SPEC® CFP2006 Result
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Cisco Systems

Cisco UCS C3160 M3 (Intel Xeon E5-2695 v2, 2.40 GHz)

$SPECfp^®\_rate2006 =$ 672
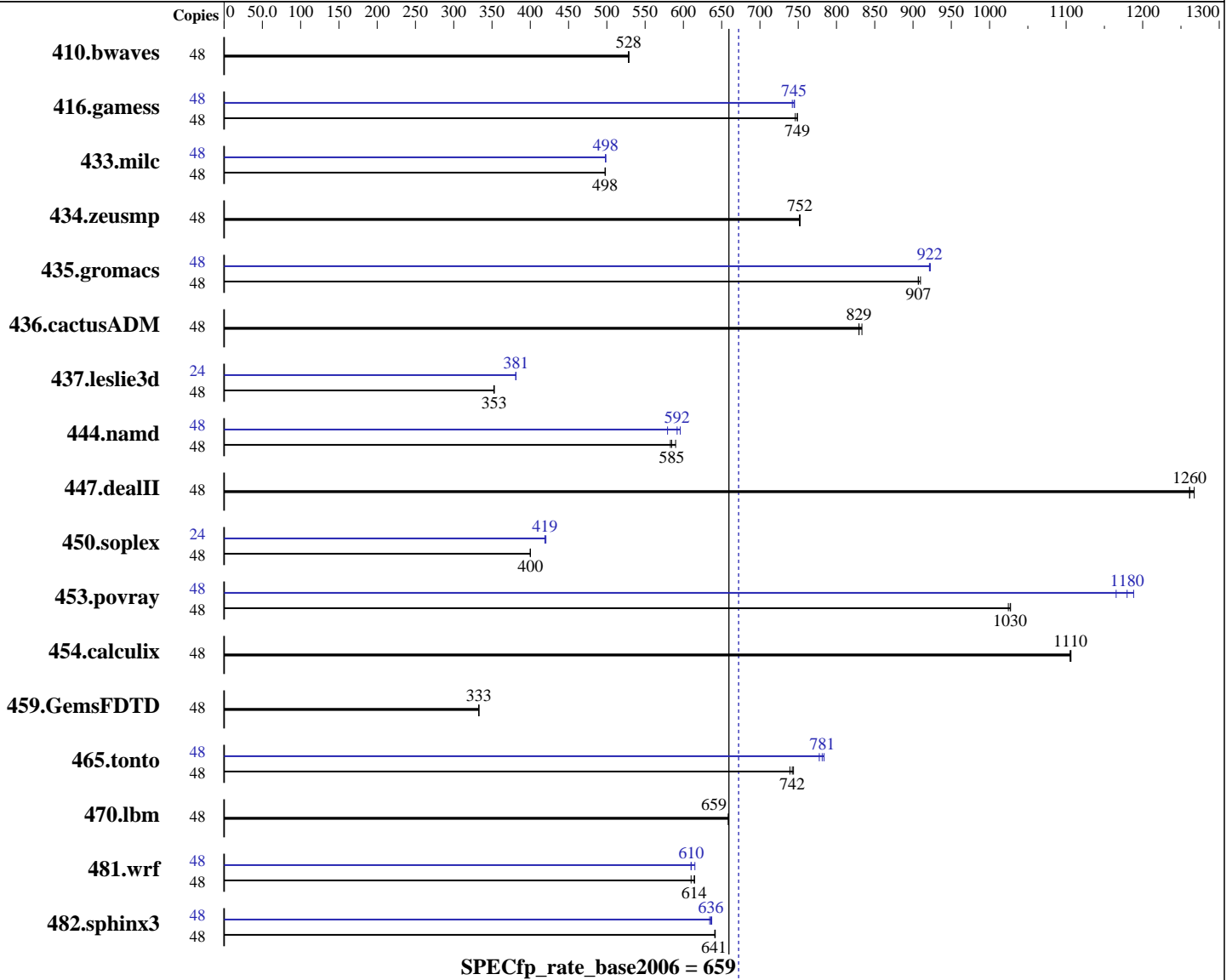
SPECfp_rate_base2006 =   659

CPU2006 license: 9019

Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: May-2015

Hardware Availability: Sep-2014

Software Availability: Nov-2014

Benchmark	Copies	Result
410.bwaves	48	528
416.gamess	48 / 48	745 / 749
433.milc	48 / 48	498 / 498
434.zeusmp	48	752
435.gromacs	48 / 48	922 / 907
436.cactusADM	48	829
437.leslie3d	24 / 48	381 / 353
444.namd	48 / 48	592 / 585
447.dealII	48	1260
450.soplex	24 / 48	419 / 400
453.povray	48 / 48	1180 / 1030
454.calculix	48	1110
459.GemsFDTD	48	333
465.tonto	48 / 48	781 / 742
470.lbm	48	659
481.wrf	48 / 48	610 / 614
482.sphinx3	48 / 48	636 / 641

