



SPEC[®] CFP2006 Result

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Huawei
CH121 (Intel Xeon E5-2670 V2)

SPECfp[®]2006 = 99.5

SPECfp_base2006 = 95.5

CPU2006 license: 3175

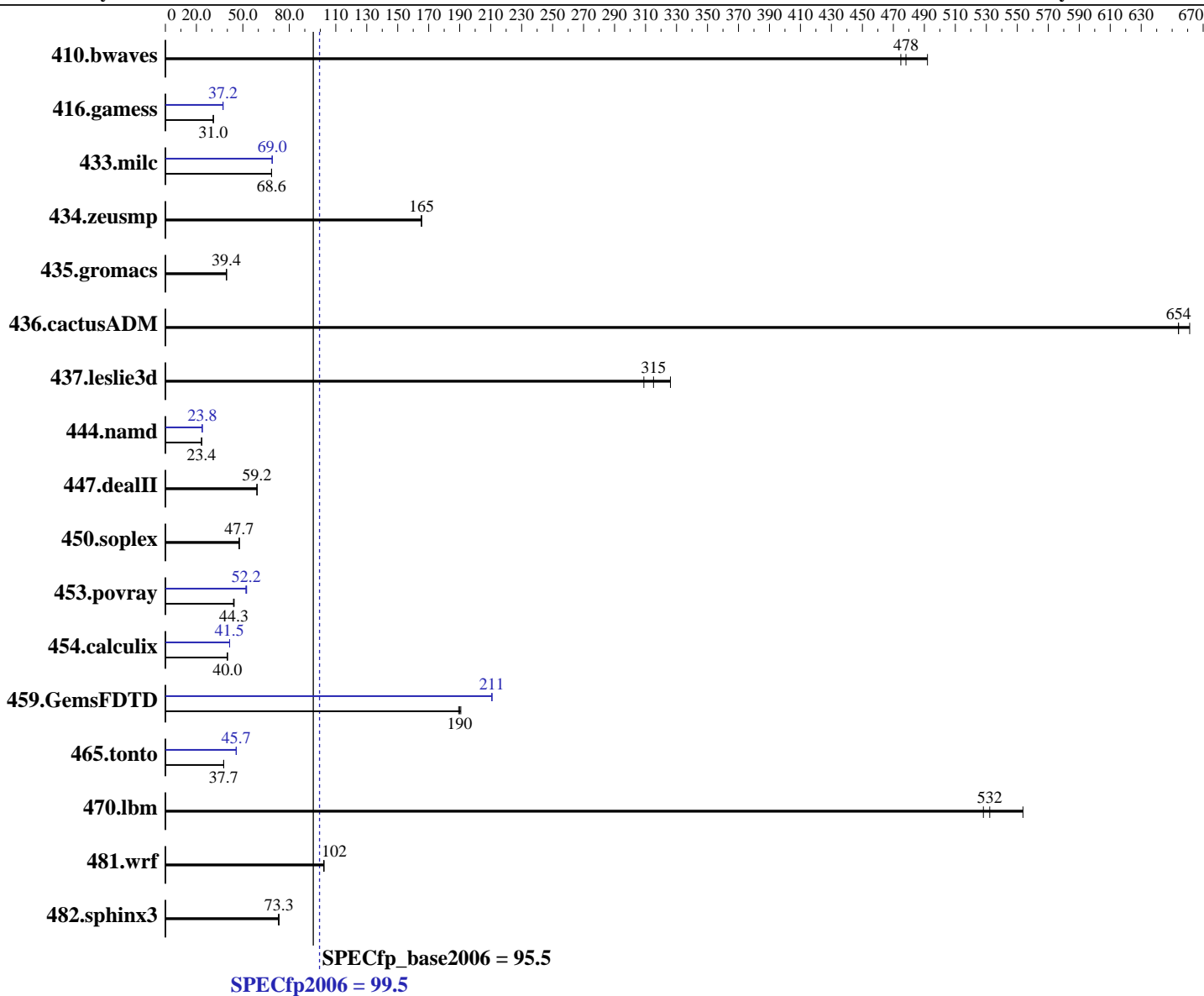
Test sponsor: Huawei

Tested by: Huawei

Test date: Jun-2014

Hardware Availability: Sep-2013

Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E5-2670 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
 CPU MHz: 2500
 FPU: Integrated
 CPU(s) enabled: 20 cores, 2 chips, 10 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 6.5 (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: ext4

