



SPEC® MPIL2007 Result

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Intel Corporation

SPECmpiL_peak2007 = Not Run

Intel Server System R2208WFTZS (Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiL_base2007 = 58.2

MPI2007 license: 13

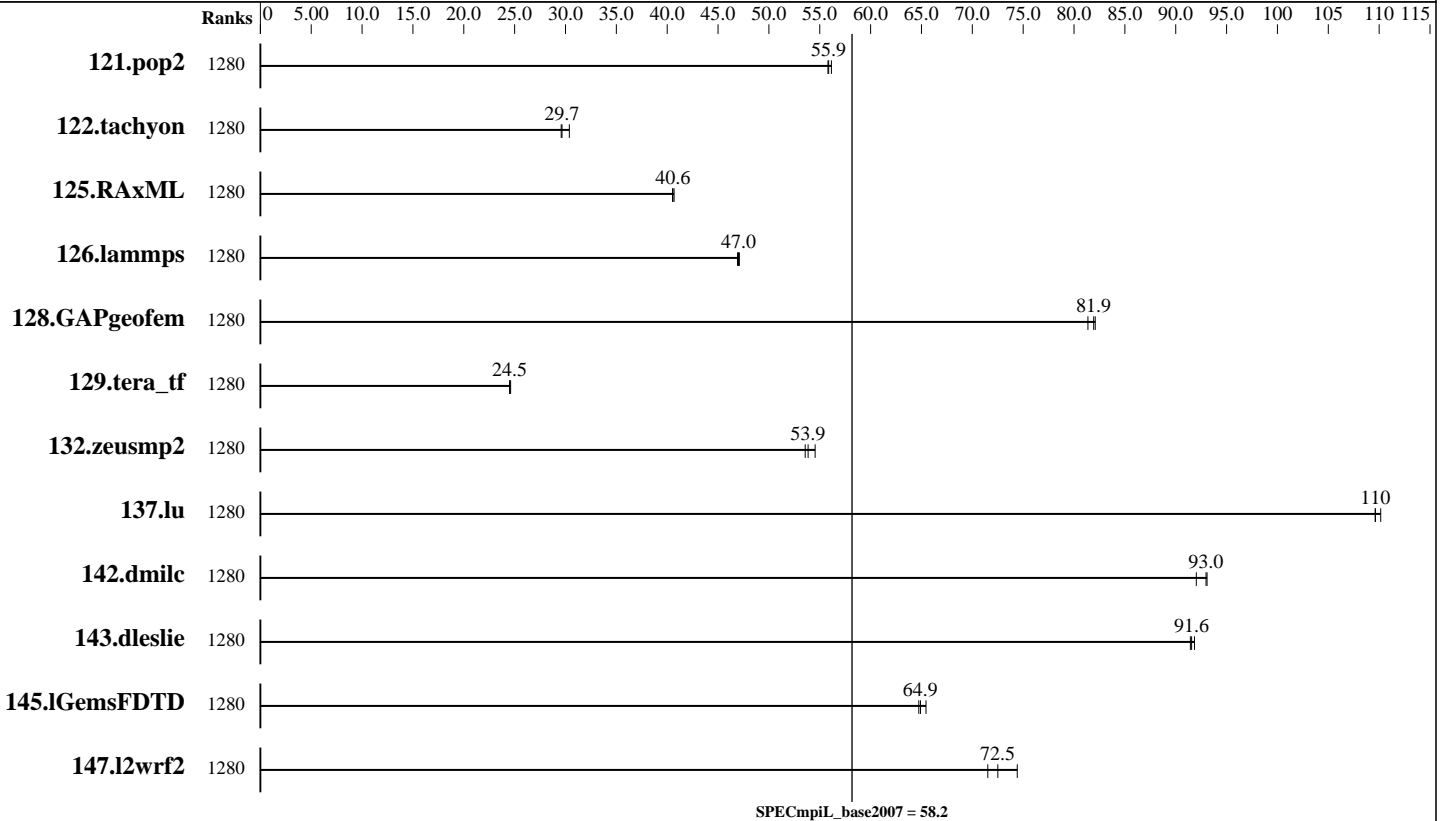
Test date: Jul-2017

Test sponsor: Intel Corporation

Hardware Availability: Jul-2017

Tested by: Intel Corporation

Software Availability: Sep-2017



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	1280	69.6	55.9	69.7	55.8	69.3	56.1							
122.tachyon	1280	65.5	29.7	64.0	30.4	65.7	29.6							
125.RAxML	1280	71.8	40.7	72.0	40.6	72.0	40.5							
126.lammps	1280	52.2	47.1	52.3	47.0	52.4	46.9							
128.GAPgeofem	1280	72.4	81.9	72.3	82.1	72.9	81.4							
129.tera_tf	1280	44.8	24.5	44.7	24.6	44.8	24.5							
132.zeusmp2	1280	39.6	53.6	38.9	54.5	39.4	53.9							
137.lu	1280	38.3	110	38.1	110	38.3	110							
142.dmilc	1280	40.0	92.0	39.6	93.0	39.6	93.1							
143.dleslie	1280	33.9	91.4	33.8	91.8	33.9	91.6							
145.lGemsFDTD	1280	67.4	65.4	68.0	64.9	68.1	64.7							
147.l2wrf2	1280	115	71.5	113	72.5	110	74.4							

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

Standard Performance Evaluation Corporation

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http://www.spec.org/



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Hardware Summary

Software Summary

Type of System: Homogeneous
 Compute Node: Endeavor Node
 Interconnects: Intel Omni-Path
 Intel Omni-Path
 File Server Node: Lustre FS
 Total Compute Nodes: 32
 Total Chips: 64
 Total Cores: 1280
 Total Threads: 2560
 Total Memory: 6 TB
 Base Ranks Run: 1280
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

