



# SPEC® MPIM2007 Result

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## Colfax International

SPECmpiM\_peak2007 = Not Run

Intel Xeon Phi 7210, 1.30 GHz,  
SMT on, Turbo off, flat DRAM+MCDRAM

SPECmpiM\_base2007 = 4.38

MPI2007 license: 3440

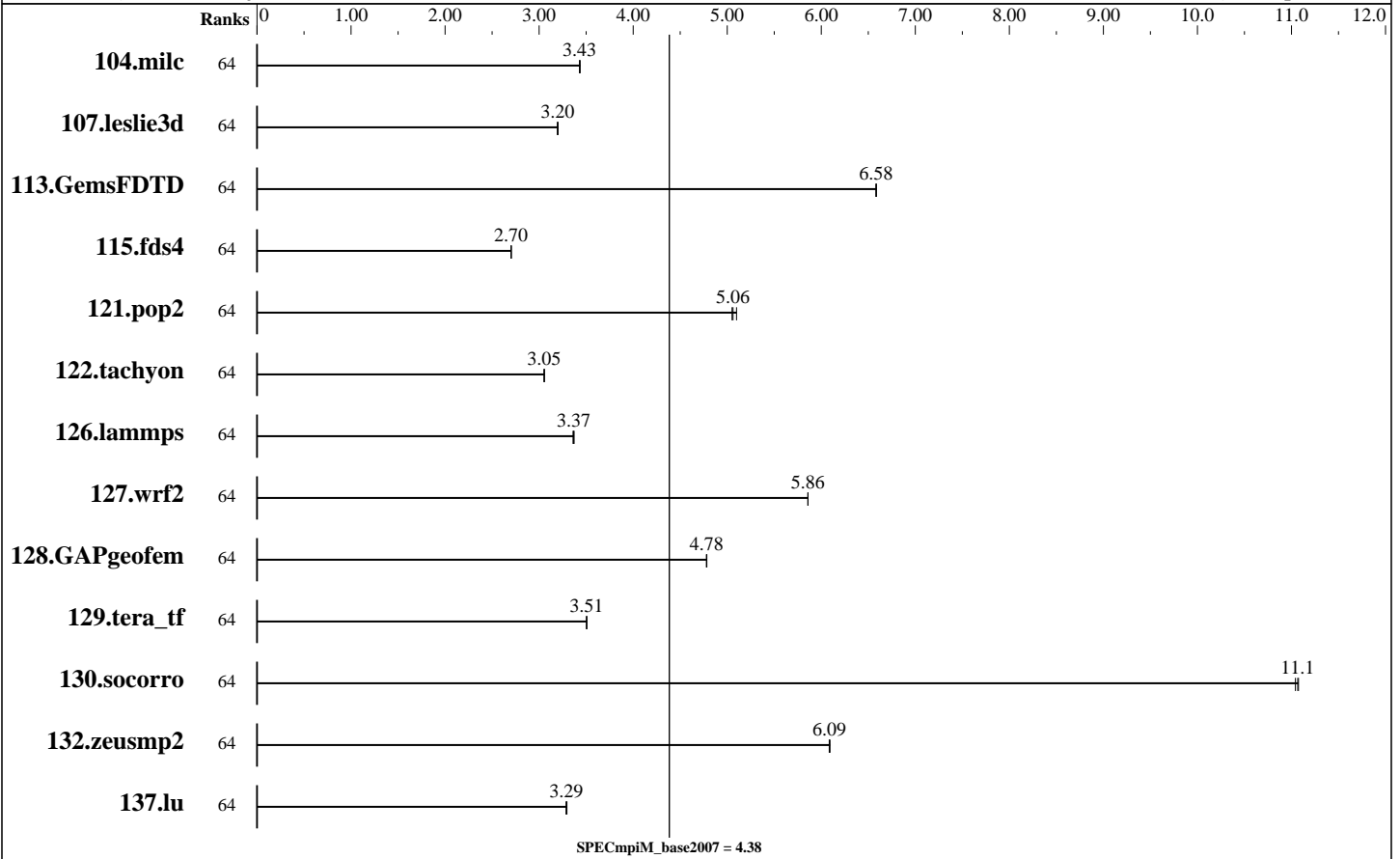
Test date: Sep-2016

Test sponsor: Indiana University

Hardware Availability: Aug-2016

Tested by: Junjie Li

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    | <b>456</b> | <b>3.43</b> | 456         | 3.43        | 455        | 3.44        |       |         |       |         |       |         |       |
| 107.leslie3d  | 64    | 1634       | 3.19        | <b>1633</b> | <b>3.20</b> | 1631       | 3.20        |       |         |       |         |       |         |       |
| 113.GemsFDTD  | 64    | 959        | 6.58        | <b>958</b>  | <b>6.58</b> | 958        | 6.59        |       |         |       |         |       |         |       |
| 115.fds4      | 64    | 722        | 2.70        | <b>722</b>  | <b>2.70</b> | 722        | 2.70        |       |         |       |         |       |         |       |
| 121.pop2      | 64    | 810        | 5.10        | 817         | 5.05        | <b>816</b> | <b>5.06</b> |       |         |       |         |       |         |       |
| 122.tachyon   | 64    | <b>916</b> | <b>3.05</b> | 917         | 3.05        | 915        | 3.06        |       |         |       |         |       |         |       |
| 126.lammps    | 64    | 868        | 3.36        | <b>866</b>  | <b>3.37</b> | 865        | 3.37        |       |         |       |         |       |         |       |
| 127.wrf2      | 64    | 1331       | 5.86        | <b>1331</b> | <b>5.86</b> | 1331       | 5.86        |       |         |       |         |       |         |       |
| 128.GAPgeofem | 64    | <b>432</b> | <b>4.78</b> | 432         | 4.78        | 432        | 4.78        |       |         |       |         |       |         |       |
| 129.tera_tf   | 64    | 790        | 3.50        | 789         | 3.51        | <b>789</b> | <b>3.51</b> |       |         |       |         |       |         |       |

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    | <b>345</b>  | <b>11.1</b> | 345     | 11.1  | 346     | 11.0  |       |         |       |         |       |         |       |
| 132.zeusmp2 | 64    | <b>510</b>  | <b>6.09</b> | 510     | 6.08  | 509     | 6.09  |       |         |       |         |       |         |       |
| 137.lu      | 64    | <b>1117</b> | <b>3.29</b> | 1115    | 3.30  | 1119    | 3.29  |       |         |       |         |       |         |       |

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

#### 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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Tested by: Junjie Li

Software Availability: Apr-2016

### 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: flat

Submitted\_by: "Li, Junjie" <lijunj@iu.edu>  
Submitted: Thu Oct 20 18:03:23 EDT 2016  
Submission: mpi2007-20161006-00526.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

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## 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](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](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](mailto:webmaster@spec.org).

Tested with SPEC MPI2007 v2.0.1.

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