# Huawei

**Huawei CH225 V3 (Intel Xeon E5-2650L v4)**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Nov-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Mar-2016</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Nov-2015</td>
</tr>
</tbody>
</table>

## Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-2650L v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 2.50 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>1700</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>28 cores, 2 chips, 14 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1.2 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 7.2 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>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>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
</tbody>
</table>

## SPECfp

<table>
<thead>
<tr>
<th>SPECfp&lt;sup&gt;®&lt;/sup&gt;2006</th>
<th>91.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp&lt;sub&gt;base&lt;/sub&gt;2006</td>
<td>86.3</td>
</tr>
</tbody>
</table>

## SPEC CPU Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>SPECfp&lt;sub&gt;base&lt;/sub&gt;2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>30.6</td>
<td>25.5</td>
</tr>
<tr>
<td>416.gamess</td>
<td>59.0</td>
<td>171</td>
</tr>
<tr>
<td>433.milc</td>
<td>30.9</td>
<td>1</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>22.6</td>
<td>48.1</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>37.9</td>
<td>46.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>327</td>
<td>663</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>22.0</td>
<td>41.0</td>
</tr>
<tr>
<td>444.namd</td>
<td>28.4</td>
<td>39.7</td>
</tr>
<tr>
<td>447.dealII</td>
<td>48.1</td>
<td>43.8</td>
</tr>
<tr>
<td>450.soplex</td>
<td>37.9</td>
<td>40.3</td>
</tr>
<tr>
<td>453.povray</td>
<td>201</td>
<td>250</td>
</tr>
<tr>
<td>454.calculix</td>
<td>680</td>
<td>663</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>71.4</td>
<td>50.1</td>
</tr>
<tr>
<td>465.tonto</td>
<td>50.1</td>
<td>1</td>
</tr>
<tr>
<td>470.lbm</td>
<td>71.4</td>
<td>1</td>
</tr>
<tr>
<td>481.wrf</td>
<td>50.1</td>
<td>1</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>50.1</td>
<td>1</td>
</tr>
</tbody>
</table>

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Huawei

Huawei CH225 V3 (Intel Xeon E5-2650L v4)

**SPEC CFP2006 Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>26.1</td>
<td>520</td>
</tr>
<tr>
<td>416.gamess</td>
<td>770</td>
<td>25.4</td>
</tr>
<tr>
<td>433.milc</td>
<td>156</td>
<td>59.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>53.2</td>
<td>171</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>231</td>
<td>30.9</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>18.0</td>
<td>665</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>28.8</td>
<td>326</td>
</tr>
<tr>
<td>444.namd</td>
<td>365</td>
<td>22.0</td>
</tr>
<tr>
<td>447.dealII</td>
<td>238</td>
<td>48.1</td>
</tr>
<tr>
<td>450.soplex</td>
<td>221</td>
<td>37.7</td>
</tr>
<tr>
<td>453.povray</td>
<td>127</td>
<td>41.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>205</td>
<td>40.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>52.9</td>
<td>201</td>
</tr>
<tr>
<td>465.tonto</td>
<td>351</td>
<td>28.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>20.2</td>
<td>680</td>
</tr>
<tr>
<td>481.wrf</td>
<td>157</td>
<td>71.4</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>388</td>
<td>50.2</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 ## e3fbb8667b5a285932ceab81e28219e1

Continued on next page
Huawei

Huawei CH225 V3 (Intel Xeon E5-2650L v4)

SPECfp2006 = 91.4
SPECfp_base2006 = 86.3

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

Test date: Nov-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 E5-2650L v4@ 1.70GHz
  2 "physical id"s (chips)
  28 "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 : 14
    siblings : 14
    physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
    physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  cache size : 35840 KB

From /proc/meminfo
  MemTotal:       527793112 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 Nov 16 11:02

SPEC is set to: /spec16

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3     xfs   911G 154G  757G 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

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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 = "28"

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 CH225 V3 and Huawei CH226 V3
are electronically equivalent.
The results have been measured on a Huawei CH225 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.zesnmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main

Continued on next page
Huawei CH225 V3 (Intel Xeon E5-2650L v4)

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### Base Portability Flags (Continued)

- 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
- 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
Huawei

Huawei CH225 V3 (Intel Xeon E5-2650L v4)

| SPECfp2006 = | 91.4 |
| SPECfp_base2006 = | 86.3 |

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

Peak Portability Flags

Same as Base Portability Flags

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

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## SPEC CFP2006 Result

**Huawei**

**Huawei CH225 V3 (Intel Xeon E5-2650L v4)**

| SPECfp2006 = | 91.4 |
| SPECfp_base2006 = | 86.3 |

- **CPU2006 license:** 3175
- **Test sponsor:** Huawei
- **Tested by:** Huawei
- **Test date:** Nov-2016
- **Hardware Availability:** Mar-2016
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### Peak Optimization Flags (Continued)

- **465.tonto (continued):**
  - `-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`
  - **481.wrf:** `basepeak = yes`

The flags files that were used to format this result can be browsed at:
- [http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.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/Huawei-Platform-Settings-BDW-V1.0.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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