C Compiler: Intel C++ Composer XE 2017 for Linux
 Version 17.0.4.196 Build 20170411
 C++ Compiler: Intel C++ Composer XE 2017 for Linux
 Version 17.0.4.196 Build 20170411
 Fortran Compiler: Intel Fortran Composer XE 2017 for Linux
 Version 17.0.4.196 Build 20170411
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: Intel MPI Library 17u4 for Linux
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: Endeavor Node

Hardware

Software

Number of nodes: 32
 Uses of the node: compute
 Vendor: Intel
 Model: Intel Server System R2208WFTZS
 (Intel Xeon Gold 6148, 2.4 GHz)
 CPU Name: Intel Xeon Gold 6148
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 40
 Cores per chip: 20
 Threads per core: 2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.7 GHz
 CPU MHz: 2400
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core
 L3 Cache: 27.5 MB I+D on chip per chip
 Other Cache: None
 Memory: 192 GB (12 x 16 GB 2Rx4 DDR4-2666 ECC Registered)
 Disk Subsystem: 1 x 800 GB SSD (INTEL SSDSC2BA80)
 Other Hardware: None
 Adapter: Intel Omni-Path Fabric Adapter 100 series
 Number of Adapters: 1
 Slot Type: PCI-Express x16
 Data Rate: 12.5 GB/s
 Ports Used: 1
 Interconnect Type: Intel Omni-Path Fabric Adapter 100 series
 Adapter: Intel Omni-Path Edge Switch 100 series
 Number of Adapters: 1
 Slot Type: PCI-Express x16
 Data Rate: 12.5 GB/s
 Ports Used: 1
 Interconnect Type: Intel Omni-Path Fabric Adapter 100 series

Adapter: Intel Omni-Path Fabric Adapter 100 series
 Adapter Driver: IFS 10.4
 Adapter Firmware: 0.9-46
 Adapter: Intel Omni-Path Edge Switch 100 series
 Adapter Driver: IFS 10.4
 Adapter Firmware: 0.9-46
 Operating System: Oracle Linux Server release 7.3, Kernel
 3.10.0-514.6.2.0.1.el7.x86_64.knl1
 Local File System: Linux/xfst
 Shared File System: LFS
 System State: Multi-User
 Other Software: IBM Platform LSF Standard 9.1.1.1



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Node Description: Lustre FS

Hardware		Software	
Number of nodes:	11	Adapter:	Intel Omni-Path Fabric Adapter 100 series
Uses of the node:	fileserver	Adapter Driver:	IFS 10.4
Vendor:	Intel	Adapter Firmware:	0.9-46
Model:	Intel Server System R2224GZ4GC4	Operating System:	Redhat* Enterprise Linux* Server Release 7.2, Kernel 3.10.0-514.6.2.0.1.el7.x86_64.knl1
CPU Name:	Intel Xeon E5-2680	Local File System:	None
CPU(s) orderable:	1-2 chips	Shared File System:	Lustre FS
Chips enabled:	2	System State:	Multi-User
Cores enabled:	16	Other Software:	None
Cores per chip:	8		
Threads per core:	2		
CPU Characteristics:	Intel Turbo Boost Technology disabled		
CPU MHz:	2700		
Primary Cache:	32 KB I + 32 KB D on chip per core		
Secondary Cache:	2 MB I+D on chip per chip		
L3 Cache:	20 MB I+D on chip per chip		
Other Cache:	None		
Memory:	64 GB (8 x 8GB 1600MHz Reg ECC DDR3)		
Disk Subsystem:	2.1 TB		
Other Hardware:	None		
Adapter:	Intel Omni-Path Fabric Adapter 100 series		
Number of Adapters:	1		
Slot Type:	PCI-Express x16		
Data Rate:	12.5 GB/s		
Ports Used:	1		
Interconnect Type:	Intel Omni-Path Fabric Adapter 100 series		

Interconnect Description: Intel Omni-Path

Hardware		Software	
Vendor:	Intel		
Model:	Intel Omni-Path 100 series		
Switch Model:	Intel Omni-Path Edge Switch 100 series		
Number of Switches:	24		
Number of Ports:	48		
Data Rate:	12.5 GB/s		
Firmware:	0.9-46		
Topology:	Fat tree		
Primary Use:	MPI traffic		



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Interconnect Description: Intel Omni-Path

Hardware		Software
Vendor:	Intel Corporation	
Model:	Intel Omni-Path 100 series	
Switch Model:	Intel Omni-Path Edge Switch 100 series	
Number of Switches:	1	
Number of Ports:	48	
Data Rate:	12.5 GB/s	
Firmware:	0.9-46	
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.

Software environment:
 export I_MPI_COMPATIBILITY=3
 export I_MPI_FABRICS=shm:tmi
 export I_MPI_HYDRA_PMI_CONNECT=alltoall

Network:
 Endeavour Omni-Path fabric consists of 48-port switches = 24 core switches connected to each leaf of the rack switch.

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 40/80/160/320/640 ranks, 2 switches for 1280 and 1980 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

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Base Compiler Invocation (Continued)

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-AVX512 -no-prec-div

C++ benchmarks:
126.lammps: -O3 -xCORE-AVX512 -no-prec-div

Fortran benchmarks:
-O3 -xCORE-AVX512 -no-prec-div

Benchmarks using both Fortran and C:
-O3 -xCORE-AVX512 -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.20170822.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20170822.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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