Huawei

Huawei CH226 V3 (Intel Xeon E5-2650 v3)

SPECint\_rate\_base2006 = 824

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

Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon E5-2650 v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2300</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>20 cores, 2 chips, 10 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 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 PC4-2133P-R)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 500 GB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 7.0 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</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-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>

Test date: Sep-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

SPECint\_rate2006 = 856

SPECint\_rate\_base2006 = 824
Huawei CH226 V3 (Intel Xeon E5-2650 v3)

**RESULTS**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>40</td>
<td>668</td>
<td>585</td>
<td>590</td>
<td>663</td>
<td>590</td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>40</td>
<td>963</td>
<td>401</td>
<td>957</td>
<td>403</td>
<td>401</td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>40</td>
<td>495</td>
<td>653</td>
<td>497</td>
<td>648</td>
<td>492</td>
<td>654</td>
</tr>
<tr>
<td>429.mcf</td>
<td>40</td>
<td>318</td>
<td>1150</td>
<td>318</td>
<td>1150</td>
<td>318</td>
<td>1150</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>40</td>
<td>773</td>
<td>543</td>
<td>773</td>
<td>543</td>
<td>773</td>
<td>543</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>40</td>
<td>320</td>
<td>1170</td>
<td>320</td>
<td>1160</td>
<td>322</td>
<td>1160</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>40</td>
<td>837</td>
<td>578</td>
<td>841</td>
<td>575</td>
<td>841</td>
<td>576</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>40</td>
<td>102</td>
<td>8120</td>
<td>102</td>
<td>8140</td>
<td>102</td>
<td>8120</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>40</td>
<td>941</td>
<td>941</td>
<td>941</td>
<td>963</td>
<td>941</td>
<td>941</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>40</td>
<td>531</td>
<td>471</td>
<td>530</td>
<td>472</td>
<td>533</td>
<td>469</td>
</tr>
<tr>
<td>473.astar</td>
<td>40</td>
<td>608</td>
<td>462</td>
<td>608</td>
<td>462</td>
<td>606</td>
<td>463</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>40</td>
<td>304</td>
<td>908</td>
<td>304</td>
<td>908</td>
<td>304</td>
<td>908</td>
</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 numactl 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"

**Platform Notes**

BIOS configuration:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Sysinfo program /spec/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon Sep 14 05:29:18 2015

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 E5-2650 v3 @ 2.30GHz
2 "physical id"s (chips)
40 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
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SPECint\_rate\_base2006 = 824

CPU2006 license: 3175
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Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

- cpu cores : 5
- 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 : 12800 KB

From /proc/meminfo
- MemTotal: 263576084 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 Sep 14 05:20

SPEC is set to: /spec
- Filesystem Type Size Used Avail Use\% Mounted on
  /dev/sda1 ext4 443G 12G 408G 3% /

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. 1.36 04/09/2015

Memory:
- 8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
- 8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz
- 8x NO DIMM NO DIMM 3 rank

(End of data from sysinfo program)
Huawei CH226 V3 (Intel Xeon E5-2650 v3)

| SPECint_rate2006 | 856 |
| SPECint_rate_base2006 | 824 |

**CPU2006 license:** 3175  
**Test date:** Sep-2015  
**Test sponsor:** Huawei  
**Hardware Availability:** Sep-2014  
**Tested by:** Huawei  
**Software Availability:** Sep-2014

---

### General Notes

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

```bash
LD_LIBRARY_PATH = "-/spec/libs/32:/spec/libs/64:/spec/sh"
```

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0  
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.:  
umactl --interleave=all runspec <etc>

---

### Base Compiler Invocation

**C benchmarks:**

```bash
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

**C++ benchmarks:**

```bash
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

---

### Base Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`  
462.libquantum: `-DSPEC_CPU_LINUX`  
483.xalancbmk: `-DSPEC_CPU_LINUX`

---

### Base Optimization Flags

**C benchmarks:**

```bash
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-opt-mem-layout-trans=3
```

**C++ benchmarks:**

```bash
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap
```

---

### Base Other Flags

**C benchmarks:**

```bash
403.gcc: -Dalloca=_alloca
```
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SPECint_rate2006 = 856
SPECint_rate_base2006 = 824

Huawei

CPU2006 license: 3175
Test date: Sep-2015
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Huawei

Peak Compiler Invocation

C benchmarks (except as noted below):
  icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

  400.perlbench: icc -m64
  401.bzip2: icc -m64
  456.hmmer: icc -m64
  458.sjeng: icc -m64

C++ benchmarks:
  icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

  400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
  401.bzip2: -DSPEC_CPU_LP64
  456.hmmer: -DSPEC_CPU_LP64
  458.sjeng: -DSPEC_CPU_LP64
  462.libquantum: -DSPEC_CPU_LINUX
  483.xalancbmk: -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)
  -auto-ilp32

  401.bzip2: -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 -auto-ilp32 -ansi-alias

  403.gcc: basepeak = yes
  429.mcf: basepeak = yes

C++ benchmarks:

  445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
  -ansi-alias -opt-mem-layout-trans=3

  456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

  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 -auto-ilp32

Continued on next page
Huawei

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SPECint_rate2006 = 856
SPECint_rate_base2006 = 824

Peak Optimization Flags (Continued)

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)
            -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
            -L/sh -lsmartheap
473.astar: basepeak = yes
483.xalanchbmk: 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-V1.4.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-V1.4.xml

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