



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>2006 = 94.7

Huawei XH622 V3 (Intel Xeon E5-2670 v3)

SPECfp\_base2006 = 90.0

CPU2006 license: 3175

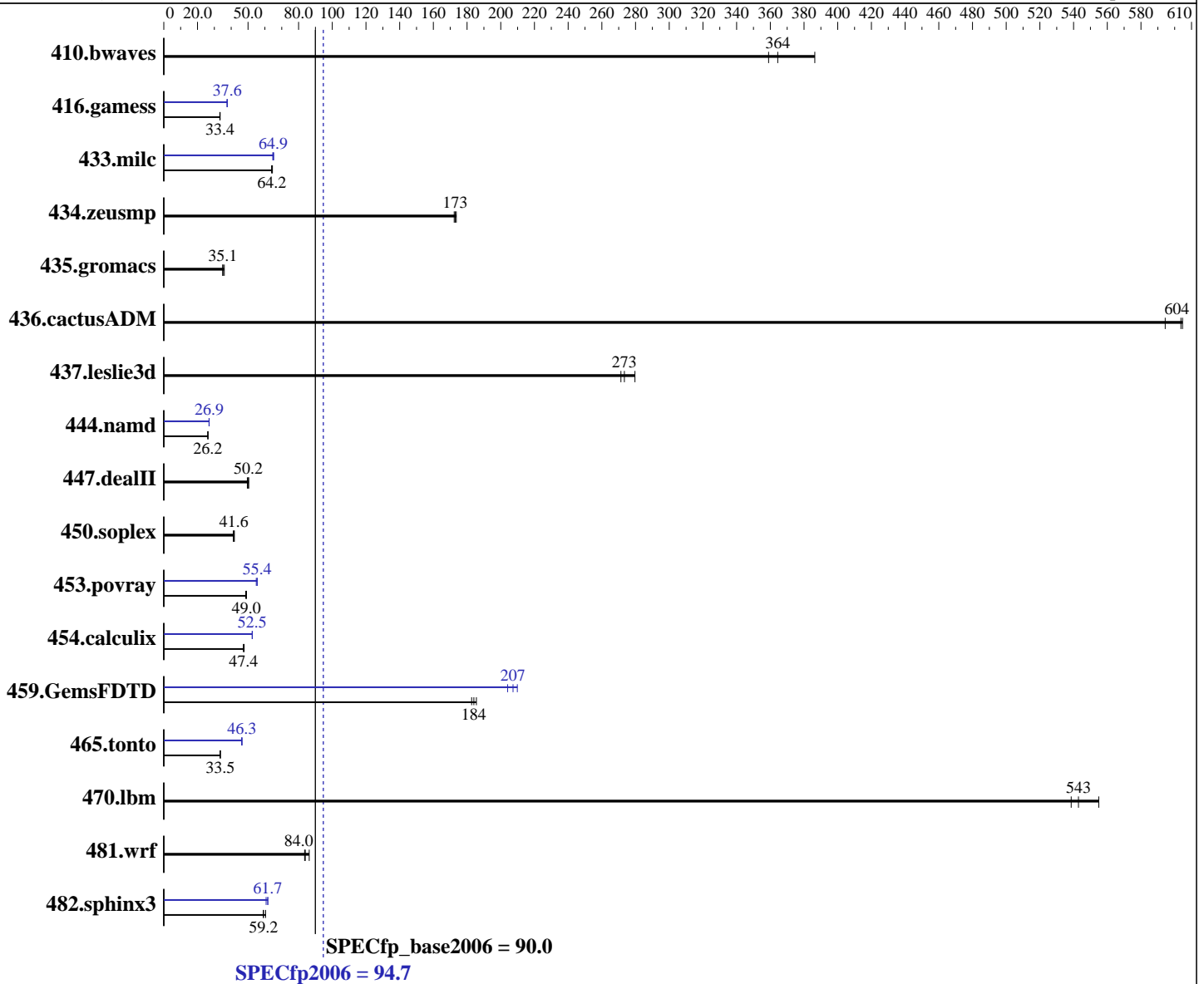
Test sponsor: Huawei

Tested by: Huawei

Test date: Feb-2015

Hardware Availability: Sep-2014

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E5-2670 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 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 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

