



SPEC® MPIM2007 Result

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Cray

SPECmpiM_peak2007 = Not Run

Cray XC30 (Intel Xeon E5-2697 v2)

SPECmpiM_base2007 = 56.3

MPI2007 license: 3440A

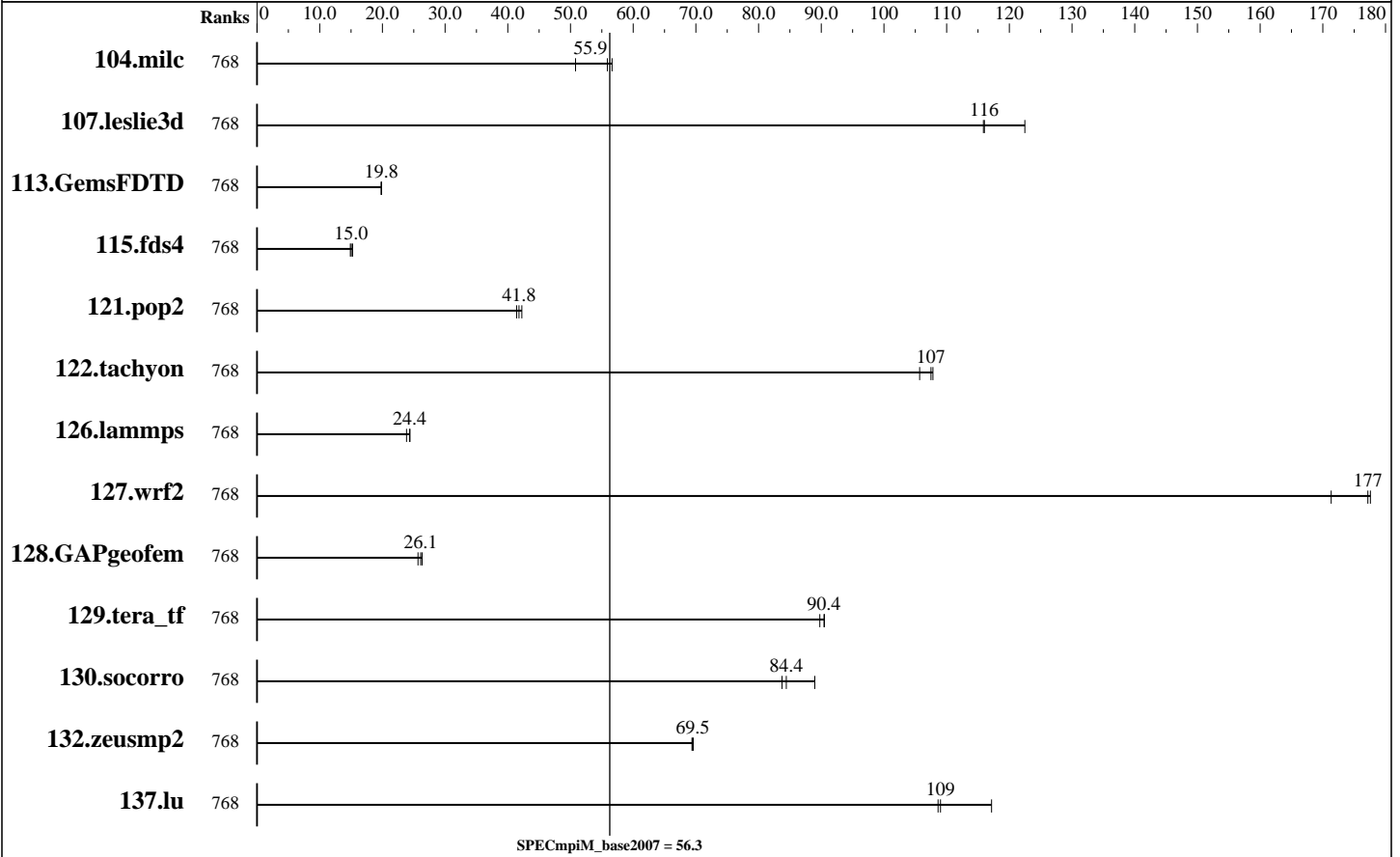
Test sponsor: Indiana University

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		
104.milc	768	27.6	56.6	28.0	55.9	30.8	50.8									
107.leslie3d	768	45.0	116	42.6	122	45.1	116									
113.GemsFDTD	768	318	19.8	318	19.8	318	19.8									
115.fds4	768	131	14.9	130	15.0	128	15.3									
121.pop2	768	97.7	42.2	98.8	41.8	99.7	41.4									
122.tachyon	768	26.0	107	26.5	106	25.9	108									
126.lammps	768	122	23.8	120	24.4	120	24.4									
127.wrf2	768	45.5	171	43.9	178	44.0	177									
128.GAPgeofem	768	78.4	26.3	79.1	26.1	80.4	25.7									
129.tera_tf	768	30.8	89.8	30.6	90.4	30.6	90.5									

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



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Results Table (Continued)

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
130.socorro	768	45.6	83.7	<u>45.2</u>	<u>84.4</u>	42.9	89.0									
132.zeusmp2	768	44.6	69.6	<u>44.7</u>	<u>69.5</u>	44.7	69.4									
137.lu	768	31.4	117	<u>33.7</u>	<u>109</u>	33.8	109									

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: 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

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: Big Red II Plus Node

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

Node Description: Data Capacitor II

Hardware	
Number of nodes:	2
Uses of the node:	fileserver
Vendor:	DDN
Model:	DDN SFA12K
CPU Name:	Intel Xeon CPU E5-2620
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	12
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)

Software	
Adapter:	Mellanox ConnectX MHQH29-XTC
Adapter Driver:	1.0-ofed1.5.4.1
Adapter Firmware:	2.9.1000
Operating System:	CentOS 6.2
Local File System:	Linux/ext4
Shared File System:	lustre
System State:	Multi-User
Other Software:	None

Interconnect Description: Infiniband (QDR)

Hardware	
Vendor:	DDN
Model:	Mellanox SX6506
Switch Model:	Mellanox SX6506

Software

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Interconnect Description: Infiniband (QDR)

Number of Switches:	1
Number of Ports:	108
Data Rate:	56 Gbps
Firmware:	mellanox SX6506
Topology:	switched
Primary Use:	Lustre fileserver

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 2 -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.



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Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
126.lammps: CC

Fortran benchmarks:
ftn

Benchmarks using both Fortran and C:
cc ftn

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 -ansi-alias -no-prec-div -ipo -xhost -fp-model fast=2

C++ benchmarks:
126.lammps: -O3 -ansi-alias -no-prec-div -ipo -xhost -fp-model fast=2

Fortran benchmarks:
-O3 -ansi-alias -no-prec-div -ipo -xhost -fp-model fast=2

Benchmarks using both Fortran and C:
-O3 -ansi-alias -no-prec-div -ipo -xhost -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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