# SPEC® CFP2006 Result

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## Cisco Systems

Cisco UCS C22 M3 (Intel Xeon E5-2407, 2.20 GHz)

SPECfp®_rate2006 = 101

SPECfp_rate_base2006 = 98.9

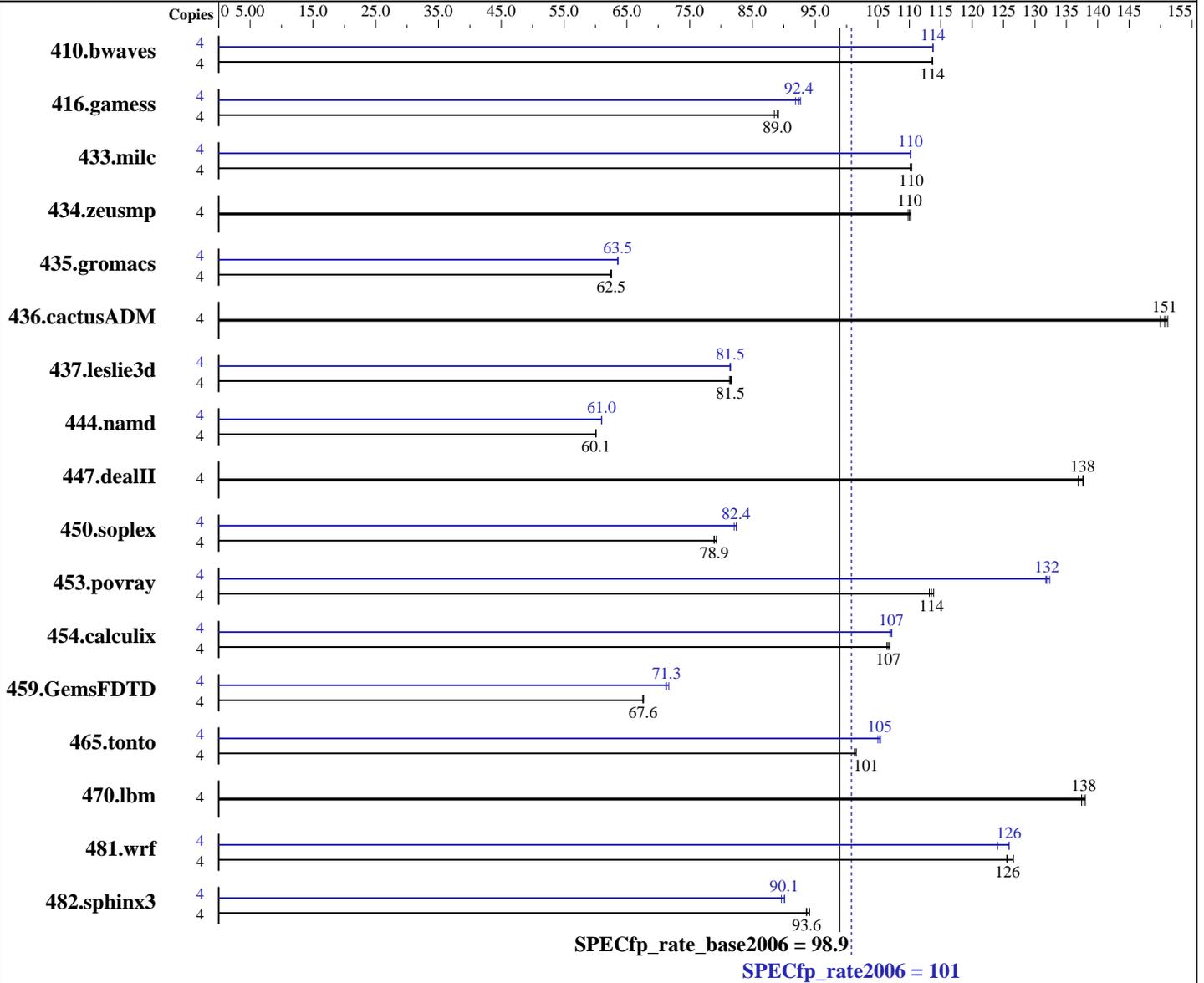**CPU2006 license:** 9019　　　　　　**Test date:** Dec-2012

