



SPEC® MPIL2007 Result

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Cray

SPECmpiL_peak2007 = Not Run

Cray XC30 (Intel Xeon E5-2697 v2)

SPECmpiL_base2007 = 28.4

MPI2007 license: 3440A

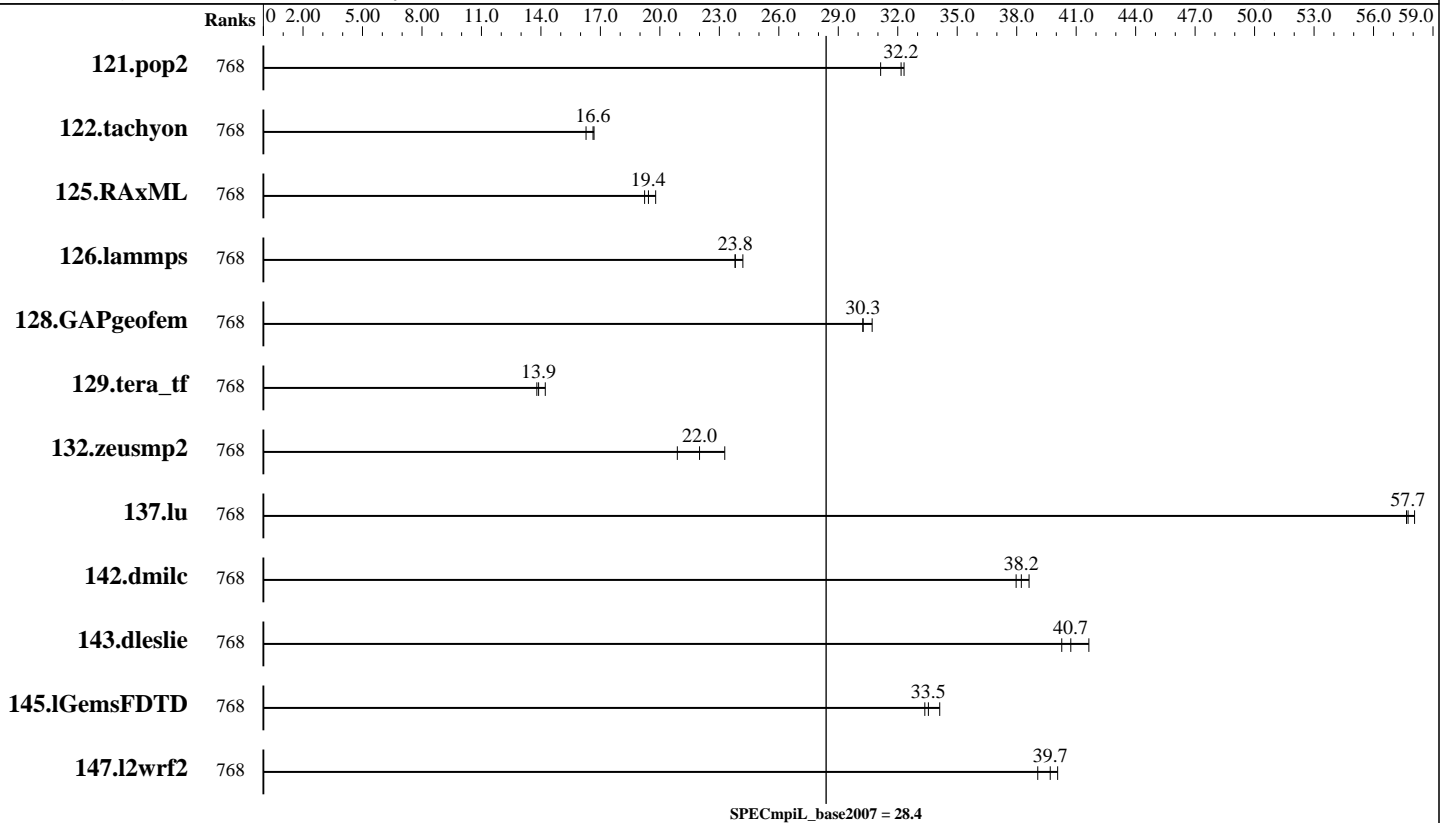
Test sponsor: Indiana University

Tested by: Indiana University

Test date: Mar-2017

Hardware Availability: Apr-2013

Software Availability: Feb-2017



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	768	125	31.1	120	32.3	<u>121</u>	<u>32.2</u>							
122.tachyon	768	119	16.3	<u>117</u>	<u>16.6</u>	117	16.7							
125.RAxML	768	<u>150</u>	<u>19.4</u>	148	19.8	152	19.2							
126.lammps	768	102	24.2	103	23.8	<u>103</u>	<u>23.8</u>							
128.GAPgeofem	768	196	30.2	193	30.7	<u>196</u>	<u>30.3</u>							
129.tera_tf	768	77.3	14.2	<u>79.2</u>	<u>13.9</u>	79.7	13.8							
132.zeusmp2	768	102	20.9	91.1	23.3	<u>96.4</u>	<u>22.0</u>							
137.lu	768	72.9	57.7	72.4	58.1	<u>72.8</u>	<u>57.7</u>							
142.dmilc	768	95.4	38.6	<u>96.4</u>	<u>38.2</u>	97.0	38.0							
143.dleslie	768	<u>76.1</u>	<u>40.7</u>	77.0	40.3	74.4	41.6							
145.lGemsFDTD	768	<u>131</u>	<u>33.5</u>	129	34.1	132	33.4							
147.l2wrf2	768	<u>207</u>	<u>39.7</u>	205	40.1	210	39.1							

