



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>2006 = 109

Huawei CH242 V3 (Intel Xeon E7-8891 v2)

SPECfp\_base2006 = 103

CPU2006 license: 3175

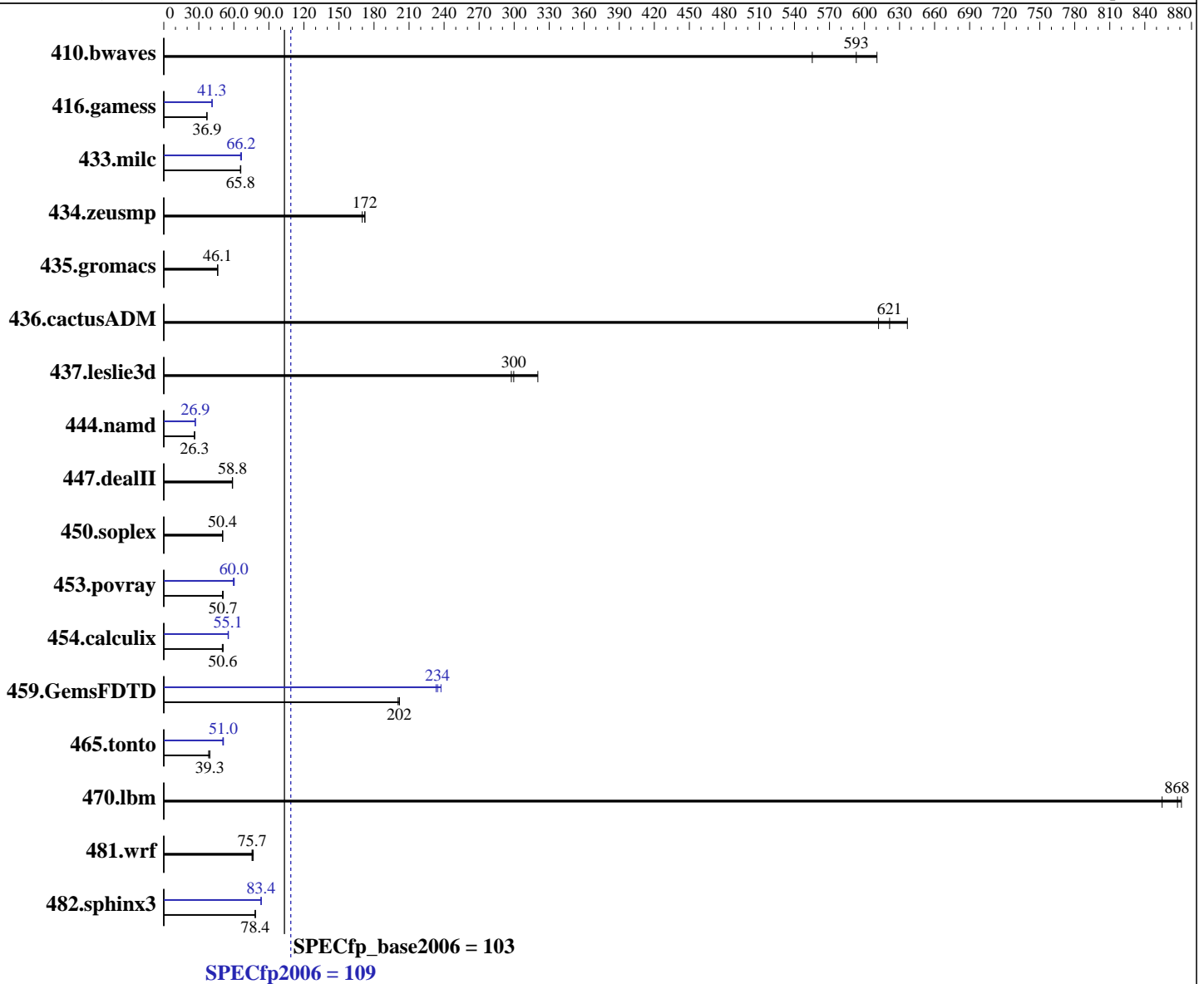
Test sponsor: Huawei

Tested by: Huawei

Test date: Jan-2015

Hardware Availability: Sep-2014

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E7-8891 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz  
 CPU MHz: 3200  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip  
 CPU(s) orderable: 2,4 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 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: xfs

