## Cisco UCS C220 M4 (Intel Xeon E5-2690 v4, 2.60 GHz)

### SPECfp®2006 = 125

### SPECfp_base2006 = 118

**CPU2006 license:** 9019  
**Test sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**CPU Name:** Intel Xeon E5-2690 v4  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.50 GHz  
**CPU MHz:** 2600  
**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:** 256 KB I+D on chip per core

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>30.8</td>
<td>120</td>
</tr>
<tr>
<td>416.gamess</td>
<td>46.5</td>
<td>118</td>
</tr>
<tr>
<td>433.milc</td>
<td>52.5</td>
<td>120</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>213</td>
<td>118</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>77.1</td>
<td>120</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>322</td>
<td>120</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>31.7</td>
<td>120</td>
</tr>
<tr>
<td>444.namd</td>
<td>30.8</td>
<td>120</td>
</tr>
<tr>
<td>447.dealII</td>
<td>67.5</td>
<td>120</td>
</tr>
<tr>
<td>450.soplex</td>
<td>50.8</td>
<td>120</td>
</tr>
<tr>
<td>453.povray</td>
<td>70.5</td>
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</tr>
<tr>
<td>454.calculix</td>
<td>56.4</td>
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<tr>
<td>459.GemsFDTD</td>
<td>58.7</td>
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<tr>
<td>465.tonto</td>
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<td>470.lbm</td>
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<td>481.wrf</td>
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</tr>
<tr>
<td>482.sphinx3</td>
<td>832</td>
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</table>

**Test date:** Jul-2016  
**Hardware Availability:** Apr-2016  
**Software Availability:** Dec-2015  
**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; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
**Auto Parallel:** Yes  
**File System:** xfs  
**System State:** Run level 3 (multi-user)
# SPEC CFP2006 Result

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2690 v4, 2.60 GHz)

<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>L3 Cache:</td>
<td>35 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
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<tr>
<td>Memory:</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
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<tr>
<td>Disk Subsystem:</td>
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<td>Other Hardware:</td>
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<td>Base Pointers:</td>
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<td>Peak Pointers:</td>
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<td>Other Software:</td>
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**SPECfp2006 = 125**  
**SPECfp_base2006 = 118**

### Results Table

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<tr>
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<th>Ratio</th>
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<td>248</td>
<td>78.5</td>
<td>247</td>
<td>78.9</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## 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**

Continued on next page
Cisco Systems
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SPECfp2006 = 125
SPECfp_base2006 = 118

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

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

Platform Notes (Continued)

running on linux-f3gd Thu Jul 14 06:30:34 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 E5-2690 v4@2.60GHz
  2 "physical id"s (chips)
  28 "processors"
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: 35840 KB

From /proc/meminfo
MemTotal: 264368484 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 Jul 13 11:48

SPEC is set to: /home/CISCO_Benchmarks/cpu2006

Filesystem Type Size Used Avail Use% Mounted on
Continued on next page
## Platform Notes (Continued)

```
/dev/sdb1  xfs  238G  44G  194G  19% /
```

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

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 = "28"

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`
- Fortran benchmarks: `ifort -m64`
- Benchmarks using both Fortran and C: `icc -m64 ifort -m64`

## Base Portability Flags

- 410.bwaves: `-DSPEC_CPU_LP64`
- 416.gamess: `-DSPEC_CPU_LP64`
- 433.milc: `-DSPEC_CPU_LP64`
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2690 v4, 2.60 GHz)

SPECfp2006 = 125
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CPU2006 license: 9019
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Tested by: Cisco Systems

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

Base Portability Flags (Continued)

434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

Peak Compiler Invocation

C benchmarks:
  icc  -m64

C++ benchmarks:
  icpc  -m64

Fortran benchmarks:
  ifort  -m64

Benchmarks using both Fortran and C:
  icc  -m64 ifort  -m64
Cisco Systems
Cisco UCS C220 M4 (Intel Xeon E5-2690 v4, 2.60 GHz)  

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Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:
444.namd: -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) -fno-alias  
-auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -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  
-ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -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) -unroll2  
-inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -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) -unroll2  
-inline-level=0 -opt-prefetch -parallel
465.tonto: -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) -inline-calloc

Continued on next page
Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2690 v4, 2.60 GHz)

SPEC CFP2006 Result

| SPECfp2006 = | 125 |
| SPECfp_base2006 = | 118 |

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

Peak Optimization Flags (Continued)

465.tonto (continued):
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
481.wrf: basepeak = yes

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.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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