



SPEC® CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R940
(Intel Xeon Gold 6136, 3.00 GHz)

SPECint®_rate2006 = 3070

SPECint_rate_base2006 = 2910

CPU2006 license: 55

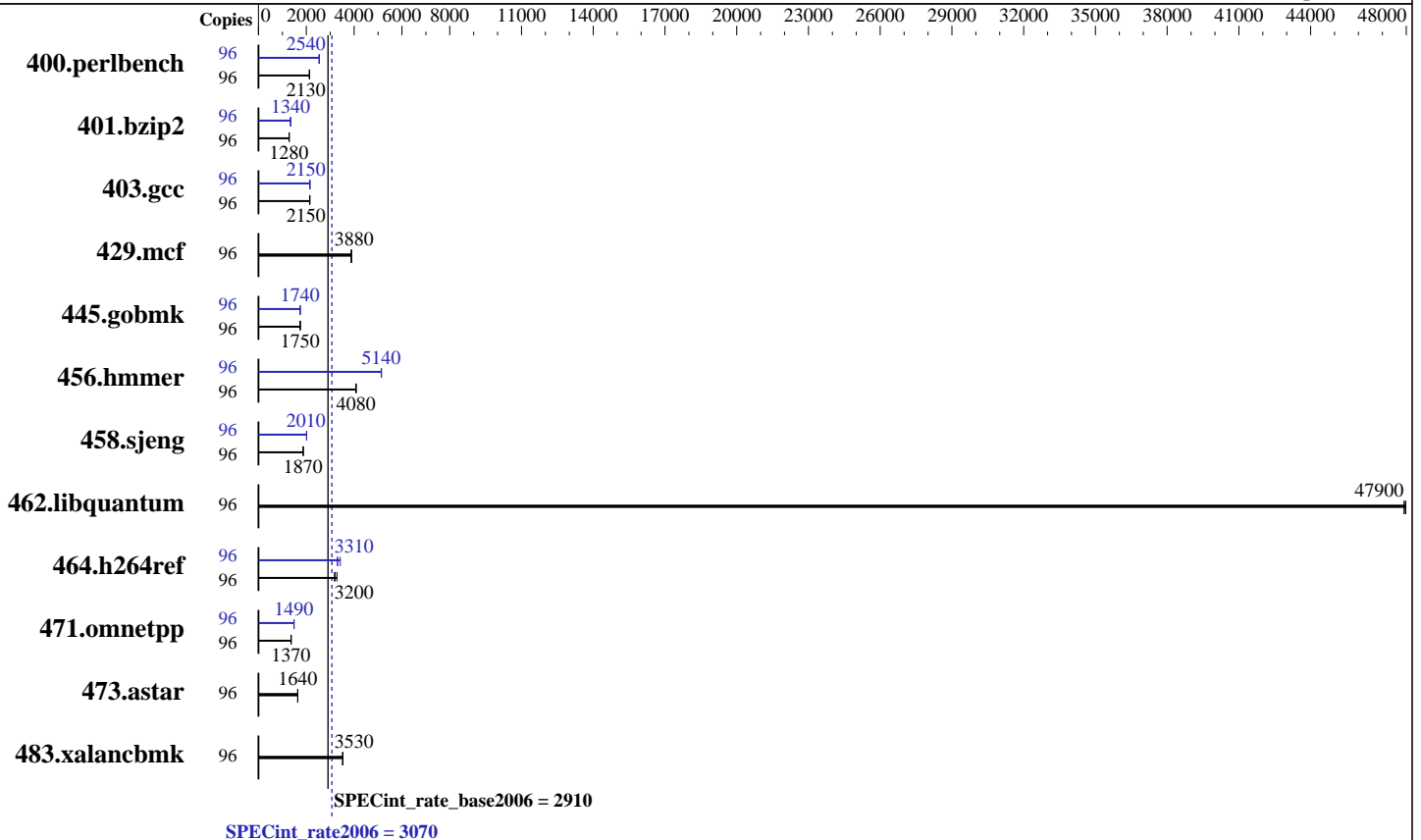
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Gold 6136
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3000
 FPU: Integrated
 CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core
 L3 Cache: 24.75 MB I+D on chip per chip
 Other Cache: None
 Memory: 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)
 Disk Subsystem: 1 x 900 GB 15K RPM SAS12
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP2 4.4.21-69-default
 Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux
 Auto Parallel: Yes
 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	96	438	2140	441	2130	440	2130	96	370	2540	369	2540	370	2540
401.bzip2	96	725	1280	725	1280	718	1290	96	687	1350	689	1340	690	1340
403.gcc	96	360	2150	360	2150	361	2140	96	359	2150	359	2150	360	2150
429.mcf	96	225	3890	226	3880	225	3880	96	225	3890	226	3880	225	3880
445.gobmk	96	576	1750	576	1750	576	1750	96	577	1740	578	1740	578	1740
456.hammer	96	219	4090	220	4070	219	4080	96	174	5140	174	5150	175	5130
458.sjeng	96	621	1870	621	1870	621	1870	96	577	2010	577	2010	577	2010
462.libquantum	96	41.5	48000	41.5	47900	41.5	47900	96	41.5	48000	41.5	47900	41.5	47900
464.h264ref	96	664	3200	648	3280	668	3180	96	642	3310	642	3310	621	3420
471.omnetpp	96	440	1360	439	1370	439	1370	96	404	1490	404	1480	403	1490
473.astar	96	411	1640	410	1640	409	1650	96	411	1640	410	1640	409	1650
483.xalancbmk	96	188	3530	188	3530	188	3520	96	188	3530	188	3530	188	3520

