Huawei CH121 V3 (Intel Xeon E5-2690 v3)

SPECint®2006 = 65.5
SPECint_base2006 = 62.7

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: Dec-2014
Hardware Availability: Sep-2014

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<tr>
<th>SPECint®2006</th>
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<td>62.7</td>
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<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System:</td>
</tr>
<tr>
<td></td>
<td>Red Hat Enterprise Linux Server release 7.0</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>(Maipo)</td>
</tr>
<tr>
<td></td>
<td>3.10.0-123.el7.x86_64</td>
</tr>
<tr>
<td>CPU MHZ:</td>
<td>Compiler:</td>
</tr>
<tr>
<td></td>
<td>C/C++: Version 15.0.0.090 of Intel C++ Studio XE</td>
</tr>
<tr>
<td></td>
<td>for Linux</td>
</tr>
<tr>
<td>FPU:</td>
<td>Auto Parallel:</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>File System:</td>
</tr>
<tr>
<td></td>
<td>ext4</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>System State:</td>
</tr>
<tr>
<td></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>Base Pointers:</td>
</tr>
<tr>
<td></td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>Peak Pointers:</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>Other Software:</td>
</tr>
<tr>
<td>Memory:</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td></td>
</tr>
<tr>
<td>Other Hardware:</td>
<td></td>
</tr>
</tbody>
</table>

CPU Characteristics:
- Intel Xeon E5-2690 v3
- Intel Turbo Boost Technology up to 3.50 GHz
- CPU MHz: 2600
- FPU: Integrated
- CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip
- Primary Cache: 32 KB I + 32 KB D on chip per core
- Secondary Cache: 256 KB I+D on chip per core
- L3 Cache: 30 MB I+D on chip per chip
- Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
- Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
- Other Hardware: None

Software:
- Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)
- Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
- Auto Parallel: Yes
- File System: ext4
- System State: Run level 3 (multi-user)
- Base Pointers: 32/64-bit
- Peak Pointers: 32/64-bit
- Other Software: Microquill SmartHeap V10.0
## Huawei

### SPEC CINT2006 Result

**Huawei CH121 V3 (Intel Xeon E5-2690 v3)**

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**Software Availability:** Sep-2014

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>242</td>
<td>40.3</td>
<td>241</td>
<td>40.6</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>389</td>
<td>24.8</td>
<td>392</td>
<td>24.6</td>
</tr>
<tr>
<td>403.gcc</td>
<td>231</td>
<td>34.8</td>
<td>231</td>
<td>34.8</td>
</tr>
<tr>
<td>429.mcf</td>
<td>148</td>
<td>61.5</td>
<td>152</td>
<td>60.1</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>363</td>
<td>28.9</td>
<td>365</td>
<td>28.8</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>135</td>
<td>69.4</td>
<td>134</td>
<td>69.4</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>355</td>
<td>34.1</td>
<td>355</td>
<td>34.0</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.16</td>
<td>6550</td>
<td>3.20</td>
<td>6480</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>452</td>
<td>49.0</td>
<td>447</td>
<td>49.6</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>173</td>
<td>36.2</td>
<td>172</td>
<td>36.3</td>
</tr>
<tr>
<td>473.astar</td>
<td>211</td>
<td>33.3</td>
<td>211</td>
<td>33.3</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>105</td>
<td>65.7</td>
<td>105</td>
<td>65.5</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
- Set Hyper-Threading to Disabled
- Baseboard Management Controller used to adjust the fan speed to 100%
- Sysinfo program /spec15/config/sysinfo.rev6914
- $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
- running on localhost.localdomain Sat Dec 20 10:00:11 2014

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 E5-2690 v3 @ 2.60GHz
- 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.)

Continued on next page
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Platform Notes (Continued)

caution.)
cpu cores : 12
siblings : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 30720 KB

From /proc/meminfo
MemTotal: 263720560 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/ /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID=rhel
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME=cpe:/o:redhat:enterprise_linux:7.0:GA:server
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 19 15:10

SPEC is set to: /spec15

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root ext4 439G 6.9G 410G 2% /

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. 1.19 10/10/2014
Memory:
8x NO DIMM NO DIMM 3 rank
8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz
8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)
Huawei

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**General Notes**

Environment variables set by runspec before the start of the run:

- `KMP_AFFINITY = "granularity=fine,compact,1,0"
- `LD_LIBRARY_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
- `OMP_NUM_THREADS = "24"

Binaries compiled on a system with 1x Core i5–4670K CPU + 16GB memory using Red Hat EL 7.0

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 CH121 V3 and Huawei CH222 V3 models 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.perlbench:** -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,muldefs -L/sh -lsmartheap64`
Huawei

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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/composer_xe_2015/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks (except as noted below):
icpc -m64

471.omnetpp: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -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
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias

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Peak Optimization Flags (Continued)

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.xml
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For other inquiries, please contact webmaster@spec.org.

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