## SPEC® CFP2006 Result

**Huawei**

Huawei CH222 V3 (Intel Xeon E5-2697 v4)

### SPECfp®2006 = 119

### SPECfp_base2006 = 113

<table>
<thead>
<tr>
<th>Package</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
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<tr>
<td>410.bwaves</td>
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<tr>
<td>416.gamess</td>
<td>49.3</td>
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<td>437.leslie3d</td>
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<td>444.namd</td>
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<td>447.dealII</td>
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<td>459.GemsFDTD</td>
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<td>465.tonto</td>
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<td>481.wrf</td>
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</tr>
<tr>
<td>482.sphinx3</td>
<td>75.0</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E5-2697 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz
- **CPU MHz:** 2300
- **FPU:** Integrated
- **CPU(s) enabled:** 36 cores, 2 chips, 18 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

### Software

- **Operating System:** Red Hat Enterprise Linux Server release 7.2 (Maipo)
- **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
- **Auto Parallel:** Yes
- **File System:** xfs

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**Test date:** Oct-2016  
**Hardware Availability:** Mar-2016  
**Software Availability:** Mar-2016
SPEC CFP2006 Result

Huawei
Huawei CH222 V3 (Intel Xeon E5-2697 v4)

SPECfp2006 = 119
SPECfp_base2006 = 113

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

L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
Disk Subsystem: 1 x 1000GB 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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th>Peak</th>
<th></th>
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<td>260</td>
<td>75.0</td>
<td>262</td>
<td>74.3</td>
</tr>
</tbody>
</table>

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
Set Snoop Mode to HS mode
Set Patrol Scrub to Disable
Set Hyper-Threading to Disable
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Fri Oct 28 00:21:13 2016

This section contains SUT (System Under Test) info as seen by
Continued on next page
Huawei CH222 V3 (Intel Xeon E5-2697 v4)  

**SPEC CFP2006 Result**

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**CPU2006 license:** 3175  
**Test date:** Oct-2016  
**Test sponsor:** Huawei  
**Tested by:** Huawei  
**Hardware Availability:** Mar-2016  
**Software Availability:** Mar-2016

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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 E5-2697 v4 @ 2.30GHz  
  2 "physical id"s (chips)  
  36 "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 : 18  
  siblings : 18  
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27  
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27  
  cache size : 46080 KB

From /proc/meminfo
- MemTotal: 263567500 kB  
- HugePages_Total: 0  
- Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
- os-release:  
  NAME="Red Hat Enterprise Linux Server"  
  VERSION="7.2 (Maipo)"
  ID="rhel"  
  ID_LIKE="fedora"  
  VERSION_ID="7.2"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
  redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
  system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

uname -a:
- Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 27 15:37

SPEC is set to: /spec16
- Filesystem Type Size Used Avail Use% Mounted on  
  /dev/sda2 xfs 254G 12G 243G 5% /

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. 3.32 09/14/2016

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Huawei

Huawei CH222 V3 (Intel Xeon E5-2697 v4)

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**Platform Notes (Continued)**

Memory:
- 16x Micron 18ASF2G72PDZ-2G3B1 16 GB 2 rank 2400 MHz
- 8x NO DIMM NO DIMM

(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 = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
- OMP_NUM_THREADS = "36"

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>

The Huawei 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`

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.reusmp: -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

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Huawei

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

Huawei CH222 V3 (Intel Xeon E5-2697 v4)

SPECfp2006 = 119
SPECfp_base2006 = 113

Test date: Oct-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

### Base Portability Flags (Continued)

- 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
- -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

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
Huawei

Huawei CH222 V3 (Intel Xeon E5-2697 v4)

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CPU2006 license: 3175
Test date: Oct-2016
Test sponsor: Huawei
Hardware Availability: Mar-2016
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Software Availability: Mar-2016

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) -prof-use(pass 2) -fno-alias
  -auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
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) -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) -unroll2
  -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) -unroll2
  -inline-level=0 -opt-prefetch -parallel
465.tonto: -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-calloc
  -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

Continued on next page
Huawei

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Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -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-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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For other inquiries, please contact webmaster@spec.org.

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