SPEC® CFP2006 Result
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Cisco Systems

Cisco UCS C220 M3 (Intel Xeon E5-2650L v2, 1.70 GHz)

$SPECfp^{®}2006 =$ 60.1
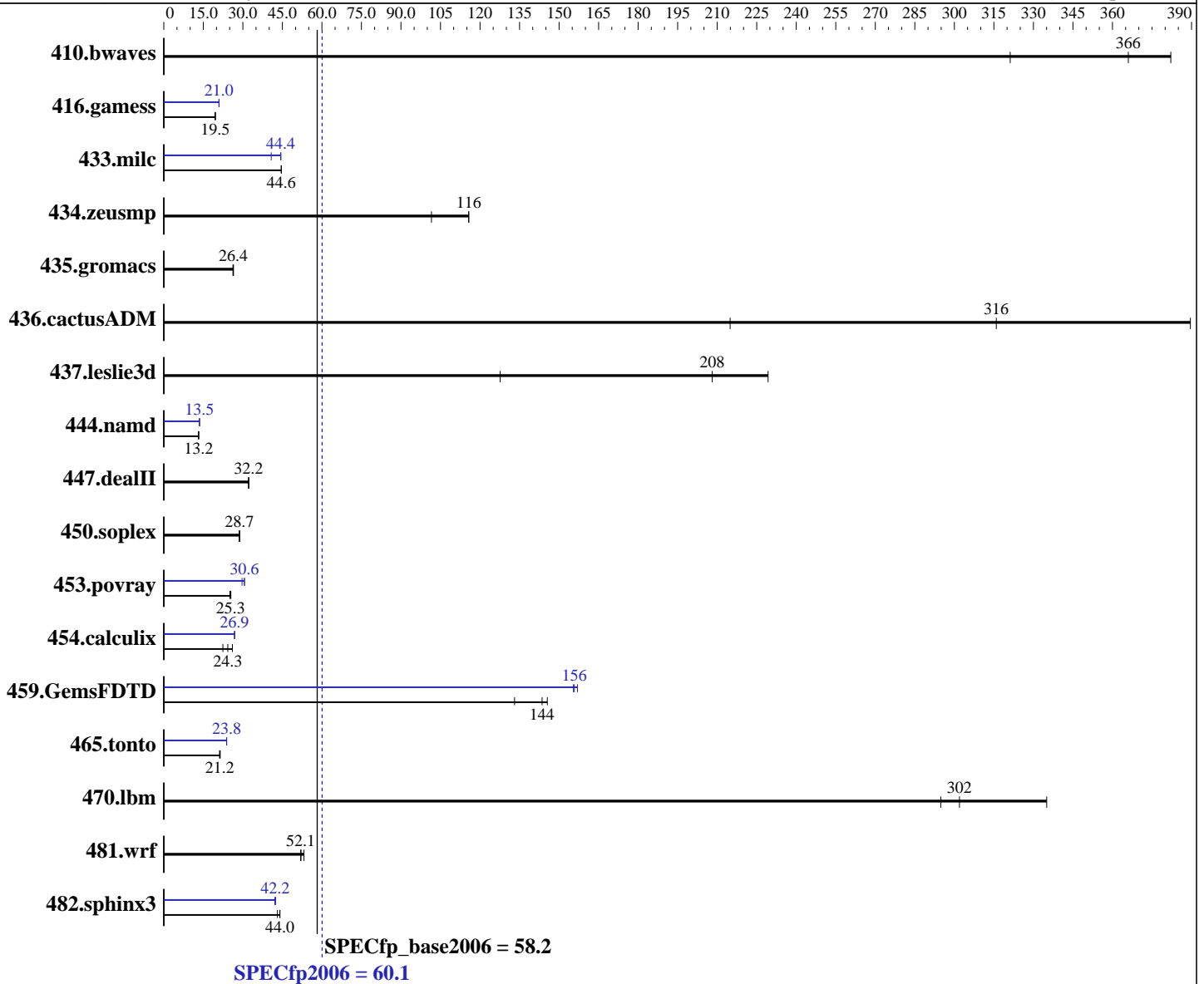
$SPECfp\_base2006 =$ 58.2

