SPEC® CINT2006 Result

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Fujitsu

PRIMERGY CX1640 M1, Intel Xeon Phi 7250, 1.40GHz

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SPECint_rate_base2006 = 814

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

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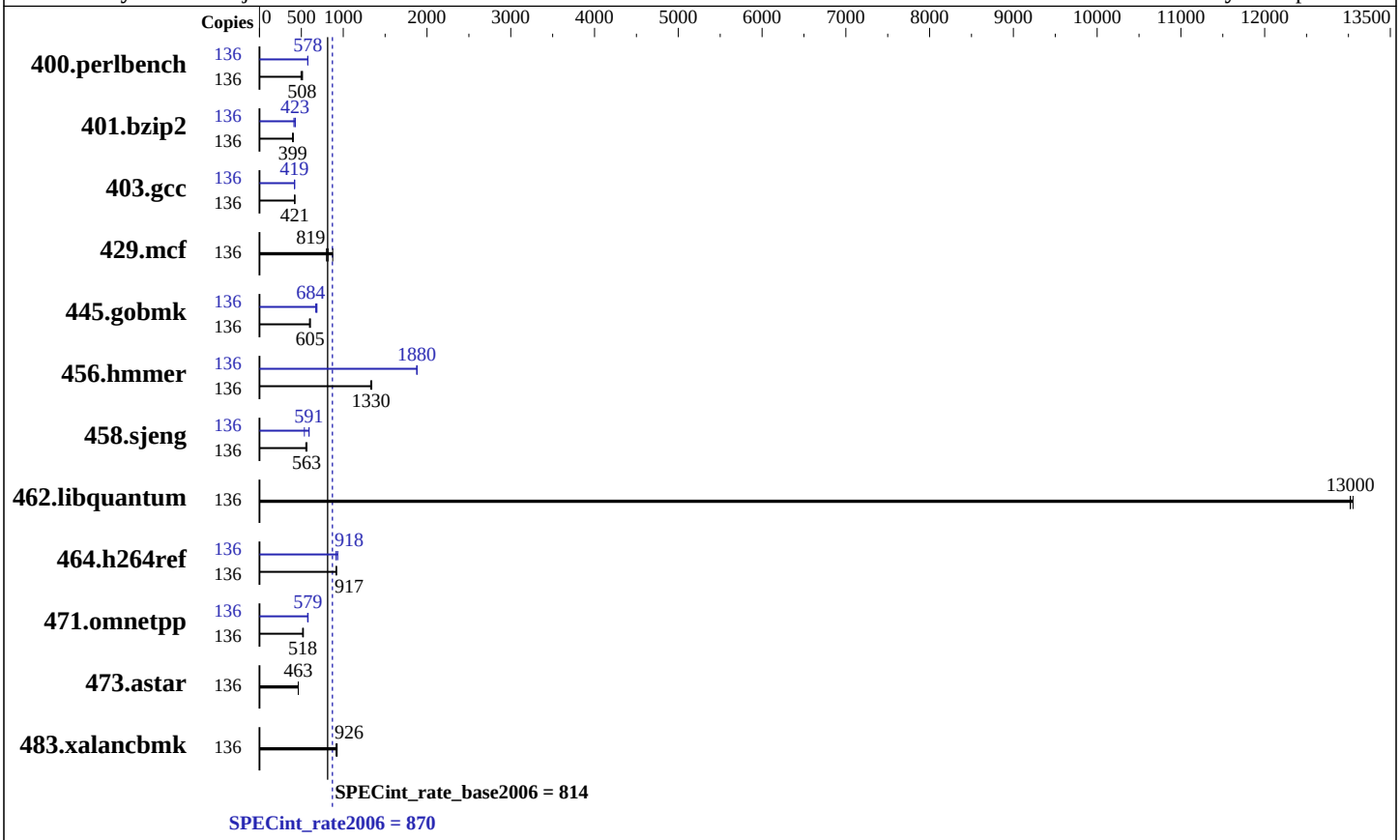
Hardware Availability: Sep-2016
Software Availability: Sep-2016



Hardware

CPU Name:	Intel Xeon Phi 7250
CPU Characteristics:	Intel Turbo Boost Technology up to 1.60 GHz
CPU MHz:	1400
FPU:	Integrated
CPU(s) enabled:	68 cores, 1 chip, 68 cores/chip, 4 threads/core
CPU(s) orderable:	1 chip
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:	192 GB (6 x 32 GB 2Rx4 PC4-2400T-R, running at 1200 MHz)
Disk Subsystem:	1 x SATA, 927 GB, 7200 RPM
Other Hardware:	16 GB MCDRAM

