SPEC® CFP2006 Result

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Huawei

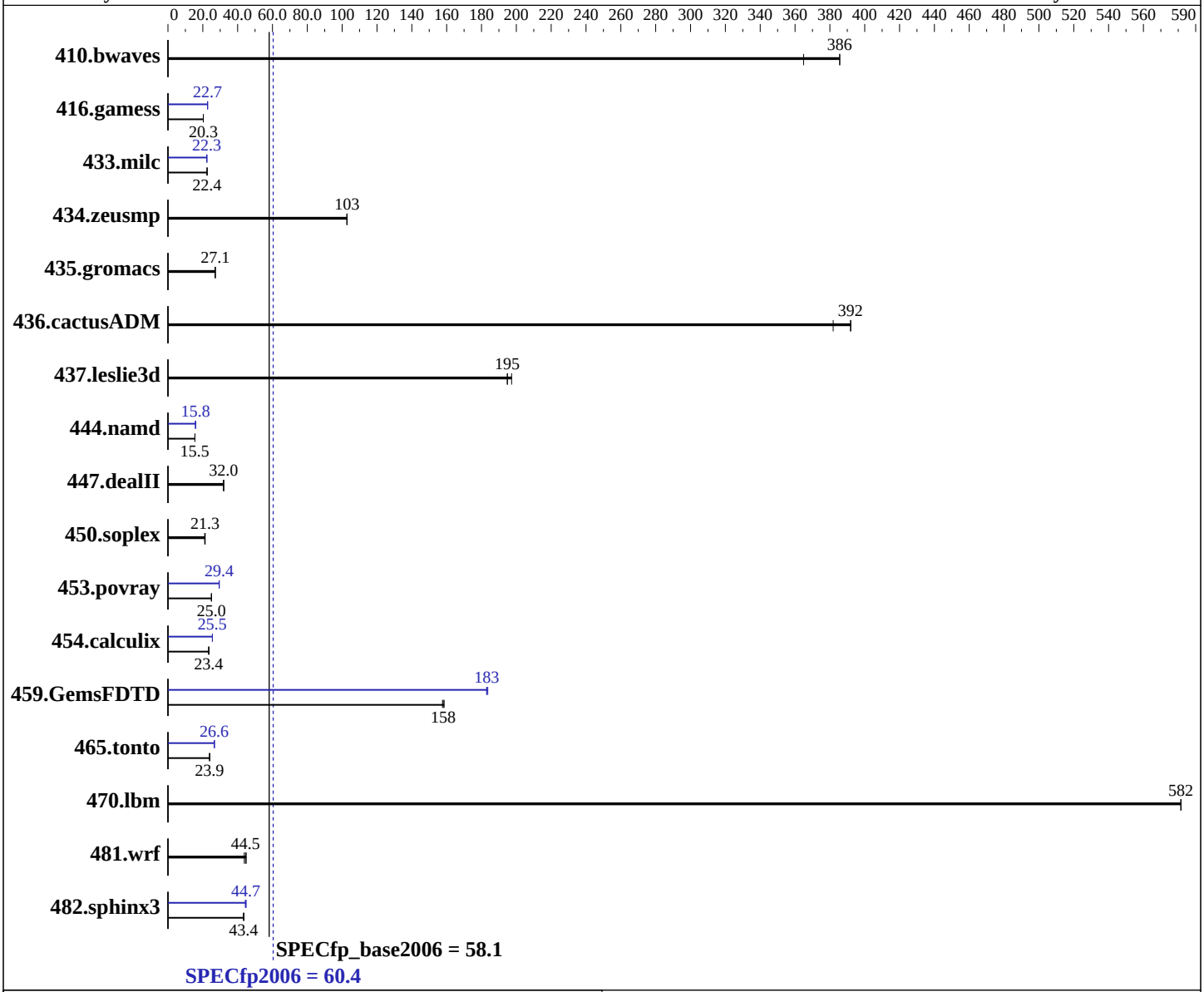
Tecal RH5885 V2 (Intel Xeon E7-4860)

SPECfp®2006 = 60.4

SPECfp_base2006 = 58.1

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Feb-2013
Hardware Availability: Oct-2012
Software Availability: Oct-2012



Hardware

CPU Name:	Intel Xeon E7-4860
CPU Characteristics:	Intel Turbo Boost Technology up to 2.67 GHz
CPU MHz:	2267
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip
CPU(s) orderable:	2,4 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 13.0.0.079 of Intel C++ Studio XE for Linux; Fortran: Version 13.0.0.079 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4