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

Type of System: Homogeneous
 Compute Node: Big Red II Plus Node
 Interconnects: Infiniband (QDR)
 Cray Aries
 File Server Node: Data Capacitor II
 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 2017 for Linux, Version 17.0.2.174 Build 20170213
 C++ Compiler: Intel C++ Composer XE 2017 for Linux, Version 17.0.2.174 Build 20170213
 Fortran Compiler: Intel Fortran Composer XE 2017 for Linux, Version 17.0.2.174 Build 20170213
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: Cray MPI (MPT) 7.5.0
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: Big Red II Plus Node

Hardware

Number of nodes: 32
 Uses of the node: compute
 Vendor: Cray
 Model: XC30
 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, 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
 Other Cache: None
 Memory: 64 GB (8 x 8 GB 2Rx4 PC3-14900R-13, ECC)
 Disk Subsystem: None
 Other Hardware: None
 Adapter: Mellanox Technologies MT27500 ConnectX-3
 Number of Adapters: 1
 Slot Type: PCIe x16 Gen 3
 Data Rate: 40Gbps
 Ports Used: 1
 Interconnect Type: 40 Gigabit Infiniband (QDR)
 Adapter: Cray Aries
 Number of Adapters: 1
 Slot Type: PCIe x16 Gen 3
 Data Rate: 126 Gbps
 Ports Used: 4
 Interconnect Type: Aries

Software

Adapter: Mellanox Technologies MT27500 ConnectX-3
 Adapter Driver: 1.0-ofed1.5.4.1
 Adapter Firmware: 2.33.5100
 Adapter: Cray Aries
 Adapter Driver: Proprietary Cray_kgni
 Adapter Firmware: v004.r091
 Operating System: SUSE Linux Enterprise Server 11 SP3 (x86_64), Cray Linux Environment 5.2
 3.0.101-0.46.1_1.0502.8871-cray_ari_c
 Local File System: None
 Shared File System: Lustre
 System State: Multi-User
 Other Software: Slurm 15.08.12



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Node Description: Data Capacitor II

Hardware		Software	
Number of nodes:	2	Adapter:	Mellanox ConnectX MHQH29-XTC
Uses of the node:	fileserver	Adapter Driver:	1.0-ofed1.5.4.1
Vendor:	DDN	Adapter Firmware:	2.9.1000
Model:	DDN SFA12K	Operating System:	CentOS 6.2
CPU Name:	Intel Xeon CPU E5-2620	Local File System:	Linux/ext4
CPU(s) orderable:	1-2 chips	Shared File System:	lustre
Chips enabled:	2	System State:	Multi-User
Cores enabled:	12	Other Software:	None
Cores per chip:	6		
Threads per core:	1		
CPU Characteristics:	Intel Turbo Boost Technology up to 2.50 GHz		
CPU MHz:	2000		
Primary Cache:	32 KB I + 32 KB D on chip per core		
Secondary Cache:	256 KB I+D on chip per core		
L3 Cache:	15 MB I+D on chip per chip		
Other Cache:	None		
Memory:	96 GB		
Disk Subsystem:	30 TB RAID 6, 10 (8 + 2) x 3 TB SAS Hitachi HUS724030ALS640, 7200RPM, 6.0Gbps		
Other Hardware:	None		
Adapter:	Mellanox ConnectX MHQH29-XTC		
Number of Adapters:	1		
Slot Type:	PCIe x8 Gen 2		
Data Rate:	40Gbps		
Ports Used:	1		
Interconnect Type:	40 Gigabit Infiniband (QDR)		

Interconnect Description: Infiniband (QDR)

Hardware		Software	
Vendor:	DDN		
Model:	Mellanox SX6506		
Switch Model:	Mellanox SX6506		
Number of Switches:	1		
Number of Ports:	108		
Data Rate:	56 Gbps		
Firmware:	mellanox SX6506		
Topology:	switched		
Primary Use:	Lustre fileserver		



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Interconnect Description: Cray Aries

Hardware		Software
Vendor:	Cray	
Model:	Cray Aries	
Switch Model:	Cray Aries	
Number of Switches:	144	
Number of Ports:	48	
Data Rate:	126 Gb/s	
Firmware:	v004.r091	
Topology:	Dragonfly	
Primary Use:	MPI traffic	

Submit Notes

The config file option 'submit' was used.
submit = srun -c 1 -n \$ranks -q \$command

General Notes

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

MPI startup command:
srun command was used to start MPI jobs.

export MPICH_NO_BUFFER_ALIAS_CHECK=true
If set, the buffer alias error check for collectives is disabled. The MPI standard does not allow aliasing of type OUT or INOUT parameters on the same collective function call. The default is false.

Job placement:
Slurm is used for job placement.
Compute nodes are selected by Slurm.
No specific node selection is used.

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
126.lammps: CC

Fortran benchmarks:
ftn

Continued on next page



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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
cc ftn

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
126.lammps: -DMPICH_IGNORE_CXX_SEEK

Base Optimization Flags

C benchmarks:

-O3 -ansi-alias -no-prec-div -fp-model fast=2

C++ benchmarks:

126.lammps: -O3 -ansi-alias -no-prec-div -fp-model fast=2

Fortran benchmarks:

-O3 -ansi-alias -no-prec-div -fp-model fast=2

Benchmarks using both Fortran and C:

-O3 -ansi-alias -no-prec-div -fp-model fast=2

The flags file that was used to format this result can be browsed at

http://www.spec.org/mpi2007/flags/EM64T_Intel170_flags.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel170_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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