



# SPEC® CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 1080

PowerEdge C6320p (Intel Xeon Phi 7250F 1.40 GHz)

SPECint\_rate\_base2006 = 1020

CPU2006 license: 55

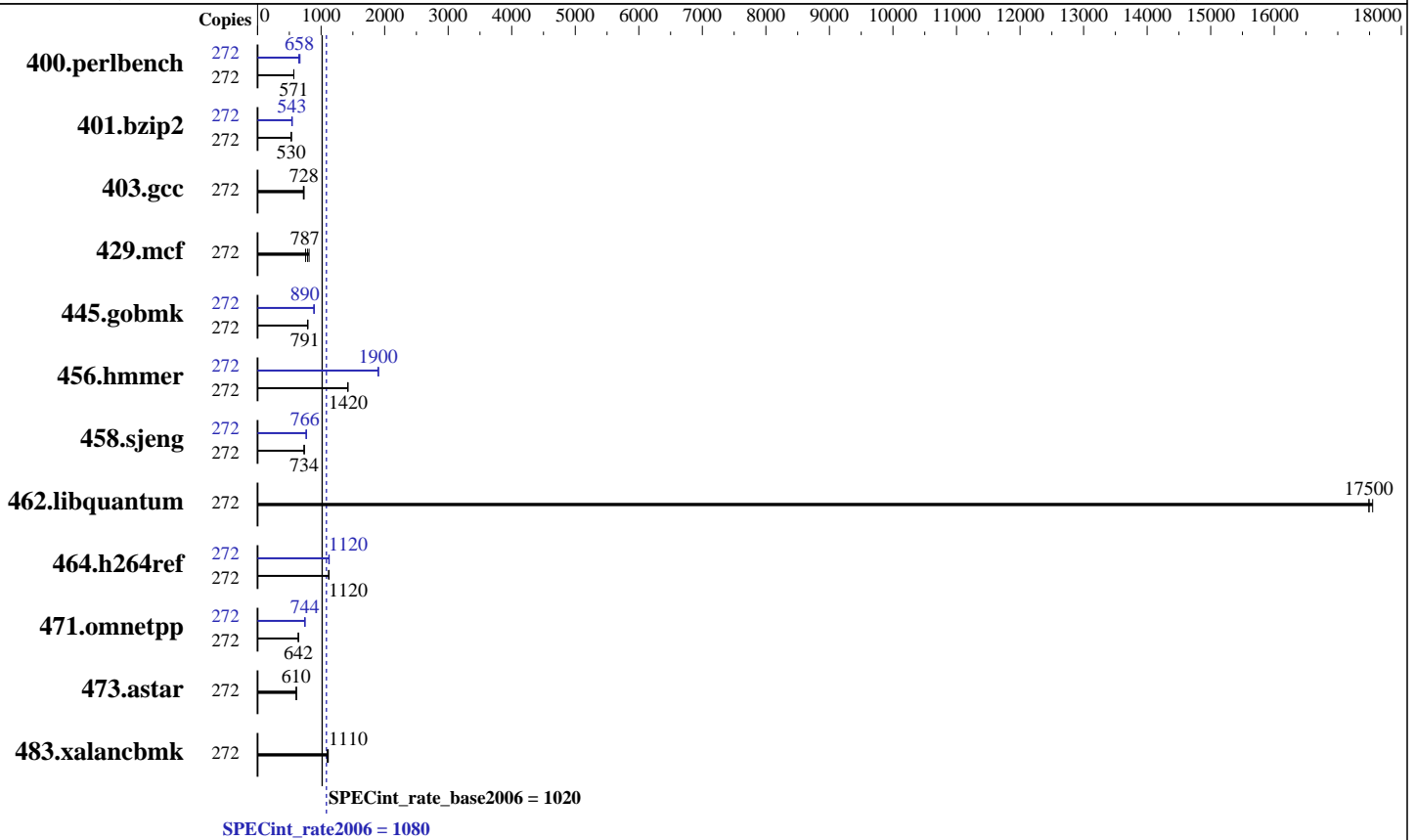
Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Mar-2017

Tested by: Dell Inc.