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L3 Cache: 37.5 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)  
 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	22.3	611	24.5	555	<b><u>22.9</u></b>	<b><u>593</u></b>	22.3	611	24.5	555	<b><u>22.9</u></b>	<b><u>593</u></b>
416.gamess	531	36.9	<b><u>530</u></b>	<b><u>36.9</u></b>	530	37.0	473	41.4	474	41.3	<b><u>474</u></b>	<b><u>41.3</u></b>
433.milc	139	65.9	<b><u>139</u></b>	<b><u>65.8</u></b>	140	65.6	<b><u>139</u></b>	<b><u>66.2</u></b>	140	65.7	138	66.5
434.zeusmp	52.8	172	53.6	170	<b><u>52.9</u></b>	<b><u>172</u></b>	52.8	172	53.6	170	<b><u>52.9</u></b>	<b><u>172</u></b>
435.gromacs	<b><u>155</u></b>	<b><u>46.1</u></b>	155	46.1	155	46.1	<b><u>155</u></b>	<b><u>46.1</u></b>	155	46.1	155	46.1
436.cactusADM	18.8	637	19.5	612	<b><u>19.2</u></b>	<b><u>621</u></b>	18.8	637	19.5	612	<b><u>19.2</u></b>	<b><u>621</u></b>
437.leslie3d	29.3	320	<b><u>31.4</u></b>	<b><u>300</u></b>	31.6	298	29.3	320	<b><u>31.4</u></b>	<b><u>300</u></b>	31.6	298
444.namd	<b><u>305</u></b>	<b><u>26.3</u></b>	305	26.3	305	26.3	298	27.0	<b><u>298</u></b>	<b><u>26.9</u></b>	298	26.9
447.dealII	<b><u>194</u></b>	<b><u>58.8</u></b>	194	58.9	195	58.7	<b><u>194</u></b>	<b><u>58.8</u></b>	194	58.9	195	58.7
450.soplex	165	50.4	<b><u>165</u></b>	<b><u>50.4</u></b>	166	50.3	165	50.4	<b><u>165</u></b>	<b><u>50.4</u></b>	166	50.3
453.povray	105	50.7	<b><u>105</u></b>	<b><u>50.7</u></b>	106	50.2	88.2	60.3	<b><u>88.7</u></b>	<b><u>60.0</u></b>	89.3	59.6
454.calculix	<b><u>163</u></b>	<b><u>50.6</u></b>	165	50.1	163	50.8	150	55.1	<b><u>150</u></b>	<b><u>55.1</u></b>	149	55.4
459.GemsFDTD	52.6	202	<b><u>52.6</u></b>	<b><u>202</u></b>	52.9	201	44.7	237	<b><u>45.3</u></b>	<b><u>234</u></b>	45.5	233
465.tonto	250	39.4	<b><u>251</u></b>	<b><u>39.3</u></b>	256	38.4	195	50.5	<b><u>193</u></b>	<b><u>51.0</u></b>	193	51.0
470.lbm	<b><u>15.8</u></b>	<b><u>868</u></b>	16.1	855	15.8	871	<b><u>15.8</u></b>	<b><u>868</u></b>	16.1	855	15.8	871
481.wrf	148	75.6	<b><u>148</u></b>	<b><u>75.7</u></b>	146	76.6	148	75.6	<b><u>148</u></b>	<b><u>75.7</u></b>	146	76.6
482.sphinx3	<b><u>249</u></b>	<b><u>78.4</u></b>	249	78.2	249	78.4	234	83.2	234	83.4	<b><u>234</u></b>	<b><u>83.4</u></b>

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.rev6914  
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
 running on localhost.localdomain Thu Jan 29 18:33:36 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 E7-8891 v2 @ 3.20GHz
 4 "physical id"s (chips)
 40 "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 2 3 4 5 6 7 8 10 11 12
  physical 1:   cores 2 3 4 5 6 7 8 10 11 12
  physical 2:   cores 2 3 4 5 6 7 8 10 11 12
  physical 3:   cores 2 3 4 5 6 7 8 10 11 12
cache size     : 38400 KB

```

From /proc/meminfo

```

MemTotal:      263802256 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 29 13:28

SPEC is set to: /spec

```

Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/sda2        xfs      445G      163G  282G  37% /

```

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.

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## Platform Notes (Continued)

BIOS American Megatrends Inc. BLISV308 11/28/2014

Memory:

32x Micron 36KSF1G72PZ-1G6K1 8 GB 2 rank 1600 MHz, configured at 1333 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 = "/spec/libs/32:/spec/libs/64:/spec/sh"

OMP\_NUM\_THREADS = "40"

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

## 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

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## Base Portability Flags (Continued)

```

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 -parallel -opt-prefetch -ansi-alias

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

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

Benchmarks using both Fortran and C:  
 -xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

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

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-

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

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## Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.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-ic15.0-official-linux64.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](mailto:webmaster@spec.org).

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