



SPEC® CINT2006 Result

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Dell Inc.

SPECint®2006 = 69.1

PowerEdge R930 (Intel Xeon E7-8890 v4, 2.20 GHz)

SPECint_base2006 = 67.5

CPU2006 license: 55

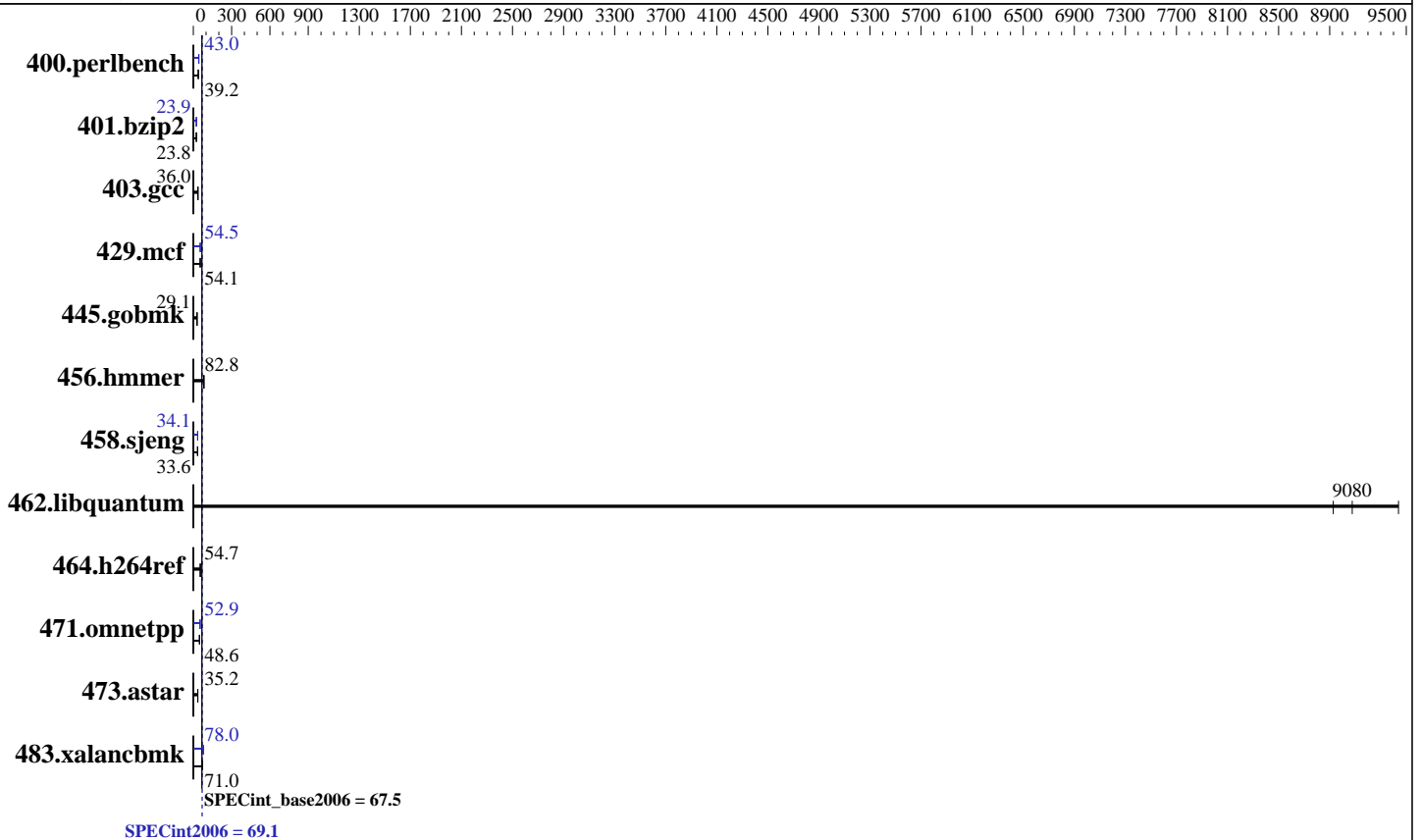
Test date: May-2016

Test sponsor: Dell Inc.

Hardware Availability: Jun-2016

Tested by: Dell Inc.

Software Availability: Dec-2015



Hardware

CPU Name: Intel Xeon E7-8890 v4
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
 CPU MHz: 2200
 FPU: Integrated
 CPU(s) enabled: 96 cores, 4 chips, 24 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: 256 KB I+D on chip per core
 L3 Cache: 60 MB I+D on chip per chip
 Other Cache: None
 Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
 Disk Subsystem: 1 x 480 GB SAS SSD
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
 Auto Parallel: Yes
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: Microquill SmartHeap V10.2



