Huawei

Huawei 1288H V5 (Intel Xeon Gold 6134)

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<tr>
<th>SPECint®2006</th>
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<tr>
<td>76.8</td>
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Software Availability: Nov-2016
Test date: Jun-2017
Hardware Availability: Aug-2017

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### Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon Gold 6134</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>3200</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 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>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>24.75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 1200 GB SAS, 10000 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Operating System:

- Red Hat Enterprise Linux Server release 7.3 (Maipo)
- C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux
- Auto Parallel: Yes
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 32/64-bit
- Peak Pointers: 32/64-bit
- Other Software: Microquill SmartHeap V10.2
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>209</td>
<td>46.8</td>
<td>210</td>
<td>46.5</td>
<td></td>
<td>210</td>
<td>46.5</td>
<td></td>
<td>188</td>
<td>51.9</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>343</td>
<td>28.1</td>
<td>343</td>
<td>28.1</td>
<td></td>
<td>343</td>
<td>28.1</td>
<td></td>
<td>343</td>
<td>28.1</td>
</tr>
<tr>
<td>403.mcf</td>
<td>186</td>
<td>43.3</td>
<td>186</td>
<td>43.3</td>
<td></td>
<td>186</td>
<td>43.3</td>
<td></td>
<td>180</td>
<td>44.7</td>
</tr>
<tr>
<td>429.gcc</td>
<td>120</td>
<td>76.0</td>
<td>120</td>
<td>76.1</td>
<td></td>
<td>119</td>
<td>76.5</td>
<td></td>
<td>120</td>
<td>76.1</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>312</td>
<td>33.7</td>
<td>313</td>
<td>33.5</td>
<td></td>
<td>313</td>
<td>33.5</td>
<td></td>
<td>312</td>
<td>33.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>96.1</td>
<td>97.1</td>
<td>96.2</td>
<td>97.0</td>
<td></td>
<td>96.2</td>
<td>97.0</td>
<td></td>
<td>96.1</td>
<td>97.1</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>324</td>
<td>37.3</td>
<td>325</td>
<td>37.3</td>
<td></td>
<td>325</td>
<td>37.3</td>
<td></td>
<td>321</td>
<td>37.7</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.32</td>
<td>6230</td>
<td>3.31</td>
<td>6250</td>
<td></td>
<td>3.31</td>
<td>6200</td>
<td></td>
<td>3.32</td>
<td>6230</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>315</td>
<td>70.2</td>
<td>315</td>
<td>70.2</td>
<td></td>
<td>315</td>
<td>70.2</td>
<td></td>
<td>315</td>
<td>70.2</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>177</td>
<td>35.3</td>
<td>182</td>
<td>34.3</td>
<td></td>
<td>180</td>
<td>34.8</td>
<td></td>
<td>137</td>
<td>45.6</td>
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<tr>
<td>473.astar</td>
<td>180</td>
<td>38.9</td>
<td>181</td>
<td>38.8</td>
<td></td>
<td>180</td>
<td>39.0</td>
<td></td>
<td>180</td>
<td>38.9</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>84.9</td>
<td>81.3</td>
<td>84.5</td>
<td>81.7</td>
<td></td>
<td>84.9</td>
<td>81.3</td>
<td></td>
<td>87.6</td>
<td>87.8</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 Hyper-Threading to Disable
Sysinfo program /spec17/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Tue Jun 6 17:39:53 2017

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) Gold 6134 CPU @ 3.20GHz
2 "physical id"s (chips)
16 "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 : 8

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Platform Notes (Continued)

siblings : 8
physical 0: cores 0 2 3 9 16 19 26 27
physical 1: cores 0 2 3 9 16 19 26 27
cache size : 25344 KB

From /proc/meminfo
MemTotal: 394145204 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME=cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Jun 6 13:18

SPEC is set to: /spec17
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 262G 87G 176G 34% /

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. 0.10 02/14/2017
Memory:
24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 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"
LD_LIBRARY_PATH = "/spec17/libs/32:/spec17/libs/64:/spec17/sh10.2"

Continued on next page
## Huawei 1288H V5 (Intel Xeon Gold 6134)

### SPECint2006 = 76.8

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### General Notes (Continued)

OMP_NUM_THREADS = "16"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2

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>

### 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 -qopt-prefetch
  - auto-p32

**C++ benchmarks:**

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
  - Wl,-z,muldefs -L/sh10.2 -lsmartheap64
Huawei 1288H V5 (Intel Xeon Gold 6134)

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Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64
400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
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: -D_FILE_OFFSET_BITS=64
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:
400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -auto-ilp32 -qopt-prefetch
Huawei

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**SPEC CINT2006 Result**

| SPECint2006 = | 76.8 |
| SPECint_base2006 = | 73.6 |

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**Peak Optimization Flags (Continued)**

- 403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -qopt-malloc-options=3 -auto-ilp32
- 429.mcf: basepeak = yes
- 445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
- 456.hmmer: basepeak = yes
- 458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll4
- 462.libquantum: basepeak = yes
- 464.h264ref: basepeak = yes

**C++ benchmarks:**

- 471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -qopt-ra-region-strategy=block -Wl,-z,muldefs -L/sh10.2 -lsmartheap
- 473.astar: basepeak = yes
- 483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -Wl,-z,muldefs -L/sh10.2 -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-ic17.0-official-linux64.html  
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.html

You can also download the XML flags sources by saving the following links:  
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml  
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.xml
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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.