



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>2006 = **108**

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp\_base2006 = **104**

CPU2006 license: 3175

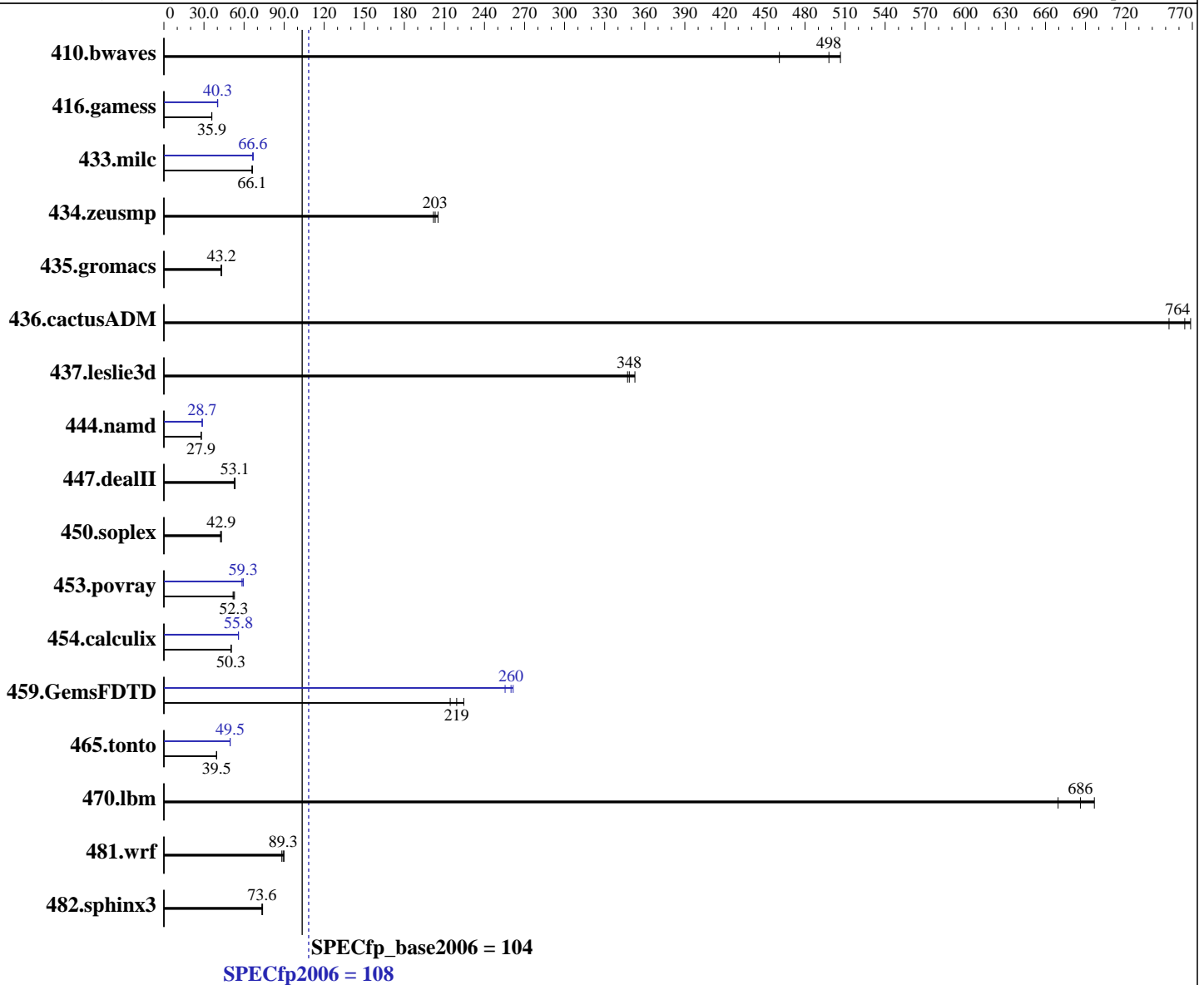
Test sponsor: Huawei

Tested by: Huawei

Test date: Jan-2015

Hardware Availability: Sep-2014

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E5-2660 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2600  
 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 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: 25 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 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	29.5	461	<b><u>27.3</u></b>	<b><u>498</u></b>	26.8	507	29.5	461	<b><u>27.3</u></b>	<b><u>498</u></b>	26.8	507
416.gamess	<b><u>546</u></b>	<b><u>35.9</u></b>	545	35.9	548	35.8	488	40.1	<b><u>486</u></b>	<b><u>40.3</u></b>	486	40.3
433.milc	138	66.3	<b><u>139</u></b>	<b><u>66.1</u></b>	139	66.0	137	66.9	<b><u>138</u></b>	<b><u>66.6</u></b>	138	66.4
434.zeusmp	45.1	202	44.3	205	<b><u>44.8</u></b>	<b><u>203</u></b>	45.1	202	44.3	205	<b><u>44.8</u></b>	<b><u>203</u></b>
435.gromacs	167	42.7	<b><u>165</u></b>	<b><u>43.2</u></b>	165	43.3	167	42.7	<b><u>165</u></b>	<b><u>43.2</u></b>	165	43.3
436.cactusADM	15.9	753	15.5	769	<b><u>15.6</u></b>	<b><u>764</u></b>	15.9	753	15.5	769	<b><u>15.6</u></b>	<b><u>764</u></b>
437.leslie3d	26.7	353	27.1	347	<b><u>27.0</u></b>	<b><u>348</u></b>	26.7	353	27.1	347	<b><u>27.0</u></b>	<b><u>348</u></b>
444.namd	287	27.9	<b><u>287</u></b>	<b><u>27.9</u></b>	287	27.9	<b><u>280</u></b>	<b><u>28.7</u></b>	279	28.7	280	28.7
447.dealII	217	52.6	<b><u>215</u></b>	<b><u>53.1</u></b>	215	53.3	217	52.6	<b><u>215</u></b>	<b><u>53.1</u></b>	215	53.3
450.soplex	194	43.0	197	42.4	<b><u>194</u></b>	<b><u>42.9</u></b>	194	43.0	197	42.4	<b><u>194</u></b>	<b><u>42.9</u></b>
453.povray	<b><u>102</u></b>	<b><u>52.3</u></b>	103	51.8	101	52.8	89.6	59.4	91.0	58.4	<b><u>89.7</u></b>	<b><u>59.3</u></b>
454.calculix	164	50.4	164	50.3	<b><u>164</u></b>	<b><u>50.3</u></b>	148	55.8	148	55.7	<b><u>148</u></b>	<b><u>55.8</u></b>
459.GemsFDTD	49.5	214	<b><u>48.4</u></b>	<b><u>219</u></b>	47.2	225	40.6	261	<b><u>40.8</u></b>	<b><u>260</u></b>	41.5	255
465.tonto	<b><u>249</u></b>	<b><u>39.5</u></b>	249	39.5	250	39.4	198	49.6	<b><u>199</u></b>	<b><u>49.5</u></b>	199	49.5