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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	249	39.3	252	38.8	<u>249</u>	<u>39.2</u>	<u>227</u>	<u>43.0</u>	227	43.0	227	43.1
401.bzip2	<u>406</u>	<u>23.8</u>	406	23.8	406	23.7	404	23.9	<u>404</u>	<u>23.9</u>	403	23.9
403.gcc	221	36.5	224	35.9	<u>224</u>	<u>36.0</u>	221	36.5	224	35.9	<u>224</u>	<u>36.0</u>
429.mcf	<u>169</u>	<u>54.1</u>	172	53.2	166	54.9	168	54.2	167	54.5	<u>167</u>	<u>54.5</u>
445.gobmk	361	29.1	360	29.1	<u>360</u>	<u>29.1</u>	361	29.1	360	29.1	<u>360</u>	<u>29.1</u>
456.hammer	113	82.6	113	82.9	<u>113</u>	<u>82.8</u>	113	82.6	113	82.9	<u>113</u>	<u>82.8</u>
458.sjeng	368	32.9	<u>360</u>	<u>33.6</u>	360	33.6	<u>355</u>	<u>34.1</u>	355	34.0	355	34.1
462.libquantum	2.20	9440	<u>2.28</u>	<u>9080</u>	2.32	8930	2.20	9440	<u>2.28</u>	<u>9080</u>	2.32	8930
464.h264ref	<u>404</u>	<u>54.7</u>	405	54.6	404	54.8	<u>404</u>	<u>54.7</u>	405	54.6	404	54.8
471.omnetpp	<u>128</u>	<u>48.6</u>	128	48.9	131	47.9	117	53.3	119	52.5	<u>118</u>	<u>52.9</u>
473.astar	202	34.7	199	35.3	<u>199</u>	<u>35.2</u>	202	34.7	199	35.3	<u>199</u>	<u>35.2</u>
483.xalancbmk	100	69.0	94.4	73.1	<u>97.1</u>	<u>71.0</u>	89.0	77.5	<u>88.4</u>	<u>78.0</u>	87.9	78.5

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

Submit Notes

The config file option 'submit' was used.

Operating System Notes

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

Platform Notes

BIOS Settings:

Virtualization Technology Disabled

System Profile set to Custom

CPU Power Management set to Hardware P States

Memory Frequency set to Maximum Performance

Turbo Boost Enabled

Energy Efficient Turbo Enabled

C1E Disabled

C States set to Autonomous

Collaborative CPU Performance Control Disabled

Memory Patrol Scrub Disabled

Memory Refresh Rate set to 1x

Uncore Frequency set to Dynamic

Energy Efficient Policy set to Performance

Monitor/MWait Enabled

Snoop Mode set to Home Snoop

Sysinfo program /root/ic16.0_Sept12_2015/config/sysinfo.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1

running on bdx-perf01 Thu May 5 14:41:26 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(R) CPU E7-8890 v4 @ 2.20GHz
 4 "physical id"s (chips)
 192 "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    : 24
  siblings    : 48
  physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
                27 28 29
  physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
                27 28 29
  physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
                27 28 29
  physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
                27 28 29
cache size     : 61440 KB

```

From /proc/meminfo

```

MemTotal:      529322532 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

```

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12 SP1

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

```

SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# 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-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp1"

```

uname -a:

```

Linux bdx-perf01 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

```

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Platform Notes (Continued)

run-level 3 May 5 14:21

SPEC is set to: /root/ic16.0_Sept12_2015

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda3	xfs	368G	9.7G	358G	3%	/

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. 2.0.1 04/20/2016

Memory:

32x 00AD00B300AD HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1600 MHz

64x Not Specified Not Specified

(End of data from sysinfo program)

General Notes

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

KMP_AFFINITY = "granularity=fine,scatter"

LD_LIBRARY_PATH = "/root/ic16.0_Sept12_2015/libs/32:/root/ic16.0_Sept12_2015/libs/64:/root/ic16.0_Sept12_2015/sh"

OMP_NUM_THREADS = "96"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

401.bzip2: -DSPEC_CPU_LP64

403.gcc: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

429.mcf: -DSPEC_CPU_LP64
 445.gobmk: -DSPEC_CPU_LP64
 456.hmmer: -DSPEC_CPU_LP64
 458.sjeng: -DSPEC_CPU_LP64
 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
 464.h264ref: -DSPEC_CPU_LP64
 471.omnetpp: -DSPEC_CPU_LP64
 473.astar: -DSPEC_CPU_LP64
 483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):

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

473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32

401.bzip2: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

```

403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.aster: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

```

Peak Optimization Flags

C benchmarks:

```

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
               -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
               -par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch
               -ansi-alias

```

```

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
            -ipo(pass 2) -O3(pass 2) -no-prec-div
            -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32
            -opt-prefetch -ansi-alias

```

403.gcc: basepeak = yes

```

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
         -opt-prefetch -auto-p32

```

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

```

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
            -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
            -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4

```

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

```

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
              -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
              -par-num-threads=1(pass 1) -prof-use(pass 2)
              -opt-ra-region-strategy=block -ansi-alias
              -Wl,-z,muldefs -L/sh -lsmartheap

```

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Peak Optimization Flags (Continued)

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

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.html>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.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.xml>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.xml>

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

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