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

Kernel boot parameter: nohz_full=1-95
Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS settings:
Logical Processor Enabled
Virtualization Technology Disabled
Sub NUMA Cluster Enabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C1E Disabled
C States set to Autonomous
Uncore Frequency set to Dynamic
Memory Patrol Scrub Disabled
Energy Efficiency Policy set to Performance
CPU Interconnect Bus Link Power Management Disabled
PCI ASPM L1 Link Power Management Disabled
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-r3h9 Fri Oct 20 17:53:13 2017

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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(R) Gold 6136 CPU @ 3.00GHz
4 "physical id"s (chips)
96 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 1: cores 0 3 4 5 6 7 16 18 19 20 21 22
physical 2: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 3: cores 0 3 4 5 6 7 16 18 19 20 21 22
```

cache size : 25344 KB

From /proc/meminfo

```
MemTotal: 791224272 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

/usr/bin/lsb_release -d

```
SUSE Linux Enterprise Server 12 SP2
```

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-r3h9 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(9464f67) x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Oct 20 17:53

SPEC is set to: /home/cpu2006

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Platform Notes (Continued)

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 796G 17G 779G 3% /home
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 08/10/2017

Memory:

13x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz
35x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

General Notes

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

LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages enabled by default

Filesystem page cache cleared with:

shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
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_2017/linux/lib/ia32

C++ benchmarks:

icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

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

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Base Portability Flags (Continued)

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:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/shl0.2 -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_2017/linux/lib/ia32

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_2017/linux/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

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Peak Portability Flags (Continued)

401.bzip2: -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: -DSPEC_CPU_LP64
458.sjeng: -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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch -auto-ilp32
-qopt-mem-layout-trans=3

403.gcc: -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3

429.mcf: basepeak = yes

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-mem-layout-trans=3

456.hmmer: -xCORE-AVX512 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-qopt-mem-layout-trans=3

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll14 -auto-ilp32
-qopt-mem-layout-trans=3

462.libquantum: basepeak = yes

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -qopt-mem-layout-trans=3

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Peak Optimization Flags (Continued)

C++ benchmarks:

```
471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
             -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
             -no-prec-div(pass 2)
             -qopt-ra-region-strategy=block
             -qopt-mem-layout-trans=3 -Wl,-z,muldefs
             -L/shl0.2 -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-ic17.0-official-linux64-revF.html>
<http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revD.20171221.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml>
<http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revD.20171221.xml>

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