



# SPEC® CFP2006 Result

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Huawei

SPECfp®2006 = **NC**

Huawei CH222 V3 (Intel Xeon E5-2660 v4)

SPECfp\_base2006 = **NC**

CPU2006 license: 3175

Test date: Mar-2016

Test sponsor: Huawei

Hardware Availability: Mar-2016

Tested by: Huawei

Software Availability: Mar-2016

**SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not**

**up policy on [http://spec.org/cpu2006/Docs/runrules.html#rule\\_1.3.2](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2)>SPEC CPU ru**

- 410.bwaves |
- 416.gamess |
- 433.milc |
- 434.zeusmp |
- 435.gromacs |
- 436.cactusADM |
- 437.leslie3d |
- 444.namd |
- 447.dealII |
- 450.soplex |
- 453.povray |
- 454.calculix |
- 459.GemsFDTD |
- 465.tonto |
- 471.lbm |
- 481.wrf |
- 482.sphinx3 |

**Non-Compliant**



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**up policy on** [http://spec.org/cpu2006/Docs/runrules.html#rule\\_1.3.2](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2) **SPEC CPU run**  
**up policy on** <https://www.spec.org/osg/policy.html#AppendixC> **gener**

### Hardware

CPU Name: Intel Xeon E5-2660 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 28 cores, 2 chips, 14 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  
 L3 Cache: 35 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC3 2400T-  
 Disk Subsystem: 1 x 1 T SATA, 7200 RPM  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 7.0  
 Compiler: C/C++ version 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Architecture: Parallel Yes  
 File System: ext4  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

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## Results Table

| Benchmark     | Base    |       |         |       |         |       | Peak    |       |         |       |         |       |
|---------------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
|               | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 416.gamess    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 433.milc      | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 434.zeusmp    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 435.gromacs   | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 436.cactusADM | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 437.leslie3d  | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 444.namd      | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 447.dealII    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 450.soplex    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 453.povray    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 454.calculix  | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 459.GemsFDTD  | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 465.tonto     | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 470.lbm       | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 481.wrf       | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |
| 482.sphinx3   | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    | NC      | NC    |

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

## Operating System Notes

each process to unlimited using "ulimit -s unlimited"

## Platform Notes

```

BIOS configuration:
Set Power Efficiency Mode to Custom
Set Snoop Mode to HS mode
Set Patrol Scrub to Disable
Set Hyper-Threading to Disable
Sysinfo program /speccpu/spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon Mar 14 10:21:56 2016

```

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## Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen from some common utilities. To remove or add to this section, see: <http://www.spec.org/cpu2006/Docs/config.html#sinfo>

From /proc/cpuinfo

```
model name      : Intel(R) Xeon(R) CPU E5-2660 v4 @ 2.00GHz
 2 "physical id"s (chips)
 28 "processors"
```

cores, siblings (Caution: continuing these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores      : 14
siblings       : 14
physical 0:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 1:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
cache size     : 35840 KB
```

From /proc/meminfo

```
MemTotal:      263569704 kB
HugePages_Total: 0
Hugepagesize:  48 kB
```

From /etc/\*release\* /etc/\*version\*

```
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
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 Mar 14 05:30

SPEC is set to: /speccpu/spec16

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## Platform Notes (Continued)

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext4  865G  110G  712G  14% /
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. 3.09 02/22/2016

Memory:

```
8x NO DIMM NO DIMM      3 rank
8x Samsung M393A2G40EB1 CRC 16 GB 1 rank 2400 MHz
8x Samsung M393A2G40EB1 CRC 16 GB 2 rank 2400 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 = /speccpu/spec16/libs/32:/speccpu/spec16/libs/64:/speccpu/spec16/sh"
OMP_NUM_THREADS = "2"
```

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

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>
CH121 V3 and Huawei CH222 V3
```

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
```

Continued on next page



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## Base Compiler Invocation (Continued)

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.lelie3d: -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  
470.lbm: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
483.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

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## Base Optimization Flags (Continued)

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

## Peak Optimization Flags

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias  
-auto-ilp32

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## Peak Optimization Flags (Continued)

447.deallI: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:readsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4  
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll12  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll12  
-inline-level=0 -opt-prefetch -parallel

465.tomcat: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -inline-alloc  
-opt-malloc-options=3 -auto -unroll4

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

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## Peak Optimization Flags (Continued)

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

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

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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