### Dell Inc.

**PowerEdge R630 (Intel Xeon E5-2683 v4, 2.10 GHz)**

<table>
<thead>
<tr>
<th>SPECint®2006</th>
<th>62.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>60.8</td>
</tr>
</tbody>
</table>

- **CPU2006 license:** 55
- **Test sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test date:** Mar-2016
- **Hardware Availability:** Mar-2016
- **Software Availability:** Dec-2015

### Hardware

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2683 v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2100</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>32 cores, 2 chips, 16 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>40 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Memory</td>
<td>512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>
## 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>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>277</td>
<td>35.3</td>
<td>278</td>
<td>35.2</td>
<td>278</td>
<td>35.2</td>
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<td>255</td>
<td>38.3</td>
<td>256</td>
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<td>401.bzip2</td>
<td>449</td>
<td>21.5</td>
<td>448</td>
<td>21.5</td>
<td>448</td>
<td>21.6</td>
<td>449</td>
<td>21.5</td>
<td>448</td>
<td>21.5</td>
<td>448</td>
<td>21.6</td>
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<tr>
<td>403.mcf</td>
<td>249</td>
<td>32.3</td>
<td>251</td>
<td>32.0</td>
<td>251</td>
<td>32.1</td>
<td>250</td>
<td>32.2</td>
<td>251</td>
<td>32.1</td>
<td>247</td>
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<tr>
<td>429.gcc</td>
<td>58.1</td>
<td>165</td>
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<td>166</td>
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<td>54.9</td>
<td>165</td>
<td>55.4</td>
<td>164</td>
<td>55.5</td>
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<tr>
<td>445.gobmk</td>
<td>25.9</td>
<td>406</td>
<td>25.9</td>
<td>405</td>
<td>25.9</td>
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<td>456.hmmer</td>
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<tr>
<td>458.sjeng</td>
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<td>30.1</td>
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<td>30.1</td>
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<td>30.1</td>
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<tr>
<td>462.libquantum</td>
<td>2.71</td>
<td>7640</td>
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<td>7790</td>
<td>2.72</td>
<td>7630</td>
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<td>2.72</td>
<td>7630</td>
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<tr>
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<td>445</td>
<td>49.7</td>
<td>442</td>
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<td>50.0</td>
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<td>471.omnetpp</td>
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<td>42.0</td>
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<td>47.7</td>
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<td>47.6</td>
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<tr>
<td>473.astar</td>
<td>222</td>
<td>31.7</td>
<td>222</td>
<td>31.7</td>
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<td>31.7</td>
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<td>31.7</td>
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<td>31.7</td>
<td>222</td>
<td>31.7</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>106</td>
<td>65.4</td>
<td>106</td>
<td>65.2</td>
<td>105</td>
<td>65.8</td>
<td>97.9</td>
<td>70.5</td>
<td>98.3</td>
<td>70.2</td>
<td>98.5</td>
<td>70.1</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:
- Snoop Mode set to Opportunistic Snoop Broadcast
- Virtualization Technology disabled
- CPU Power Management set to Maximum Performance
- Memory Patrol Scrub disabled
- C states set to Autonomous
- Energy Efficient Policy set to Performance
- Energy Efficient Turbo disabled
- C1E disabled
- Uncore Frequency set to Dynamic

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-m662 Tue Mar 22 15:51:50 2016

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

Continued on next page
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2683 v4, 2.10 GHz)

SPECint2006 = 62.3
SPECint_base2006 = 60.8

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

Platform Notes (Continued)

model name : Intel(R) Xeon(R) CPU E5-2683 v4 @ 2.10GHz
  2 "physical id"s (chips)
  64 "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
  cache size : 40960 KB

From /proc/meminfo
  MemTotal: 529333472 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 linux-m662 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 22 15:49

SPEC is set to: /root/cpu2006-1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 xfs 439G 7.4G 432G 2% /

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.

Continued on next page
**SPEC CINT2006 Result**

Dell Inc.  
PowerEdge R630 (Intel Xeon E5-2683 v4, 2.10 GHz)  

| SPECint2006 | 62.3 |
| SPECint_base2006 | 60.8 |

**CPU2006 license:** 55  
**Test date:** Mar-2016  
**Test sponsor:** Dell Inc.  
**Hardware Availability:** Mar-2016  
**Tested by:** Dell Inc.  
**Software Availability:** Dec-2015

### Platform Notes (Continued)

- BIOS Dell Inc. 2.0.1 02/12/2016  
- Memory:  
  - 16x 00AD063200AD HMA84GR7MFR4N-UH 32 GB 2 rank 2400 MHz  
  - 8x 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 = "32"

- 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`
- 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`
Dell Inc.
PowerEdge R630 (Intel Xeon E5-2683 v4, 2.10 GHz)

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CPU2006 license: 55
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Tested by: Dell Inc.

Test date: Mar-2016
Hardware Availability: Mar-2016
Software Availability: Dec-2015

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
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.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2683 v4, 2.10 GHz)

SPECint2006 = 62.3
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CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Mar-2016
Hardware Availability: Mar-2016
Software Availability: Dec-2015

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: basepeak = yes

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

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) -unroll14

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca
<table>
<thead>
<tr>
<th>Dell Inc.</th>
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<td>SPECint_base2006 = 60.8</td>
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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

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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