SPEC® CFP2006 Result
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Cisco Systems

$SPECfp^{®}\_rate2006 =$ 888

Cisco UCS B420 M3 (Intel Xeon E5-4650, 2.7 GHz)
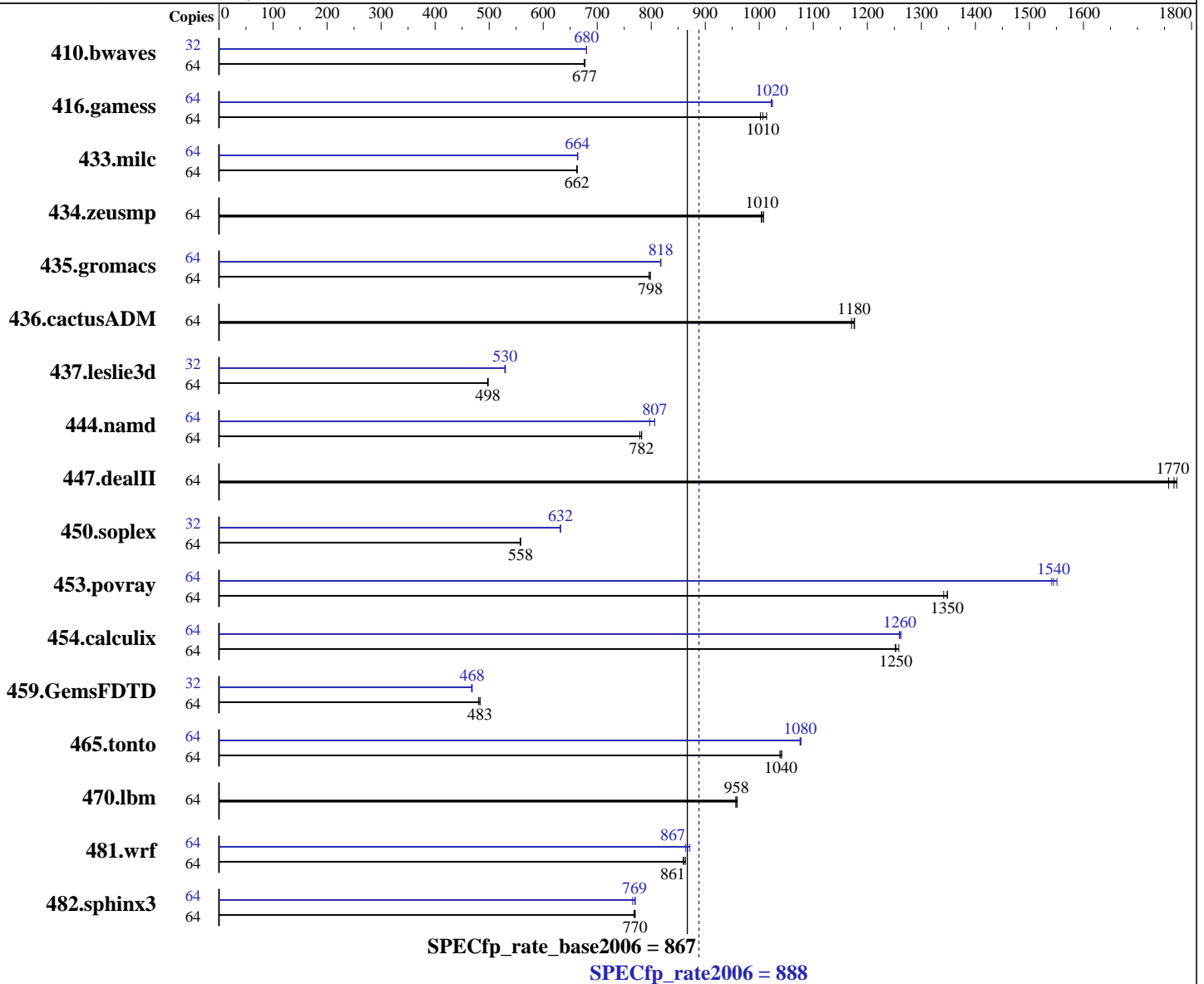
$SPECfp\_rate\_base2006 =$ 867

