Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

**SPECint®2006 =** 73.1

**SPECint_base2006 =** 71.0

**Hardware**

- **CPU Name:** Intel Xeon E5-2698 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz
- **CPU MHz:** 2200
- **FPU:** Integrated
- **CPU(s) enabled:** 40 cores, 2 chips, 20 cores/chip
- **CPU(s) orderable:** 1.2 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:** 50 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
- **Disk Subsystem:** 1 x 1000GB SATA, 7200 RPM
- **Other Hardware:** None

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default
- **Compiler:** C/C++: Version 16.0.0.101 of Intel C++ Studio XE 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

---

**CPU2006 license:** 3175

**Test sponsor:** Huawei

**Test date:** Nov-2016

**Hardware Availability:** Mar-2016

**Software Availability:** Dec-2015
Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

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

SPECint2006 = 73.1
SPECint_base2006 = 71.0

Test date: Nov-2016
Hardware Availability: Mar-2016
Software Availability: Dec-2015

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>238</td>
<td>41.1</td>
<td>237</td>
<td>41.2</td>
<td>236</td>
<td>41.4</td>
<td>214</td>
<td>45.7</td>
<td>214</td>
<td>45.8</td>
<td>214</td>
<td>45.7</td>
<td>214</td>
<td>45.7</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>383</td>
<td>25.2</td>
<td>384</td>
<td>25.1</td>
<td>383</td>
<td>25.2</td>
<td>382</td>
<td>25.3</td>
<td>382</td>
<td>25.3</td>
<td>382</td>
<td>25.3</td>
<td>382</td>
<td>25.3</td>
</tr>
<tr>
<td>403.mcf</td>
<td>209</td>
<td>38.6</td>
<td>208</td>
<td>38.6</td>
<td>209</td>
<td>38.5</td>
<td>209</td>
<td>38.5</td>
<td>208</td>
<td>38.7</td>
<td>209</td>
<td>38.6</td>
<td>209</td>
<td>38.6</td>
</tr>
<tr>
<td>429.gcc</td>
<td>139</td>
<td>65.6</td>
<td>139</td>
<td>65.8</td>
<td>138</td>
<td>66.1</td>
<td>139</td>
<td>65.6</td>
<td>139</td>
<td>65.8</td>
<td>138</td>
<td>66.1</td>
<td>138</td>
<td>66.1</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
<td>342</td>
<td>30.7</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>106</td>
<td>88.3</td>
<td>109</td>
<td>85.9</td>
<td>106</td>
<td>87.6</td>
<td>106</td>
<td>88.3</td>
<td>109</td>
<td>85.9</td>
<td>106</td>
<td>87.6</td>
<td>106</td>
<td>87.6</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>336</td>
<td>36.1</td>
<td>335</td>
<td>36.1</td>
<td>335</td>
<td>36.1</td>
<td>331</td>
<td>36.5</td>
<td>331</td>
<td>36.5</td>
<td>331</td>
<td>36.5</td>
<td>331</td>
<td>36.5</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>2.65</td>
<td>7820</td>
<td>2.67</td>
<td>7750</td>
<td>2.68</td>
<td>7730</td>
<td>2.65</td>
<td>7820</td>
<td>2.67</td>
<td>7750</td>
<td>2.68</td>
<td>7730</td>
<td>2.68</td>
<td>7730</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>382</td>
<td>57.9</td>
<td>383</td>
<td>57.8</td>
<td>382</td>
<td>57.9</td>
<td>382</td>
<td>57.9</td>
<td>383</td>
<td>57.8</td>
<td>382</td>
<td>57.9</td>
<td>382</td>
<td>57.9</td>
</tr>
<tr>
<td>471.onetopp</td>
<td>122</td>
<td>51.4</td>
<td>128</td>
<td>49.0</td>
<td>127</td>
<td>49.3</td>
<td>111</td>
<td>56.1</td>
<td>111</td>
<td>56.2</td>
<td>111</td>
<td>56.2</td>
<td>111</td>
<td>56.2</td>
</tr>
<tr>
<td>473.astar</td>
<td>188</td>
<td>37.2</td>
<td>189</td>
<td>37.2</td>
<td>188</td>
<td>37.3</td>
<td>188</td>
<td>37.2</td>
<td>189</td>
<td>37.2</td>
<td>188</td>
<td>37.2</td>
<td>188</td>
<td>37.2</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>87.3</td>
<td>79.0</td>
<td>88.2</td>
<td>78.2</td>
<td>88.0</td>
<td>78.4</td>
<td>79.6</td>
<td>86.7</td>
<td>79.8</td>
<td>86.5</td>
<td>80.0</td>
<td>86.3</td>
<td>80.0</td>
<td>86.3</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 mode
Set Patrol Scrub to Disable
Set Hyper-Threading to Disable

Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-6392 Wed Nov 30 08:40:42 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 E5-2698 v4 @ 2.20GHz
  2 "physical id"s (chips)
  40 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with
Continued on next page
Huawei

Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

PECint2006 = 73.1
PECint_base2006 = 71.0

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

Test date: Nov-2016
Hardware Availability: Mar-2016
Software Availability: Dec-2015

Platform Notes (Continued)

cautions.)
cpu cores : 20
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 51200 KB

From /proc/meminfo
MemTotal: 528845004 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/susr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1

From /etc/*release*/etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# This file is deprecated and will be removed in a future service pack or
release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 30 08:39 last=5

SPEC is set to: /spec16
Filesystem Type Size Used Avail Use% Mounted on
/dev/md126p2 xfs 455G 25G 431G 6% /

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. 3.31 08/22/2016
Memory:
16x Micron 36ASF4G72PZ-2G3A1 32 GB 2 rank 2400 MHz

Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

SPECint2006 = 73.1
SPECint_base2006 = 71.0

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Nov-2016
Tested by: Huawei
Hardware Availability: Mar-2016
Software Availability: Dec-2015

Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "40"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
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.perlbench: -D SPEC_CPU_LP64 -D SPEC_CPU_LINUX_X64
401.bzip2: -D SPEC_CPU_LP64
403.gcc: -D SPEC_CPU_LP64
429.mcf: -D SPEC_CPU_LP64
445.gobmk: -D SPEC_CPU_LP64
456.hmmer: -D SPEC_CPU_LP64
458.sjeng: -D SPEC_CPU_LP64
462.libquantum: -D SPEC_CPU_LP64 -D SPEC_CPU_LINUX
464.hmmer: -D SPEC_CPU_LP64
471.omnetpp: -D SPEC_CPU_LP64
473.astar: -D SPEC_CPU_LP64
483.xalancbmk: -D SPEC_CPU_LP64 -D SPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
Huawei

Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

SPECint2006 = 73.1
SPECint_base2006 = 71.0

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Nov-2016
Tested by: Huawei
Hardware Availability: Mar-2016
Software Availability: Dec-2015

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -lsmartheap64

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_2016/linux/compiler/lib/ia32_lin
C++ benchmarks (except as noted below):
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
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: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
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:

Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

SPECint2006 = 73.1
SPECint_base2006 = 71.0

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

Peak Optimization Flags (Continued)

400.perlbench: -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) -opt-prefetch
-ansi-alias

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

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

429.mcf: basepeak = yes

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

458.sjeng: -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) -unroll14

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -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)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca
Huawei

Huawei RH1288 V3 (Intel Xeon E5-2698 v4)

SPECint2006 = 73.1
SPECint_base2006 = 71.0

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

Test date: Nov-2016
Hardware Availability: Mar-2016
Software Availability: Dec-2015

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

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.
Originally published on 27 December 2016.