Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Gold 6140M, 2.30 GHz)

| SPECint®2006 | 79.1 |
| SPECint_base2006 | 75.5 |

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

Software Availability: Aug-2017
Test date: Nov-2017

![Graph showing SPECint®2006 and SPECint_base2006 results]

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Gold 6140M</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2300</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>36 cores, 2 chips, 18 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>24.75 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)</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>
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Cisco UCS C220 M5 (Intel Xeon Gold 6140M, 2.30 GHz)

SPECint2006 = 79.1
SPECint_base2006 = 75.5
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>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>209</td>
<td>46.8</td>
<td>210</td>
<td>46.5</td>
<td>210</td>
<td>46.5</td>
<td>185</td>
<td>53.0</td>
<td>185</td>
<td>52.9</td>
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<tr>
<td>401.bzip2</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
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<tr>
<td>403.gcc</td>
<td>186</td>
<td>43.2</td>
<td>185</td>
<td>43.5</td>
<td>187</td>
<td>43.1</td>
<td>181</td>
<td>44.4</td>
<td>181</td>
<td>44.5</td>
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<tr>
<td>429.mcf</td>
<td>115</td>
<td>79.0</td>
<td>115</td>
<td>79.6</td>
<td>114</td>
<td>79.7</td>
<td>116</td>
<td>78.6</td>
<td>116</td>
<td>78.5</td>
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<tr>
<td>445.gobmk</td>
<td>315</td>
<td>33.3</td>
<td>313</td>
<td>33.5</td>
<td>314</td>
<td>33.4</td>
<td>311</td>
<td>33.7</td>
<td>311</td>
<td>33.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>96.6</td>
<td>96.6</td>
<td>96.8</td>
<td>96.3</td>
<td>96.9</td>
<td>96.3</td>
<td>96.6</td>
<td>96.6</td>
<td>96.9</td>
<td>96.9</td>
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<tr>
<td>458.sjeng</td>
<td>326</td>
<td>37.1</td>
<td>326</td>
<td>37.1</td>
<td>326</td>
<td>37.1</td>
<td>320</td>
<td>37.8</td>
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<td>37.8</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>2.61</td>
<td>7940</td>
<td>2.60</td>
<td>7960</td>
<td>2.61</td>
<td>7940</td>
<td>2.60</td>
<td>7960</td>
<td>2.61</td>
<td>7940</td>
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<tr>
<td>464.h264ref</td>
<td>322</td>
<td>68.6</td>
<td>323</td>
<td>68.6</td>
<td>324</td>
<td>68.4</td>
<td>322</td>
<td>68.6</td>
<td>323</td>
<td>68.6</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>164</td>
<td>38.1</td>
<td>165</td>
<td>37.8</td>
<td>163</td>
<td>38.4</td>
<td>126</td>
<td>49.7</td>
<td>126</td>
<td>49.7</td>
</tr>
<tr>
<td>473.astar</td>
<td>181</td>
<td>38.8</td>
<td>182</td>
<td>38.6</td>
<td>182</td>
<td>38.6</td>
<td>183</td>
<td>38.4</td>
<td>183</td>
<td>38.4</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>87.0</td>
<td>79.3</td>
<td>86.9</td>
<td>79.4</td>
<td>86.8</td>
<td>79.5</td>
<td>78.8</td>
<td>87.6</td>
<td>77.7</td>
<td>88.9</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 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 rhel73-spec Fri Nov 24 03:17:11 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 6140M CPU @ 2.30GHz
2 "physical id"s (chips)
36 "processors"
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**SPECint2006** = 79.1
**SPECint_base2006** = 75.5

<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>Nov-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>

**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.)

```plaintext
cpu cores : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
```

cache size : 25344 KB

From /proc/meminfo

```plaintext
MemTotal:   394677644 kB
HugePages_Total:   0
Hugepagesize: 2048 kB
```

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

```plaintext
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:

```plaintext
Linux rhel73-spec 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 Nov 24 03:07

SPEC is set to: /home/cpu2006-1.2

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sdb5</td>
<td>xfs</td>
<td>503G</td>
<td>24G</td>
<td>480G</td>
<td>5%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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. C220M5.3.1.1d.0.0615170645 06/15/2017Cisco Systems, Inc. C220M5.3.1.1d.0.0615170645 06/15/2017

Memory:

48x 0xce00 M393A2G40EB2-CTD 16 GB 2 rank 2666 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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<thead>
<tr>
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</table>

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Hardware Availability: Aug-2017
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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 = "36"

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):

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
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test sponsor: Cisco Systems
tested by: Cisco Systems

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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.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.xalancbmik: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
  -Wl,-z,muldefs -L/sh10.2 -lsmartheap
## Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Gold 6140M, 2.30 GHz)

### SPEC CINT2006 Result

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| SPECint_base2006 =                | 75.5 |

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| Tested by:       | Cisco Systems |
| Test date:       | Nov-2017 |
| Hardware Availability: | Aug-2017 |
| Software Availability: | Apr-2017 |

### Peak Other Flags (Continued)

- 403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at:


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


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