Dell Inc.

PowerEdge M630 (Intel Xeon E5-2667 v4, 3.20 GHz)

<table>
<thead>
<tr>
<th>SPECint®2006</th>
<th>71.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>68.1</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint2006</th>
<th>SPECint_base2006</th>
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<tbody>
<tr>
<td>perlbench</td>
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</tr>
<tr>
<td>bzip2</td>
<td>26.4</td>
<td>25.9</td>
</tr>
<tr>
<td>gcc</td>
<td>38.7</td>
<td>68.7</td>
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<tr>
<td>mcf</td>
<td>66.8</td>
<td>30.91</td>
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<tr>
<td>gobmk</td>
<td>35.8</td>
<td>35.4</td>
</tr>
<tr>
<td>hmmer</td>
<td>35.8</td>
<td>35.4</td>
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<tr>
<td>sjeng</td>
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<td>35.4</td>
</tr>
<tr>
<td>libquantum</td>
<td>61.9</td>
<td>5900</td>
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<tr>
<td>h264ref</td>
<td>49.9</td>
<td>87.1</td>
</tr>
<tr>
<td>omnetpp</td>
<td>34.8</td>
<td>37.9</td>
</tr>
<tr>
<td>astar</td>
<td>37.8</td>
<td>37.9</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>27.1</td>
<td>27.1</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2667 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz
- **CPU MHz:** 3200
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 2 chips, 8 cores/chip, 2 threads/core
- **CPU(s) orderable:** 1.2 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:** 25 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
- **Disk Subsystem:** 1 x 300 GB 7200 RPM SATA HDD

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
- **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
Dell Inc.
PowerEdge M630 (Intel Xeon E5-2667 v4, 3.20 GHz)  

SPECint2006 = 71.8  
SPECint_base2006 = 68.1

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>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>232</td>
<td>42.1</td>
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<td>41.9</td>
<td>233</td>
<td>42.0</td>
<td>212</td>
<td>46.1</td>
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<td>401.bzip2</td>
<td>375</td>
<td>25.7</td>
<td><strong>373</strong></td>
<td><strong>25.9</strong></td>
<td>372</td>
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<td><strong>366</strong></td>
<td><strong>26.4</strong></td>
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<tr>
<td>403.gcc</td>
<td>207</td>
<td>38.8</td>
<td><strong>208</strong></td>
<td><strong>38.7</strong></td>
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<td>207</td>
<td>38.8</td>
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<tr>
<td>429.mcf</td>
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<td>445.gobmk</td>
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<td><strong>30.9</strong></td>
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<td>456.hmmer</td>
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<td>87.7</td>
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<td>87.5</td>
<td><strong>106</strong></td>
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<td>106</td>
<td>87.7</td>
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<tr>
<td>458.sjeng</td>
<td><strong>342</strong></td>
<td><strong>35.4</strong></td>
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<td>338</td>
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<tr>
<td>462.libquantum</td>
<td>3.45</td>
<td>6010</td>
<td>3.68</td>
<td>5620</td>
<td><strong>3.51</strong></td>
<td><strong>5900</strong></td>
<td>3.45</td>
<td>6010</td>
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<tr>
<td>464.h264ref</td>
<td>356</td>
<td>62.1</td>
<td>359</td>
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<td><strong>358</strong></td>
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<td>62.1</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td><strong>180</strong></td>
<td><strong>34.8</strong></td>
<td>168</td>
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<td>181</td>
<td>34.5</td>
<td><strong>125</strong></td>
<td><strong>49.9</strong></td>
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<tr>
<td>473.astar</td>
<td>185</td>
<td>37.9</td>
<td>188</td>
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<td><strong>186</strong></td>
<td><strong>37.8</strong></td>
<td>185</td>
<td>38.0</td>
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<tr>
<td>483.xalancbmk</td>
<td>91.5</td>
<td>75.4</td>
<td>89.0</td>
<td>77.6</td>
<td><strong>89.5</strong></td>
<td><strong>77.1</strong></td>
<td>79.1</td>
<td>87.2</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 Home Snoop
  - Virtualization Technology disabled
  - System Profile set to custom
  - CPU Power Management set to Maximum Performance
  - C States set to Autonomous
  - C1E disabled
  - Energy Efficient Turbo disabled
  - Uncore Frequency set to Dynamic
  - Energy Efficiency Policy set to Performance
  - Memory Patrol Scrub disabled

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Tue Jun 28 11:05:00 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

Continued on next page
### Platform Notes (Continued)

From /proc/cpuinfo
- model name : Intel(R) Xeon(R) CPU E5-2667 v4@ 3.20GHz
- 2 "physical id"s (chips)
- 32 "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 : 8
  - siblings : 16
  - physical 0: cores 0 2 3 4 8 10 11 12
  - physical 1: cores 0 2 3 4 8 10 11 12
- cache size : 25600 KB

From /proc/meminfo
- MemTotal: 528280408 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION="7.2 (Maipo)"
  - ID="rhel"
  - ID_LIKE="fedora"
  - VERSION_ID="7.2"
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
  - ANSI_COLOR="0;31"
  - CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
  - redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
  - system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

uname -a:
- Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 28 11:04 last=5

SPEC is set to: /root/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 276G 14G 263G 5% /

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. 2.2.1 06/07/2016
Memory:
- 16x 00CE00B300CE M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz
- 8x Not Specified Not Specified

Continued on next page
**SPEC CINT2006 Result**

**Dell Inc.**

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**SPECint2006 = 71.8**  
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**Platform Notes (Continued)**

(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 = "16"

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

**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
```
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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

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

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SPEC CINT2006 Result

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PowerEdge M630 (Intel Xeon E5-2667 v4, 3.20 GHz)

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CPU2006 license: 55
Test sponsor: Dell Inc.
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Test date: Jun-2016
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Peak Optimization Flags (Continued)

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

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
| CPU2006 license: 55 | Test date: Jun-2016 |
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Dell Inc.
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**SPECint2006** = 71.8
**SPECint_base2006** = 68.1

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 23 August 2016.

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