Cisco Systems
Cisco UCS C460 M4 (Intel Xeon E7-8893 v4 3.20 GHz)

| SPECfp®2006 | 121 |
| SPECfp_base2006 | 115 |

**CPU2006 license:** 9019

**Test sponsor:** Cisco Systems

**Tested by:** Cisco Systems

**Test date:** Oct-2016

**Hardware Availability:** Jul-2016

**Software Availability:** Dec-2015

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**410.bwaves**

| Score | 45.6 |

**416.gameess**

| Score | 39.3 |

**433.milc**

| Score | 69.0 |

**434.zeusmp**

| Score | 157 |

**435.gromacs**

| Score | 56.4 |

**436.cactusADM**

| Score | 771 |

**437.leslie3d**

| Score | 351 |

**444.namd**

| Score | 31.7 |

**447.dealII**

| Score | 64.9 |

**450.soplex**

| Score | 46.7 |

**453.povray**

| Score | 70.6 |

**454.calculix**

| Score | 61.8 |

**459.GemsFDTD**

| Score | 57.3 |

**465.tonto**

| Score | 268 |

**470.lbm**

| Score | 815 |

**481.wrf**

| Score | 83.1 |

**482.sphinx3**

| Score | 78.6 |

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**SPECfp_base2006 = 115**

**SPECfp2006 = 121**

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**CPU Name:** Intel Xeon E7-8893 v4

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.50 GHz

**CPU MHz:** 3200

**FPU:** Integrated

**CPU(s) enabled:** 16 cores, 4 chips, 4 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

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**Operating System:** SUSE Linux Enterprise Server 12 SP1 (x86_64)

**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
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**SPECfp2006 =** 121  
**SPECfp_base2006 =** 115

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>9019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
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</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
</tr>
</tbody>
</table>

- **L3 Cache:** 60 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 512 GB (32 x 16 GB 2Rx4 PC4-2400T-R, running at 1600 MHz)
- **Disk Subsystem:** 1 x 400 GB SAS SSD
- **Other Hardware:** None
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **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 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 /opt/cpu2006-1.2/config/sysinfo.rev6914

### 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>
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<td>250</td>
<td>77.9</td>
<td>246</td>
<td>79.1</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 set to Balanced Performance
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SPECfp2006 = 121
SPECfp_base2006 = 115

Platform Notes (Continued)

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667bSa285932ceab81e28219e1
running on linux-69f9 Sat Oct  8 16:01:37 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 E7-8893 v4 @ 3.20GHz
   4 "physical id"s (chips)
   16 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 4
siblings : 4
physical 0: cores 12 13 25 26
physical 1: cores 12 13 25 26
physical 2: cores 12 13 25 26
physical 3: cores 12 13 25 26
cache size : 61440 KB

From /proc/meminfo
MemTotal:       529304708 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

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 Oct 8 02:05

SPEC is set to: /opt/cpu2006-1.2

Filesystem   Type   Size   Used    Avail   Use% Mounted on
Continued on next page
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Test date: Oct-2016
Hardware Availability: Jul-2016
Software Availability: Dec-2015

Platform Notes (Continued)
/dev/sda1    xfs  372G  40G  332G  11% /
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. C460M4.2.0.12b.0.062120160920 06/21/2016
Memory:
32x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz, configured at 1600 MHz
64x 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 = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"
OMP_NUM_THREADS = "16"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

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
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main

Continued on next page
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Base Portability Flags (Continued)

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
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:
icc -m64

Fortran benchmarks:
ifort -m64

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.html

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 other inquiries, please contact webmaster@spec.org.