



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>2006 = 98.7

Huawei XH622 V3 (Intel Xeon E5-2683 v3)

SPECfp\_base2006 = 94.7

CPU2006 license: 3175

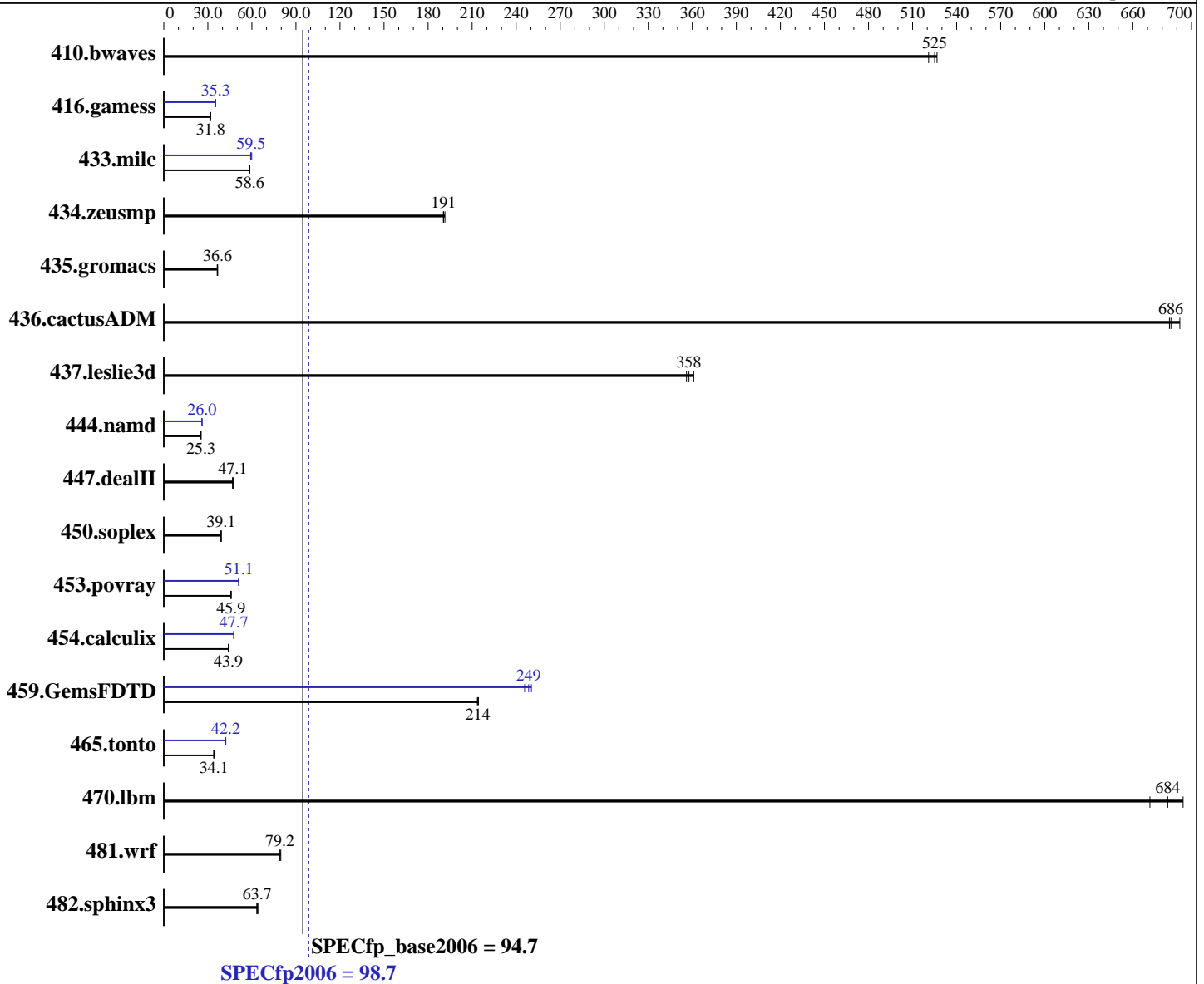
Test date: Mar-2015

Test sponsor: Huawei

Hardware Availability: Sep-2014

Tested by: Huawei

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E5-2683 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 28 cores, 2 chips, 14 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

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)  
 3.10.0-123.el7.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

