



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>\_rate2006 = 1090

Huawei CH242 V3 (Intel Xeon E7-4830 v2)

SPECfp\_rate\_base2006 = 1070

CPU2006 license: 3175

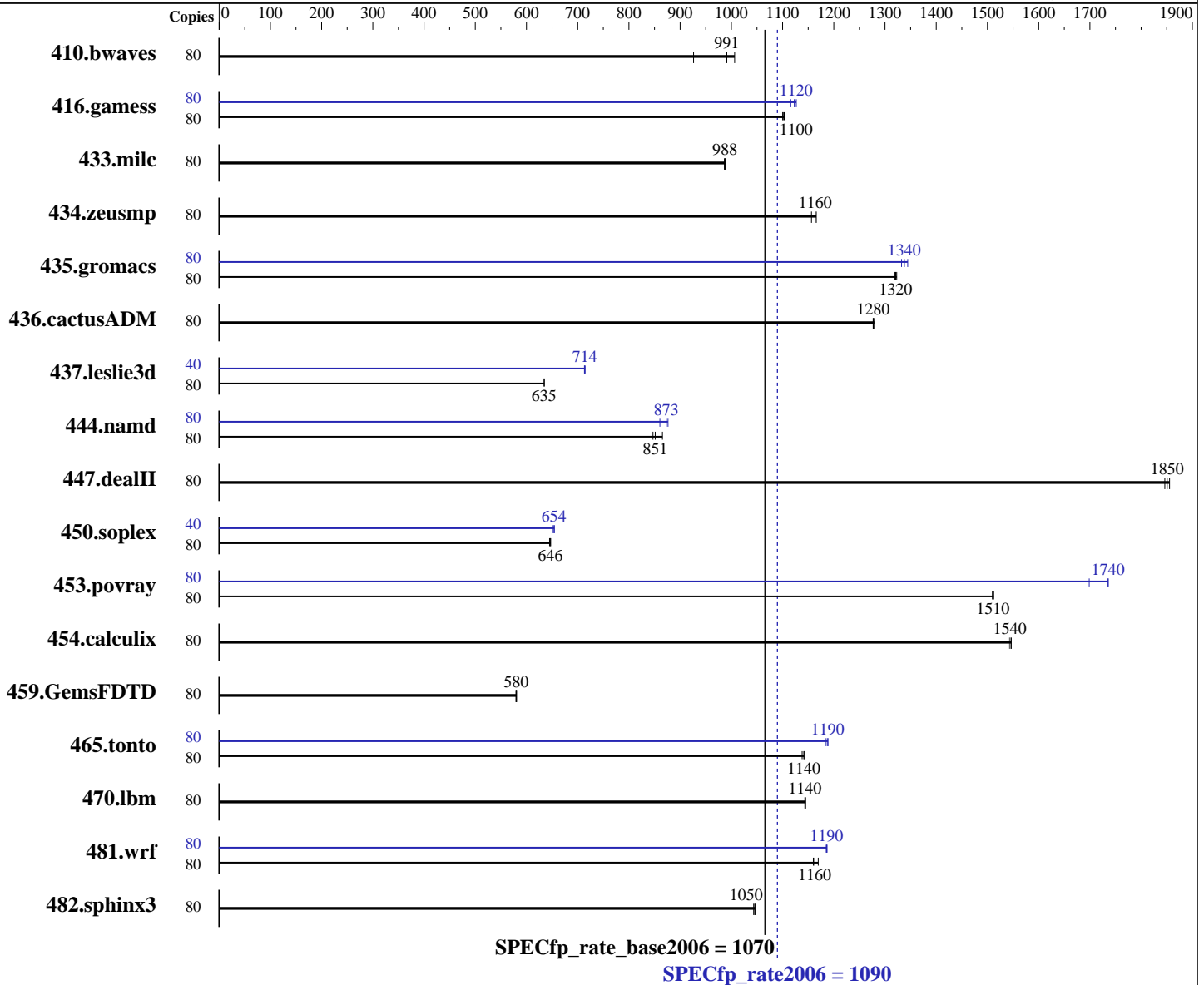
Test sponsor: Huawei

Tested by: Huawei

Test date: Sep-2014

Hardware Availability: Feb-2014

Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E7-4830 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 2,4 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 14.0.0.080 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