Software Availability: Jan-2017



## Hardware

CPU Name: Intel Xeon Phi 7250F  
 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: 400 GB (6 x 64 GB 2Rx8 PC4-2400T-R + 8 x 2 GB 7200 MHz MCDRAM)  
 Disk Subsystem: 1 x 1 TB 7.2K RPM SATA  
 Other Hardware: None

## Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86\_64) 4.4.16-56-default  
 Compiler: C/C++; Version 16.0.2.181 of Intel C++ Studio XE for Linux  
 Auto Parallel: No  
 File System: btrfs  
 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	272	<b>4651</b>	<b>571</b>	4651	571	4666	569	272	4090	650	<b>4041</b>	<b>658</b>	3978	668
401.bzip2	272	4970	528	4924	533	<b>4949</b>	<b>530</b>	272	4875	538	4806	546	<b>4837</b>	<b>543</b>
403.gcc	272	<b>3006</b>	<b>728</b>	2995	731	3036	721	272	<b>3006</b>	<b>728</b>	2995	731	3036	721
429.mcf	272	3280	756	<b>3150</b>	<b>787</b>	3057	811	272	3280	756	<b>3150</b>	<b>787</b>	3057	811
445.gobmk	272	3630	786	<b>3608</b>	<b>791</b>	3605	792	272	<b>3206</b>	<b>890</b>	3202	891	3217	887
456.hammer	272	1787	1420	<b>1785</b>	<b>1420</b>	1785	1420	272	<b>1335</b>	<b>1900</b>	1337	1900	1334	1900
458.sjeng	272	4493	732	4476	735	<b>4483</b>	<b>734</b>	272	<b>4294</b>	<b>766</b>	4302	765	4284	768
462.libquantum	272	<b>322</b>	<b>17500</b>	322	17500	321	17500	272	<b>322</b>	<b>17500</b>	322	17500	321	17500
464.h264ref	272	5348	1130	<b>5363</b>	<b>1120</b>	5388	1120	272	5336	1130	5362	1120	<b>5358</b>	<b>1120</b>
471.omnetpp	272	2650	642	2642	643	<b>2647</b>	<b>642</b>	272	2273	748	2288	743	<b>2285</b>	<b>744</b>
473.astar	272	<b>3132</b>	<b>610</b>	3133	609	3129	610	272	<b>3132</b>	<b>610</b>	3133	609	3129	610
483.xalancbmk	272	1715	1090	1686	1110	<b>1692</b>	<b>1110</b>	272	1715	1090	1686	1110	<b>1692</b>	<b>1110</b>

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

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on linux-z6tq Thu Mar 23 18:41:23 2017

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 7250F @ 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
```

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## Platform Notes (Continued)

```

physical 0: cores 0 1 8 9 10 11 12 13 14 15 18 19 20 21 22 23 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 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73
cache size : 1024 KB

```

From /proc/meminfo

```

MemTotal:      396134156 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

From /etc/\*release\* /etc/\*version\*

```

SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# This file is deprecated and will be removed in a future service pack or
# release.
# Please check /etc/os-release for details about this release.

```

os-release:

```

NAME="SLES"
VERSION="12-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

uname -a:

```

Linux linux-z6tq 4.4.16-56-default #1 SMP Mon Aug 8 14:24:26 UTC 2016
(5b281a8) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Mar 23 17:34

SPEC is set to: /root/cpu2006-1.2

```

Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdb2       btrfs    930G  533G  394G   58% /

```

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.

BIOS Dell Inc. 1.1.7 003/003/2017

Memory:

```

6x Hynix HMAA8GL7MMR4N-UH 64 GB 4 rank 2400 MHz
8x INTEL N/A 2 GB 7200 MHz

```

(End of data from sysinfo program)



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## General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"

Binaries compiled on a system with  
Intel 2nd Generation Xeon Phi CPU  
with 96 GB DDR4 memory using RedHat EL 7.2  
Filesystem page cache cleared with:  
echo 1> /proc/sys/vm/drop\_caches  
runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>

## 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



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## 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.xalanbmk: -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

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## Peak Optimization Flags (Continued)

403.gcc: basepeak = yes

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/Default-Platform-Flags.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>

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Tested with SPEC CPU2006 v1.2.  
Report generated on Mon Jun 12 12:43:45 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 12 June 2017.