Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

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

SPECint<sup>®</sup>2006 = 68.2
SPECint<sub>base2006</sub> = 65.1

Hardware

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>46.1</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>25.0</td>
</tr>
<tr>
<td>403.gcc</td>
<td>38.9</td>
</tr>
<tr>
<td>429.mcf</td>
<td>70.2</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>28.9</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>33.7</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32.5</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>38.3</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>70.4</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>29.2</td>
</tr>
<tr>
<td>473.astar</td>
<td>70.2</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>6340</td>
</tr>
</tbody>
</table>

Software

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-514.el7.x86_64</td>
<td></td>
</tr>
<tr>
<td>Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
<td></td>
</tr>
<tr>
<td>Auto Parallel: Yes</td>
<td></td>
</tr>
<tr>
<td>File System: xfs</td>
<td></td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers: 32/64-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
<td></td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V10.2</td>
<td></td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Gold 5120
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 19.25 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R, running at 2400 MHz)
Disk Subsystem: 1 x 300 GB SAS 10K RPM
Other Hardware: None
Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

SPECint2006 = 68.2
SPECint_base2006 = 65.1

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

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>242</td>
<td>40.5</td>
<td>241</td>
<td>40.5</td>
<td>241</td>
<td>40.6</td>
<td>212</td>
<td>46.2</td>
<td>212</td>
<td>46.6</td>
<td>212</td>
<td>46.1</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>389</td>
<td>24.8</td>
<td>389</td>
<td>24.7</td>
<td>390</td>
<td>24.8</td>
<td>386</td>
<td>25.0</td>
<td>386</td>
<td>25.0</td>
<td>386</td>
<td>25.0</td>
</tr>
<tr>
<td>403.gcc</td>
<td>210</td>
<td>38.3</td>
<td>210</td>
<td>38.3</td>
<td>210</td>
<td>38.3</td>
<td>207</td>
<td>38.9</td>
<td>207</td>
<td>39.0</td>
<td>207</td>
<td>38.8</td>
</tr>
<tr>
<td>429.mcf</td>
<td>128</td>
<td>71.1</td>
<td>130</td>
<td>70.4</td>
<td>130</td>
<td>70.2</td>
<td>130</td>
<td>70.1</td>
<td>130</td>
<td>70.2</td>
<td>130</td>
<td>70.2</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>363</td>
<td>28.9</td>
<td>363</td>
<td>28.9</td>
<td>363</td>
<td>28.9</td>
<td>359</td>
<td>29.2</td>
<td>359</td>
<td>29.2</td>
<td>359</td>
<td>29.2</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>111</td>
<td>83.7</td>
<td>111</td>
<td>83.7</td>
<td>112</td>
<td>83.1</td>
<td>111</td>
<td>83.7</td>
<td>111</td>
<td>83.7</td>
<td>112</td>
<td>83.1</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>372</td>
<td>32.8</td>
<td>372</td>
<td>32.5</td>
<td>372</td>
<td>32.5</td>
<td>365</td>
<td>33.1</td>
<td>365</td>
<td>33.1</td>
<td>365</td>
<td>33.1</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.29</td>
<td>6300</td>
<td>3.27</td>
<td>6340</td>
<td>3.19</td>
<td>6500</td>
<td>3.29</td>
<td>6300</td>
<td>3.27</td>
<td>6340</td>
<td>3.19</td>
<td>6500</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>372</td>
<td>59.8</td>
<td>372</td>
<td>59.4</td>
<td>370</td>
<td>59.8</td>
<td>372</td>
<td>59.5</td>
<td>372</td>
<td>59.4</td>
<td>370</td>
<td>59.8</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>206</td>
<td>30.4</td>
<td>206</td>
<td>30.3</td>
<td>206</td>
<td>30.3</td>
<td>157</td>
<td>39.9</td>
<td>156</td>
<td>40.2</td>
<td>154</td>
<td>40.5</td>
</tr>
<tr>
<td>473.astar</td>
<td>208</td>
<td>33.8</td>
<td>208</td>
<td>33.8</td>
<td>207</td>
<td>33.8</td>
<td>207</td>
<td>33.8</td>
<td>208</td>
<td>33.8</td>
<td>208</td>
<td>33.7</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>98.3</td>
<td>70.2</td>
<td>98.3</td>
<td>70.2</td>
<td>98.3</td>
<td>70.2</td>
<td>90.0</td>
<td>76.7</td>
<td>89.4</td>
<td>77.2</td>
<td>89.2</td>
<td>77.3</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 HyperThreading Technology set to Disabled
CPU performance set to Enterprise
Power Performance Tuning set to OS
SNC set to Disabled
IMC Interleaving set to Auto
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on rhe173 Tue Aug  8 18:06:46 2017

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) Gold 5120 CPU @ 2.20GHz
  2 "physical id"s (chips)
  28 "processors"
Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.2GHz)  

**SPECint2006 =**  68.2  
**SPECint_base2006 =**  65.1

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>9019</th>
<th>Test date:</th>
<th>Aug-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Cisco Systems</td>
<td>Hardware Availability:</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

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 : 14
- 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 : 19712 KB

From /proc/meminfo

- MemTotal: 394867524 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release*, /etc/*version*

- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION="7.3 (Maipo)"
  - ID="rhel"
  - ID_LIKE="fedora"
  - VERSION_ID="7.3"
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
  - ANSI_COLOR="0;31"
  - CPE_NAME=cpe:/o:redhat:enterprise_linux:7.3:GA:server
  - redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
  - system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:

- Linux rhel73 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64
  - x86_64 x86_64 GNU/Linux

run-level 3 Aug 8 18:06

SPEC is set to: /home/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc5 xfs 634G 11G 624G  2% /home

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. C240M5.3.1.1.d.0.0615170707 06/15/2017Cisco Systems, Inc. C240M5.3.1.1.d.0.0615170707 06/15/2017

Memory:
- 48x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz, configured at 2400 MHz

(End of data from sysinfo program)

The correct amount of Memory installed is 384 GB (24 x 16 GB)
and the dmidecode is reporting invalid number of DIMMs installed

Continued on next page
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

SPECint2006 = 68.2
SPECint_base2006 = 65.1

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

Platform Notes (Continued)

Installed Memory:
24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz, configured at 2400 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006-1.2/lib/ia32:/home/cpu2006-1.2/lib/intel64:/home/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "28"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
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 -qopt-prefetch -auto-p32
Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

SPECint2006 = 68.2
SPECint_base2006 = 65.1

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

Test date: Aug-2017
Hardware Availability: Aug-2017
Software Availability: Apr-2017

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -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_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
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
Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

SPECint2006 = 68.2
SPECint_base2006 = 65.1

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

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2) -qopt-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div -auto-ilp32 -qopt-prefetch

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
   -qopt-malloc-options=3 -auto-ilp32

429.mc: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
   -qopt-prefetch -auto-p32

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2)

456.hmmer: basepeak = yes

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2) -qopt-ra-region-strategy=block
   -Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
   -auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
   -Wl,-z,muldefs -L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:

Continued on next page
### Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Gold 5120, 2.20GHz)

**SPECint2006 = 68.2**  
**SPECint_base2006 = 65.1**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>9019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>Test date:</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

**Peak Other Flags (Continued)**

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-ic17.0-official-linux64-revF.html  
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml  
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.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.  
Originally published on 5 September 2017.