



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>\_rate2006 = 485

Huawei E9000 CH220 (Intel Xeon E5-2670)

SPECfp\_rate\_base2006 = 475

CPU2006 license: 3175

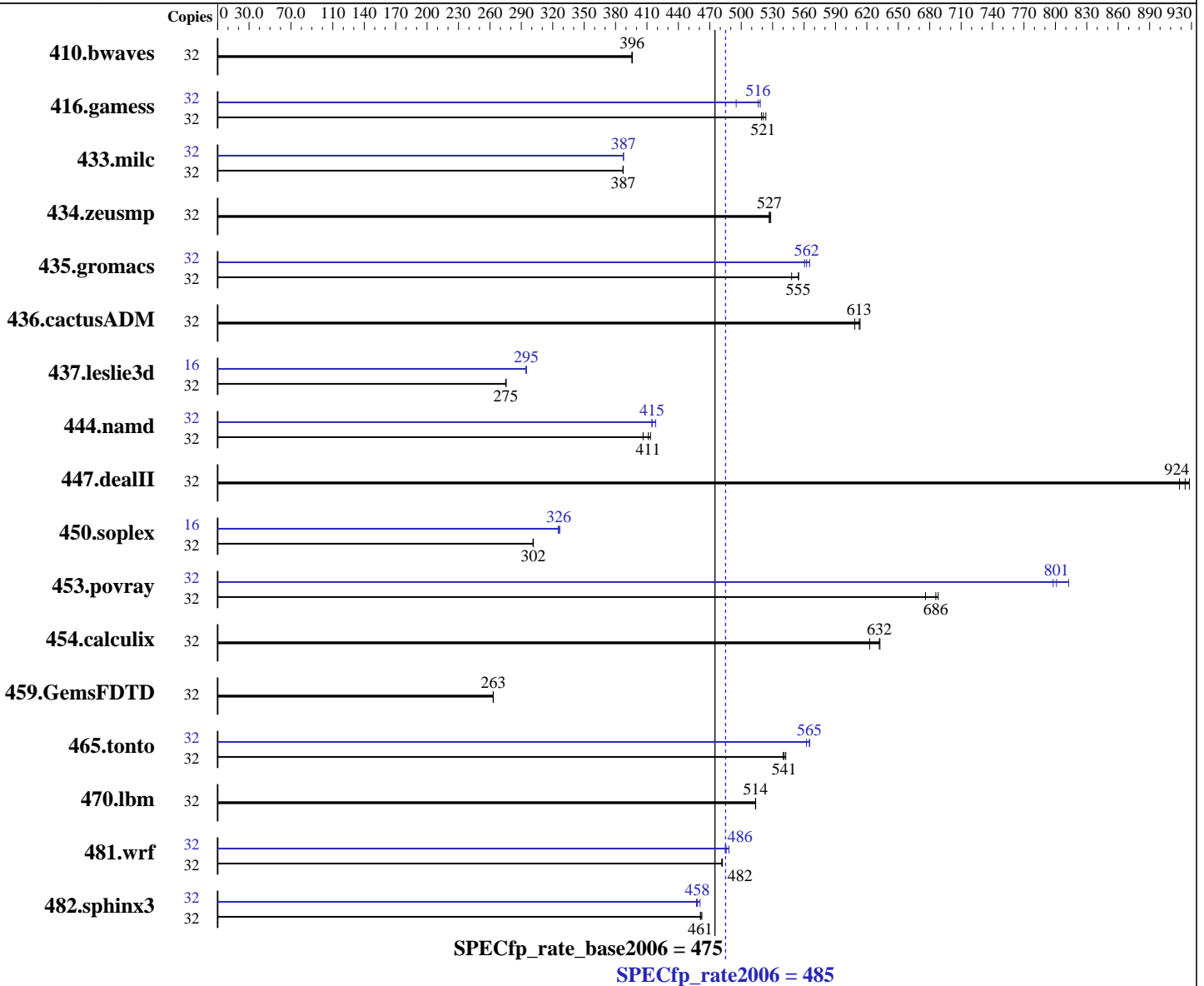
Test sponsor: Huawei

Tested by: Huawei

Test date: Aug-2013

Hardware Availability: Aug-2012

Software Availability: Jun-2013



### Hardware

CPU Name: Intel Xeon E5-2670  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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 6.4 (Santiago)  
 2.6.32-358.el6.x86\_64  
 Compiler: C/C++: Version 13.0.1.117 of Intel C++ Studio XE for Linux;  
 Fortran: Version 13.0.1.117 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: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
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	32	1099	396	1098	396	<b><u>1099</u></b>	<b><u>396</u></b>	32	1099	396	1098	396	<b><u>1099</u></b>	<b><u>396</u></b>
416.gamess	32	<b><u>1203</u></b>	<b><u>521</u></b>	1197	524	1206	519	32	<b><u>1214</u></b>	<b><u>516</u></b>	1265	495	1209	518
433.milc	32	759	387	759	387	<b><u>759</u></b>	<b><u>387</u></b>	32	<b><u>758</u></b>	<b><u>387</u></b>	758	388	758	387
434.zeusmp	32	<b><u>552</u></b>	<b><u>527</u></b>	551	528	553	527	32	<b><u>552</u></b>	<b><u>527</u></b>	551	528	553	527
435.gromacs	32	417	548	<b><u>412</u></b>	<b><u>555</u></b>	412	555	32	408	560	<b><u>406</u></b>	<b><u>562</u></b>	404	565
436.cactusADM	32	623	614	628	608	<b><u>624</u></b>	<b><u>613</u></b>	32	623	614	628	608	<b><u>624</u></b>	<b><u>613</u></b>
437.leslie3d	32	<b><u>1093</u></b>	<b><u>275</u></b>	1093	275	1092	276	16	510	295	<b><u>510</u></b>	<b><u>295</u></b>	510	295
444.namd	32	632	406	621	413	<b><u>624</u></b>	<b><u>411</u></b>	32	<b><u>619</u></b>	<b><u>415</u></b>	613	418	619	415
447.dealII	32	399	919	394	928	<b><u>396</u></b>	<b><u>924</u></b>	32	399	919	394	928	<b><u>396</u></b>	<b><u>924</u></b>
450.soplex	32	<b><u>885</u></b>	<b><u>302</u></b>	885	302	886	301	16	<b><u>409</u></b>	<b><u>326</u></b>	410	325	408	327
453.povray	32	252	676	247	688	<b><u>248</u></b>	<b><u>686</u></b>	32	213	798	209	813	<b><u>213</u></b>	<b><u>801</u></b>
454.calculix	32	<b><u>418</u></b>	<b><u>632</u></b>	417	633	424	623	32	<b><u>418</u></b>	<b><u>632</u></b>	417	633	424	623
459.GemsFDTD	32	1290	263	<b><u>1290</u></b>	<b><u>263</u></b>	1289	263	32	1290	263	<b><u>1290</u></b>	<b><u>263</u></b>	1289	263
465.tonto	32	<b><u>582</u></b>	<b><u>541</u></b>	583	540	580	543	32	<b><u>557</u></b>	<b><u>565</u></b>	560	562	557	565
470.lbm	32	856	514	<b><u>856</u></b>	<b><u>514</u></b>	856	514	32	856	514	<b><u>856</u></b>	<b><u>514</u></b>	856	514
481.wrf	32	<b><u>742</u></b>	<b><u>482</u></b>	742	482	743	481	32	732	488	<b><u>736</u></b>	<b><u>486</u></b>	737	485
482.sphinx3	32	<b><u>1352</u></b>	<b><u>461</u></b>	1349	462	1353	461	32	<b><u>1361</u></b>	<b><u>458</u></b>	1354	461	1364	457

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"

## Platform Notes

Sysinfo program /opt/spec/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on e2670.huawei.com Sat Aug 17 00:09:56 2013

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Test date: Aug-2013  