470.lbm	<b><u>20.0</u></b>	<b><u>686</u></b>	19.7	697	20.5	669	<b><u>20.0</u></b>	<b><u>686</u></b>	19.7	697	20.5	669
481.wrf	127	88.3	124	89.9	<b><u>125</u></b>	<b><u>89.3</u></b>	127	88.3	124	89.9	<b><u>125</u></b>	<b><u>89.3</u></b>
482.sphinx3	<b><u>265</u></b>	<b><u>73.6</u></b>	265	73.4	264	73.9	<b><u>265</u></b>	<b><u>73.6</u></b>	265	73.4	264	73.9

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  
 Set Hyper-Threading to Disabled  
 Baseboard Management Controller used to adjust the fan speed to 100%  
 Sysinfo program /spec15/config/sysinfo.rev6914  
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
 running on localhost.localdomain Mon Jan 19 05:52:49 2015

This section contains SUT (System Under Test) info as seen by  
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## Platform Notes (Continued)

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 E5-2660 v3 @ 2.60GHz
 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:      263721016 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 Jan 19 05:49
```

```
SPEC is set to: /spec15
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdb1       ext4  237G  13G  213G   6% /
```

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. 1.19 10/10/2014

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## Platform Notes (Continued)

### Memory:

8x NO DIMM NO DIMM 3 rank  
8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz  
8x Samsung M393A2G40DB0-CPB 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 = "20"
```

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 CH121 V3 and Huawei CH222 V3 models are electronically equivalent.

The results have been measured on a Huawei CH121 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
```

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## Base Portability Flags (Continued)

```

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:

```

-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

```



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## Peak Portability Flags

Same as Base Portability Flags

## 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

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## Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

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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