SPEC® CFP2006 Result
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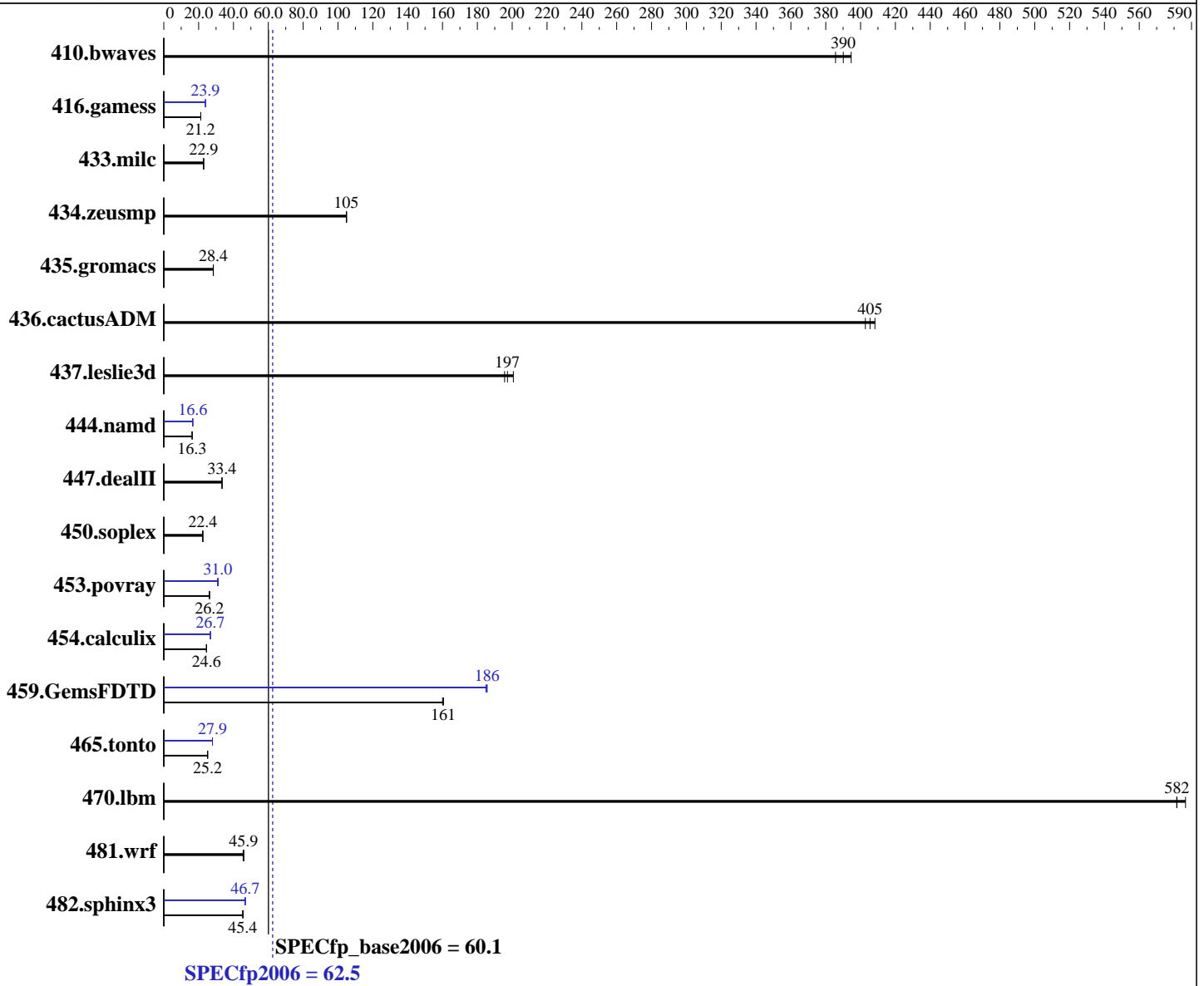
Huawei
Tecal RH5885 V2

$SPECfp^{®}2006 =$ 62.5

$SPECfp\_base2006 =$ 60.1

CPU2006 license: 13   **Test date:** Oct-2012
Test sponsor: Huawei   **Hardware Availability:** Oct-2012
Tested by: Huawei   **Software Availability:** Oct-2012