SPECfp_rate_base2006 = 659

SPECfp_rate2006 = 672

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

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 12 (x86_64) 3.12.28-4-default

Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux

Auto Parallel: No

File System: ext4

System State: Run level 3 (multi-user)

Base Pointers: 32-bit

Peak Pointers: 32/64-bit

Continued on next page

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L3 Cache:	30 MB I+D on chip per chip	Other Software:	None
Other Cache:	None		
Memory:	256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1866 MHz and CL7)		
Disk Subsystem:	1 X 400 GB SSD SAS		
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	48	1235	528	1233	529	**1235**	**528**	48	1235	528	1233	529	**1235**	**528**
416.gamess	48	**1255**	**749**	1260	746	1255	749	48	1261	745	1266	742	**1262**	**745**
433.milc	48	885	498	884	498	**885**	**498**	48	884	499	**884**	**498**	885	498
434.zeusmp	48	581	751	581	752	**581**	**752**	48	581	751	581	752	**581**	**752**
435.gromacs	48	**378**	**907**	378	907	377	910	48	**372**	**922**	372	923	372	921
436.cactusADM	48	692	829	688	833	**692**	**829**	48	692	829	688	833	**692**	**829**
437.leslie3d	48	**1279**	**353**	1278	353	1281	352	24	592	381	592	381	**592**	**381**
444.namd	48	**658**	**585**	660	583	653	590	48	646	596	664	579	**650**	**592**
447.dealII	48	**435**	**1260**	433	1270	435	1260	48	**435**	**1260**	433	1270	435	1260
450.soplex	48	1000	400	**1000**	**400**	1001	400	24	**477**	**419**	478	419	476	420
453.povray	48	249	1030	**249**	**1030**	249	1020	48	219	1170	**216**	**1180**	215	1190
454.calculix	48	358	1110	358	1110	**358**	**1110**	48	358	1110	358	1110	**358**	**1110**
459.GemsFDTD	48	1529	333	1531	333	**1531**	**333**	48	1529	333	1531	333	**1531**	**333**
465.tonto	48	639	739	**636**	**742**	635	744	48	607	778	**604**	**781**	603	784
470.lbm	48	**1001**	**659**	1001	659	1001	659	48	**1001**	**659**	1001	659	1001	659
481.wrf	48	**873**	**614**	872	615	879	610	48	872	615	**879**	**610**	879	610
482.sphinx3	48	**1459**	**641**	1459	641	1458	642	48	1469	637	**1471**	**636**	1475	634

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"

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CPU2006 license: 9019
Test sponsor: Cisco Systems
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Test date: May-2015
Hardware Availability: Sep-2014
Software Availability: Nov-2014

Platform Notes

```
BIOS Settings:
Intel HT Technology = Enabled
CPU performance set to Enterprise
Power Technology set to Custom
CPU Power State C6 set to Disabled
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
 Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
 running on linux-vedd Fri May  8 22:22:22 2015

 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
    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
    cache size : 30720 KB

 From /proc/meminfo
    MemTotal:      264642792 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 0
       # This file is deprecated and will be removed in a future service pack or
       release.
       # Please check /etc/os-release for details about this release.
    os-release:
       NAME="SLES"
       VERSION="12"
       VERSION_ID="12"
       PRETTY_NAME="SUSE Linux Enterprise Server 12"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12"
```

Continued on next page

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Platform Notes (Continued)

```
uname -a:
   Linux linux-vedd 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
   (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 8 09:45

SPEC is set to: /opt/cpu2006-1.2
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sdy1      ext4  394G   11G  382G   3% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.

  BIOS Cisco Systems, Inc. C3160M3.2.0.2a.0.090920140606 09/09/2014
  Memory:
   16x 0xAD00 HMT42GR7AFR4C-RD 16 GB 2 rank 1866 MHz

(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:/opt/cpu2006-1.2/sh"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/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

Continued on next page

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CPU2006 license: 9019	**Test date:** May-2015
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Base Compiler Invocation (Continued)

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 -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:
```
icc   -m64
```

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Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):
```
icpc  -m64
```

```
450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

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
   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
```

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 -prof-gen(pass 1) -ipo -O3 -no-prec-div
              -opt-mem-layout-trans=3 -prof-use(pass 2) -unroll2
```

C++ benchmarks:

Continued on next page

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Peak Optimization Flags (Continued)

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:

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.20150505.html

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

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.20150505.xml

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

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