Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2623 v4 2.60 GHz)

SPECint®2006 = 57.7
SPECint_base2006 = 55.7

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

Hardware
CPU Name: Intel Xeon E5-2623 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1.2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 10 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem: 1 x 960 GB SAS SSD
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 12 SP1 (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
### SPEC CINT2006 Result

**Cisco Systems**  
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**Test date:** Dec-2016  
**Hardware Availability:** Apr-2016  
**Software Availability:** Dec-2015

---

#### 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>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>262</td>
<td>37.3</td>
<td>260</td>
<td>37.5</td>
<td>260</td>
<td>37.6</td>
<td>239</td>
<td>40.8</td>
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<tr>
<td>401.bzip2</td>
<td>415</td>
<td>23.3</td>
<td>411</td>
<td>23.5</td>
<td>414</td>
<td>23.3</td>
<td>406</td>
<td>23.8</td>
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<tr>
<td>403.mcf</td>
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<td>32.6</td>
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<td>32.6</td>
<td>248</td>
<td>32.4</td>
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<tr>
<td>429.mfc</td>
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<td>61.7</td>
<td>193</td>
<td>61.1</td>
<td>147</td>
<td>62.0</td>
<td>149</td>
<td>61.4</td>
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<tr>
<td>445.gobmk</td>
<td>389</td>
<td>27.0</td>
<td>388</td>
<td>27.0</td>
<td>389</td>
<td>27.0</td>
<td>390</td>
<td>26.9</td>
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<tr>
<td>456.hmmer</td>
<td>118</td>
<td>78.9</td>
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<td>79.0</td>
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<td>78.9</td>
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<tr>
<td>458.sjeng</td>
<td>387</td>
<td>31.3</td>
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<td>31.3</td>
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<td>31.3</td>
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<tr>
<td>462.libquantum</td>
<td>7.20</td>
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<td>3060</td>
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<td>464.h264ref</td>
<td>406</td>
<td>54.5</td>
<td>407</td>
<td>54.4</td>
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<td>54.7</td>
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<td>54.5</td>
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<tr>
<td>471.omnetpp</td>
<td>283</td>
<td>22.1</td>
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<td>21.5</td>
<td>284</td>
<td>22.0</td>
<td>231</td>
<td>27.1</td>
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<tr>
<td>473.astar</td>
<td>219</td>
<td>32.0</td>
<td>221</td>
<td>31.8</td>
<td>217</td>
<td>32.3</td>
<td>219</td>
<td>32.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>105</td>
<td>65.6</td>
<td>106</td>
<td>64.9</td>
<td>105</td>
<td>65.5</td>
<td>94.7</td>
<td>72.9</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 Hyper-Threading Technology option set to Disabled
- CPU performance set to Enterprise
- Power Technology set to Energy Efficient
- Energy Performance BIAS setting set to Balanced Performance
- Memory RAS configuration set to Maximum Performance
- Memory Power Saving Mode set to Disabled
- QPI Snoop Mode set to Home Directory Snoop with OSB

Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-40jf Thu Dec 15 16:09:01 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
- model name : Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
- 2 "physical id"s (chips)

Continued on next page
Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2623 v4 2.60 GHz)

<table>
<thead>
<tr>
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<th>SPECint_base2006: 55.7</th>
</tr>
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Test sponsor: Cisco Systems
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Platform Notes (Continued)

8 "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 : 4
- siblings : 4
- physical 0: cores 0 1 2 3
- physical 1: cores 0 1 2 3
- cache size : 10240 KB

From /proc/meminfo
- MemTotal: 264570780 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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 Dec 15 00:39

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 xfs 893G 17G 877G 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 Cisco Systems, Inc. C220M4.2.0.13d.0.0812161113 08/12/2016
Memory:
- 16x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz, configured at 2133 MHz
- 8x NO DIMM NO DIMM

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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,compact"
- LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"
- OMP_NUM_THREADS = "8"

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
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) -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

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Peak Optimization Flags (Continued)

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

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:
   -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) -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 -lsmarthep

473.astar:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -auto-p32 -Wl,-z,muldefs -L/sh -lsmarthep64

483.xalancbmk:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -ansi-alias -Wl,-z,muldefs -L/sh -lsmarthep

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
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.html
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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/Cisco-Platform-Settings-V1.2-revE.xml

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For other inquiries, please contact webmaster@spec.org.

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