Benchmark	Result
410.bwaves	390
416.gamess	23.9 / 21.2
433.milc	22.9
434.zeusmp	105
435.gromacs	28.4
436.cactusADM	405
437.leslie3d	197
444.namd	16.6 / 16.3
447.dealII	33.4
450.soplex	22.4
453.povray	31.0 / 26.2
454.calculix	26.7 / 24.6
459.GemsFDTD	186 / 161
465.tonto	27.9 / 25.2
470.lbm	582
481.wrf	45.9
482.sphinx3	46.7 / 45.4

SPECfp_base2006 = 60.1
SPECfp2006 = 62.5

Hardware

CPU Name:	Intel Xeon E7-8870
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip
CPU(s) orderable:	2,4,8 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:	30 MB I+D on chip per chip	System State:	Run level 3 (add definition here)
Other Cache:	None	Base Pointers:	64-bit
Memory:	1 TB (64 x 16 GB 2Rx4 PC3L-10600R-9, ECC, running at 1066 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1x300 GB SAS, 10K RPM		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	35.2	386	**34.8**	**390**	34.4	395	35.2	386	**34.8**	**390**	34.4	395
416.gamess	**922**	**21.2**	921	21.2	922	21.2	819	23.9	**819**	**23.9**	819	23.9
433.milc	401	22.9	403	22.8	**401**	**22.9**	401	22.9	403	22.8	**401**	**22.9**
434.zeusmp	86.9	105	**86.9**	**105**	86.7	105	86.9	105	**86.9**	**105**	86.7	105
435.gromacs	251	28.4	**251**	**28.4**	252	28.4	251	28.4	**251**	**28.4**	252	28.4
436.cactusADM	29.3	408	29.7	403	**29.5**	**405**	29.3	408	29.7	403	**29.5**	**405**
437.leslie3d	46.8	201	**47.6**	**197**	48.0	196	46.8	201	**47.6**	**197**	48.0	196
444.namd	493	16.3	493	16.3	**493**	**16.3**	482	16.6	482	16.6	**482**	**16.6**
447.dealII	342	33.4	**342**	**33.4**	342	33.4	342	33.4	**342**	**33.4**	342	33.4
450.soplex	**373**	**22.4**	374	22.3	372	22.4	**373**	**22.4**	374	22.3	372	22.4
453.povray	202	26.3	**203**	**26.2**	204	26.1	170	31.2	**172**	**31.0**	172	30.9
454.calculix	**336**	**24.6**	336	24.6	338	24.4	308	26.8	**308**	**26.7**	308	26.7
459.GemsFDTD	66.3	160	**66.1**	**161**	66.1	161	**57.2**	**186**	57.2	186	57.4	185
465.tonto	**391**	**25.2**	391	25.2	392	25.1	352	28.0	**352**	**27.9**	352	27.9
470.lbm	23.4	587	**23.6**	**582**	23.6	582	23.4	587	**23.6**	**582**	23.6	582
481.wrf	245	45.5	243	45.9	**243**	**45.9**	245	45.5	243	45.9	**243**	**45.9**
482.sphinx3	430	45.3	428	45.5	**429**	**45.4**	**417**	**46.7**	418	46.7	416	46.9

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
    Sysinfo program /root/benchmark/cpu2006/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ 5569a0425e2ad530534e4c79a46e4d28
    running on Huawei-RH5885 Tue Oct 16 02:17:28 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

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7- 8870 @ 2.40GHz
      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 : 30720 KB

From /proc/meminfo
   MemTotal:      1058611024 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 Huawei-RH5885 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 Oct 15 16:10

SPEC is set to: /root/benchmark/cpu2006
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/sda1      ext4    274G  8.0G  252G   4% /root/benchmark

Additional information from dmidecode:
  BIOS American Megatrends Inc. RGPUC-BIOS-V019 09/18/2012
  Memory:
   64x   16 GB
   64x Micron 36KSF2G72PZ-1G4D1 16 GB 1067 MHz 2 rank

(End of data from sysinfo program)
```

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General Notes

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

 Binaries compiled on a system with 4xE7-8870 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
```

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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: `basepeak = yes`

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- -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 file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml

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