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L3 Cache: 24 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 4Rx4 PC3-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
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						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	37.2	365	35.2	386	**35.2**	**386**	37.2	365	35.2	386	**35.2**	**386**
416.gamess	964	20.3	965	20.3	**965**	**20.3**	861	22.7	860	22.8	**861**	**22.7**
433.milc	408	22.5	409	22.4	**409**	**22.4**	411	22.3	**411**	**22.3**	411	22.3
434.zeusmp	**88.5**	**103**	88.5	103	88.7	103	**88.5**	**103**	88.5	103	88.7	103
435.gromacs	263	27.1	263	27.2	**263**	**27.1**	263	27.1	263	27.2	**263**	**27.1**
436.cactusADM	30.5	392	**30.5**	**392**	31.3	382	30.5	392	**30.5**	**392**	31.3	382
437.leslie3d	**48.2**	**195**	47.6	197	48.2	195	**48.2**	**195**	47.6	197	48.2	195
444.namd	518	15.5	**518**	**15.5**	517	15.5	**506**	**15.8**	506	15.8	506	15.8
447.dealII	358	32.0	358	31.9	**358**	**32.0**	358	32.0	358	31.9	**358**	**32.0**
450.soplex	**392**	**21.3**	395	21.1	391	21.3	**392**	**21.3**	395	21.1	391	21.3
453.povray	213	25.0	**213**	**25.0**	213	24.9	181	29.4	**181**	**29.4**	180	29.5
454.calculix	351	23.5	**352**	**23.4**	353	23.4	323	25.5	**323**	**25.5**	324	25.5
459.GemsFDTD	**67.1**	**158**	66.9	159	67.3	158	**58.0**	**183**	58.0	183	57.8	184
465.tonto	412	23.9	**412**	**23.9**	411	23.9	**370**	**26.6**	369	26.6	370	26.6
470.lbm	23.6	582	**23.6**	**582**	23.6	582	23.6	582	**23.6**	**582**	23.6	582
481.wrf	255	43.8	249	44.9	**251**	**44.5**	255	43.8	249	44.9	**251**	**44.5**
482.sphinx3	447	43.6	**449**	**43.4**	449	43.4	434	44.9	**436**	**44.7**	439	44.4

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

```
BIOS configuration:
Intel Hyper-Threading set to Disabled
Power Technology set to Custom, Performance/Watt set to Traditional
Sysinfo program /home/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ 5569a0425e2ad530534e4c79a46e4d28
running on RH5885-24 Fri Feb  1 19:53:41 2013

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
```

Continued on next page

Platform Notes (Continued)

```
      http://www.spec.org/cpu2006/Docs/config.html#sysinfo

    From /proc/cpuinfo
       model name : Intel(R) Xeon(R) CPU E7- 4860 @ 2.27GHz
          4 "physical id"s (chips)
          40 "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 8 9 16 17 18 24 25
          physical 1: cores 0 1 2 8 9 16 17 18 24 25
          physical 2: cores 0 1 2 8 9 16 17 18 24 25
          physical 3: cores 0 1 2 8 9 16 17 18 24 25
       cache size : 24576 KB

    From /proc/meminfo
       MemTotal:       1058808572 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 RH5885-24 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 Feb 1 11:08

    SPEC is set to: /home/cpu2006
       Filesystem     Type    Size  Used Avail Use% Mounted on
       /dev/mapper/vg_rh588524-lv_home
                      ext4    409G   16G  373G   4% /home

    Additional information from dmidecode:
      BIOS American Megatrends Inc. RGPUC-BIOS-V023 12/17/2012
      Memory:
       64x   16 GB
       64x Hyundai HMT42GR7BMR4C-H9 16 GB 1067 MHz 4 rank

    (End of data from sysinfo program)
       Descriptions about memory generated by sysinfo are not correct,
       only 64 DIMMs are installed not 128, see descriptions below.
       Memory:
        64x Hyundai HMT42GR7BMR4C-H9 16 GB 1067 MHz 4 rank
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"
OMP_NUM_THREADS = "40"

 Binaries compiled on a system with 4x Xeon E7-8870 CPU + 1024GB
 memory using RHEL6.2
 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
```

Base Optimization Flags

C benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias`

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias`

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -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) `-static -auto-ilp32 -ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

Continued on next page

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- -static

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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revG.xml

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