Dell Inc.

PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

<table>
<thead>
<tr>
<th>SPECint&lt;sup&gt;®&lt;/sup&gt;2006</th>
<th>38.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint&lt;sub&gt;base&lt;/sub&gt;2006</td>
<td>37.3</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 55

**Test date:** May-2016

**Test sponsor:** Dell Inc.

**Hardware Availability:** Jun-2016

**Tested by:** Dell Inc.

**Software Availability:** Mar-2016

### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Specint&lt;sup&gt;®&lt;/sup&gt;2006</th>
<th>Specint&lt;sub&gt;base&lt;/sub&gt;2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>12.5</td>
<td>13.5</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>13.6</td>
<td>13.8</td>
</tr>
<tr>
<td>403.gcc</td>
<td>40.8</td>
<td>40.8</td>
</tr>
<tr>
<td>429.mcf</td>
<td>15.8</td>
<td>15.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>18.7</td>
<td>18.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>44.1</td>
<td>44.1</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>18.4</td>
<td>18.4</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>31.7</td>
<td>31.7</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>19.7</td>
<td>19.7</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>19.6</td>
<td>19.6</td>
</tr>
<tr>
<td>473.astar</td>
<td>44.9</td>
<td>44.9</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>42.3</td>
<td>42.3</td>
</tr>
</tbody>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-4610 v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>40 cores, 4 chips, 10 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>40</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>40</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>25 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>512 GB (32 x 16 GB 2Rx8 PC4-2400T-R, running at 1866 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 800 GB SATA SSD</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Feature</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; Fortran: Version 16.0.2.181 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>btrfs</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>None</td>
</tr>
</tbody>
</table>
Dell Inc.
PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

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

SPECint2006 = 38.9
SPECint_base2006 = 37.3

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>454</td>
<td>21.5</td>
<td>451</td>
<td>21.7</td>
<td>453</td>
<td>21.6</td>
<td>416</td>
<td>23.5</td>
<td>416</td>
<td>23.5</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>708</td>
<td>13.6</td>
<td>708</td>
<td>13.6</td>
<td>714</td>
<td>13.5</td>
<td>702</td>
<td>13.8</td>
<td>701</td>
<td>13.8</td>
</tr>
<tr>
<td>403.mcf</td>
<td>376</td>
<td>21.4</td>
<td>375</td>
<td>21.5</td>
<td>375</td>
<td>21.5</td>
<td>376</td>
<td>21.4</td>
<td>375</td>
<td>21.5</td>
</tr>
<tr>
<td>429.gcc</td>
<td>225</td>
<td>40.6</td>
<td>223</td>
<td>40.9</td>
<td>224</td>
<td>40.8</td>
<td>222</td>
<td>41.2</td>
<td>224</td>
<td>40.7</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>664</td>
<td>15.8</td>
<td>665</td>
<td>15.8</td>
<td>664</td>
<td>15.8</td>
<td>664</td>
<td>15.8</td>
<td>665</td>
<td>15.8</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>211</td>
<td>44.1</td>
<td>212</td>
<td>44.1</td>
<td>211</td>
<td>44.1</td>
<td>211</td>
<td>44.1</td>
<td>211</td>
<td>44.1</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>656</td>
<td>18.5</td>
<td>656</td>
<td>18.4</td>
<td>656</td>
<td>18.4</td>
<td>649</td>
<td>18.6</td>
<td>648</td>
<td>18.7</td>
</tr>
<tr>
<td>462.libquant</td>
<td>5.65</td>
<td>3670</td>
<td>5.02</td>
<td>4130</td>
<td>5.77</td>
<td>3590</td>
<td>5.65</td>
<td>3670</td>
<td>5.02</td>
<td>4130</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>697</td>
<td>31.7</td>
<td>699</td>
<td>31.7</td>
<td>698</td>
<td>31.7</td>
<td>697</td>
<td>31.7</td>
<td>699</td>
<td>31.7</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>265</td>
<td>23.6</td>
<td>280</td>
<td>22.3</td>
<td>277</td>
<td>22.6</td>
<td>198</td>
<td>31.6</td>
<td>197</td>
<td>31.7</td>
</tr>
<tr>
<td>473.astar</td>
<td>358</td>
<td>19.6</td>
<td>354</td>
<td>19.8</td>
<td>358</td>
<td>19.6</td>
<td>355</td>
<td>19.8</td>
<td>357</td>
<td>19.7</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>163</td>
<td>42.4</td>
<td>168</td>
<td>41.0</td>
<td>163</td>
<td>42.3</td>
<td>157</td>
<td>44.0</td>
<td>153</td>
<td>45.1</td>
</tr>
</tbody>
</table>

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 Performance set to Hardware P States
- C States set to Autonomous
- C1E disabled
- Uncore Frequency set to Dynamic
- Energy Efficiency Policy set to Balanced Performance
- Memory Patrol Scrub disabled
- Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-vs2o Thu May  5 09:19:30 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 M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

SPECint2006 = 38.9
SPECint_base2006 = 37.3

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

Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

Platform Notes (Continued)

model name : Intel(R) Xeon(R) CPU E5-4610 v4 @ 1.80GHz
  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.)
  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:       529195636 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:
  (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 5 09:17

SPEC is set to: /root/cpu2006-1.2
  Filesystem    Type  Size  Used Avail Use% Mounted on
  /dev/sda2     xfs  365G 8.6G  356G  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
Continued on next page
SPEC CINT2006 Result

Dell Inc.

PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

SPECint2006 = 38.9
SPECint_base2006 = 37.3

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

Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Dell Inc. 2.0.1 03/31/2016
Memory:
20x 00AD00B300AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz, configured at 1866 MHz
12x 00CE00B300CE M393A2K43BB1-CRC 16 GB 2 rank 2400 MHz, configured at 1866 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 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

Continued on next page
SPEC CINT2006 Result

Dell Inc.

PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

| SPECint2006 = | 38.9 |
| SPECint_base2006 = | 37.3 |

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

Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

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/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

Continued on next page
Dell Inc.

PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

SPECint2006 = 38.9
SPECint_base2006 = 37.3

CPU2006 license: 55
Test date: May-2016
Test sponsor: Dell Inc.
Hardware Availability: Jun-2016
Tested by: Dell Inc.
Software Availability: Mar-2016

Peak Portability Flags (Continued)

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

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) -unroll4

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
Dell Inc.

PowerEdge M830 (Intel Xeon E5-4610 v4, 1.80 GHz)

SPECint2006 = 38.9
SPECint_base2006 = 37.3

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

Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

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

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.
Report generated on Tue Jun 28 17:30:12 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 28 June 2016.