### Huawei CH222 V3 (Intel Xeon E5-2618L v4)

<table>
<thead>
<tr>
<th>Test sponsor</th>
<th>Huawei</th>
<th>Test date</th>
<th>Oct-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license</td>
<td>3175</td>
<td>Hardware Availability</td>
<td>Mar-2016</td>
</tr>
<tr>
<td>Tested by</td>
<td>Huawei</td>
<td>Software Availability</td>
<td>Mar-2016</td>
</tr>
</tbody>
</table>

- **SPECint®2006 = 64.8**
- **SPECint_base2006 = 61.5**

#### Hardware

<table>
<thead>
<tr>
<th></th>
<th>Intel Xeon E5-2618L v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2618L v4</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.20 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2200</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>20 cores, 2 chips, 10 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>
<tr>
<td>L3 Cache</td>
<td>25 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2133T-R)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

#### Software

<table>
<thead>
<tr>
<th></th>
<th>SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>
Huawei CH222 V3 (Intel Xeon E5-2618L v4)

**SPEC CINT2006 Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>258</td>
<td>37.9</td>
<td>257</td>
<td>37.9</td>
<td>257</td>
<td>38.0</td>
<td>236</td>
<td>41.3</td>
<td>236</td>
<td>41.3</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>413</td>
<td>23.4</td>
<td>412</td>
<td>23.4</td>
<td>412</td>
<td>23.4</td>
<td>404</td>
<td>23.9</td>
<td>404</td>
<td>23.9</td>
</tr>
<tr>
<td>403.gcc</td>
<td>224</td>
<td>36.0</td>
<td>224</td>
<td>36.0</td>
<td>224</td>
<td>35.9</td>
<td>224</td>
<td>36.0</td>
<td>224</td>
<td>35.9</td>
</tr>
<tr>
<td>429.mcf</td>
<td>145</td>
<td>63.0</td>
<td>141</td>
<td>64.6</td>
<td>143</td>
<td>63.8</td>
<td>144</td>
<td>63.3</td>
<td>141</td>
<td>64.7</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>379</td>
<td>27.7</td>
<td>378</td>
<td>27.7</td>
<td>378</td>
<td>27.7</td>
<td>379</td>
<td>27.7</td>
<td>378</td>
<td>27.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>118</td>
<td>79.1</td>
<td>118</td>
<td>79.0</td>
<td>118</td>
<td>78.9</td>
<td>118</td>
<td>79.1</td>
<td>118</td>
<td>79.0</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>380</td>
<td>31.9</td>
<td>380</td>
<td>31.9</td>
<td>379</td>
<td>31.9</td>
<td>374</td>
<td>32.3</td>
<td>375</td>
<td>32.3</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>4.09</td>
<td>5060</td>
<td>4.11</td>
<td>5040</td>
<td>4.08</td>
<td>5070</td>
<td>4.09</td>
<td>5060</td>
<td>4.11</td>
<td>5040</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>424</td>
<td>52.2</td>
<td>425</td>
<td>52.1</td>
<td>425</td>
<td>52.0</td>
<td>424</td>
<td>52.2</td>
<td>425</td>
<td>52.1</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>193</td>
<td>32.4</td>
<td>191</td>
<td>32.7</td>
<td>191</td>
<td>32.7</td>
<td>130</td>
<td>48.0</td>
<td>131</td>
<td>47.9</td>
</tr>
<tr>
<td>473.astar</td>
<td>205</td>
<td>34.3</td>
<td>204</td>
<td>34.4</td>
<td>204</td>
<td>34.3</td>
<td>204</td>
<td>34.4</td>
<td>206</td>
<td>34.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>98.4</td>
<td>70.1</td>
<td>98.7</td>
<td>69.9</td>
<td>98.5</td>
<td>70.0</td>
<td>88.2</td>
<td>78.3</td>
<td>87.9</td>
<td>78.5</td>
</tr>
</tbody>
</table>

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

**Submit Notes**

The config file option 'submit' was used.

**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 ES 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 linux-1020 Tue Oct 25 06:51:35 2016

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 E5-2618L v4 @ 2.20GHz
2 "physical id"s (chips)
20 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with...
Huawei
Huawei CH222 V3 (Intel Xeon E5-2618L v4)

SPECint2006 = 64.8
SPECint_base2006 = 61.5

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

Platform Notes (Continued)

caution.)
cpu cores : 10
siblings : 10
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal: 264063872 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID=sles
ANSI_COLOR=0;32
CPE_NAME=cpe:/o:suse:sles:12:sp1

uname -a:
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Oct 24 15:02

SPEC is set to: /spec16
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 394G 14G 380G 4% /

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
Memory:
16x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)
Huawei CH222 V3 (Intel Xeon E5-2618L v4)

<table>
<thead>
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<th>SPECint2006</th>
<th>64.8</th>
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<td>SPECint_base2006</td>
<td>61.5</td>
</tr>
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

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

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 = "20"

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
runcp 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

Base Portability Flags

400.perlbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
  -Wl,-z,meldfs -L/sh -lsmartheap64
### SPEC CINT2006 Result

**Huawei**

Huawei CH222 V3 (Intel Xeon E5-2618L v4)

| SPECint2006 = | 64.8 |
| SPECint_base2006 = | 61.5 |

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

**Base Other Flags**

C benchmarks:

- 403.gcc: -Dalloca=_alloca

---

### Peak Compiler Invocation

C benchmarks (except as noted below):

```shell
icc -m64
```

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):

```shell
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

473.astar: icpc -m64

---

### Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32

401.bzip2: -DSPEC_CPU_LP64

403.gcc: -DSPEC_CPU_LP64

429.mcf: -DSPEC_CPU_LP64

445.gobmk: -DSPEC_CPU_LP64

456.hmmer: -DSPEC_CPU_LP64

458.sjeng: -DSPEC_CPU_LP64

462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

464.h264ref: -DSPEC_CPU_LP64

471.omnetpp: -D_FILE_OFFSET_BITS=64

473.astar: -DSPEC_CPU_LP64

483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

---

### Peak Optimization Flags

C benchmarks:

```shell
400.perlbench: -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) -opt-prefetch -ansi-alias
```

```shell
401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilkp32 -opt-prefetch -ansi-alias
```

Continued on next page

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Huawei CH222 V3 (Intel Xeon E5-2618L v4)

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SPECint_base2006 = 61.5

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

Test date: Oct-2016
Hardware Availability: Mar-2016
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Peak Optimization Flags (Continued)

403.gcc: basepeak = yes
429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-opt-prefetch -auto-p32
445.gobmk: basepeak = yes
456.hmmer: basepeak = yes
458.sjeng: -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
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:
471.omnetpp: -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)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap
473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64
483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

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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