Continued on next page



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L3 Cache: 35 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
 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	26.1	521	<u>25.9</u>	<u>525</u>	25.8	527	26.1	521	<u>25.9</u>	<u>525</u>	25.8	527
416.gamess	613	31.9	620	31.6	<u>615</u>	<u>31.8</u>	555	35.3	<u>555</u>	<u>35.3</u>	557	35.2
433.milc	<u>157</u>	<u>58.6</u>	157	58.6	157	58.5	<u>154</u>	<u>59.5</u>	155	59.1	153	59.9
434.zeusmp	<u>47.8</u>	<u>191</u>	47.8	190	47.5	191	<u>47.8</u>	<u>191</u>	47.8	190	47.5	191
435.gromacs	195	36.7	<u>195</u>	<u>36.6</u>	196	36.4	195	36.7	<u>195</u>	<u>36.6</u>	196	36.4
436.cactusADM	17.3	692	<u>17.4</u>	<u>686</u>	17.4	685	17.3	692	<u>17.4</u>	<u>686</u>	17.4	685
437.leslie3d	26.0	361	<u>26.3</u>	<u>358</u>	26.4	356	26.0	361	<u>26.3</u>	<u>358</u>	26.4	356
444.namd	317	25.3	317	25.3	<u>317</u>	<u>25.3</u>	308	26.0	309	26.0	<u>308</u>	<u>26.0</u>
447.dealII	243	47.1	<u>243</u>	<u>47.1</u>	244	46.8	243	47.1	<u>243</u>	<u>47.1</u>	244	46.8
450.soplex	214	38.9	213	39.1	<u>214</u>	<u>39.1</u>	214	38.9	213	39.1	<u>214</u>	<u>39.1</u>
453.povray	116	45.9	116	45.7	<u>116</u>	<u>45.9</u>	104	51.2	<u>104</u>	<u>51.1</u>	105	50.9
454.calculix	188	43.9	<u>188</u>	<u>43.9</u>	188	44.0	173	47.7	173	47.7	<u>173</u>	<u>47.7</u>
459.GemsFDTD	49.7	214	<u>49.6</u>	<u>214</u>	49.5	214	42.4	250	<u>42.7</u>	<u>249</u>	43.2	246
465.tonto	289	34.1	<u>288</u>	<u>34.1</u>	288	34.1	233	42.2	<u>233</u>	<u>42.2</u>	233	42.2
470.lbm	19.8	694	20.5	672	<u>20.1</u>	<u>684</u>	19.8	694	20.5	672	<u>20.1</u>	<u>684</u>
481.wrf	<u>141</u>	<u>79.2</u>	140	79.7	142	78.8	<u>141</u>	<u>79.2</u>	140	79.7	142	78.8
482.sphinx3	304	64.1	308	63.3	<u>306</u>	<u>63.7</u>	304	64.1	308	63.3	<u>306</u>	<u>63.7</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  
 Set Snoop Mode to HS mode  
 Set Intel Hyper-threading Technology to Disable  
 Sysinfo program /spec15/config/sysinfo.rev6914  
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
 running on localhost.localdomain Fri Mar 20 06:11:22 2015

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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Hardware Availability: Sep-2014

Software Availability: Sep-2014

## Platform Notes (Continued)

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

From /proc/cpuinfo

```

model name      : Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz
 2 "physical id"s (chips)
 28 "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     : 14
  siblings      : 14
  physical 0:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size     : 35840 KB

```

From /proc/meminfo

```

MemTotal:      263720096 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

From /etc/\*release\* /etc/\*version\*

```

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

```

uname -a:

```

Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Mar 20 05:49

SPEC is set to: /spec15

```

Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal        ext4  458G   38G  397G   9% /

```

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 1.17 09/03/2014

Memory:

Continued on next page



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<b>CPU2006 license:</b> 3175	<b>Test date:</b> Mar-2015
<b>Test sponsor:</b> Huawei	<b>Hardware Availability:</b> Sep-2014
<b>Tested by:</b> Huawei	<b>Software Availability:</b> Sep-2014

## Platform Notes (Continued)

8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz  
 8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:  
 KMP\_AFFINITY = "granularity=fine,compact,1,0"  
 LD\_LIBRARY\_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"  
 OMP\_NUM\_THREADS = "28"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0  
 Transparent Huge Pages enabled with:  
 echo always > /sys/kernel/mm/transparent\_hugepage/enabled  
 runspec command invoked through numactl i.e.:  
 numactl --interleave=all runspec <etc>  
 The Huawei XH622 V3 and Huawei XH628 V3 are electronically equivalent.  
 The results have been measured on a Huawei XH628 V3 model.

## 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.lelie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64

Continued on next page



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## Base Portability Flags (Continued)

```

447.deallI: -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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -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



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Software Availability: Sep-2014

## Peak Optimization Flags

### C benchmarks:

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

### C++ benchmarks:

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(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: -xCORE-AVX2(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

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Software Availability: Sep-2014

## Peak Optimization Flags (Continued)

454.calculix: -xCORE-AVX2 -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-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.xml>

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