SPEC® CFP2006 Result
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Huawei

Huawei CH242 (Intel Xeon E7-4860)

$SPECfp^{®}2006 =$ 63.0

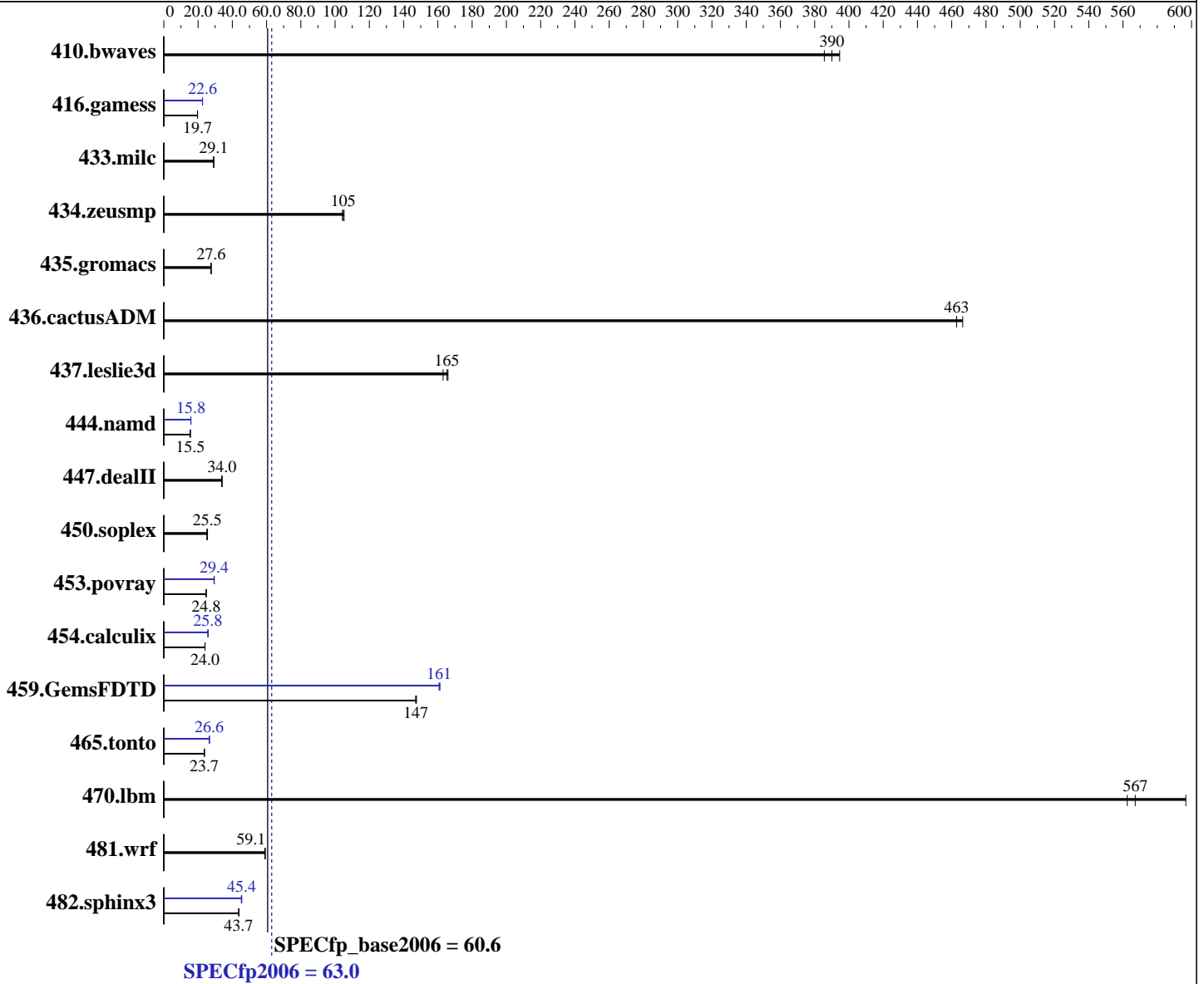$SPECfp\_base2006 =$ 60.6

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

Test date: Aug-2014
Hardware Availability: Apr-2011
Software Availability: Nov-2013

