SPEC® CFP2006 Result

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Huawei

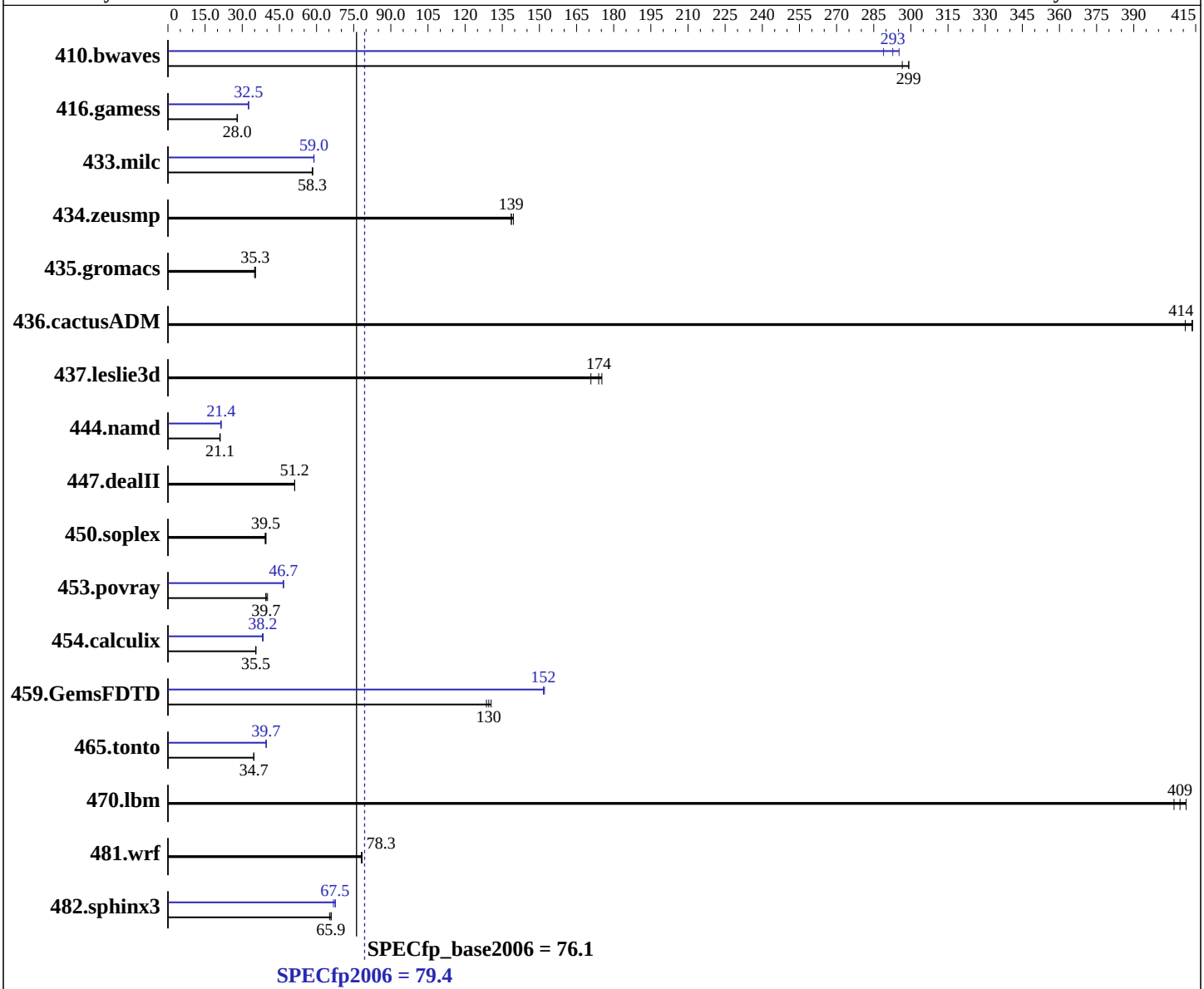
Huawei RH2285 V2 (Intel Xeon E5-2470)

SPECfp®2006 = 79.4

SPECfp_base2006 = 76.1

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

Test date: Jul-2012
Hardware Availability: May-2012
Software Availability: Dec-2011



Hardware

CPU Name:	Intel Xeon E5-2470
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

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Software

Operating System:	Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 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:	ext4

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12 x 8 GB 1Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 300 GB SAS, 10K 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	45.4	299	**45.4**	**299**	45.8	297	**46.4**	**293**	46.0	295	47.0	289
416.gamess	701	27.9	**700**	**28.0**	697	28.1	**602**	**32.5**	601	32.6	602	32.5
433.milc	158	58.3	**157**	**58.3**	157	58.5	**156**	**59.0**	156	58.9	156	59.0
434.zeusmp	65.2	139	65.6	139	**65.6**	**139**	65.2	139	65.6	139	**65.6**	**139**
435.gromacs	204	35.0	202	35.3	**202**	**35.3**	204	35.0	202	35.3	**202**	**35.3**
436.cactusADM	**28.9**	**414**	29.1	411	28.9	414	**28.9**	**414**	29.1	411	28.9	414
437.leslie3d	53.6	175	55.0	171	**54.0**	**174**	53.6	175	55.0	171	**54.0**	**174**
444.namd	383	21.0	381	21.1	**381**	**21.1**	374	21.4	374	21.4	**374**	**21.4**
447.dealII	224	51.2	**224**	**51.2**	223	51.2	224	51.2	**224**	**51.2**	223	51.2
450.soplex	213	39.2	**211**	**39.5**	211	39.6	213	39.2	**211**	**39.5**	211	39.6
453.povray	135	39.5	**134**	**39.7**	132	40.2	114	46.6	114	46.7	**114**	**46.7**
454.calculix	**233**	**35.5**	232	35.5	233	35.4	216	38.2	**216**	**38.2**	214	38.5
459.GemsFDTD	82.5	129	**81.9**	**130**	81.3	131	70.0	152	69.8	152	**70.0**	**152**
465.tonto	**284**	**34.7**	284	34.7	284	34.7	**248**	**39.7**	248	39.7	248	39.7
470.lbm	33.8	406	**33.6**	**409**	33.4	411	33.8	406	**33.6**	**409**	33.4	411
481.wrf	143	78.1	**143**	**78.3**	142	78.4	143	78.1	**143**	**78.3**	142	78.4
482.sphinx3	299	65.2	**296**	**65.9**	296	65.9	**289**	**67.5**	288	67.6	292	66.8

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"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Select only test related files when installing the operating system
```

Platform Notes

```
BIOS configuration:
Intel Hyper-Threading set to Disabled
Set Power Efficiency Mode to Performance
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on RH62-yjp2 Tue Jul 24 17:30:41 2012
```

Continued on next page

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 E5-2470 0 @ 2.30GHz
      2 "physical id"s (chips)
      16 "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  : 8
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       99043072 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

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 RH62-yjp2 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 Jul 23 23:12

SPEC is set to: /spec
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/sda1      ext3    270G   91G  165G  36% /

Additional information from dmidecode:
  Memory:
   12x Samsu M393B 8 GB 1600 MHz 1 rank

(End of data from sysinfo program)
```

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"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
```

Continued on next page

General Notes (Continued)

```
using RHEL 6.1
```

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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

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

Continued on next page

Base Optimization Flags (Continued)

Fortran benchmarks:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xAVX -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: `-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 -ansi-alias`

470.lbm: `basepeak = yes`

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

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`

Continued on next page

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel -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

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(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: -xAVX -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-linux64.20120425.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revE.20120703.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/Huawei-Platform-Settings-revE.20120703.xml

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