Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)

| SPECint®2006 = | 62.2 |
| SPECint_base2006 = | 60.0 |

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

| SPECint2006 = | 62.2 |
| SPECint_base2006 = | 60.0 |

Test date: Feb-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System:</td>
</tr>
<tr>
<td></td>
<td>Red Hat Enterprise Linux Server release 7.0</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>(Maipo)</td>
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<tr>
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<td>3.10.0-123.el7.x86_64</td>
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<td>CPU MHz:</td>
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<td>C++: Version 15.0.0.0.90 of Intel C++ Studio XE for Linux</td>
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<td>FPU:</td>
<td>Auto Parallel:</td>
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<td>CPU(s) enabled:</td>
<td>File System:</td>
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<td>xfs</td>
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<td>CPU(s) orderable:</td>
<td>System State:</td>
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<td>Run level 3 (multi-user)</td>
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<td>Primary Cache:</td>
<td>Base Pointers:</td>
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<td>32/64-bit</td>
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<tr>
<td>Secondary Cache:</td>
<td>Peak Pointers:</td>
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<td>L3 Cache:</td>
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<td>Microquill SmartHeap V10.0</td>
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<td>Other Cache:</td>
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Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)

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SPECint_base2006 = 60.0

CPU2006 license: 9019
Test sponsor: Cisco Systems
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Results Table

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<th>Ratio</th>
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<td>38.3</td>
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<td>385</td>
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<td>462.libquantum</td>
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<td>6270</td>
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<td>471.omnetpp</td>
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<td>473.astar</td>
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<td>483.xalancbmk</td>
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<td>62.1</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
CPU performance set to HPC
Power Technology set to Performance
Energy Performance BIAS setting set to Performance
Memory RAS configuration set to Maximum Performance
Snoop Mode set to Early Snoop
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on rhe17 Thu Feb 12 20:17:41 2015

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 E5-2680 v3 @ 2.50GHz
  2 "physical id"s (chips)
  24 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with
Continued on next page
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)

SPECint2006 = 62.2
SPECint_base2006 = 60.0

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

Platform Notes (Continued)

cautions.)
cpu cores : 12
siblings : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From /proc/meminfo
MemTotal: 263867840 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:ga:server"

redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux rhel7 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Feb 12 20:16

SPEC is set to: /opt/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 xfs 439G 64G 375G 15% /

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. C220M4.2.0.3d.0.111120141447 11/11/2014
Memory:
16x 0xCE00 M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)
## Cisco Systems

**Cisco UCS C220 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)**

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>=</th>
<th>62.2</th>
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<tbody>
<tr>
<td>SPECint_base2006</td>
<td>=</td>
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</tr>
</tbody>
</table>

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

### General Notes

Environment variables set by runspec before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact,1,0"
- LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"
- OMP_NUM_THREADS = "24"

- Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
- Transparent Huge Pages enabled with:
  - echo always > /sys/kernel/mm/transparent_hugepage/enabled
- Filesystem page cache cleared with:
  - echo 1> /proc/sys/vm/drop_caches
- 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:
  - -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
## Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)

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<tbody>
<tr>
<td>SPECint_base2006</td>
<td>60.0</td>
</tr>
</tbody>
</table>

### 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/composer_xe_2015/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks (except as noted below):

- icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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
- 464.h264ref: -DSPEC_CPU_LP64
- 473.astar: -DSPEC_CPU_LP64
- 483.xalancbmk: -DSPEC_CPU_LINUX

### Peak Optimization Flags

C benchmarks:

- 400.perlbench: -xCORE-AVX2(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: -xCORE-AVX2(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

Continued on next page
SPEC CINT2006 Result

Cisco Systems
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Software Availability: Sep-2014

Peak Optimization Flags (Continued)

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(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias

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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.xml
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For other inquiries, please contact webmaster@spec.org.

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