Cisco Systems

Cisco UCS C220 M3 (Intel Xeon E5-2695 v2, 2.40 GHz)

| SPECfp®2006 | 56.8 |
| SPECfp_base2006 | 52.7 |

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

Hardware

| CPU Name: | Intel Xeon E5-2695 v2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.20 GHz |
| CPU MHZ: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 24 cores, 2 chips, 12 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2 chip |
| 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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Software

| Operating System: | Red Hat Enterprise Linux Server release 6.4 (Santiago) |
| Compiler: | C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ext4 |

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## SPEC CFP2006 Result

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### CPU2006 License: 9019  
**Test date:** Dec-2013  
**Test sponsor:** Cisco Systems  
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### L3 Cache: 30 MB I+D on chip per chip  
**Other Cache:** None  
**Memory:** 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)  
**Disk Subsystem:** 1 X 300 GB 15000 RPM SAS  
**Other Hardware:** None

### System State: Run level 3 (multi-user)  
**Base Pointers:** 32/64-bit  
**Peak Pointers:** 32/64-bit  
**Other Software:** None

### 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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<tbody>
<tr>
<td>410.bwaves</td>
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<td>268</td>
<td>46.6</td>
<td>291</td>
<td>45.8</td>
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<tr>
<td>416.gamess</td>
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<td>858</td>
<td>22.8</td>
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<td>22.7</td>
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<tr>
<td>433.milc</td>
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<td>50.4</td>
<td>182</td>
<td>50.3</td>
<td>182</td>
<td>50.3</td>
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<td>434.zeusmp</td>
<td>103</td>
<td>88.5</td>
<td>95.6</td>
<td>95.1</td>
<td>95.2</td>
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<td>94.4</td>
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<td>83.4</td>
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<td>444.namd</td>
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<td>16.6</td>
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<td>16.6</td>
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<td>447.dealII</td>
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<td>39.3</td>
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<td>34.4</td>
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<td>453.povray</td>
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<td>31.8</td>
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<td>32.5</td>
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<td>454.calculix</td>
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<td>23.9</td>
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<td>29.0</td>
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<td>459.GemsFDTD</td>
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<td>90.1</td>
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<td>481.wrf</td>
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<td>60.6</td>
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<tr>
<td>482.sphinx3</td>
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<td>28.3</td>
<td>625</td>
<td>31.2</td>
<td>599</td>
<td>32.5</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 HT Technology = Enabled  
CPU performance set to HPC  
Power Technology set to Custom  
CPU Power State C6 set to Enabled  
CPU Power State C1 Enhanced set to Disabled  
Energy Performance policy set to Performance  
Memory RAS configuration set to Maximum Performance  
DRAM Clock Throttling Set to Performance  
LV DDR Mode set to Performance-mode

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Hardware Availability: Dec-2013
Software Availability: Sep-2013

Platform Notes (Continued)

DRAM Refresh Rate Set to 1x
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on rhei6.4-speed Fri Dec 20 02:50:02 2013

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 E5-2695 v2 @ 2.40GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
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
cache size : 30720 KB

From /proc/meminfo
MemTotal: 264455736 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux rhel6.4-speed 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 20 02:46

SPEC is set to: /opt/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb1 ext4 275G 98G 163G 38% /

Additional information from dmidecode:
BIOS Cisco Systems, Inc. C220M3.1.5.2.27.071120132232 07/11/2013
Memory:
16x 0xAD00 HMT42GR7AFR4C-RD 16 GB 1866 MHz 2 rank

(End of data from sysinfo program)
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General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"
OMP_NUM_THREADS = "48"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runcspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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.zesmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
443.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
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Base Optimization Flags

C benchmarks:
- -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
- -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
- -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- -xSSE4.2 -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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
- no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
- ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
- parallel

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**Peak Optimization Flags (Continued)**

**C++ benchmarks:**

444.namd: 
- xSSE4.2(pass 2)
- prof-gen(pass 1)
- ipo(pass 2)
- o3(pass 2)
- no-prec-div(pass 2)
- prof-use(pass 2)
- fno-alias
- auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: 
- xSSE4.2(pass 2)
- prof-gen(pass 1)
- ipo(pass 2)
- o3(pass 2)
- no-prec-div(pass 2)
- prof-use(pass 2)
- unroll14
- ansi-alias

**Fortran benchmarks:**

410.bwaves: basepeak = yes

416.gamess: 
- xSSE4.2(pass 2)
- prof-gen(pass 1)
- ipo(pass 2)
- o3(pass 2)
- no-prec-div(pass 2)
- prof-use(pass 2)
- unroll12
- inline-level=0
- scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: 
- xSSE4.2(pass 2)
- prof-gen(pass 1)
- ipo(pass 2)
- o3(pass 2)
- no-prec-div(pass 2)
- prof-use(pass 2)
- unroll12
- inline-level=0
- opt-prefetch
- parallel

465.tonto: 
- xSSE4.2(pass 2)
- prof-gen(pass 1)
- ipo(pass 2)
- o3(pass 2)
- no-prec-div(pass 2)
- prof-use(pass 2)
- inline-calloc
- opt-malloc-options=3
- auto
- unroll14

**Benchmarks using both Fortran and C:**

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: 
- xSSE4.2
- 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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130717.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130717.xml
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