**Test sponsor:** Cisco Systems　　　　**Hardware Availability:** Sep-2012

**Tested by:** Cisco Systems　　　　　**Software Availability:** Feb-2012



SPECfp_rate_base2006 = 98.9

SPECfp_rate2006 = 101

| | | |
|---|---|---|
| **Copies** | | |
| 410.bwaves | 4 | 114 |
| | 4 | 114 |
| 416.gamess | 4 | 92.4 |
| | 4 | 89.0 |
| 433.milc | 4 | 110 |
| | 4 | 110 |
| 434.zeusmp | 4 | 110 |
| 435.gromacs | 4 | 63.5 |
| | 4 | 62.5 |
| 436.cactusADM | 4 | 151 |
| 437.leslie3d | 4 | 81.5 |
| | 4 | 81.5 |
| 444.namd | 4 | 61.0 |
| | 4 | 60.1 |
| 447.dealII | 4 | 138 |
| 450.soplex | 4 | 82.4 |
| | 4 | 78.9 |
| 453.povray | 4 | 132 |
| | 4 | 114 |
| 454.calculix | 4 | 107 |
| | 4 | 107 |
| 459.GemsFDTD | 4 | 71.3 |
| | 4 | 67.6 |
| 465.tonto | 4 | 105 |
| | 4 | 101 |
| 470.lbm | 4 | 138 |
| 481.wrf | 4 | 126 |
| | 4 | 126 |
| 482.sphinx3 | 4 | 90.1 |
| | 4 | 93.6 |

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2407 |
| CPU Characteristics: | |
| CPU MHz: | 2200 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| 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 |

**Continued on next page**

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.2 (Santiago)<br>2.6.32-220.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;<br>Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | No |
| File System: | ext4 |

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| | | | |
|---|---|---|---|
| L3 Cache: | 10 MB I+D on chip per chip | System State: | Run level 3 (multi-user) |
| Other Cache: | None | Base Pointers: | 32/64-bit |
| Memory: | 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1067 MHz and CL7) | Peak Pointers: | 32/64-bit |
| | | Other Software: | None |
| Disk Subsystem: | 1 X 146 GB 15000 RPM SAS | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 410.bwaves | 4 | 478 | 114 | **478** | **114** | 478 | 114 | 4 | 478 | 114 | **478** | **114** | 478 | 114 |
| 416.gamess | 4 | **880** | **89.0** | 885 | 88.5 | 879 | 89.1 | 4 | **847** | **92.4** | 852 | 91.9 | 845 | 92.7 |
| 433.milc | 4 | **333** | **110** | 333 | 110 | 333 | 110 | 4 | **333** | **110** | 333 | 110 | 333 | 110 |
| 434.zeusmp | 4 | 331 | 110 | 330 | 110 | **331** | **110** | 4 | 331 | 110 | 330 | 110 | **331** | **110** |
| 435.gromacs | 4 | **457** | **62.5** | 457 | 62.5 | 456 | 62.6 | 4 | 449 | 63.5 | 449 | 63.6 | **449** | **63.5** |
| 436.cactusADM | 4 | 319 | 150 | 316 | 151 | **317** | **151** | 4 | 319 | 150 | 316 | 151 | **317** | **151** |
| 437.leslie3d | 4 | 460 | 81.7 | **461** | **81.5** | 462 | 81.4 | 4 | 462 | 81.4 | 461 | 81.5 | **461** | **81.5** |
| 444.namd | 4 | 534 | 60.1 | **534** | **60.1** | 534 | 60.1 | 4 | 526 | 61.0 | **526** | **61.0** | 526 | 61.0 |
| 447.dealII | 4 | 332 | 138 | **333** | **138** | 334 | 137 | 4 | 332 | 138 | **333** | **138** | 334 | 137 |
| 450.soplex | 4 | 423 | 78.9 | **423** | **78.9** | 421 | 79.3 | 4 | 406 | 82.1 | **405** | **82.4** | 405 | 82.5 |
| 453.povray | 4 | 187 | 114 | 188 | 113 | **187** | **114** | 4 | **161** | **132** | 162 | 132 | 161 | 132 |
| 454.calculix | 4 | **309** | **107** | 309 | 107 | 310 | 106 | 4 | 309 | 107 | **308** | **107** | 308 | 107 |
| 459.GemsFDTD | 4 | 627 | 67.7 | **628** | **67.6** | 628 | 67.5 | 4 | **595** | **71.3** | 592 | 71.7 | 596 | 71.2 |
| 465.tonto | 4 | 388 | 102 | 389 | 101 | **388** | **101** | 4 | 373 | 105 | 375 | 105 | **374** | **105** |
| 470.lbm | 4 | 400 | 137 | **399** | **138** | 398 | 138 | 4 | 400 | 137 | **399** | **138** | 398 | 138 |
| 481.wrf | 4 | 353 | 127 | **356** | **126** | 356 | 126 | 4 | **355** | **126** | 360 | 124 | 355 | 126 |
| 482.sphinx3 | 4 | 833 | 93.6 | **832** | **93.6** | 828 | 94.1 | 4 | 870 | 89.6 | **865** | **90.1** | 865 | 90.1 |

