



# SPEC<sup>®</sup> CFP2006 Result

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## Cisco Systems

SPECfp<sup>®</sup>\_rate2006 = 399

Cisco UCS C460 M2 (Intel Xeon E7-4807, 1.86 GHz)

SPECfp\_rate\_base2006 = 391

CPU2006 license: 9019

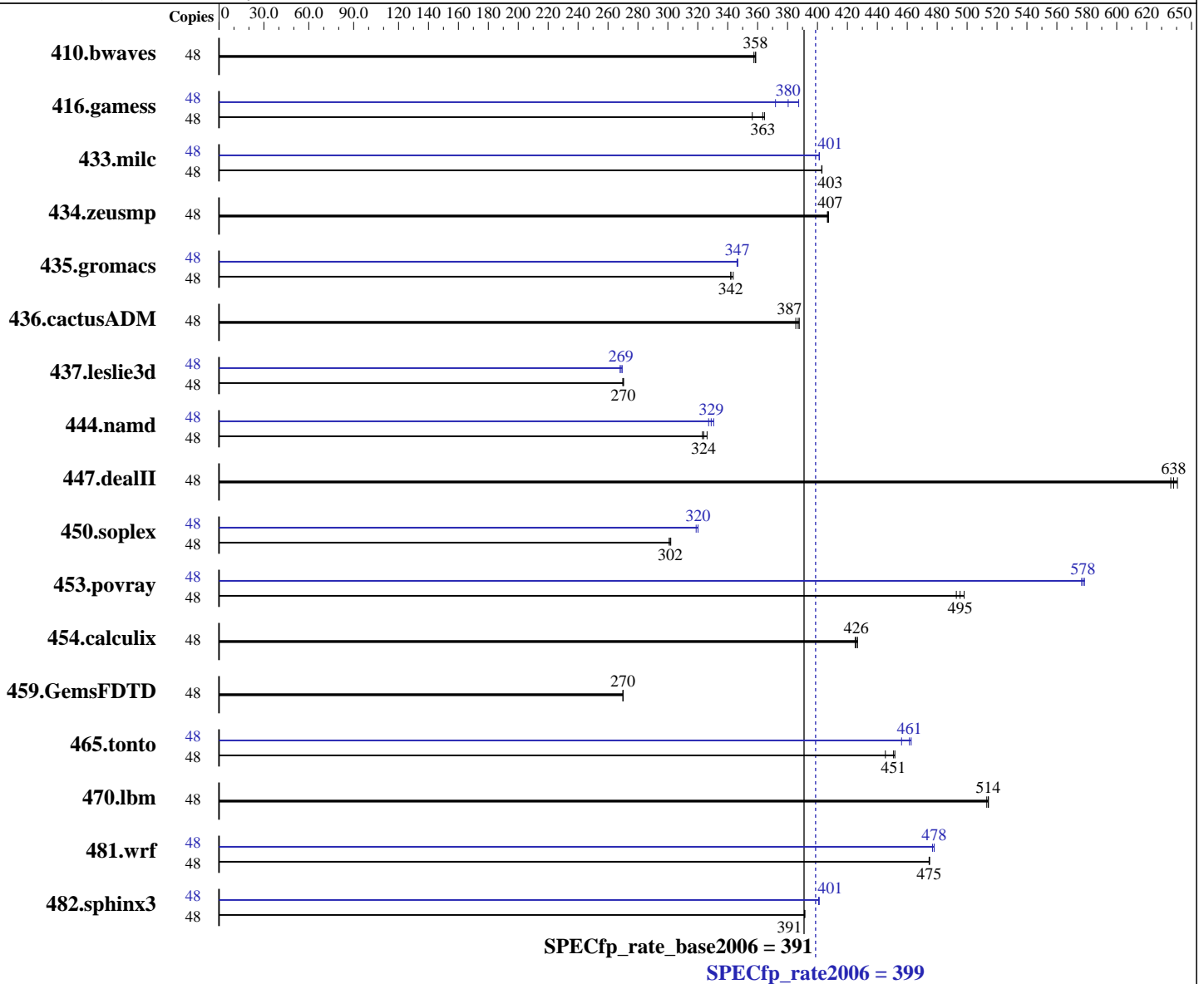
Test date: Jan-2012

Test sponsor: Cisco Systems

Hardware Availability: May-2011

Tested by: Cisco Systems

Software Availability: Oct-2011



### Hardware

CPU Name: Intel Xeon E7-4807  
 CPU Characteristics:  
 CPU MHz: 1867  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2,3,4 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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### Software

