Huawei

Huawei CH220 V3 (Intel Xeon E5-2643 v4)

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: May-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 available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC
Huawei

Huawei CH220 V3 (Intel Xeon E5-2643 v4)

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<tr>
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<th>3175</th>
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<tr>
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### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-2643 v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3400</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1,2 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB L1 + 32 KB D on chip per core</td>
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<tr>
<td>Secondary Cache:</td>
<td>256 KB L1+D on chip per core</td>
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<td>L3 Cache:</td>
<td>20 MB L1+D on chip per chip</td>
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<tr>
<td>Other Cache:</td>
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</tr>
<tr>
<td>Memory:</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
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<tr>
<td>Disk Subsystem:</td>
<td>1 x 1000 GB SATA, 7200 RPM</td>
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<tr>
<td>Other Hardware:</td>
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### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64</th>
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<tbody>
<tr>
<td>Compiler: C/C++:</td>
<td>Version 16.0.0.101 of Intel C++ Studio XE for Linux</td>
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<td>Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</td>
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<td>Auto Parallel:</td>
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<tr>
<td>File System:</td>
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<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
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<td>Base Pointers:</td>
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<td>Peak Pointers:</td>
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<td>Other Software:</td>
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Huawei CH220 V3 (Intel Xeon E5-2643 v4)  

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</tr>
</tbody>
</table>

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 numaclt 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"
**Huawei CH220 V3 (Intel Xeon E5-2643 v4)**

<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006</td>
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**CPU2006 license:** 3175  
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**Software Availability:** Mar-2016

---

**Platform Notes**

BIOS configuration:
- Set Power Efficiency Mode to Performance
- Set Snoop Mode to ES mode
- Set Patrol Scrub to Disable
- Set Hyper-Threading to enabled

Sysinfo program /spec16/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb3661b885332ceab81e28219e1  
running on localhost.localdomain Tue May  3 21:11:23 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 E5-2643 v4 @ 3.40GHz
- 2 "physical id"s (chips)  
- 24 "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 : 12  
- 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: 263568992 kB  
- HugePages_Total: 0  
- Hugepagesize: 2048 kB

`release* /etc/*version*  
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)  

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Continued on next page
## SPEC CFP2006 Result

### Huawei

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### Platform Notes (Continued)

```plaintext
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 May 3 12:54
```

**SPEC is set to:** /spec16  
**Filesystem** | **Type** | **Size** | **Used** | **Avail** | **Use%** | **Mounted on** |
<table>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>ext4</td>
<td>850G</td>
<td>31G</td>
<td>776G</td>
<td>4%</td>
<td>/</td>
</tr>
</tbody>
</table>

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 02/22/2016  
**Memory:**  
8x Samsung M393A2G40EB1-CRC 16 GB 1 rank 2400 MHz  
8x Samsung M393A2G40EB1-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 = "/spec16/libs/32:/spec16/libs/64:/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
```

```
runcspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```
SPEC CFP2006 Result

Huawei

Huawei CH220 V3 (Intel Xeon E5-2643 v4)

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SPECfp_rate_base2006 = NC

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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 -nofor_main
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG
453.povray: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG
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

Non-Compliant
Huawei

Huawei CH220 V3 (Intel Xeon E5-2643 v4)

SPEC CFP2006 Result
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SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC

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Base Optimization Flags (Continued)

C++ benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -scc-p32
  -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:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both C and Fortran:
icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: basepeak = yes

Continued on next page

Non-Compliant
Huawei CH220 V3 (Intel Xeon E5-2643 v4)

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Peak Optimization Flags (Continued)

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) -mem-layout-trans=3(pass 2)
              -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) -opt-mem-layout-trans=3(pass 2)
              -prof-use(pass 2) -fno-alias -auto-ilp32

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
              -inlin-level=0 -ansi-alias

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
438.gromacs: basepeak = yes

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) -unroll4 -auto
              -inline-callc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -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-prefetch -auto-ilp32

Continued on next page
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Peak Optimization Flags (Continued)

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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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
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