



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Cray

SPECmpiM_peak2007 = Not Run

Cray XC30 (Intel Xeon E5-2697 v2)

SPECmpiM_base2007 = 6.68

MPI2007 license: 3440A

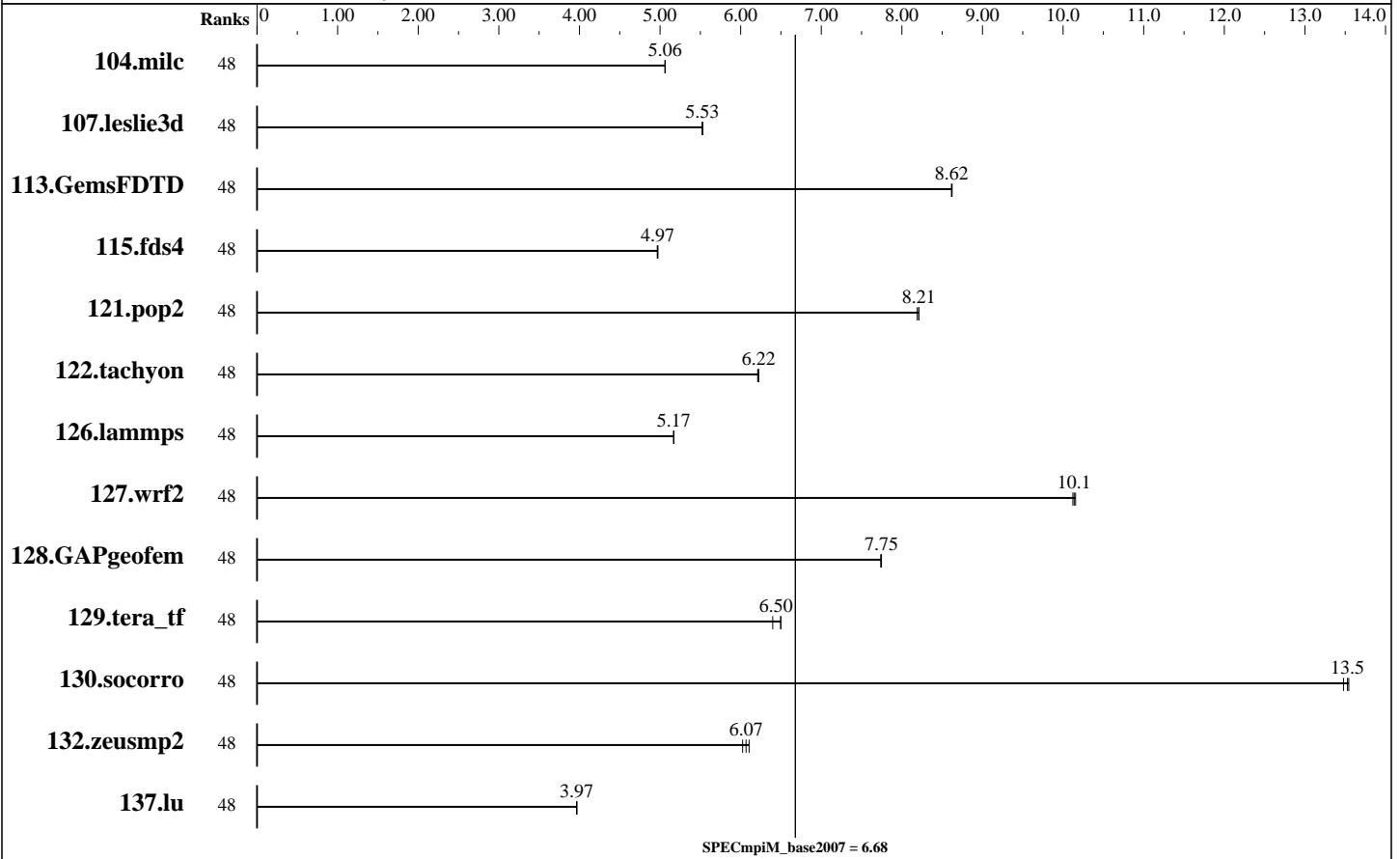
Test sponsor: Indiana University

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 | 48 | 309 | 5.06 | 309 | 5.06 | 309 | 5.06 | | | | | | | | | |
| 107.leslie3d | 48 | 944 | 5.53 | 945 | 5.53 | 945 | 5.52 | | | | | | | | | |
| 113.GemsFDTD | 48 | 732 | 8.62 | 732 | 8.62 | 732 | 8.62 | | | | | | | | | |
| 115.fds4 | 48 | 393 | 4.97 | 392 | 4.97 | 393 | 4.97 | | | | | | | | | |
| 121.pop2 | 48 | 504 | 8.19 | 503 | 8.21 | 503 | 8.21 | | | | | | | | | |
| 122.tachyon | 48 | 450 | 6.21 | 450 | 6.22 | 449 | 6.22 | | | | | | | | | |
| 126.lammmps | 48 | 564 | 5.17 | 564 | 5.17 | 564 | 5.17 | | | | | | | | | |
| 127.wrf2 | 48 | 768 | 10.2 | 770 | 10.1 | 769 | 10.1 | | | | | | | | | |
| 128.GAPgeofem | 48 | 267 | 7.75 | 267 | 7.74 | 267 | 7.75 | | | | | | | | | |
| 129.tera_tf | 48 | 426 | 6.50 | 433 | 6.40 | 426 | 6.50 | | | | | | | | | |

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 | 48 | 282 | 13.5 | <u>282</u> | <u>13.5</u> | 283 | 13.5 | | | | | | | |
| 132.zeusmp2 | 48 | 508 | 6.10 | <u>511</u> | <u>6.07</u> | 515 | 6.02 | | | | | | | |
| 137.lu | 48 | 926 | 3.97 | <u>927</u> | <u>3.97</u> | 927 | 3.96 | | | | | | | |

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: 1
 Total Chips: 2
 Total Cores: 24
 Total Threads: 48
 Total Memory: 64 GB
 Base Ranks Run: 48
 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: 1
 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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Software Availability: Feb-2017

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 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.



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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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