## SPEC® CINT2006 Result

### Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4620 v3, 2.00 GHz)

| SPECint®2006 | 45.9 |
|--------------------------------------------------|
| SPECint_base2006 | 43.7 |

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor</td>
<td>Dell Inc.</td>
</tr>
<tr>
<td>Tested by</td>
<td>Dell Inc.</td>
</tr>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-4620 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.60 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2000</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>40 cores, 4 chips, 10 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>4 chip</td>
</tr>
<tr>
<td>Memory</td>
<td>512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 400 GB 7200 RPM SATA</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
<tr>
<td>Software</td>
<td>Operating System: SUSE Linux Enterprise Server 12 3.12.28-4-default</td>
</tr>
<tr>
<td></td>
<td>Compiler: C/C++: Version 15.0.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td></td>
<td>Auto Parallel: Yes</td>
</tr>
<tr>
<td></td>
<td>File System: ext4</td>
</tr>
<tr>
<td></td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td></td>
<td>Base Pointers: 32/64-bit</td>
</tr>
<tr>
<td></td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td></td>
<td>Other Software: Microquill SmartHeap V10.0</td>
</tr>
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</table>

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### 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

---

### Hardware

- CPU Name: Intel Xeon E5-4620 v3
- CPU Characteristics: Intel Turbo Boost Technology up to 2.60 GHz
- CPU MHz: 2000
- FPU: Integrated
- CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
- CPU(s) orderable: 4 chip
- Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)
- Disk Subsystem: 1 x 400 GB 7200 RPM SATA
- Other Hardware: None
Dell Inc.

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**SPECint2006 =** 45.9

**SPECint_base2006 =** 43.7

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>339</td>
<td>28.8</td>
<td>349</td>
<td>28.0</td>
<td>343</td>
<td>28.5</td>
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<td>33.7</td>
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<tr>
<td>401.bzip2</td>
<td>551</td>
<td>17.5</td>
<td>550</td>
<td>17.5</td>
<td>550</td>
<td>17.5</td>
<td>553</td>
<td>17.5</td>
<td>553</td>
<td>17.5</td>
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<td>403.gcc</td>
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<td>23.7</td>
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<td>429.mcf</td>
<td>211</td>
<td>43.2</td>
<td>209</td>
<td>43.6</td>
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<td>42.6</td>
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<td>43.2</td>
<td>209</td>
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<tr>
<td>456.hmmer</td>
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<td>50.6</td>
<td>185</td>
<td>50.3</td>
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<td>50.6</td>
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<td>50.4</td>
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<td>458.sjeng</td>
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<td>25.6</td>
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<td>25.7</td>
<td>472</td>
<td>25.7</td>
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<tr>
<td>462.libquantum</td>
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<td>4380</td>
<td>4.73</td>
<td>4390</td>
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<td>4380</td>
<td>4.73</td>
<td>4390</td>
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<td>464.h264ref</td>
<td>629</td>
<td>35.2</td>
<td>629</td>
<td>35.2</td>
<td>632</td>
<td>35.0</td>
<td>629</td>
<td>35.2</td>
<td>629</td>
<td>35.2</td>
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<tr>
<td>471.omnetpp</td>
<td>272</td>
<td>23.0</td>
<td>274</td>
<td>22.8</td>
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<td>23.2</td>
<td>201</td>
<td>31.1</td>
<td>200</td>
<td>31.2</td>
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<tr>
<td>473.astar</td>
<td>301</td>
<td>23.3</td>
<td>296</td>
<td>23.7</td>
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<td>23.3</td>
<td>297</td>
<td>23.6</td>
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<td>23.6</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>163</td>
<td>42.3</td>
<td>162</td>
<td>42.7</td>
<td>158</td>
<td>43.7</td>
<td>148</td>
<td>46.7</td>
<td>147</td>
<td>47.1</td>
</tr>
</tbody>
</table>

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**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:
Snoop Mode set to Home Snoop
Virtualization Technology disabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932c5232965e28219e1
running on linux-k8qh Tue Feb 10 10:38:03 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 E5-4620 v3 @ 2.00GHz
  4 "physical id"s (chips)
80 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

Continued on next page
Dell Inc.

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SPECint_base2006 = 43.7

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

Test date: Feb-2015
Hardware Availability: Jun-2015
Software Availability: Jun-2015

Platform Notes (Continued)

cpu cores : 10
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
physical 2: cores 0 1 2 3 4 8 9 10 11 12
physical 3: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal: 529334376 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-k8qh 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 Feb 10 10:34

SPEC is set to: /root/cpu2006-1.2

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>ext4</td>
<td>267G</td>
<td>80G</td>
<td>186G</td>
<td>31%</td>
<td>/</td>
</tr>
</tbody>
</table>

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 SM BIOS" standard.

BIOS Dell Inc. 0.4.0 01/08/2015
Memory:
4x 002C00B3002C 36ASF2G72PZ-2G1A1 16 GB 2 rank 2133 MHz, configured at 1867 MHz

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**Hardware Availability:** Jun-2015  
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**Platform Notes (Continued)**

MHz  
1x 00AD00B300AD HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1867 MHz  
14x 00AD063200AD HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1867 MHz  
5x 00AD063200AD HMA42GR7MFR4N-TFT1 16 GB 2 rank 2133 MHz, configured at 1867 MHz  
8x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1867 MHz  
16x 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/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
- OMP_NUM_THREADS = "40"

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
- 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 471.omnetpp: -DSPEC_CPU_LP64
- 473.astar: -DSPEC_CPU_LP64

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#### Base Portability Flags (Continued)

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  
  445.gobmk: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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

#### Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32  
401.bzip2: -DSPEC_CPU_LP64  
403.gcc: -DSPEC_CPU_LP64  
429.mcf: -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

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Tested by: Dell Inc.  

**Peak Portability Flags (Continued)**

473.astar: \texttt{-DSPEC\_CPU\_LP64}  
483.xalancbmk: \texttt{-DSPEC\_CPU\_LINUX}

**Peak Optimization Flags**

**C benchmarks:**

400.perlbench: \texttt{-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)}  
\texttt{-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)}  
\texttt{-opt-prefetch -ansi-alias}

401.bzip2: \texttt{-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)}  
\texttt{-03(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32}  
\texttt{-opt-prefetch -ansi-alias}

403.gcc: basepeak = yes

429.mcf: basepeak = yes

445.gobmk: \texttt{-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)}  
\texttt{-ansi-alias}

456.hmmer: basepeak = yes

458.sjeng: \texttt{-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)}  
\texttt{-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)}  
\texttt{-unroll4}

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

**C++ benchmarks:**

471.omnetpp: \texttt{-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)}  
\texttt{-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)}  
\texttt{-opt-ra-region-strategy=block -ansi-alias}  
\texttt{-Wl,-z,muldefs -L/sh -lsmartheap}

473.astar: \texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch}  
\texttt{-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64}

483.xalancbmk: \texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch}  
\texttt{-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap}
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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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 2 June 2015.