Huawei RH1288 V3 (Intel Xeon E5-2603 v3)

<table>
<thead>
<tr>
<th>SPECint rate 2006</th>
<th>274</th>
</tr>
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<tbody>
<tr>
<td>SPECint rate base 2006</td>
<td>264</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Software Availability</th>
<th>Mar-2014</th>
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<tbody>
<tr>
<td>Hardware Availability</td>
<td>Sep-2014</td>
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Hardware

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Operating System</th>
<th>Compiler</th>
<th>Auto Parallel</th>
<th>File System</th>
<th>System State</th>
<th>Base Pointers</th>
<th>Peak Pointers</th>
<th>Other Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon E5-2603 v3</td>
<td>Red Hat Enterprise Linux Server release 6.5 (Santiago)</td>
<td>C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
<td>No</td>
<td>ext4</td>
<td>Run level 3 (multi-user)</td>
<td>32-bit</td>
<td>32/64-bit</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>CPU MHZ: 1600</td>
<td></td>
<td></td>
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<tr>
<td>FPU: Integrated</td>
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<tr>
<td>CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip</td>
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<tr>
<td>CPU(s) orderable: 1.2 chip</td>
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<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
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<tr>
<td>L3 Cache: 15 MB I+D on chip per chip</td>
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<tr>
<td>Other Cache: None</td>
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<td></td>
</tr>
<tr>
<td>Memory: 128 GB (16 x 8 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)</td>
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<tr>
<td>Disk Subsystem: 1 x 500 GB SATA, 7200 RPM</td>
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<tr>
<td>Other Hardware: None</td>
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Huawei RH1288 V3 (Intel Xeon E5-2603 v3)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>400.perlbench</td>
<td>12</td>
<td>588</td>
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<td>586</td>
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<td>401.bzip2</td>
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<td>904</td>
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<td>902</td>
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<td>403.gcc</td>
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<td>481</td>
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<td>12</td>
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<td>429.mcf</td>
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<td>445.gobmk</td>
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<td>829</td>
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<td>12</td>
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<td>458.sjeng</td>
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<td>462.libquantum</td>
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<td>2790</td>
<td>88.7</td>
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<td>88.7</td>
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<tr>
<td>464.h264ref</td>
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<td>793</td>
<td>335</td>
<td>12</td>
<td>769</td>
<td>346</td>
<td>768</td>
<td>346</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>12</td>
<td>513</td>
<td>146</td>
<td>512</td>
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<td>511</td>
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<td>12</td>
<td>495</td>
<td>152</td>
<td>494</td>
<td>152</td>
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<td>473.astar</td>
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<td>12</td>
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<tr>
<td>483.xalancbmk</td>
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<td>255</td>
<td>325</td>
<td>255</td>
<td>325</td>
<td>12</td>
<td>255</td>
<td>325</td>
<td>255</td>
<td>325</td>
</tr>
</tbody>
</table>

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 Custom
Set Snoop Mode to HS
Set Hyper-Threading to Disabled
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on huawei Thu Mar 13 05:22:45 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 E5-2603 v3 @ 1.60GHz
  2 "physical id"s (chips)
  12 "processors"
Platform Notes (Continued)

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 : 6
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
cache size : 15360 KB

From /proc/meminfo
MemTotal: 131903376 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)

uname -a:
Linux huawei 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Mar 13 05:20

SPEC is set to: /spec
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 433G 8.5G 403G 3% /

Additional information from dmidecode:
BIOS Insyde Corp. 1.16 09/02/2014
Memory:
8x Samsung M393A1G40DB0-CPB 8 GB 1600 MHz 1 rank
8x Samsung M393A1G40DB0-CPB 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64:/spec/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
  echo 1>/proc/sys/vm/drop_caches

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<tr>
<td>Tested by</td>
<td>Huawei</td>
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<tr>
<td>Test date</td>
<td>Mar-2014</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Sep-2014</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Nov-2013</td>
</tr>
</tbody>
</table>

**General Notes (Continued)**

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

**Base Compiler Invocation**

- **C benchmarks:**
  - icc -m32

- **C++ benchmarks:**
  - icpc -m32

**Base Portability Flags**

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

**Base Optimization Flags**

- **C benchmarks:**
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  - -opt-mem-layout-trans=3

- **C++ benchmarks:**
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  - -opt-mem-layout-trans=3 -W1,-z,muldefs -L/sh -lsmartheap

**Base Other Flags**

- **C benchmarks:**
  - 403.gcc: -Dalloca=_alloca

**Peak Compiler Invocation**

C benchmarks (except as noted below):

- icc -m32

- 400.perlbench: icc -m64

- 401.bzip2: icc -m64

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Huawei

Huawei RH1288 V3 (Intel Xeon E5-2603 v3)

SPECint_rate2006 = 274
SPECint_rate_base2006 = 264

CPU2006 license: 3175
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Tested by: Huawei

Test date: Mar-2014
Hardware Availability: Sep-2014
Software Availability: Nov-2013

Peak Compiler Invocation (Continued)

456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

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

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

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias

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Huawei RH1288 V3 (Intel Xeon E5-2603 v3)

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Peak Optimization Flags (Continued)

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.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-ic14.0-official-linux64.20140128.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-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.xml

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

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