Huawei

Huawei CH222 V3 (Intel Xeon E5-2643 v4)

**SPECfp®2006 = 118**

**SPECfp_base2006 = 114**

<table>
<thead>
<tr>
<th>Test sponsor:</th>
<th>Huawei</th>
</tr>
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<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Test date:</td>
<td>Dec-2016</td>
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<tr>
<td>Hardware Availability:</td>
<td>Mar-2016</td>
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<td>Software Availability:</td>
<td>Nov-2015</td>
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<tr>
<td><strong>CPU2006 license</strong>: 3175</td>
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<tr>
<td><strong>Tested by</strong>: Huawei</td>
<td></td>
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<tr>
<td><strong>Hardware</strong></td>
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<tr>
<td><strong>CPU Name</strong>: Intel Xeon E5-2643 v4</td>
<td></td>
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<tr>
<td><strong>CPU Characteristics</strong>: Intel Turbo Boost Technology up to 3.70 GHz</td>
<td></td>
</tr>
<tr>
<td><strong>CPU MHz</strong>: 3400</td>
<td></td>
</tr>
<tr>
<td><strong>FPU</strong>: Integrated</td>
<td></td>
</tr>
<tr>
<td><strong>CPU(s) enabled</strong>: 12 cores, 2 chips, 6 cores/chip</td>
<td></td>
</tr>
<tr>
<td><strong>CPU(s) orderable</strong>: 1.2 chip</td>
<td></td>
</tr>
<tr>
<td><strong>Primary Cache</strong>: 32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Cache</strong>: 256 KB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
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<tr>
<td><strong>Operating System</strong>: Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64</td>
<td></td>
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<tr>
<td><strong>Compiler</strong>: 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</td>
<td></td>
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<tr>
<td><strong>Auto Parallel</strong>: Yes</td>
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<tr>
<td><strong>File System</strong>: xfs</td>
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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp Base2006</th>
<th>SPECfp Base2006</th>
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<tr>
<td>410.bwaves</td>
<td>48.0</td>
<td>44.0</td>
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<tr>
<td>416.gamess</td>
<td>74.1</td>
<td>214</td>
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<tr>
<td>433.milc</td>
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<td>434.zeusmp</td>
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<td>435.gromacs</td>
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<tr>
<td>436.cactusADM</td>
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<td>437.leslie3d</td>
<td>268</td>
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<td>444.namd</td>
<td>32.5</td>
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<tr>
<td>447.dealII</td>
<td>68.6</td>
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<td>450.soplex</td>
<td>47.8</td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>63.8 / 65.0</td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>62.7</td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td></td>
<td></td>
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<tr>
<td>465.tonto</td>
<td>61.1 / 207</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>53.3 / 584</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>92.6</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
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**SPECfp base2006 = 114**

**SPECfp2006 = 118**
Huawei CH222 V3 (Intel Xeon E5-2643 v4)  

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**Huawei**

**Huawei CH222 V3 (Intel Xeon E5-2643 v4)**

**SPECfp2006** = 118

**SPECfp_base2006** = 114

**CPU2006 license:** 3175

**Test sponsor:** Huawei

**Tested by:** Huawei

**L3 Cache:** 20 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)

**Disk Subsystem:** 1 x 1000 GB 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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<th>Seconds</th>
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<tr>
<td>465.tonto</td>
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<td>482.sphinx3</td>
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<td>209.0</td>
<td>93.5</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 Performance
- Set Snoop Mode to HS mode
- Set Patrol Scrub to Disable
- Set Hyper-Threading to Disable

Baseboard Management Controller used to adjust the fan speed to 100%

Sysinfo program /spec16/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 #s e3fbb8667b5a285932ceab81e28219e1 running on localhost.localdomain Wed Dec 7 21:05:56 2016

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info@spec.org
http://www.spec.org/
Huawei CH222 V3 (Intel Xeon E5-2643 v4) SPECfp2006 = 118
SPECfp_base2006 = 114

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

Test date: Dec-2016
Hardware Availability: Mar-2016
Software Availability: Nov-2015

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 E5-2643 v4 @ 3.40GHz
2 "physical id"s (chips)
12 "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 : 6
siblings : 6
physical 0: cores 0 1 2 3 6 7
physical 1: cores 0 1 2 3 6 7
cache size : 20480 KB

From /proc/meminfo
MemTotal: 527795096 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 Dec 7 20:57

SPEC is set to: /spec16
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 911G 155G 756G 17% /

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.

Continued on next page
Huawei CH222 V3 (Intel Xeon E5-2643 v4)

| SPECfp2006 = | 118 |
| SPECfp_base2006 = | 114 |

CPU2006 license: 3175  
Test date: Dec-2016  
Test sponsor: Huawei  
Tested by: Huawei  
Hardware Availability: Mar-2016  
Software Availability: Nov-2015

Platform Notes (Continued)

BIOS Insyde Corp. 3.32 09/14/2016  
Memory:  
8x NO DIMM NO DIMM  
16x Samsung M393A4K40BB1-CRC 32 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 = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"  
OMP_NUM_THREADS = "12"  

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  
runcspec command invoked through numactl i.e.:  
umactl --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 -nofor_main  
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main  
437.leslie3d: -DSPEC_CPU_LP64  
444.namd: -DSPEC_CPU_LP64 -nofor_main  
447.dealII: -DSPEC_CPU_LP64

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## SPEC CFP2006 Result

**Huawei**

**Huawei CH222 V3 (Intel Xeon E5-2643 v4)**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
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<tbody>
<tr>
<td>118</td>
<td>114</td>
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</table>

**CPU2006 license:** 3175

**Test sponsor:** Huawei

**Test date:** Dec-2016

**Hardware Availability:** Mar-2016

**Tested by:** Huawei

**Software Availability:** Nov-2015

### Base Portability Flags (Continued)

```
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 E5-2643 v4)

**SPEC CFP2006 Result**

**SPECfp2006 =** 118

**SPECfp_base2006 =** 114

**CPU2006 license:** 3175

**Test sponsor:** Huawei

**Test date:** Dec-2016

**Tested by:** Huawei

**Hardware Availability:** Mar-2016

**Software Availability:** Nov-2015

**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:threadsafepass 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:threadsafepass 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:threadsafepass 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:threadsafepass 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:threadsafepass 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 CH222 V3 (Intel Xeon E5-2643 v4) SPECfp2006 = 118
SPECfp_base2006 = 114

CPU2006 license: 3175
Test sponsor: Huawei
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Test date: Dec-2016
Hardware Availability: Mar-2016
Software Availability: Nov-2015

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.

Tested with SPEC CPU2006 v1.2.
Originally published on 27 December 2016.