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.13.1.el7.mpsp_1.3.2.100.x86_64
Compiler:	C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	136	**2616**	**508**	2585	514	2681	496	136	**2298**	**578**	2309	575	2297	578
401.bzip2	136	3317	396	**3293**	**399**	3253	403	136	**3105**	**423**	3194	411	3063	428
403.gcc	136	2594	422	2609	420	**2601**	**421**	136	2624	417	2606	420	**2615**	**419**
429.mcf	136	**1514**	**819**	1551	800	1418	875	136	**1514**	**819**	1551	800	1418	875
445.gobmk	136	**2358**	**605**	2351	607	2391	597	136	2083	685	2125	671	**2086**	**684**
456.hmmer	136	956	1330	**951**	**1330**	947	1340	136	676	1880	**675**	**1880**	675	1880
458.sjeng	136	**2925**	**563**	2916	564	2975	553	136	3070	536	2780	592	**2783**	**591**
462.libquantum	136	216	13100	**216**	**13000**	216	13000	136	216	13100	**216**	**13000**	216	13000
464.h264ref	136	**3281**	**917**	3286	916	3275	919	136	**3279**	**918**	3221	934	3292	914
471.omnetpp	136	**1642**	**518**	1645	517	1621	524	136	1480	574	**1467**	**579**	1465	580
473.astar	136	2061	463	**2062**	**463**	2062	463	136	2061	463	**2062**	**463**	2062	463
483.xalancbmk	136	1026	914	**1014**	**926**	1013	926	136	1026	914	**1014**	**926**	1013	926

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

```
The taskset mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate taskset commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
BIOS configuration:
Cluster Mode = Quadrant
Memory Mode = Cache
Patrol Scrub = Disabled
Power Technology = Custom
Enhanced Speedstep = Enabled
Turbo Mode = Enabled
CPU C6 Report = Disabled
Package C State limit = C0
Cooling System:
Cool-Central Liquid Cooling Technology
For details of cooling system please visit: http://www.fujitsu.com/fts/products/computing/servers/primergy/scale-out/cclc/index.html
For information about Fujitsu please visit: http://www.fujitsu.com
 Sysinfo program /home/nakashima/cpu2006/config/sysinfo.rev6914
 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
 running on cx1640m1-29 Thu Jun  2 19:40:07 2016
```

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Platform Notes (Continued)

```
This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon Phi(TM) CPU 7250 @ 1.40GHz
      1 "physical id"s (chips)
      272 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 68
      siblings  : 272
      physical 0: cores 0 1 2 3 8 9 10 11 12 13 14 15 16 17 18 19 20 21 24 25 26
      27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51
      52 53 54 55 56 57 58 59 62 63 64 65 66 67 68 69 70 71 72 73 74 75
   cache size : 1024 KB

From /proc/meminfo
   MemTotal:       197749988 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:
   Linux cx1640m1-29 3.10.0-327.13.1.el7.mpsp_1.3.2.100.x86_64 #1 SMP Mon May 23
   05:37:07 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 2 19:39

SPEC is set to: /home/nakashima/cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda3      xfs   927G  254G  674G  28% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.
```

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Platform Notes (Continued)

```
    BIOS FUJITSU // American Megatrends Inc. V5.0.0.11 R0.85.0 for D3727-A1x
    02/23/2016
    Memory:
     6x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz, configured at 1200 MHz

  (End of data from sysinfo program)
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/home/nakashima/cpu2006/libs/32:/home/nakashima/cpu2006/libs/64:/home/nakashima/cpu2006/sh"

  Binaries compiled on a system with
  1x Intel 2nd Generation Xeon Phi CPU
  + 96GB memory using RedHat EL 7.2
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:

```
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

C++ benchmarks:

```
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSET_BITS=64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
`-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch`

C++ benchmarks:
`-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs -L/sh -lsmartheap`

Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

Peak Compiler Invocation

C benchmarks (except as noted below):
`icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
`icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

Peak Portability Flags

400.perlbench: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
403.gcc: `-D_FILE_OFFSET_BITS=64`
429.mcf: `-D_FILE_OFFSET_BITS=64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
458.sjeng: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
462.libquantum: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
464.h264ref: `-D_FILE_OFFSET_BITS=64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-D_FILE_OFFSET_BITS=64`
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -auto-ilp32

401.bzip2: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -opt-prefetch -auto-ilp32 -ansi-alias

403.gcc: -xMIC-AVX512 -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xMIC-AVX512(pass 2) -prof-gen(pass 1) -par-num-threads=1(pass 1) -prof-use(pass 2) -ansi-alias

456.hmmer: -xMIC-AVX512 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -unroll4 -auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64-revB.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-KNL-RevA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-KNL-RevA.xml

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