SPEC® CINT2006 Result

Dell Inc.

PowerEdge R930 (Intel Xeon E7-8860 v3, 2.20 GHz)

SPECint®2006 = 61.1
SPECint_base2006 = 59.3

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Apr-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

400.perlbench
401.bzip2
403.gcc
429.mcf
445.gobmk
456.hmmer
458.sjeng
462.libquantum
464.h264ref
471.omnetpp
473.astar
483.xalancbmk

SPECint2006 = 61.1
SPECint_base2006 = 59.3

Hardware

CPU Name: Intel Xeon E7-8860 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 64 cores, 4 chips, 16 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: 40 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: 2 x 200 GB SAS6 SSD, RAID0
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 3.12.28-4-default
Compiler: C/C++: Version 15.0.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
## Dell Inc.

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### SPEC CINT2006 Result

**spec**

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**CPU2006 license:** 55  
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### Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peaks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>270</td>
<td>36.1</td>
<td>266</td>
<td>36.7</td>
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<td>42.2</td>
<td>232</td>
<td>42.1</td>
<td>232</td>
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<td>401.bzip2</td>
<td>429</td>
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<td>425</td>
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<td><strong>22.6</strong></td>
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<td>22.5</td>
<td>425</td>
<td>22.7</td>
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<td>403.gcc</td>
<td><strong>254</strong></td>
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<td>31.8</td>
<td><strong>252</strong></td>
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<td>429.mcf</td>
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<td>54.3</td>
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<td>174</td>
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<td>54.3</td>
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<td>456.hmmer</td>
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<td>458.sjeng</td>
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<tr>
<td>462.libquantum</td>
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<td><strong>2.34</strong></td>
<td><strong>8660</strong></td>
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<tr>
<td>464.h264ref</td>
<td>536</td>
<td>41.3</td>
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<td>41.3</td>
<td><strong>533</strong></td>
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<td>471.omnetpp</td>
<td>158</td>
<td>39.5</td>
<td>159</td>
<td>39.3</td>
<td><strong>158</strong></td>
<td><strong>39.5</strong></td>
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<td>47.8</td>
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<td>47.6</td>
<td>131</td>
</tr>
<tr>
<td>473.astar</td>
<td>230</td>
<td>30.6</td>
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<td><strong>30.6</strong></td>
<td>227</td>
<td>30.9</td>
<td>230</td>
<td>30.6</td>
<td><strong>229</strong></td>
<td><strong>30.6</strong></td>
<td>227</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td><strong>116</strong></td>
<td><strong>59.5</strong></td>
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<td>59.3</td>
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<td>59.8</td>
<td><strong>116</strong></td>
<td><strong>59.5</strong></td>
<td>116</td>
<td>59.3</td>
<td>115</td>
</tr>
</tbody>
</table>

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 Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost enabled
Energy Efficient Turbo disabled
C1E disabled
C States disabled
Collaborative CPU Performance Control disabled
Memory Patrol Scrub disabled
Memory Refresh Rate set to 1x
Uncore Frequency set to Maximum
Energy Efficient Policy set to Performance
Monitor/MWait enabled

Sysinfo program:
/root/Desktop/Performance/ic15.0_Aug29_2014/config/sysinfo.rev6914

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

Continued on next page
SPEC CINT2006 Result

Dell Inc.

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CPU2006 license: 55
Test sponsor: Dell Inc.
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**Platform Notes (Continued)**

running on linux-w31k Sun Apr 12 08:34:03 2015

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 E7-8860 v3 @ 2.20GHz
- 4 "physical id"s (chips)
- 128 "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 : 16
- siblings : 32
- physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- cache size : 40960 KB

From /proc/meminfo

- MemTotal: 529207312 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12

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

SuSE-release:

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

uname -a:

- Linux linux-w31k 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
- (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 10 15:40 last=5

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Platform Notes (Continued)

SPEC is set to: /root/Desktop/Performance/ic15.0_Aug29_2014
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      ext4  364G   11G  353G   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. 1.0.1 [MRC_096] 03/27/2015
Memory:
32x 00AD00B300AD Not Specified 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/Desktop/Performance/ic15.0_Aug29_2014/libs/32:/root/Desktop/Performance/ic15.0_Aug29_2014/libs/64:/root/Desktop/Performance/ic15.0_Aug29_2014/sh"
OMP_NUM_THREADS = "64"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
memory using RedHat EL 7.0
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  
429.mcf: -DSPEC_CPU_LP64  
445.gobmk: -DSPEC_CPU_LP64  
456.hmmer: -DSPEC_CPU_LP64  
458.sjeng: -DSPEC_CPU_LP64  

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Base Portability Flags (Continued)

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/composer_xe_2015/lib/ia32

C++ benchmarks (except as noted below):
icpc -m64  
471.omnetpp: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32  
401.bzip2: -DSPEC_CPU_LP64  
403.gcc: -DSPEC_CPU_LP64  
429.mcf: -DSPEC_CPU_LP64  
445.gobmk: -DSPEC_CPU_LP64  
456.hmmer: -DSPEC_CPU_LP64

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### Peak Portability Flags (Continued)

- 458.sjeng: -DSPEC_CPU_LP64
- 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 473.astar: -DSPEC_CPU_LP64
- 483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

### Peak Optimization Flags

#### C benchmarks:

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

- 401.bzip2: basepeak = yes

- 403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc  
  -opt-malloc-options=3 -auto-ilp32

- 429.mcf: basepeak = yes

- 445.gobmk: basepeak = yes

- 456.hmmer: basepeak = yes

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

- 462.libquantum: basepeak = yes

- 464.h264ref: basepeak = yes

#### C++ benchmarks:

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

- 473.astar: basepeak = yes

- 483.xalancbmk: basepeak = yes
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### 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-ic15.0-official-linux64.html  

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

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml  
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.xml

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

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue May  5 15:15:08 2015 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on  5 May 2015.