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

Test date: Nov-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Benchmark	Result
410.bwaves	366
416.gamess	21.0 / 19.5
433.milc	44.4 / 44.6
434.zeusmp	116
435.gromacs	26.4
436.cactusADM	316
437.leslie3d	208
444.namd	13.5 / 13.2
447.dealII	32.2
450.soplex	28.7
453.povray	30.6 / 25.3
454.calculix	26.9 / 24.3
459.GemsFDTD	156 / 144
465.tonto	23.8 / 21.2
470.lbm	302
481.wrf	52.1
482.sphinx3	42.2 / 44.0

SPECfp_base2006 = 58.2
SPECfp2006 = 60.1

Hardware

CPU Name: Intel Xeon E5-2650L v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.10 GHz
CPU MHz: 1700
FPU: Integrated
CPU(s) enabled: 20 cores, 2 chips, 10 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 6.4 (Santiago)
2.6.32-358.el6.x86_64
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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L3 Cache:	25 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz and CL11)
Disk Subsystem:	1 x 134 GB SSD
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 Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	42.3	321	**37.1**	**366**	35.6	382	42.3	321	**37.1**	**366**	35.6	382
416.gamess	1002	19.5	1003	19.5	**1002**	**19.5**	934	21.0	**934**	**21.0**	935	20.9
433.milc	206	44.6	**206**	**44.6**	206	44.6	207	44.4	**207**	**44.4**	225	40.8
434.zeusmp	89.6	102	78.6	116	**78.7**	**116**	89.6	102	78.6	116	**78.7**	**116**
435.gromacs	272	26.2	270	26.4	**270**	**26.4**	272	26.2	270	26.4	**270**	**26.4**
436.cactusADM	**37.8**	**316**	55.6	215	30.7	390	**37.8**	**316**	55.6	215	30.7	390
437.leslie3d	41.0	229	73.6	128	**45.2**	**208**	41.0	229	73.6	128	**45.2**	**208**
444.namd	607	13.2	**607**	**13.2**	607	13.2	592	13.5	592	13.5	**592**	**13.5**
447.dealII	355	32.2	**355**	**32.2**	355	32.2	355	32.2	**355**	**32.2**	355	32.2
450.soplex	290	28.8	291	28.7	**290**	**28.7**	290	28.8	291	28.7	**290**	**28.7**
453.povray	212	25.1	**210**	**25.3**	209	25.5	174	30.6	179	29.7	**174**	**30.6**
454.calculix	368	22.4	**340**	**24.3**	317	26.0	**307**	**26.9**	307	26.8	307	26.9
459.GemsFDTD	79.7	133	72.9	146	**73.9**	**144**	68.3	155	**68.1**	**156**	67.6	157
465.tonto	460	21.4	464	21.2	**464**	**21.2**	412	23.9	**413**	**23.8**	413	23.8
470.lbm	41.0	335	**45.5**	**302**	46.6	295	41.0	335	**45.5**	**302**	46.6	295
481.wrf	215	52.0	210	53.2	**215**	**52.1**	215	52.0	210	53.2	**215**	**52.1**
482.sphinx3	452	43.1	**443**	**44.0**	442	44.1	462	42.2	459	42.4	**461**	**42.2**

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

    Intel HT Technology = Disabled
    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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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 localhost.localdomain Mon Nov 25 10:59:43 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 E5-2650L v2 @ 1.70GHz
       2 "physical id"s (chips)
       20 "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 : 10
       siblings  : 10
       physical 0: cores 0 1 2 3 4 8 9 10 11 12
       physical 1: cores 0 1 2 3 4 8 9 10 11 12
    cache size : 25600 KB

 From /proc/meminfo
    MemTotal:        132125900 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)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

 uname -a:
    Linux localhost.localdomain 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 Nov 24 16:58

 SPEC is set to: /opt/cpu2006-1.2
    Filesystem     Type     Size  Used Avail Use% Mounted on
    /dev/sda1      ext4     134G   51G   77G  40% /

 Additional information from dmidecode:
   BIOS Cisco Systems, Inc. C220M3.1.5.2.27.071120132232 07/11/2013
   Memory:
    16x 0xAD00 HMT31GR7EFR4C-RD 8 GB 1600 MHz 2 rank

 (End of data from sysinfo program)
```

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Test sponsor: Cisco Systems	**Hardware Availability:** Sep-2013
Tested by: Cisco Systems	**Software Availability:** Sep-2013

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 = "20"

 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
 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.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) -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-

        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) -unroll2
                -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 -unroll4

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

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