SPEC® MPIM2007 Result

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Colfax International

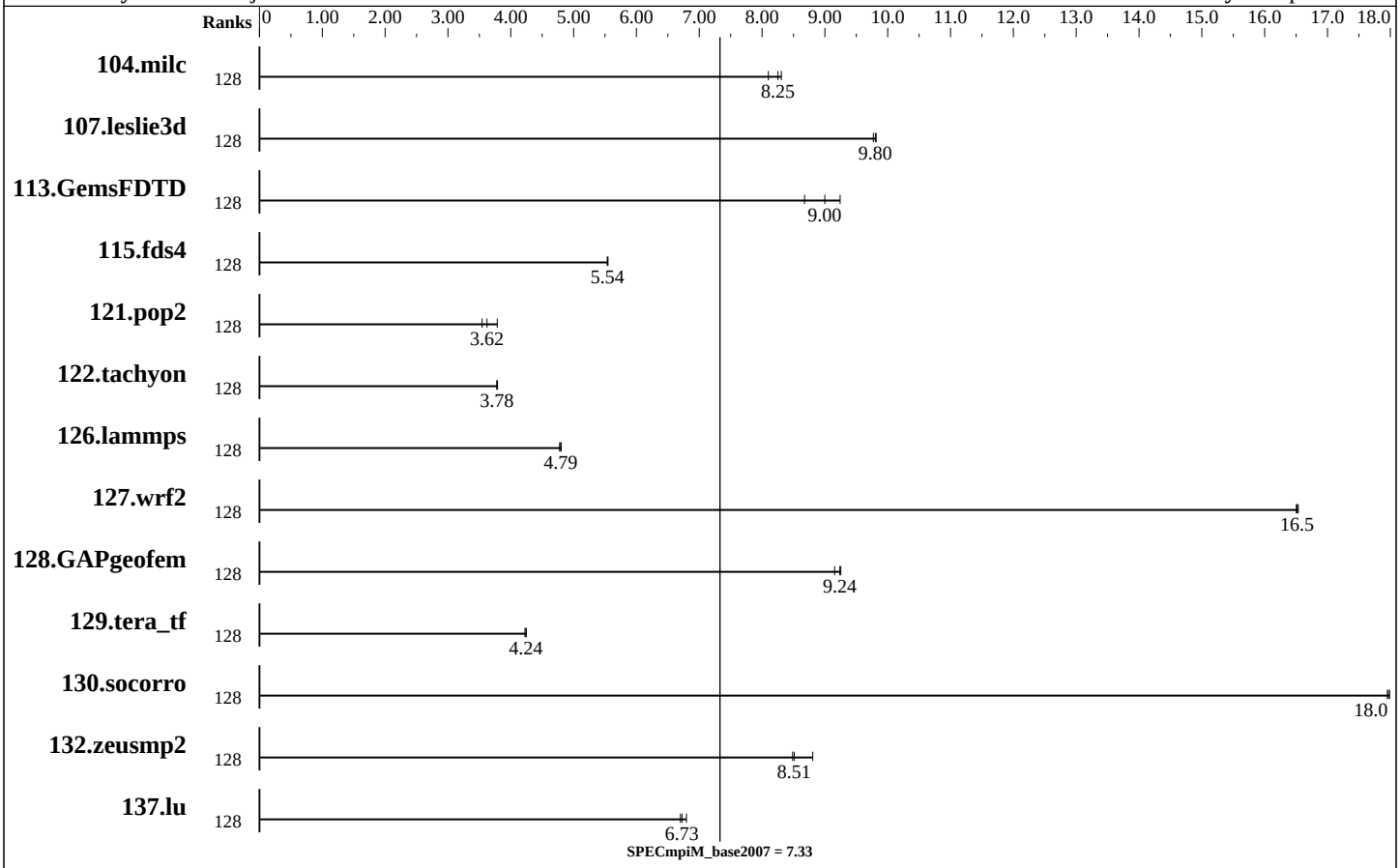
Intel Xeon Phi 7210, 1.30 GHz,
SMT on, Turbo off, flat (MCDRAM preferred)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 7.33

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	128	**190**	**8.25**	188	8.31	193	8.10							
107.leslie3d	128	**532**	**9.80**	534	9.77	532	9.82							
113.GemsFDTD	128	683	9.24	**701**	**9.00**	727	8.68							
115.fds4	128	352	5.54	**352**	**5.54**	352	5.55							
121.pop2	128	1091	3.78	**1140**	**3.62**	1165	3.54							
122.tachyon	128	738	3.79	740	3.78	**740**	**3.78**							
126.lammps	128	610	4.78	**608**	**4.79**	607	4.80							
127.wrf2	128	472	16.5	**472**	**16.5**	471	16.5							
128.GAPgeofem	128	223	9.25	**224**	**9.24**	226	9.15							
129.tera_tf	128	652	4.24	655	4.23	**652**	**4.24**							

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	128	213	18.0	**212**	**18.0**	212	18.0							
132.zeusmp2	128	352	8.81	366	8.49	**365**	**8.51**							
137.lu	128	541	6.80	549	6.70	**547**	**6.73**							

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:	128
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

Continued on next page

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

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Node Description: KNL

Ports Used:	0
Interconnect Type:	0

Submit Notes

```
The config file option 'submit' was used.
numactl -p 1 mpirun -genv I_MPI_COMPATIBILITY 4  -np $ranks $command
```

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: flat
```

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`
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/EM64T_Intel_flags.html
http://www.spec.org/mpi2007/flags/colfax-knl.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/EM64T_Intel_flags.xml
http://www.spec.org/mpi2007/flags/colfax-knl.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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