Cisco Systems
Cisco UCS C220 M3 (Intel Xeon E5-2680 v2, 2.80 GHz)

<table>
<thead>
<tr>
<th>Specint®2006</th>
<th>54.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specint_base2006</td>
<td>51.5</td>
</tr>
</tbody>
</table>

- **CPU2006 license:** 9019
- **Test date:** Oct-2013
- **Hardware Availability:** Sep-2013
- **Software Availability:** Sep-2013

**Tested by:** Cisco Systems

**Test sponsor:** Cisco Systems

### Hardware

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2680 v2</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.60 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2800</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>20 cores, 2 chips, 10 cores/chip</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>25 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 X 146 GB 15000 RPM SAS</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 6.4 (Santiago)</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 14.0.0.0.080 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</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 V10.0</td>
</tr>
</tbody>
</table>
Cisco Systems
Cisco UCS C220 M3 (Intel Xeon E5-2680 v2, 2.80 GHz)

SPECint2006 = 54.4
SPECint_base2006 = 51.5

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Test date: Oct-2013

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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>332</td>
<td>29.4</td>
<td>333</td>
<td>29.4</td>
<td>332</td>
<td>29.4</td>
<td>279</td>
<td>35.0</td>
<td>279</td>
<td>35.0</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>453</td>
<td>21.3</td>
<td>454</td>
<td>21.3</td>
<td>454</td>
<td>21.3</td>
<td>446</td>
<td>21.6</td>
<td>447</td>
<td>21.6</td>
</tr>
<tr>
<td>403.mcf</td>
<td>256</td>
<td>31.5</td>
<td>255</td>
<td>31.5</td>
<td>255</td>
<td>31.6</td>
<td>251</td>
<td>32.1</td>
<td>251</td>
<td>32.1</td>
</tr>
<tr>
<td>429.mcf</td>
<td>143</td>
<td>63.8</td>
<td>143</td>
<td>63.8</td>
<td>146</td>
<td>62.6</td>
<td>143</td>
<td>63.8</td>
<td>143</td>
<td>63.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>439</td>
<td>23.9</td>
<td>433</td>
<td>24.2</td>
<td>437</td>
<td>24.0</td>
<td>428</td>
<td>24.5</td>
<td>428</td>
<td>24.5</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>170</td>
<td>54.8</td>
<td>172</td>
<td>54.2</td>
<td>170</td>
<td>54.8</td>
<td>175</td>
<td>53.4</td>
<td>175</td>
<td>53.4</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>460</td>
<td>26.3</td>
<td>460</td>
<td>26.3</td>
<td>461</td>
<td>26.3</td>
<td>448</td>
<td>27.0</td>
<td>448</td>
<td>27.0</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>5,50</td>
<td>3770</td>
<td>5.89</td>
<td>3520</td>
<td>5.31</td>
<td>3900</td>
<td>5,50</td>
<td>3770</td>
<td>5.89</td>
<td>3520</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>483</td>
<td>45.8</td>
<td>476</td>
<td>46.5</td>
<td>481</td>
<td>46.0</td>
<td>434</td>
<td>51.0</td>
<td>434</td>
<td>51.0</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>203</td>
<td>30.8</td>
<td>206</td>
<td>30.3</td>
<td>206</td>
<td>30.4</td>
<td>142</td>
<td>44.0</td>
<td>145</td>
<td>43.2</td>
</tr>
<tr>
<td>473.astar</td>
<td>242</td>
<td>29.0</td>
<td>244</td>
<td>28.8</td>
<td>242</td>
<td>29.0</td>
<td>242</td>
<td>29.0</td>
<td>242</td>
<td>29.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>132</td>
<td>52.4</td>
<td>134</td>
<td>51.4</td>
<td>132</td>
<td>52.4</td>
<td>135</td>
<td>51.2</td>
<td>135</td>
<td>51.1</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:
Intel HT Technology = Disabled
CPU performance set to HPC
Power Technology set to Custom
CPU Power State C6 set to Enabled
CPU Power State C1 Enhanced set to Disabled
Energy Performance policy set to Performance
Memory RAS configuration set to Maximum Performance
DRAM Clock Throttling Set to Performance
LV DDR Mode set to Performance-mode
DRAM Refresh Rate Set to 1x
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Fri Nov 8 00:48:50 2013

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

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| SPECint2006 | 54.4 |
| SPECint_base2006 | 51.5 |

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2680 v2 @ 2.80GHz
  2 "physical id"s (chips)
  20 "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 : 10
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
  cache size : 25600 KB

From /proc/meminfo
MemTotal: 132125900 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
  Linux localhost.localdomain 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Nov 8 00:45

SPEC is set to: /opt/cpu2006-1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda1 ext4 134G 48G 86G 38% /

Additional information from dmidecode:
  BIOS Cisco Systems, Inc. C220M3.1.5.2.27.071120132232 07/11/2013
  Memory:
    16x 0xAD00 HMT31GR7EFR4C-RD 8 GB 1866 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/opt/cpu2006-1.2/lib32:/opt/cpu2006-1.2/lib64:/opt/cpu2006-1.2/sh"
  OMP_NUM_THREADS = "20"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

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General Notes (Continued)
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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:
  -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
  -xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:
  403 gcc: -Dalloca=_alloca
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Peak Compiler Invocation

C benchmarks (except as noted below):
  icc -m64

  400.perlbench: icc -m32
  445.gobmk: icc -m32
  464.h264ref: icc -m32

C++ benchmarks (except as noted below):
  icpc -m32

  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
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch
  -ansi-alias

401.bzip2: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div -prof-use(pass 2) -auto-ilp32 -opt-prefetch
  -ansi-alias

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

429.mcf: basepeak = yes

445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
  -ansi-alias

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Peak Optimization Flags (Continued)

456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias

458.sjeng: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll14

462.libquantum: basepeak = yes

464.h264ref: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll12
-ansi-alias

C++ benchmarks:

471.omnetpp: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap

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

483.xalancbmk: -xAVX -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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130717.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130717.xml
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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