Huawei
Huawei RH8100 V3 (Intel Xeon E7-8890 v3)

<table>
<thead>
<tr>
<th>SPECint_rate2006 = 5670</th>
<th>SPECint_rate_base2006 = 5470</th>
</tr>
</thead>
</table>

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

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

CPU Name: Intel Xeon E7-8890 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz: 2500
FPU: Integrated
CPU(s) enabled: 144 cores, 8 chips, 18 cores/chip, 2 threads/core
CPU(s) orderable: 4.6.8 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 2 TB (128 x 16 GB 2RX4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 3 x 300 GB SAS, 10K RPM
Other Hardware: None

Hardware

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

<table>
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<tr>
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**SPEC CINT2006 Result**

**SPECint_rate2006 =** 5670

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**CPU2006 license:** 3175
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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio</th>
<th>Seconds Peak</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>288</td>
<td>626</td>
<td>4490</td>
<td>626</td>
<td>4500</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>288</td>
<td>1009</td>
<td>2700</td>
<td>1009</td>
<td>2780</td>
</tr>
<tr>
<td>403.gcc</td>
<td>288</td>
<td>576</td>
<td>4000</td>
<td>576</td>
<td>4020</td>
</tr>
<tr>
<td>429.mcf</td>
<td>288</td>
<td>390</td>
<td>6730</td>
<td>391</td>
<td>6710</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>288</td>
<td>814</td>
<td>3710</td>
<td>814</td>
<td>3720</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>288</td>
<td>319</td>
<td>8410</td>
<td>319</td>
<td>8410</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>288</td>
<td>786</td>
<td>4430</td>
<td>786</td>
<td>4430</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>288</td>
<td>109</td>
<td>54700</td>
<td>109</td>
<td>54600</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>288</td>
<td>960</td>
<td>6640</td>
<td>955</td>
<td>6670</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>288</td>
<td>721</td>
<td>2500</td>
<td>724</td>
<td>2490</td>
</tr>
<tr>
<td>473.astar</td>
<td>288</td>
<td>664</td>
<td>3050</td>
<td>663</td>
<td>3050</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>288</td>
<td>356</td>
<td>5580</td>
<td>350</td>
<td>5680</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"

Turbo mode set with:

cpupower -c all frequency-set -g performance

### Platform Notes

BIOS configuration:
Set Power Efficiency Mode to Performance
Set Lock_step to disabled
Baseboard Management Controller used to adjust the fan speed to 100%
Set DRAM Maintenace to Manual
Set DRAM Maintenace Mode to pTRR
Set Patrol Scrub to Enabled
Set Memory Power Saving to disabled
Sysinfo program /spec/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on RH8100V3 Thu May 14 06:12:26 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

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| SPECint_rate2006 = | 5670 |
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Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E7-8890 v3 @ 2.50GHz
  8 "physical id"s (chips)
  288 "processors"
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 : 18
  siblings : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 6: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 7: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
cache size : 46080 KB

From /proc/meminfo
MemTotal: 2113342788 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 RH8100V3 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 May 14 05:43

SPEC set is to: /spec
  Filesystem  Type  Size  Used  Avail  Use%  Mounted on
  /dev/sda2   ext4  452G  9.8G  419G   3%  /spec
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
Continued on next page
**Huawei RH8100 V3 (Intel Xeon E7-8890 v3)**

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**SPECint_rate2006 = 5670**

**SPECint_rate_base2006 = 5470**

---

**Platform Notes (Continued)**

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS American Megatrends Inc. BLISV705 03/30/2015
Memory:
64x NO DIMM NO DIMM
128x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 2 TB and the dmidecode description should have two lines reading as:
64x NO DIMM NO DIMM
128x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

---

**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 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
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
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**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 -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`
Huawei

Huawei RH8100 V3 (Intel Xeon E7-8890 v3)

SPECint_rate2006 = 5670
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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

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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)
-03(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
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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

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-V1.0-HSW-RevG.xml

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

Tested with SPEC CPU2006 v1.2.
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