SPEC® MPIM2007 Result

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Colfax International

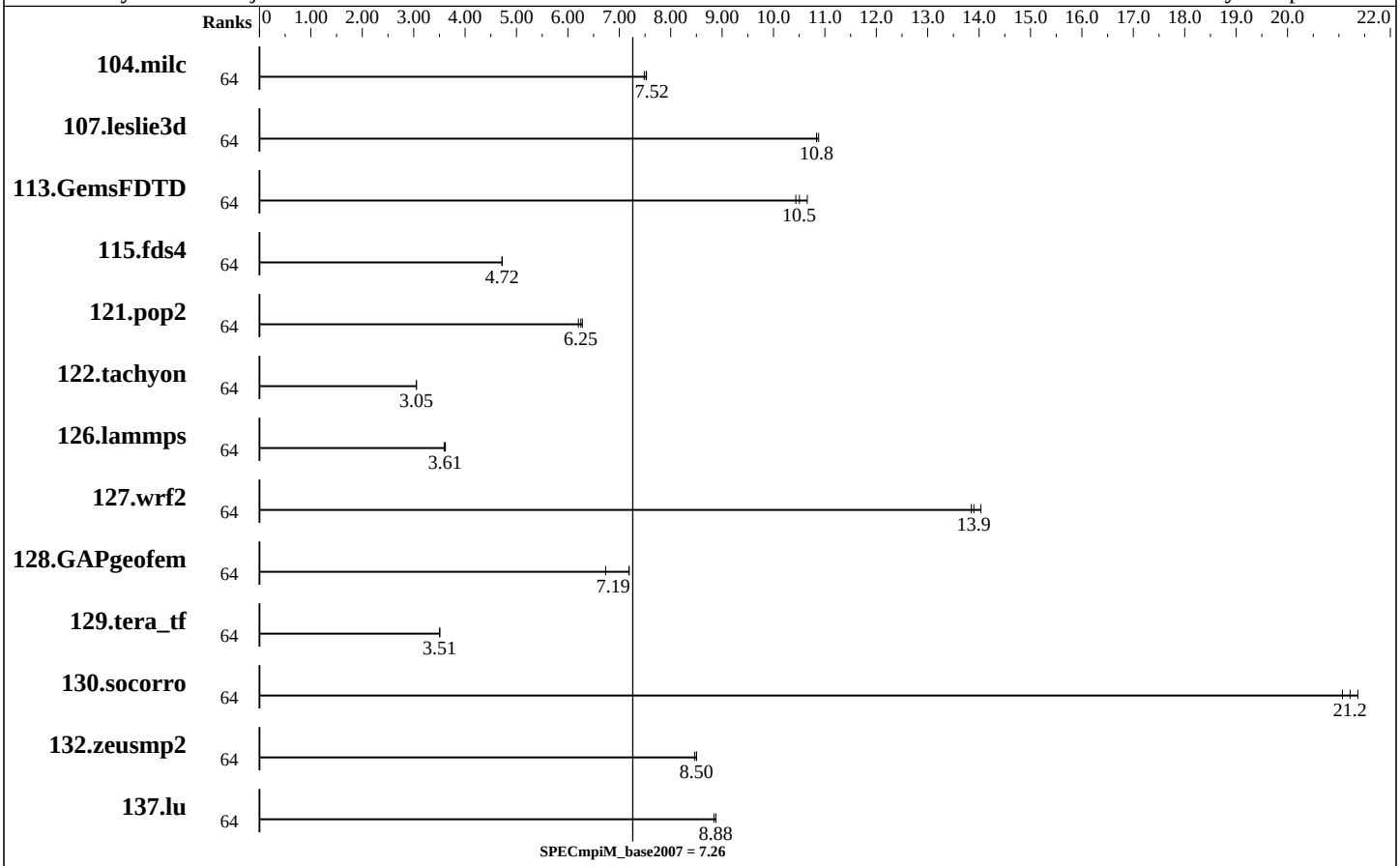
Intel Xeon Phi 7210, 1.30 GHz,
SMT on, Turbo off, MCDRAM Cache

