Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Silver 4110, 2.10 GHz)

<table>
<thead>
<tr>
<th>SPECint®2006</th>
<th>61.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>58.9</td>
</tr>
</tbody>
</table>

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

Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon Silver 4110</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2100</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chips</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>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>384 GB (24 x 16 GB 2Rx4 PC4-2666V-R, running at 2400)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 600 GB SAS HDD, 10K RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</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 V10.2</td>
</tr>
</tbody>
</table>
# SPEC CINT2006 Result

## Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Silver 4110, 2.10 GHz)

### SPECint2006 = 61.5

### SPECint_base2006 = 58.9

**CPU2006 license:** 9019  
**Test sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test date:** Jan-2010  
**Hardware Availability:** Aug-2017  
**Software Availability:** Apr-2017

## 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>257</td>
<td>37.9</td>
<td>258</td>
<td>37.8</td>
<td><strong>258</strong></td>
<td><strong>37.9</strong></td>
<td>226</td>
<td>43.1</td>
<td>227</td>
<td>43.1</td>
</tr>
<tr>
<td>401.bzip2</td>
<td><strong>414</strong></td>
<td><strong>23.3</strong></td>
<td>414</td>
<td>23.3</td>
<td>414</td>
<td>23.3</td>
<td><strong>410</strong></td>
<td><strong>23.6</strong></td>
<td>410</td>
<td>23.5</td>
</tr>
<tr>
<td>403.mcf</td>
<td>229</td>
<td>35.2</td>
<td>228</td>
<td>35.3</td>
<td>229</td>
<td>35.2</td>
<td>225</td>
<td>35.7</td>
<td><strong>225</strong></td>
<td><strong>35.8</strong></td>
</tr>
<tr>
<td>429.gcc</td>
<td>137</td>
<td>66.6</td>
<td>135</td>
<td>67.8</td>
<td><strong>136</strong></td>
<td><strong>66.9</strong></td>
<td>134</td>
<td>68.2</td>
<td>135</td>
<td>67.4</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>393</td>
<td>26.7</td>
<td><strong>392</strong></td>
<td><strong>26.7</strong></td>
<td>392</td>
<td>26.8</td>
<td>384</td>
<td>27.3</td>
<td><strong>384</strong></td>
<td><strong>27.3</strong></td>
</tr>
<tr>
<td>456.hmmer</td>
<td><strong>119</strong></td>
<td><strong>78.5</strong></td>
<td>119</td>
<td>78.5</td>
<td>119</td>
<td>78.6</td>
<td><strong>119</strong></td>
<td><strong>78.5</strong></td>
<td>119</td>
<td>78.6</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>400</td>
<td>30.2</td>
<td><strong>400</strong></td>
<td><strong>30.3</strong></td>
<td>400</td>
<td>30.3</td>
<td>391</td>
<td>30.9</td>
<td>392</td>
<td>30.9</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>4.38</td>
<td>4730</td>
<td>4.35</td>
<td>4760</td>
<td><strong>4.35</strong></td>
<td><strong>4760</strong></td>
<td>4.38</td>
<td>4730</td>
<td>4.35</td>
<td>4760</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>402</td>
<td><strong>55.1</strong></td>
<td>401</td>
<td>55.1</td>
<td>402</td>
<td>55.1</td>
<td><strong>402</strong></td>
<td><strong>55.1</strong></td>
<td>401</td>
<td>55.1</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td><strong>257</strong></td>
<td><strong>24.3</strong></td>
<td>257</td>
<td>24.3</td>
<td>258</td>
<td>24.3</td>
<td>205</td>
<td>30.4</td>
<td>207</td>
<td>30.1</td>
</tr>
<tr>
<td>473.astar</td>
<td>226</td>
<td>31.1</td>
<td><strong>227</strong></td>
<td><strong>30.9</strong></td>
<td>227</td>
<td>30.9</td>
<td>228</td>
<td>30.9</td>
<td>226</td>
<td>31.1</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>104</td>
<td>66.3</td>
<td><strong>104</strong></td>
<td><strong>66.3</strong></td>
<td>104</td>
<td>66.5</td>
<td>96.1</td>
<td>71.8</td>
<td><strong>96.0</strong></td>
<td><strong>71.8</strong></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 localhost.localdomain Tue Jan 12 07:32:51 2010

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) Silver 4110 CPU @ 2.10GHz
- 2 "physical id"s (chips)
- 16 "processors"

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**SPECint_base2006 = 58.9**

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

<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>cpu cores : 8</td>
</tr>
<tr>
<td>siblings : 8</td>
</tr>
<tr>
<td>physical 0: cores 0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>physical 1: cores 0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>cache size : 11264 KB</td>
</tr>
</tbody>
</table>

From /proc/meminfo  
MemTotal: 395609248 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)

```
nname -a:
Linux localhost.localdomain 3.10.0-514.e17.x86_64 #1 SMP Wed Oct 19 11:24:13
EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 11 09:47
```

SPEC is set to: /home/cpu2006-1.2  
```
Filesystem  Type  Size  Used  Avail Use% Mounted on
/dev/mapper/rhel-home  xfs  169G  7.8G  161G  5%  /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. B200M5.3.2.1d.5.0727171353 07/27/2017Cisco Systems, Inc. B200M5.3.2.1d.5.0727171353 07/27/2017
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

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

Platform Notes (Continued)

Installed Memory:
24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 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 = "16"

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

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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):
ncc -m64
400.perlbench: ncc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: ncc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
ncc -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
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CPU2006 license: 9019
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Hardware Availability: Aug-2017
Tested by: Cisco Systems
Software Availability: Apr-2017

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.mcf: -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

Peak Other Flags

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

C benchmarks:
Cisco Systems
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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

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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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