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/cpu2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on C22-M3 Wed Dec 12 13:57:49 2012

## Cisco Systems

Cisco UCS C22 M3 (Intel Xeon E5-2407, 2.20 GHz)

SPECfp_rate2006 =  101

SPECfp_rate_base2006 =  98.9

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

**Test date:** Dec-2012
**Hardware Availability:** Sep-2012
**Software Availability:** Feb-2012

## 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 E5-2407 0 @ 2.20GHz
      1 "physical id"s (chips)
      4 "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 : 4
      siblings  : 4
      physical 0: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       49403308 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux C22-M3 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011 x86_64
   x86_64 x86_64 GNU/Linux

run-level 3 Dec 12 11:49

SPEC is set to: /opt/cpu2006-1.2
   Filesystem    Type    Size   Used Avail Use% Mounted on
   /dev/sda1     ext4    134G   9.9G  118G   8% /

Additional information from dmidecode:
  Memory:
   6x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
```

## 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"
```

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## Cisco Systems

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$SPECfp\_rate2006 = \quad 101$

$SPECfp\_rate\_base2006 = \quad 98.9$

## General Notes (Continued)

```
Binaries compiled on a system with 2 X Intel Xeon E5-2690 CPU + 128 GB memory using RHEL 6.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>          /proc/sys/vm/drop_caches
```

## 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.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:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Continued on next page

## Cisco Systems

Cisco UCS C22 M3 (Intel Xeon E5-2407, 2.20 GHz)

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# Base Optimization Flags (Continued)

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -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.dealII: -DSPEC_CPU_LP64
      453.povray: -DSPEC_CPU_LP64
     454.calculix: -DSPEC_CPU_LP64 -nofor_main
       465.tonto: -DSPEC_CPU_LP64
        470.lbm: -DSPEC_CPU_LP64
        481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

## Cisco Systems

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**Test date:** Dec-2012
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**Software Availability:** Feb-2012

# Peak Optimization Flags

C benchmarks:

        433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
                -opt-mem-layout-trans=3

        470.lbm: basepeak = yes

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -static
                -unroll2

C++ benchmarks:

        444.namd: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3

    453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
                -opt-mem-layout-trans=3

Fortran benchmarks:

    410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -static

    416.gamess: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

  459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3

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

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# Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32
-opt-mem-layout-trans=3

481.wrf: Same as 454.calculix

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.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-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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