Benchmark results:

Benchmark	peak	base
410.bwaves		390
416.gamess	22.6	19.7
433.milc		29.1
434.zeusmp		105
435.gromacs		27.6
436.cactusADM		463
437.leslie3d		165
444.namd	15.8	15.5
447.dealII		34.0
450.soplex		25.5
453.povray	29.4	24.8
454.calculix	25.8	24.0
459.GemsFDTD	161	147
465.tonto	26.6	23.7
470.lbm		567
481.wrf		59.1
482.sphinx3	45.4	43.7

SPECfp_base2006 = 60.6
SPECfp2006 = 63.0

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 6.5 (Santiago) 2.6.32-431.el6.x86_64
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext3
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L3 Cache:	24 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3L-10600R-09, ECC, running at 1067 MHz)
Disk Subsystem:	1 X 600 GB SAS 10000 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	35.2	386	**34.8**	**390**	34.4	395	35.2	386	**34.8**	**390**	34.4	395
416.gamess	**995**	**19.7**	997	19.6	994	19.7	868	22.6	**866**	**22.6**	866	22.6
433.milc	315	29.1	**315**	**29.1**	315	29.2	315	29.1	**315**	**29.1**	315	29.2
434.zeusmp	86.5	105	87.3	104	**86.9**	**105**	86.5	105	87.3	104	**86.9**	**105**
435.gromacs	**258**	**27.6**	259	27.6	258	27.7	**258**	**27.6**	259	27.6	258	27.7
436.cactusADM	25.8	463	**25.8**	**463**	25.6	466	25.8	463	**25.8**	**463**	25.6	466
437.leslie3d	56.6	166	57.6	163	**56.9**	**165**	56.6	166	57.6	163	**56.9**	**165**
444.namd	518	15.5	**519**	**15.5**	519	15.5	507	15.8	**507**	**15.8**	507	15.8
447.dealII	336	34.0	**337**	**34.0**	338	33.9	336	34.0	**337**	**34.0**	338	33.9
450.soplex	332	25.1	327	25.5	**328**	**25.5**	332	25.1	327	25.5	**328**	**25.5**
453.povray	216	24.7	**215**	**24.8**	215	24.8	**181**	**29.4**	182	29.3	180	29.5
454.calculix	343	24.0	342	24.1	**343**	**24.0**	320	25.8	320	25.8	**320**	**25.8**
459.GemsFDTD	**72.1**	**147**	71.9	148	72.1	147	66.0	161	65.8	161	**66.0**	**161**
465.tonto	415	23.7	416	23.7	**416**	**23.7**	370	26.6	**370**	**26.6**	370	26.6
470.lbm	23.0	597	24.4	562	**24.2**	**567**	23.0	597	24.4	562	**24.2**	**567**
481.wrf	189	59.0	**189**	**59.1**	189	59.2	189	59.0	**189**	**59.1**	189	59.2
482.sphinx3	446	43.7	**446**	**43.7**	444	43.9	428	45.6	**429**	**45.4**	431	45.2

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on localhost.localdomain Fri Aug  8 13:48:29 2014
```

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Platform Notes (Continued)

```
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 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:       264380632 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 localhost.localdomain 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 Aug 8 04:43

SPEC is set to: /spec
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/sda2       ext3   547G  176G  344G  34% /

Additional information from dmidecode:
  Memory:
   32x RAMAXEL RMS6031EC64FAF1333 8 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,0,1"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
```

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

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$SPECfp\_base2006 = 60.6$

Base Optimization Flags (Continued)

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`

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

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Peak Optimization Flags (Continued)

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
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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-linux64.20120912.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.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-ic12.1-official-linux64.20120912.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml

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

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