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Software Availability: Jun-2013

## Platform Notes (Continued)

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 E5-2670 0 @ 2.60GHz
 2 "physical id"s (chips)
 32 "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     : 8
  siblings      : 16
  physical 0:   cores 0 1 2 3 4 5 6 7
  physical 1:   cores 0 1 2 3 4 5 6 7
cache size     : 20480 KB
```

```
From /proc/meminfo
MemTotal:      132119764 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux e2670.huawei.com 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Aug 15 16:42
```

```
SPEC is set to: /opt/spec
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda3       ext4      218G  40G  168G  19% /opt
```

```
Additional information from dmidecode:
BIOS Insyde Corp. OARYV030 04/07/2013
Memory:
 16x Hynix HMT41GR7MFR8C-PB 8 GB 1600 MHz
 8x NO DIMM NO DIMM
```

(End of data from sysinfo program)



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## General Notes

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

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5  
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>  
The Huawei E9000 CH220 and  
the Huawei E9000 CH221 and  
the Huawei E9000 CH222 and  
the Huawei E9000 CH121 models are electronically equivalent.  
The results have been measured on a Huawei E9000 CH121 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  
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

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## Base Portability Flags (Continued)

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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

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  
416.gamess: -DSPEC\_CPU\_LP64

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Tested by: Huawei

Software Availability: Jun-2013

## Peak Portability Flags (Continued)

```

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

```

## 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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -static -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
-unroll2

```

### 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

```

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## Peak Optimization Flags (Continued)

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- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -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 -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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

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

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revF.20130108.html>

<http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.html>

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

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revF.20130108.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.xml>

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Standard Performance Evaluation Corporation

[info@spec.org](mailto:info@spec.org)

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