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L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (32 x 8 GB 2Rx4 PC3L-12800R-11, ECC, running at 1066 MHz)  
 Disk Subsystem: 1 x 300 GB SAS, 10K RPM  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	80	1080	1010	1174	926	<b>1097</b>	<b>991</b>	80	1080	1010	1174	926	<b>1097</b>	<b>991</b>		
416.gamess	80	1424	1100	1420	1100	<b>1423</b>	<b>1100</b>	80	<b>1395</b>	<b>1120</b>	1404	1120	1390	1130		
433.milc	80	<b>744</b>	<b>988</b>	744	986	744	988	80	<b>744</b>	<b>988</b>	744	986	744	988		
434.zeusmp	80	<b>626</b>	<b>1160</b>	630	1160	624	1170	80	<b>626</b>	<b>1160</b>	630	1160	624	1170		
435.gromacs	80	432	1320	433	1320	<b>432</b>	<b>1320</b>	80	<b>427</b>	<b>1340</b>	429	1330	425	1340		
436.cactusADM	80	749	1280	747	1280	<b>749</b>	<b>1280</b>	80	749	1280	747	1280	<b>749</b>	<b>1280</b>		
437.leslie3d	80	1185	635	1189	633	<b>1185</b>	<b>635</b>	40	527	713	526	715	<b>527</b>	<b>714</b>		
444.namd	80	<b>754</b>	<b>851</b>	741	865	758	847	80	732	876	746	861	<b>735</b>	<b>873</b>		
447.dealII	80	493	1860	496	1850	<b>494</b>	<b>1850</b>	80	493	1860	496	1850	<b>494</b>	<b>1850</b>		
450.soplex	80	1034	645	1031	647	<b>1032</b>	<b>646</b>	40	512	652	<b>510</b>	<b>654</b>	510	654		
453.povray	80	<b>282</b>	<b>1510</b>	281	1510	282	1510	80	245	1740	251	1700	<b>245</b>	<b>1740</b>		
454.calculix	80	427	1550	428	1540	<b>427</b>	<b>1540</b>	80	427	1550	428	1540	<b>427</b>	<b>1540</b>		
459.GemsFDTD	80	1462	581	<b>1463</b>	<b>580</b>	1465	579	80	1462	581	<b>1463</b>	<b>580</b>	1465	579		
465.tonto	80	692	1140	689	1140	<b>690</b>	<b>1140</b>	80	664	1190	662	1190	<b>663</b>	<b>1190</b>		
470.lbm	80	<b>961</b>	<b>1140</b>	960	1150	961	1140	80	<b>961</b>	<b>1140</b>	960	1150	961	1140		
481.wrf	80	<b>769</b>	<b>1160</b>	764	1170	770	1160	80	754	1190	<b>753</b>	<b>1190</b>	753	1190		
482.sphinx3	80	<b>1491</b>	<b>1050</b>	1490	1050	1494	1040	80	<b>1491</b>	<b>1050</b>	1490	1050	1494	1040		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



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Test date: Sep-2014

Hardware Availability: Feb-2014

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## Platform Notes

BIOS configuration:

Set VMSE Lockstep mode to Disable

Sysinfo program /spec/config/sysinfo.rev6818

\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191

running on localhost.localdomain Mon Sep 29 08:56:43 2014

This section contains SUT (System Under Test) info as seen by 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 E7-4830 v2 @ 2.20GHz

4 "physical id"s (chips)

80 "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 : 20

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

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

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

cache size : 20480 KB

From /proc/meminfo

MemTotal: 264353068 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 Sep 28 17:39

SPEC is set to: /spec

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda2	ext4	255G	94G	149G	39%	/

Additional information from dmidecode:

BIOS American Megatrends Inc. BLISV302 09/03/2014

Memory:

32x 8 GB

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## Platform Notes (Continued)

32x Micron 36KSF1G72PZ-1G6K1 8 GB 1066 MHz 2 rank

(End of data from sysinfo program)

The system use 256 GB memory

## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/spec/libs/32:/spec/libs/64:/spec/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB  
memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop\_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

## 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 -opt-prefetch -auto-p32 -ansi-alias  
 -opt-mem-layout-trans=3

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias  
 -opt-mem-layout-trans=3

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias  
 -opt-mem-layout-trans=3

## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

```

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
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

```

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32

```

447.dealII: basepeak = yes

```

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

```

```

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(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-

```

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## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.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-ic14.0-official-linux64.20140128.xml>

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

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Tested with SPEC CPU2006 v1.2.  
Report generated on Tue Oct 21 15:48:11 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 21 October 2014.