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L3 Cache: 25 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)
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 | <u>28.4</u> | <u>478</u> | 27.6 | 492 | 28.6 | 475 | <u>28.4</u> | <u>478</u> | 27.6 | 492 | 28.6 | 475 |
| 416.gamess | 633 | 31.0 | <u>633</u> | <u>31.0</u> | 633 | 30.9 | 526 | 37.2 | <u>526</u> | <u>37.2</u> | 527 | 37.2 |
| 433.milc | 134 | 68.6 | 134 | 68.5 | <u>134</u> | <u>68.6</u> | 133 | 68.9 | 133 | 69.0 | <u>133</u> | <u>69.0</u> |
| 434.zeusmp | <u>55.0</u> | <u>165</u> | 55.0 | 165 | 55.0 | 165 | <u>55.0</u> | <u>165</u> | 55.0 | 165 | 55.0 | 165 |
| 435.gromacs | 182 | 39.3 | <u>181</u> | <u>39.4</u> | 181 | 39.5 | 182 | 39.3 | <u>181</u> | <u>39.4</u> | 181 | 39.5 |
| 436.cactusADM | <u>18.3</u> | <u>654</u> | 18.1 | 661 | 18.3 | 654 | <u>18.3</u> | <u>654</u> | 18.1 | 661 | 18.3 | 654 |
| 437.leslie3d | 30.4 | 309 | <u>29.8</u> | <u>315</u> | 28.8 | 326 | 30.4 | 309 | <u>29.8</u> | <u>315</u> | 28.8 | 326 |
| 444.namd | 343 | 23.4 | 343 | 23.4 | <u>343</u> | <u>23.4</u> | 337 | 23.8 | 337 | 23.8 | <u>337</u> | <u>23.8</u> |
| 447.dealII | <u>193</u> | <u>59.2</u> | 193 | 59.2 | 193 | 59.1 | <u>193</u> | <u>59.2</u> | 193 | 59.2 | 193 | 59.1 |
| 450.soplex | 175 | 47.6 | <u>175</u> | <u>47.7</u> | 175 | 47.7 | 175 | 47.6 | <u>175</u> | <u>47.7</u> | 175 | 47.7 |
| 453.povray | 121 | 44.0 | 120 | 44.3 | <u>120</u> | <u>44.3</u> | 102 | 52.0 | 101 | 52.5 | <u>102</u> | <u>52.2</u> |
| 454.calculix | 206 | 40.0 | <u>206</u> | <u>40.0</u> | 206 | 40.0 | 199 | 41.5 | 199 | 41.5 | <u>199</u> | <u>41.5</u> |
| 459.GemsFDTD | <u>55.8</u> | <u>190</u> | 55.6 | 191 | 56.0 | 189 | 50.3 | 211 | 50.3 | 211 | <u>50.3</u> | <u>211</u> |
| 465.tonto | 261 | 37.7 | <u>261</u> | <u>37.7</u> | 262 | 37.6 | 215 | 45.7 | 215 | 45.8 | <u>215</u> | <u>45.7</u> |
| 470.lbm | <u>25.8</u> | <u>532</u> | 26.0 | 528 | 24.8 | 554 | <u>25.8</u> | <u>532</u> | 26.0 | 528 | 24.8 | 554 |
| 481.wrf | 109 | 102 | 109 | 102 | <u>109</u> | <u>102</u> | 109 | 102 | 109 | 102 | <u>109</u> | <u>102</u> |
| 482.sphinx3 | <u>266</u> | <u>73.3</u> | 266 | 73.3 | 267 | 73.0 | <u>266</u> | <u>73.3</u> | 266 | 73.3 | 267 | 73.0 |

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

Sysinfo program /spec/config/sysinfo.rev6800
\$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3
running on localhost.localdomain Wed Jun 25 22:17:33 2014

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 E5-2670 v2 @ 2.50GHz
Continued on next page



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|--------------------------------------|--------------------------|-------------|
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| | |
|------------------------------|--|
| CPU2006 license: 3175 | Test date: Jun-2014 |
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Platform Notes (Continued)

```

2 "physical id"s (chips)
20 "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 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal:      264478184 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 Jun 25 16:34

SPEC is set to: /spec
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal       ext4  410G   82G  307G  21% /

Additional information from dmidecode:
Memory:
16x Micron 36JSF2G72PZ-1G9E1 16 GB 1867 MHz 2 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 = "20"

```

Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory using RHEL 6.1

Transparent Huge Pages enabled with:

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```



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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

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



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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: basepeak = yes

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: 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: basepeak = yes

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Peak Optimization Flags (Continued)

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-linux64.20111122.html>
<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-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-V1.0-IVB-RevG.xml>

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 For other inquiries, please contact webmaster@spec.org.

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