Operating System: Red Hat Enterprise Linux Server release 6.1 (Santiago)  
 2.6.32-131.0.15.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

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L3 Cache: 18 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 1 TB (64 x 16 GB 4Rx4 PC3-8500R-9, ECC, running at 800 MHz)  
 Disk Subsystem: 600 GB SAS 10K RPM  
 Other Hardware: None

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	48	1825	358	1818	359	<b>1820</b>	<b>358</b>	48	1825	358	1818	359	<b>1820</b>	<b>358</b>
416.gamess	48	<b>2586</b>	<b>363</b>	2637	356	2578	365	48	2426	387	<b>2470</b>	<b>380</b>	2527	372
433.milc	48	1093	403	<b>1094</b>	<b>403</b>	1094	403	48	1098	401	1099	401	<b>1098</b>	<b>401</b>
434.zeusmp	48	1074	407	1072	407	<b>1074</b>	<b>407</b>	48	1074	407	1072	407	<b>1074</b>	<b>407</b>
435.gromacs	48	<b>1002</b>	<b>342</b>	997	344	1002	342	48	<b>989</b>	<b>347</b>	990	346	988	347
436.cactusADM	48	1479	388	<b>1482</b>	<b>387</b>	1488	386	48	1479	388	<b>1482</b>	<b>387</b>	1488	386
437.leslie3d	48	<b>1671</b>	<b>270</b>	1668	270	1672	270	48	1683	268	1674	269	<b>1679</b>	<b>269</b>
444.namd	48	1191	323	1180	326	<b>1188</b>	<b>324</b>	48	1164	331	<b>1170</b>	<b>329</b>	1176	327
447.dealII	48	863	636	857	641	<b>861</b>	<b>638</b>	48	863	636	857	641	<b>861</b>	<b>638</b>
450.soplex	48	1326	302	<b>1328</b>	<b>302</b>	1331	301	48	<b>1250</b>	<b>320</b>	1250	320	1255	319
453.povray	48	513	498	<b>516</b>	<b>495</b>	518	493	48	441	578	<b>442</b>	<b>578</b>	443	577
454.calculix	48	931	425	928	427	<b>930</b>	<b>426</b>	48	931	425	928	427	<b>930</b>	<b>426</b>
459.GemsFDTD	48	1885	270	<b>1886</b>	<b>270</b>	1887	270	48	1885	270	<b>1886</b>	<b>270</b>	1887	270
465.tonto	48	<b>1048</b>	<b>451</b>	1046	452	1060	445	48	<b>1024</b>	<b>461</b>	1021	463	1035	456
470.lbm	48	1285	513	<b>1283</b>	<b>514</b>	1282	514	48	1285	513	<b>1283</b>	<b>514</b>	1282	514
481.wrf	48	1129	475	1130	475	<b>1130</b>	<b>475</b>	48	1124	477	<b>1122</b>	<b>478</b>	1122	478
482.sphinx3	48	<b>2390</b>	<b>391</b>	2389	392	2391	391	48	2333	401	2334	401	<b>2333</b>	<b>401</b>

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

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

Sysinfo program /opt/cpu2006/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on localhost.localdomain Mon Dec 24 19:05:09 2012  
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## Platform Notes (Continued)

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- 4807 @ 1.87GHz
 4 "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 caution.)

```
cpu cores      : 6
siblings       : 12
physical 0:    : cores 0 8 9 16 17 25
physical 1:    : cores 0 1 2 18 24 25
physical 2:    : cores 0 1 2 18 24 25
physical 3:    : cores 0 1 2 18 24 25
```

cache size : 18432 KB

From /proc/meminfo

```
MemTotal:      1058715356 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

/usr/bin/lsb\_release -d

```
Red Hat Enterprise Linux Server release 6.1 (Santiago)
```

From /etc/\*release\* /etc/\*version\*

```
redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

uname -a:

```
Linux localhost.localdomain 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10
15:42:40 EDT 2011 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Dec 24 19:01

SPEC is set to: /opt/cpu2006

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdal        ext4      550G  60G  462G  12% /
```

Additional information from dmidecode:

(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/libs/32:/opt/cpu2006/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5  
Transparent Huge Pages disabled with:  
echo never > /sys/kernel/mm/redhat\_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

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  
436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.deallI: -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 -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak 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  
436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.deallI: -DSPEC\_CPU\_LP64  
453.povray: -DSPEC\_CPU\_LP64

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Software Availability: Oct-2011

## Peak Portability Flags (Continued)

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

## 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) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -static -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3  
 -unroll2

### C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -fno-alias -auto-ilp32

447.dealIII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -unroll4 -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) -unroll2  
 -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.xml>

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