SPEC® CFP2006 Result

Cisco Systems

Cisco UCS B420 M3 (Intel Xeon E5-4657L v2, 2.40 GHz)

$SPECfp^®\_rate2006 =$ 1320

$SPECfp\_rate\_base2006 =$ 1290

Benchmark	Copies	Result
410.bwaves	96	1060
416.gamess	96	1460
416.gamess	96	1440
433.milc	96	995
433.milc	96	995
434.zeusmp	96	1480
435.gromacs	96	1760
435.gromacs	96	1730
436.cactusADM	96	1640
437.leslie3d	48	764
437.leslie3d	96	701
444.namd	96	1130
444.namd	96	1110
447.dealII	96	2470
450.soplex	48	857
450.soplex	96	737
453.povray	96	2240
453.povray	96	1960
454.calculix	96	2030
459.GemsFDTD	96	660
465.tonto	96	1540
465.tonto	96	1480
470.lbm	96	1320
481.wrf	96	1240
481.wrf	96	1240
482.sphinx3	96	1290
482.sphinx3	96	1320

SPECfp_rate_base2006 = 1290

SPECfp_rate2006 = 1320

Hardware

CPU Name: Intel Xeon E5-4657L v2

CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz

CPU MHz: 2400

FPU: Integrated

CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip, 2 threads/core

CPU(s) orderable: 1,2,3,4 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 6.5 (Santiago)
2.6.32-431.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: No

File System: ext4

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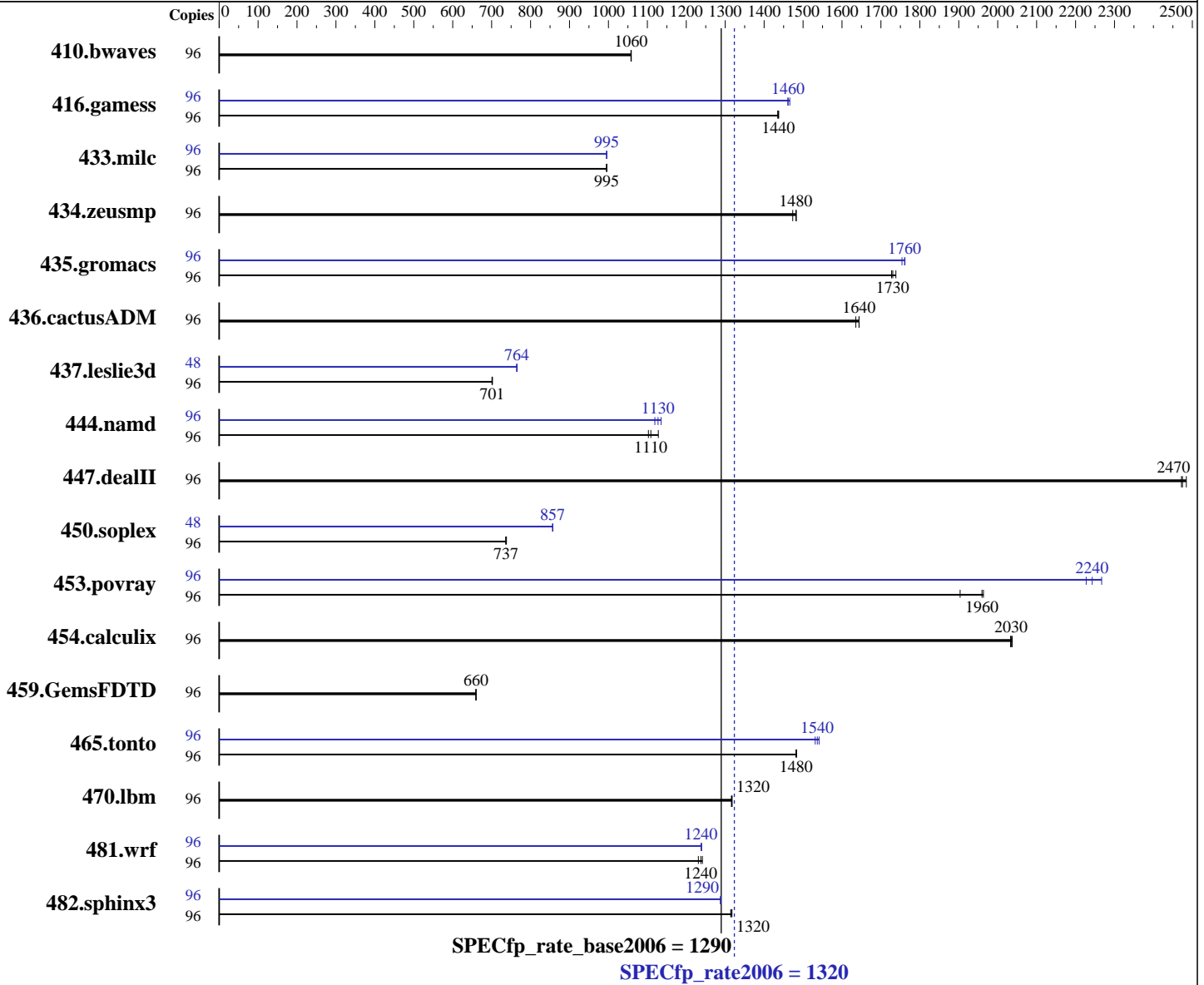SPECfp_rate2006 =   1320