CPU2006 license: 9019

Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Aug-2012

Hardware Availability: Sep-2012

Software Availability: Feb-2012

	Copies		
410.bwaves	32		680
	64		677
416.gamess	64		1020
	64		1010
433.milc	64		664
	64		662
434.zeusmp	64		1010
435.gromacs	64		818
	64		798
436.cactusADM	64		1180
437.leslie3d	32		530
	64		498
444.namd	64		807
	64		782
447.dealII	64		1770
450.soplex	32		632
	64		558
453.povray	64		1540
	64		1350
454.calculix	64		1260
	64		1250
459.GemsFDTD	32		468
	64		483
465.tonto	64		1080
	64		1040
470.lbm	64		958
481.wrf	64		867
	64		861
482.sphinx3	64		769
	64		770

SPECfp_rate_base2006 = 867

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Hardware

CPU Name: Intel Xeon E5-4650

CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz

CPU MHz: 2700

FPU: Integrated

CPU(s) enabled: 32 cores, 4 chips, 8 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

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)
2.6.32-220.el6.x86_64

Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;
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:	20 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 PC3-12800R-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 X 300 GB 10K 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	64	**1285**	**677**	1284	678	1286	676	32	**639**	**680**	640	680	639	680
416.gamess	64	1251	1000	1236	1010	**1245**	**1010**	64	1226	1020	**1225**	**1020**	1223	1020
433.milc	64	**887**	**662**	887	662	886	663	64	885	664	886	663	**885**	**664**
434.zeusmp	64	580	1000	**579**	**1010**	578	1010	64	580	1000	**579**	**1010**	578	1010
435.gromacs	64	**572**	**798**	572	798	574	796	64	559	818	**559**	**818**	559	817
436.cactusADM	64	**651**	**1180**	653	1170	650	1180	64	**651**	**1180**	653	1170	650	1180
437.leslie3d	64	**1208**	**498**	1208	498	1211	497	32	**568**	**530**	567	530	569	529
444.namd	64	**656**	**782**	659	779	656	782	64	**636**	**807**	644	797	636	807
447.dealII	64	**414**	**1770**	413	1770	417	1760	64	**414**	**1770**	413	1770	417	1760
450.soplex	64	**956**	**558**	956	558	957	558	32	**422**	**632**	422	632	422	632
453.povray	64	253	1350	**253**	**1350**	254	1340	64	**220**	**1540**	221	1540	220	1550
454.calculix	64	420	1260	**421**	**1250**	422	1250	64	419	1260	**419**	**1260**	418	1260
459.GemsFDTD	64	1405	483	1413	481	**1406**	**483**	32	725	468	**725**	**468**	727	467
465.tonto	64	607	1040	605	1040	**606**	**1040**	64	**585**	**1080**	586	1080	585	1080
470.lbm	64	**918**	**958**	917	959	919	956	64	**918**	**958**	917	959	919	956
481.wrf	64	832	859	**831**	**861**	828	863	64	**824**	**867**	828	864	820	872
482.sphinx3	64	1624	768	1619	770	**1620**	**770**	64	1619	771	**1621**	**769**	1629	766

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

BIOS Configuration:
Hyper-Threading set to Enabled
Processor C6 Report set to Disabled

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Platform Notes (Continued)

```
Processor C1E set to Disabled
CPU Performance set to HPC
LV DDR Mode set to Performance-mode
 Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6800
 $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
 running on speccpu-rhel6.2 Fri Aug 31 23:38:40 2012

 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 E5-4650 0 @ 2.70GHz
       4 "physical id"s (chips)
       64 "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 : 8
       siblings  : 16
       physical 0: cores 0 1 2 3 4 5 6 7
       physical 1: cores 0 1 2 3 4 5 6 7
       physical 2: cores 0 1 2 3 4 5 6 7
       physical 3: cores 0 1 2 3 4 5 6 7
    cache size : 20480 KB

 From /proc/meminfo
    MemTotal:       264502052 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 speccpu-rhel6.2 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 Aug 31 23:18

 SPEC is set to: /opt/cpu2006-1.2
    Filesystem      Type     Size   Used Avail Use% Mounted on
    /dev/sda2       ext4     274G    11G  250G   4% /

 Additional information from dmidecode:
    Memory:
     32x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 2 rank
```
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Platform Notes (Continued)

```
(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"

 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
```

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Base Portability Flags (Continued)

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
```

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`

Cisco Systems

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Peak Portability Flags (Continued)

```
     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
```

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
```

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Peak Optimization Flags (Continued)

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

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-V1.2.20130607.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-V1.2.20130607.xml

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