Huawei RH2288 V3 (Intel Xeon E5-2683 v3)

| SPECint\_rate\_base2006 | 1060 |

| SPECint\_rate2006 | 1110 |

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

| Software | Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)  
3.10.0-123.el7.x86_64  
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux  
Auto Parallel: No  
File System: ext4  
System State: Run level 3 (multi-user)  
Base Pointers: 32-bit  
Peak Pointers: 32/64-bit  
Other Software: Microquill SmartHeap V10.0 |

| Hardware | CPU Name: Intel Xeon E5-2683 v3  
CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
CPU MHz: 2000  
FPU: Integrated  
CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip, 2 threads/core  
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: 35 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM  
Other Hardware: None  

---

**Comparison:**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>994</td>
<td>994</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>786</td>
<td>786</td>
</tr>
<tr>
<td>403.gcc</td>
<td>839</td>
<td>839</td>
</tr>
<tr>
<td>429.mcf</td>
<td>1480</td>
<td>1480</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>733</td>
<td>733</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>1620</td>
<td>1620</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>1490</td>
<td>1490</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>1280</td>
<td>1280</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>1240</td>
<td>1240</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>621</td>
<td>621</td>
</tr>
<tr>
<td>473.astar</td>
<td>595</td>
<td>595</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>1080</td>
<td>1080</td>
</tr>
</tbody>
</table>

---

**Note:** All measurements are in millions of operations per second (MOPS).
Huawei RH2288 V3 (Intel Xeon E5-2683 v3)

**SPECint_rate2006 =** 1110

**SPECint_rate_base2006 =** 1060

---

### Results Table

<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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>695</td>
<td>695</td>
<td>695</td>
<td>695</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>56</td>
<td>1007</td>
<td>1007</td>
<td>1007</td>
<td>1007</td>
<td>1007</td>
<td>1007</td>
</tr>
<tr>
<td>403.gcc</td>
<td>56</td>
<td>544</td>
<td>544</td>
<td>546</td>
<td>546</td>
<td>546</td>
<td>546</td>
</tr>
<tr>
<td>429.mcf</td>
<td>56</td>
<td>346</td>
<td>346</td>
<td>345</td>
<td>345</td>
<td>345</td>
<td>345</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>56</td>
<td>807</td>
<td>807</td>
<td>806</td>
<td>806</td>
<td>806</td>
<td>806</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>56</td>
<td>349</td>
<td>349</td>
<td>351</td>
<td>351</td>
<td>351</td>
<td>351</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>56</td>
<td>878</td>
<td>878</td>
<td>878</td>
<td>878</td>
<td>878</td>
<td>878</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>56</td>
<td>116</td>
<td>116</td>
<td>116</td>
<td>116</td>
<td>116</td>
<td>116</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>56</td>
<td>1006</td>
<td>1006</td>
<td>1003</td>
<td>1003</td>
<td>1003</td>
<td>1003</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>56</td>
<td>587</td>
<td>587</td>
<td>589</td>
<td>589</td>
<td>589</td>
<td>589</td>
</tr>
<tr>
<td>473.astar</td>
<td>56</td>
<td>675</td>
<td>675</td>
<td>671</td>
<td>671</td>
<td>671</td>
<td>671</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>56</td>
<td>358</td>
<td>358</td>
<td>358</td>
<td>358</td>
<td>358</td>
<td>358</td>
</tr>
</tbody>
</table>

---

### Platform Notes

Stack size set to unlimited using “ulimit -s unlimited”.

---

### Operating System Notes

BIOS Configuration:

---

### 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.
## SPEC CINT2006 Result

**Huawei**

<table>
<thead>
<tr>
<th>Huawei RH2288 V3 (Intel Xeon E5-2683 v3)</th>
</tr>
</thead>
</table>

| SPECint_rate2006 = | 1110 |
| SPECint_rate_base2006 = | 1060 |

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

---

### Platform Notes (Continued)

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

- cpu cores: 7
- siblings: 14
- physical 0: cores: 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- physical 1: cores: 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- cache size: 17920 KB

From /proc/meminfo

- MemTotal: 263574228 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 22 07:06
```

SPEC is set to: /spec15

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>ext4</td>
<td>448G</td>
<td>209G</td>
<td>217G</td>
<td>49%</td>
<td>/</td>
</tr>
</tbody>
</table>

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. 1.26 12/22/2014
- Memory:
  - 8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
  - 8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)
Huawei

Huawei RH2288 V3 (Intel Xeon E5-2683 v3)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>1110</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1060</td>
</tr>
</tbody>
</table>

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Sep-2015
Tested by: Huawei

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/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/transarent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

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

C++ benchmarks:
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:
-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 -Wl,-z,muldefs -L/sh -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca
Huawei RH2288 V3 (Intel Xeon E5-2683 v3)

SPECint\_rate2006 = 1110
SPECint\_rate\_base2006 = 1060

CPU2006 license: 3175

Test sponsor: Huawei
Tested by: Huawei

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

Peak Compiler Invocation

C benchmarks (except as noted below):
\[
\text{icc} \ -m32 \ -L/opt/intel/composer_xe_2015/lib/ia32
\]
400.perlbench: \texttt{icc} \ -m64
401.bzip2: \texttt{icc} \ -m64
456.hmmer: \texttt{icc} \ -m64
458.sjeng: \texttt{icc} \ -m64

C++ benchmarks:
\[
\texttt{icpc} \ -m32 \ -L/opt/intel/composer_xe_2015/lib/ia32
\]

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)
-03(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)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias
403.gcc: -xCORE\_AVX2 -ipo -03 -no-prec-div
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 -03 -no-prec-div -unroll2 -auto-ilp32
458.sjeng: -xCORE\_AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

Continued on next page
Huawei RH2288 V3 (Intel Xeon E5-2683 v3)

SPECint\_rate2006 = 1110
SPECint\_rate\_base2006 = 1060

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

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

Peak Optimization Flags (Continued)

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

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

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

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

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 20 October 2015.