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 7.26

MPI2007 license: 3440
Test sponsor: Indiana University
Tested by: Junjie Li

Test date: Sep-2016
Hardware Availability: Aug-2016
Software Availability: Apr-2016



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	64	209	7.48	208	7.53	**208**	**7.52**							
107.leslie3d	64	480	10.9	482	10.8	**482**	**10.8**							
113.GemsFDTD	64	**601**	**10.5**	592	10.7	605	10.4							
115.fds4	64	414	4.72	413	4.72	**413**	**4.72**							
121.pop2	64	657	6.28	**660**	**6.25**	665	6.20							
122.tachyon	64	916	3.05	917	3.05	**917**	**3.05**							
126.lammps	64	806	3.62	**807**	**3.61**	812	3.59							
127.wrf2	64	563	13.8	555	14.0	**561**	**13.9**							
128.GAPgeofem	64	**287**	**7.19**	287	7.19	307	6.73							
129.tera_tf	64	**789**	**3.51**	791	3.50	789	3.51							

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	64	179	21.4	**180**	**21.2**	181	21.1							
132.zeusmp2	64	367	8.46	365	8.50	**365**	**8.50**							
137.lu	64	414	8.88	**414**	**8.88**	416	8.84							

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:	KNL
File Server Node:	KNL
Head Node:	KNL
Total Compute Nodes:	1
Total Chips:	1
Total Cores:	64
Total Threads:	256
Total Memory:	96 GB
Base Ranks Run:	64
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160415
C++ Compiler:	Intel C++ Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160415
Fortran Compiler:	Intel Fortran Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160415
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library for Linux 5.1.3 Build 20160120
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: KNL

Hardware

Number of nodes:	1
Uses of the node:	head, compute, fileserver
Vendor:	Colfax International
Model:	None
CPU Name:	Intel Xeon Phi 7210
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	64
Cores per chip:	64
Threads per core:	4
CPU Characteristics:	Intel Turbo Boost Technology off, Simultaneous Multithreading (SMT) on
CPU MHz:	1300
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per two cores
L3 Cache:	None
Other Cache:	None
Memory:	96 GB (6 x 16 GB 2Rx8 PC4-2400T-REB-11, ECC)
Disk Subsystem:	Intel S3510 SSD 800GB, SATA3
Other Hardware:	None
Adapter:	0
Number of Adapters:	0
Slot Type:	0
Data Rate:	0

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Software

Adapter:	0
Adapter Driver:	0
Adapter Firmware:	--
Operating System:	CentOS Linux Release 7.2.1511
Local File System:	Linux/ext4
Shared File System:	None
System State:	Multi-User
Other Software:	None

Node Description: KNL

Ports Used:	0
Interconnect Type:	0

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

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

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

 BIOS settings:
   Intel Simultaneous Multithreading (SMT): on
   Intel Turbo Boost Technology (Turbo)  : off
   Cluster Mode: quadrant
   Memory Mode: cache

Submitted_by: "Li, Junjie" <lijunj@iu.edu>
Submitted: Thu Oct 20 18:09:55 EDT 2016
Submission: mpi2007-20161014-00528.sub
```

Base Compiler Invocation

C benchmarks:
`mpiicc`

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`

Continued on next page

Base Portability Flags (Continued)

127.wrf2: `-DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX`
130.socorro: `-assume nostd_intent_in`

Base Optimization Flags

C benchmarks:
`-O3 -xMIC-AVX512 -no-prec-div -fp-model fast=2 -ipo -fma`

C++ benchmarks:

126.lammps: `-O3 -xMIC-AVX512 -no-prec-div -fp-model fast=2 -ipo -fma`

Fortran benchmarks:
`-O3 -xMIC-AVX512 -no-prec-div -fp-model fast=2 -ipo -fma`

Benchmarks using both Fortran and C:
`-O3 -xMIC-AVX512 -no-prec-div -fp-model fast=2 -ipo -fma`

The flags files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/colfax-knl.20170127.html
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20161026.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/colfax-knl.20170127.xml
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20161026.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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