



SPEC[®] CFP2006 Result

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Huawei

SPECfp[®]2006 = 105

Huawei RH2288E v2 (Intel Xeon E5-2680 v2)

SPECfp_base2006 = 101

CPU2006 license: 3175

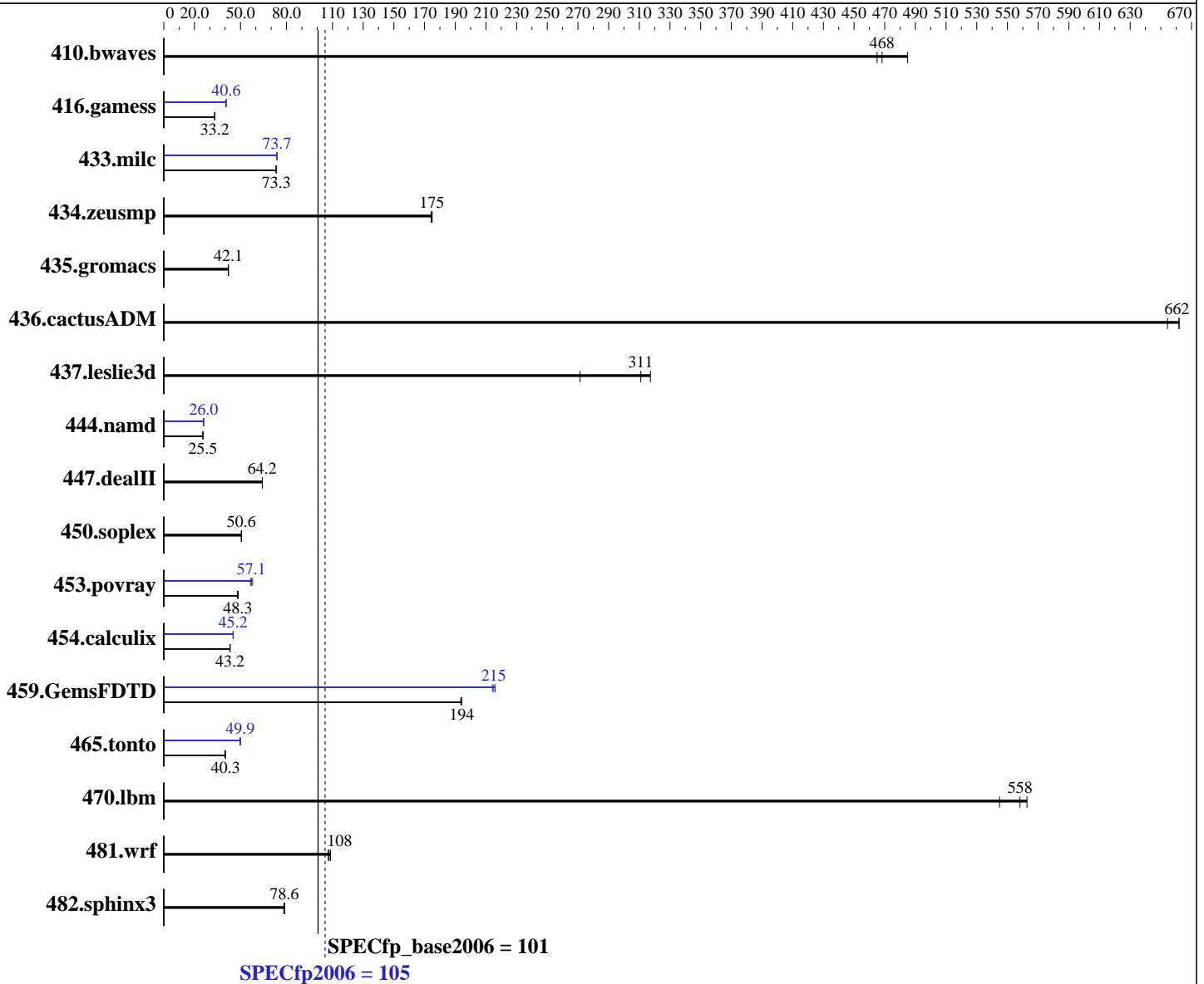
Test date: Sep-2014

Test sponsor: Huawei

Hardware Availability: Sep-2013

Tested by: Huawei

Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E5-2680 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip
 CPU(s) orderable: 1,2 chip
 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 300 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 | 29.2 | 465 | 28.0 | 485 | <u>29.0</u> | <u>468</u> | 29.2 | 465 | 28.0 | 485 | <u>29.0</u> | <u>468</u> |
| 416.gamess | 590 | 33.2 | 590 | 33.2 | <u>590</u> | <u>33.2</u> | 483 | 40.6 | 482 | 40.6 | <u>482</u> | <u>40.6</u> |
| 433.milc | <u>125</u> | <u>73.3</u> | 125 | 73.4 | 125 | 73.2 | <u>124</u> | <u>73.7</u> | 125 | 73.7 | 124 | 73.8 |
| 434.zeusmp | 52.2 | 174 | <u>52.0</u> | <u>175</u> | 52.0 | 175 | 52.2 | 174 | <u>52.0</u> | <u>175</u> | 52.0 | 175 |
| 435.gromacs | 169 | 42.2 | <u>170</u> | <u>42.1</u> | 170 | 42.0 | 169 | 42.2 | <u>170</u> | <u>42.1</u> | 170 | 42.0 |
| 436.cactusADM | 18.1 | 662 | <u>18.1</u> | <u>662</u> | 18.3 | 654 | 18.1 | 662 | <u>18.1</u> | <u>662</u> | 18.3 | 654 |
| 437.leslie3d | 34.6 | 271 | 29.6 | 317 | <u>30.2</u> | <u>311</u> | 34.6 | 271 | 29.6 | 317 | <u>30.2</u> | <u>311</u> |
| 444.namd | 314 | 25.5 | <u>314</u> | <u>25.5</u> | 314 | 25.5 | <u>309</u> | <u>26.0</u> | 309 | 26.0 | 309 | 26.0 |
| 447.dealII | <u>178</u> | <u>64.2</u> | 178 | 64.3 | 178 | 64.2 | <u>178</u> | <u>64.2</u> | 178 | 64.3 | 178 | 64.2 |
| 450.soplex | 165 | 50.6 | <u>165</u> | <u>50.6</u> | 165 | 50.6 | 165 | 50.6 | <u>165</u> | <u>50.6</u> | 165 | 50.6 |
| 453.povray | 111 | 48.0 | <u>110</u> | <u>48.3</u> | 110 | 48.4 | 91.9 | 57.9 | <u>93.2</u> | <u>57.1</u> | 93.8 | 56.7 |
| 454.calculix | <u>191</u> | <u>43.2</u> | 191 | 43.2 | 191 | 43.1 | <u>183</u> | <u>45.2</u> | 183 | 45.2 | 183 | 45.2 |
| 459.GemsFDTD | <u>54.6</u> | <u>194</u> | 54.8 | 194 | 54.6 | 194 | 49.1 | 216 | <u>49.3</u> | <u>215</u> | 49.5 | 214 |