SPECfp_rate_base2006 = 1290

CPU2006 license: 9019	**Test date:** May-2014
Test sponsor: Cisco Systems	**Hardware Availability:** Apr-2014
Tested by: Cisco Systems	**Software Availability:** Apr-2014

L3 Cache:	30 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	32/64-bit
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-14900R-13, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 X 300 GB 15000 RPM SAS	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	96	1232	1060	**1233**	**1060**	1233	1060	96	1232	1060	**1233**	**1060**	1233	1060
416.gamess	96	1310	1430	**1308**	**1440**	1308	1440	96	1282	1470	1287	1460	**1286**	**1460**
433.milc	96	**885**	**995**	885	995	885	996	96	885	996	**885**	**995**	885	995
434.zeusmp	96	**590**	**1480**	593	1470	589	1480	96	**590**	**1480**	593	1470	589	1480
435.gromacs	96	394	1740	**396**	**1730**	397	1730	96	391	1750	**389**	**1760**	389	1760
436.cactusADM	96	698	1640	**698**	**1640**	701	1640	96	698	1640	**698**	**1640**	701	1640
437.leslie3d	96	1285	702	1287	701	**1287**	**701**	48	589	766	**590**	**764**	590	764
444.namd	96	682	1130	**694**	**1110**	698	1100	96	688	1120	**683**	**1130**	678	1140
447.dealII	96	444	2470	442	2480	**444**	**2470**	96	444	2470	442	2480	**444**	**2470**
450.soplex	96	1085	738	**1087**	**737**	1088	736	48	**467**	**857**	467	857	467	857
453.povray	96	268	1900	**261**	**1960**	260	1960	96	225	2270	229	2230	**228**	**2240**
454.calculix	96	**389**	**2030**	390	2030	389	2040	96	**389**	**2030**	390	2030	389	2040
459.GemsFDTD	96	1545	659	**1544**	**660**	1542	660	96	1545	659	**1544**	**660**	1542	660
465.tonto	96	**637**	**1480**	637	1480	637	1480	96	617	1530	**615**	**1540**	613	1540
470.lbm	96	1002	1320	1001	1320	**1002**	**1320**	96	1002	1320	1001	1320	**1002**	**1320**
481.wrf	96	**867**	**1240**	871	1230	864	1240	96	865	1240	**866**	**1240**	866	1240
482.sphinx3	96	1424	1310	**1422**	**1320**	1420	1320	96	1452	1290	**1452**	**1290**	1453	1290

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

    Intel HT Technology = Enabled
    CPU performance set to HPC
    Power Technology set to Custom

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Platform Notes (Continued)

```
CPU Power State C6 set to Disabled
CPU Power State C1 Enhanced set to Disabled
Memory RAS configuration set to Maximum Performance
DRAM Clock Throttling Set to Performance
 Sysinfo program /opt/cpu2006-1.4/config/sysinfo.rev6818
 $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
 running on b420m3 Fri May  9 11:40:11 2014

 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 E5-4657L v2 @ 2.40GHz
       4 "physical id"s (chips)
       96 "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 : 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
       physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
       physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
    cache size : 30720 KB

 From /proc/meminfo
    MemTotal:       264493700 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.5 (Santiago)

 From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

 uname -a:
    Linux b420m3 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64
    x86_64 x86_64 GNU/Linux

 run-level 3 May 9 11:34

 SPEC is set to: /opt/cpu2006-1.4
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda1       ext4  275G   11G  250G   5% /

 Additional information from dmidecode:
  BIOS Cisco Systems, Inc. B420M3.2.2.1.8.042120142113 04/21/2014
```
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CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Test date: May-2014
Hardware Availability: Apr-2014
Software Availability: Apr-2014

Platform Notes (Continued)

```
   Memory:
    32x 0xAD00 HMT31GR7EFR4C-RD 8 GB 1866 MHz 2 rank
    16x NO DIMM NO DIMM

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/cpu2006-1.4/libs/32:/opt/cpu2006-1.4/libs/64:/opt/cpu2006-1.4/sh"

 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
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

Submitted_by: "Sheshgiri I (shei)" <shei@cisco.com>
Submitted: Mon May 19 14:36:26 EDT 2014
Submission: cpu2006-20140519-29612.sub
```

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
```

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Base Portability Flags (Continued)

```
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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

C++ benchmarks:

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

Fortran benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xAVX -ipo -O3 -no-prec-div -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
```

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CPU2006 license: 9019

Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: May-2014

Hardware Availability: Apr-2014

Software Availability: Apr-2014

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
 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: -xAVX(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) -auto-ilp32

      470.lbm: basepeak = yes

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

C++ benchmarks:

```
     444.namd: -xAVX(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.dealII: basepeak = yes

   450.soplex: -xAVX(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: -xAVX(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:

Cisco Systems

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CPU2006 license:	9019	**Test date:**	May-2014
Test sponsor:	Cisco Systems	**Hardware Availability:**	Apr-2014
Tested by:	Cisco Systems	**Software Availability:**	Apr-2014

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

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-

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
              -prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

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-revB.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-revB.xml

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

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