# SPEC® CFP2006 Result

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## Huawei

Huawei CH121 V3 (Intel Xeon E5-2695 v4)

SPECfp®_rate2006 = NC

SPECfp_rate_base2006 = NC

**CPU2006 license:** 3175
**Test sponsor:** Huawei
**Tested by:** Huawei

**Test date:** Feb-2016
**Hardware Availability:** Mar-2016
**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 a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU ru up policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">gener**

| Copies | |
|---|---|
| 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 | |
| [illegible] | |
| 470.lbm | |
| 481.wrf | |
| 482.sphinx3 | |

Non-Compliant

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### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2695 v4 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.30 GHz |
| CPU MHz: | 2100 |
| FPU: | Integrated |
| CPU(s) enabled: | 36 cores, 2 chips, 18 cores/chip, 2 threads/core |
| 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: | 45 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2400T-) |
| Disk Subsystem: | 1 x 600GB SAS, 10000 RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.0 (Maipo)<br>3.10.0-123.el7.x86_64 |
| Compiler: | C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;<br>Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | No |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | None |

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## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 416.gamess | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 433.milc | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 434.zeusmp | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 435.gromacs | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 436.cactusADM | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 437.leslie3d | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 444.namd | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 447.dealII | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 450.soplex | 72 | NC | NC | NC | NC | NC | NC | 36 | NC | NC | NC | NC | NC | NC |
| 453.povray | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 454.calculix | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 459.GemsFDTD | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 465.tonto | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 470.lbm | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 481.wrf | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |
| 482.sphinx3 | 72 | NC | NC | NC | NC | NC | NC | 72 | NC | NC | NC | NC | NC | NC |

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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## Platform Notes

```
BIOS configuration:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Sysinfo program /spec/spec16/config/sysinf rev69
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb866 5a2859 2ceab81e28219e1
running on localhost.localdomain Tue Nov 11 1 12:10 2014

This section contains SUT (System Un er Tes ) info as seen by
some common utilities.  To rem ve or add to his section, see:
  http://www.spec.org/cpu200 /Docs/co ig.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) X on(R) CPU E 2695 v4 @ 2.10GHz
      2 "physical id"s (ch s)
      72 "processors"
   cores, siblings (Caution: unting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 9
      siblings  : 1
      physical 0: cores  1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 1: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
   cache size : 230 KB

From /proc/memin
   MemTotal:       263564176 kB
   HugePages_Total:       0
   Hugepagesi :       2048 kB

From /etc/ elease* /etc/*version*
   os-r
      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
```

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## Platform Notes (Continued)

```
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 Nov 9 09:59

SPEC is set to: /spec/spec16
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   549G  135G  415G  25% /
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 02/2[illegible]2016
  Memory:
   8x NO DIMM NO DIMM   3 Rank
   8x Samsung M393A2G40EB[illegible]-CRC 16 GB 1 rank 2400 MHz
   8x Samsung M393A[illegible]EB1-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:
LD_LIBRARY_PATH = "/spec/spec16/libs/32:/spec/spec16/libs/64:/spec/spec16/sh"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
      RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/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 CH121 V3 and Huawei CH222 V3
are electronically equivalent.
The results have been measured on a Huawei CH121 V3 model
```

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

Continued on next page

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## Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p3
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -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 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

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
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

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## Peak Portability Flags (Continued)

450.soplex: -D_FILE_OFFSET_BITS=64
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_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: -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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

453.povray: -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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

Continued on next page

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## Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:thre fe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-di (pass 2)
-par-num-threads=1(pass 1) -prof e(pass 2) unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pas 2) -prof-gen threadsafe(pass 1)
-ipo(pass 2) -O3( 2) -no-prec-div(pass 2)
-par-num-threads pass 1) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -op loc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AV pass 2) -prof-gen:threadsafe(pass 1)
-ipo( s 2) - pass 2) -no-prec-div(pass 2)
-par- m-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
-prof-u pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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 sources 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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