML	224	326	8.97	**326**	**8.95**	329	8.86							
126.lammps	224	314	7.83	311	7.92	**311**	**7.91**							
128.GAPgeofem	224	**419**	**14.2**	419	14.2	418	14.2							
129.tera_tf	224	195	5.63	**186**	**5.90**	185	5.93							
132.zeusmp2	224	222	9.57	**222**	**9.55**	222	9.55							
137.lu	224	257	16.4	260	16.2	**259**	**16.2**							
142.dmilc	224	232	15.8	233	15.8	**233**	**15.8**							
143.dleslie	224	**234**	**13.2**	232	13.4	238	13.0							
145.lGemsFDTD	224	388	11.4	387	11.4	**387**	**11.4**							
147.l2wrf2	224	743	11.0	**743**	**11.0**	745	11.0							

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:	224
Total Threads:	448
Total Memory:	512 GB
Base Ranks Run:	224
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
C++ Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Fortran Compiler:	Intel Fortran Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library 4.1.3.049 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:	R2208WTTYC1
CPU Name:	Intel Xeon E5-2697 v3
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	28
Cores per chip:	14
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.6 GHz, 9.6 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:	35 MB I+D on chip per chip, 35 MB shared / 14 cores
Other Cache:	None
Memory:	64 GB (8 x 8 GB 2Rx4 PC4-17000R-15, ECC)
Disk Subsystem:	ATA INTEL SSDSA2BZ20, SSDSC2BB80
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 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

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Test date: Aug-2014
Hardware Availability: Sep-2014
Software Availability: May-2014

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

Interconnect Description: IB Switch

Hardware

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

Software

Interconnect Description: Gigabit Ethernet

Hardware	
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

Software

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 28/56/112/224/448 ranks, 2 switches for 896 ranks, 4 switches for 1792 ranks,
  8 switches for 3584 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

Continued on next page

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-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`

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`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20140908.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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