



SPEC® CINT2006 Result

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Fujitsu

SPECint®_rate2006 = 870

PRIMERGY CX1640 M1, Intel Xeon Phi 7250, 1.40GHz

SPECint_rate_base2006 = 814

CPU2006 license: 19

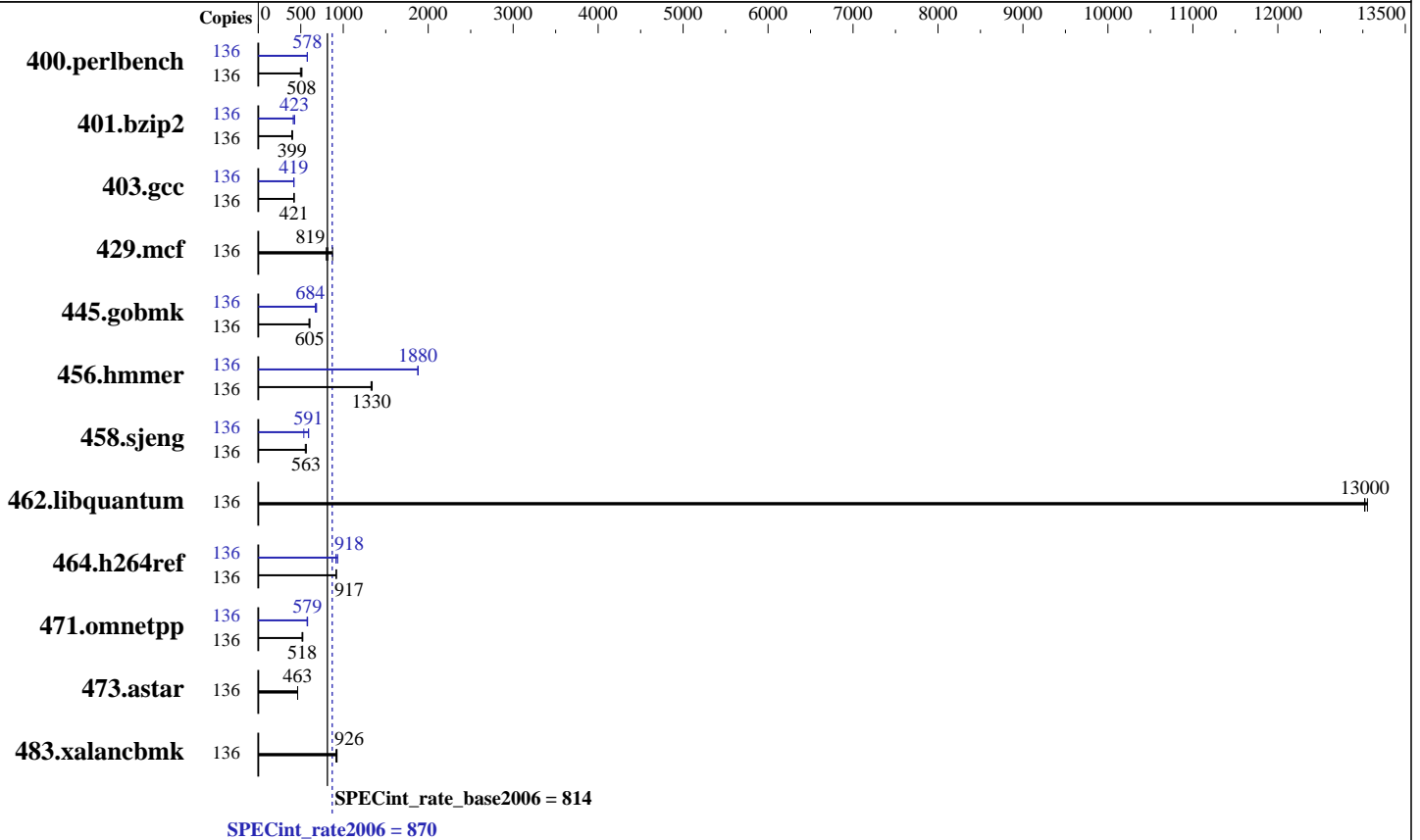
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Jun-2016

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



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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.hammer	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



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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



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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



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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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For other inquiries, please contact webmaster@spec.org.

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