Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

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

CPU Name: Intel Xeon E5-2667 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 3200
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 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: 25 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 300 GB SAS HDD, 15K RPM
Other Hardware: None

Operating System: SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default
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
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

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

SPECint2006 = 72.0
SPECint_base2006 = 69.0

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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>230</td>
<td>42.5</td>
<td>230</td>
<td>42.6</td>
<td>230</td>
<td>42.5</td>
<td>212</td>
<td>46.2</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>370</td>
<td>26.1</td>
<td>369</td>
<td>26.2</td>
<td>364</td>
<td>26.5</td>
<td>364</td>
<td>26.5</td>
</tr>
<tr>
<td>403.gcc</td>
<td>205</td>
<td>39.3</td>
<td>205</td>
<td>39.3</td>
<td>205</td>
<td>39.2</td>
<td>207</td>
<td>38.9</td>
</tr>
<tr>
<td>429.mcf</td>
<td>131</td>
<td>69.7</td>
<td>131</td>
<td>69.4</td>
<td>131</td>
<td>69.6</td>
<td>131</td>
<td>69.5</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>336</td>
<td>31.2</td>
<td>336</td>
<td>31.2</td>
<td>336</td>
<td>31.2</td>
<td>342</td>
<td>30.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>105</td>
<td>35.7</td>
<td>105</td>
<td>35.6</td>
<td>105</td>
<td>35.7</td>
<td>105</td>
<td>35.7</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>339</td>
<td>35.7</td>
<td>339</td>
<td>35.7</td>
<td>339</td>
<td>35.7</td>
<td>336</td>
<td>36.0</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.33</td>
<td>6230</td>
<td>3.33</td>
<td>6220</td>
<td>3.40</td>
<td>6090</td>
<td>3.33</td>
<td>6230</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>359</td>
<td>61.7</td>
<td>357</td>
<td>62.0</td>
<td>356</td>
<td>62.1</td>
<td>359</td>
<td>61.7</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>175</td>
<td>35.7</td>
<td>175</td>
<td>35.7</td>
<td>174</td>
<td>35.9</td>
<td>124</td>
<td>50.3</td>
</tr>
<tr>
<td>473.astar</td>
<td>187</td>
<td>37.4</td>
<td>187</td>
<td>37.5</td>
<td>187</td>
<td>37.6</td>
<td>186</td>
<td>37.7</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>92.4</td>
<td>74.6</td>
<td>92.4</td>
<td>74.7</td>
<td>93.5</td>
<td>73.8</td>
<td>85.3</td>
<td>80.9</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 /home/CISCO_Benchmarks/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-f3gd Tue Apr  5 21:24:48 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 E5-2667 v4 @ 3.20GHz
2 "physical id"s (chips)
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

**SPECint2006 = 72.0**  
**SPECint_base2006 = 69.0**

**CPU2006 license:** 9019  
**Test sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Hardware Availability:** Apr-2016  
**Software Availability:** Dec-2015

**Platform Notes (Continued)**

16 "processors"  
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 : 8  
siblings : 8  
physical 0: cores 0 2 3 4 8 10 11 12  
physical 1: cores 0 2 3 4 8 10 11 12  
cache size : 25600 KB
```

From /proc/meminfo  
```
MemTotal:       264369876 kB  
HugePages_Total:       0  
Hugepagesize:       2048 kB
```

```
/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1
```

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 Apr 5 11:56
```

**SPEC is set to:** /home/CISCO_Benchmarks/cpu2006  
```
Filesystem   Type Size Used Avail Use% Mounted on
/dev/sdb1     xfs 238G 46G 192G 20% /
```

**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. C220M4.2.0.9.42.021920161702 02/19/2016**

Continued on next page
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

SPECint2006 = 72.0
SPECint_base2006 = 69.0

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

Platform Notes (Continued)
Memory:
16x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz
8x NO DIMM NO DIMM

(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 = */home/CISCO_Benchmarks/cpu2006/libs/32:/home/CISCO_Benchmarks/cpu2006/libs/64:/home/CISCO_Benchmarks/cpu2006/sh"
OMP_NUM_THREADS = "16"

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

Continued on next page
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

SPECint2006 = 72.0
SPECint_base2006 = 69.0

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

Test date: Apr-2016
Hardware Availability: Apr-2016
Software Availability: Dec-2015

**Base Optimization Flags (Continued)**

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -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_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
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)

SPECint2006 = 72.0
SPECint_base2006 = 69.0

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
               -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 -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
## Cisco Systems

**Cisco UCS C220 M4 (Intel Xeon E5-2667 v4, 3.20 GHz)**

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>72.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>69.0</td>
</tr>
</tbody>
</table>

- **CPU2006 license:** 9019
- **Test sponsor:** Cisco Systems
- **Tested by:** Cisco Systems
- **Test date:** Apr-2016
- **Hardware Availability:** Apr-2016
- **Software Availability:** Dec-2015

### Peak Other Flags

**C benchmarks:**

```
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:


---

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.
Report generated on Tue Sep 6 16:57:43 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 September 2016.