| 465.tonto | 247 | 39.8 | <u>244</u> | <u>40.3</u> | 244 | 40.4 | 197 | 49.9 | <u>197</u> | <u>49.9</u> | 198 | 49.6 |
| 470.lbm | 24.4 | 563 | <u>24.6</u> | <u>558</u> | 25.2 | 545 | 24.4 | 563 | <u>24.6</u> | <u>558</u> | 25.2 | 545 |
| 481.wrf | 103 | 109 | 104 | 107 | <u>104</u> | <u>108</u> | 103 | 109 | 104 | 107 | <u>104</u> | <u>108</u> |
| 482.sphinx3 | 248 | 78.7 | 249 | 78.3 | <u>248</u> | <u>78.6</u> | 248 | 78.7 | 249 | 78.3 | <u>248</u> | <u>78.6</u> |

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:
 Set Power Efficiency Mode to Custom
 Baseboard Management Controller used to adjust the fan speed to 100%
 Set Hyper-Threading to Disabled
 Sysinfo program /spec/config/sysinfo.rev6800
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3
 running on localhost.localdomain Mon Mar 3 13:14:35 2014

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

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Platform Notes (Continued)

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

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) CPU E5-2680 v2 @ 2.80GHz
 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 Mar 1 05:06

SPEC is set to: /spec

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2        ext4  254G  15G  227G   6% /
```

Additional information from dmidecode:

Memory:

```
16x Samsung M393B2G70DB0-CMA 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"
```

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General Notes (Continued)

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

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

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Base Optimization Flags (Continued)

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

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

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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: basepeak = yes

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-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-linux64.20120425.xml>
<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml>



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