Dell Inc.

PowerEdge M630 (Intel Xeon E5-2660 v4, 2.0 GHz)

SPECint®2006 = 64.1
SPECint_base2006 = 61.8

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

Test date: Jul-2016
Hardware Availability: Jun-2016
Software Availability: Nov-2015

CPU Name: Intel Xeon E5-2660 v4
CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz: 2000
FPU: Integrated
CPU(s) enabled: 28 cores, 2 chips, 14 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: 35 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
Other Hardware: None

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
### 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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>263</td>
<td>37.2</td>
<td>263</td>
<td>37.1</td>
<td>263</td>
<td>37.2</td>
<td>241</td>
<td>40.6</td>
<td>242</td>
<td>40.4</td>
<td>241</td>
<td>40.6</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>433</td>
<td>22.3</td>
<td>433</td>
<td>22.3</td>
<td>431</td>
<td>22.4</td>
<td>426</td>
<td>22.7</td>
<td>426</td>
<td>22.6</td>
<td>420</td>
<td>23.0</td>
</tr>
<tr>
<td>403.gcc</td>
<td>237</td>
<td>34.0</td>
<td>236</td>
<td>34.2</td>
<td>237</td>
<td>34.0</td>
<td>237</td>
<td>34.0</td>
<td>236</td>
<td>34.2</td>
<td>237</td>
<td>34.0</td>
</tr>
<tr>
<td>429.mcf</td>
<td>157</td>
<td>57.9</td>
<td>163</td>
<td>55.9</td>
<td>158</td>
<td>57.8</td>
<td>157</td>
<td>57.9</td>
<td>163</td>
<td>55.9</td>
<td>158</td>
<td>57.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>386</td>
<td>27.2</td>
<td>387</td>
<td>27.1</td>
<td>386</td>
<td>27.2</td>
<td>384</td>
<td>27.3</td>
<td>385</td>
<td>27.2</td>
<td>384</td>
<td>27.3</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>120</td>
<td>78.0</td>
<td>120</td>
<td>77.9</td>
<td>120</td>
<td>78.0</td>
<td>120</td>
<td>78.0</td>
<td>120</td>
<td>77.9</td>
<td>120</td>
<td>78.0</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>381</td>
<td>31.7</td>
<td>381</td>
<td>31.8</td>
<td>380</td>
<td>31.8</td>
<td>375</td>
<td>32.2</td>
<td>375</td>
<td>32.2</td>
<td>376</td>
<td>32.2</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.44</td>
<td>6030</td>
<td>3.43</td>
<td>6040</td>
<td>3.41</td>
<td>6080</td>
<td>3.44</td>
<td>6030</td>
<td>3.43</td>
<td>6040</td>
<td>3.41</td>
<td>6080</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>421</td>
<td>52.5</td>
<td>423</td>
<td>52.4</td>
<td>423</td>
<td>52.4</td>
<td>421</td>
<td>52.5</td>
<td>423</td>
<td>52.4</td>
<td>423</td>
<td>52.4</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>151</td>
<td>41.4</td>
<td>161</td>
<td>38.8</td>
<td>149</td>
<td>42.0</td>
<td>125</td>
<td>50.1</td>
<td>125</td>
<td>50.2</td>
<td>124</td>
<td>50.6</td>
</tr>
<tr>
<td>473.astar</td>
<td>216</td>
<td>32.6</td>
<td>214</td>
<td>32.8</td>
<td>212</td>
<td>33.0</td>
<td>216</td>
<td>32.6</td>
<td>214</td>
<td>32.8</td>
<td>212</td>
<td>33.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>105</td>
<td>65.5</td>
<td>105</td>
<td>65.7</td>
<td>104</td>
<td>66.2</td>
<td>93.4</td>
<td>73.9</td>
<td>93.1</td>
<td>74.1</td>
<td>92.9</td>
<td>74.2</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 Sun Jul 10 01:38:32 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 E5-2660 v4@ 2.00GHz
- 2 "physical id"s (chips)
- 56 "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: 14
- siblings: 28
- physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- cache size: 35840 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 Jul 10 01:37
```

SPEC is set to: /root/cpu2006-1.2

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.

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
Dell Inc.  
PowerEdge M630 (Intel Xeon E5-2660 v4, 2.0 GHz) 

SPECint2006 = 64.1  
SPECint_base2006 = 61.8

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

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 = "28"

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  -03  -no-prec-div  -parallel  -opt-prefetch  -auto-p32

C++ benchmarks:
  -xCORE-AVX2  -ipo  -03  -no-prec-div  -opt-prefetch  -auto-p32
  -Wl,-z,muldefs  -L/sh  -lsmartheap64
# SPEC CINT2006 Result

**Dell Inc.**

PowerEdge M630 (Intel Xeon E5-2660 v4, 2.0 GHz)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint2006</td>
<td>64.1</td>
</tr>
<tr>
<td>SPECint_base2006</td>
<td>61.8</td>
</tr>
</tbody>
</table>

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

## 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`

445.gobmk: `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: `-D_FILE_OFFSET_BITS=64`

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) -03(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) -03(pass 2) -no-prec-div -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32`

Continued on next page
Dell Inc.

PowerEdge M630 (Intel Xeon E5-2660 v4, 2.0 GHz)

SPECint2006 = 64.1
SPECint_base2006 = 61.8

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

Test date: Jul-2016
Hardware Availability: Jun-2016
Software Availability: Nov-2015

Peak Optimization Flags (Continued)

401.bzip2 (continued):
   -opt-prefetch -ansi-alias

403.gcc: basepeak = yes
429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

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

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: 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

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
Dell Inc.
PowerEdge M630 (Intel Xeon E5-2660 v4, 2.0 GHz)

SPECint2006 = 64.1
SPECint_base2006 = 61.8

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

Test date: Jul-2016
Hardware Availability: Jun-2016
Software Availability: Nov-2015

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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.