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L3 Cache: 30 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	37.9	359	35.2	386	<b><u>37.3</u></b>	<b><u>364</u></b>	37.9	359	35.2	386	<b><u>37.3</u></b>	<b><u>364</u></b>
416.gamess	589	33.2	<b><u>587</u></b>	<b><u>33.4</u></b>	586	33.4	520	37.7	521	37.6	<b><u>520</u></b>	<b><u>37.6</u></b>
433.milc	<b><u>143</u></b>	<b><u>64.2</u></b>	142	64.5	143	64.0	142	64.7	141	65.2	<b><u>141</u></b>	<b><u>64.9</u></b>
434.zeusmp	52.4	174	52.8	172	<b><u>52.6</u></b>	<b><u>173</u></b>	52.4	174	52.8	172	<b><u>52.6</u></b>	<b><u>173</u></b>
435.gromacs	204	34.9	<b><u>203</u></b>	<b><u>35.1</u></b>	199	35.9	204	34.9	<b><u>203</u></b>	<b><u>35.1</u></b>	199	35.9
436.cactusADM	20.1	594	19.8	605	<b><u>19.8</u></b>	<b><u>604</u></b>	20.1	594	19.8	605	<b><u>19.8</u></b>	<b><u>604</u></b>
437.leslie3d	<b><u>34.4</u></b>	<b><u>273</u></b>	34.6	271	33.6	280	<b><u>34.4</u></b>	<b><u>273</u></b>	34.6	271	33.6	280
444.namd	306	26.2	307	26.2	<b><u>306</u></b>	<b><u>26.2</u></b>	298	26.9	299	26.8	<b><u>298</u></b>	<b><u>26.9</u></b>
447.dealII	<b><u>228</u></b>	<b><u>50.2</u></b>	231	49.6	227	50.4	<b><u>228</u></b>	<b><u>50.2</u></b>	231	49.6	227	50.4
450.soplex	199	41.9	<b><u>200</u></b>	<b><u>41.6</u></b>	202	41.3	199	41.9	<b><u>200</u></b>	<b><u>41.6</u></b>	202	41.3
453.povray	<b><u>109</u></b>	<b><u>49.0</u></b>	108	49.1	109	48.6	<b><u>96.1</u></b>	<b><u>55.4</u></b>	96.0	55.4	96.9	54.9
454.calculix	173	47.7	<b><u>174</u></b>	<b><u>47.4</u></b>	175	47.3	157	52.5	<b><u>157</u></b>	<b><u>52.5</u></b>	157	52.5
459.GemsFDTD	58.1	183	57.2	186	<b><u>57.7</u></b>	<b><u>184</u></b>	52.0	204	50.6	210	<b><u>51.2</u></b>	<b><u>207</u></b>
465.tonto	293	33.6	294	33.5	<b><u>294</u></b>	<b><u>33.5</u></b>	<b><u>212</u></b>	<b><u>46.3</u></b>	213	46.3	212	46.4
470.lbm	24.8	555	25.5	539	<b><u>25.3</u></b>	<b><u>543</u></b>	24.8	555	25.5	539	<b><u>25.3</u></b>	<b><u>543</u></b>
481.wrf	<b><u>133</u></b>	<b><u>84.0</u></b>	129	86.3	134	83.6	<b><u>133</u></b>	<b><u>84.0</u></b>	129	86.3	134	83.6
482.sphinx3	323	60.4	330	59.1	<b><u>329</u></b>	<b><u>59.2</u></b>	316	61.7	<b><u>316</u></b>	<b><u>61.7</u></b>	321	60.7

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 HT to Disable  
 Sysinfo program /spec15/config/sysinfo.rev6914  
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
 running on localhost.localdomain Thu Feb 12 05:01:21 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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CPU2006 license: 3175

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Tested by: Huawei

Test date: Feb-2015

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 E5-2670 v3 @ 2.30GHz

2 "physical id"s (chips)

24 "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 : 12

siblings : 12

physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13

physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

cache size : 30720 KB

From /proc/meminfo

MemTotal: 263720560 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 Feb 12 04:59

SPEC is set to: /spec15

Filesystem Type Size Used Avail Use% Mounted on

/dev/sdal ext4 433G 63G 349G 16% /

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:

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## 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 = "24"

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.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64

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## Base Portability Flags (Continued)

```

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:
-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: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

### 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

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## Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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