Huawei

Huawei RH8100 V3 (Intel Xeon E7-8867 v3)

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
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<tr>
<td>SPECint_rate_base2006</td>
<td>4930</td>
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CPU2006 license: 3175  
Test sponsor: Huawei  
Tested by: Huawei  
Test date: Jun-2015  
Hardware Availability: May-2015  
Software Availability: Sep-2014

| SPECint_rate2006 | 4930 |

Hardware

<table>
<thead>
<tr>
<th>Hardware Details</th>
<th>Value</th>
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<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E7-8867 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2500</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>128 cores, 8 chips, 16 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>4,6,8 chips</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>45 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>2 TB (128 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>3 x 300 GB SAS, 10K RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
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Software

<table>
<thead>
<tr>
<th>Software Details</th>
<th>Value</th>
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<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</td>
</tr>
<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>
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Huawei RH8100 V3 (Intel Xeon E7-8867 v3)

**SPECrate2006 = 5120**

**SPECrate_base2006 = 4930**

<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>Peak</th>
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<tr>
<td>perlbench</td>
<td>256</td>
<td>669</td>
<td>3740</td>
<td>669</td>
<td>3740</td>
<td>669</td>
<td>3740</td>
<td>669</td>
<td>3740</td>
<td>669</td>
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<tr>
<td>bzip2</td>
<td>256</td>
<td>1007</td>
<td>2450</td>
<td>1005</td>
<td>2460</td>
<td>1003</td>
<td>2460</td>
<td>965</td>
<td>3740</td>
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<td>gcc</td>
<td>256</td>
<td>566</td>
<td>3640</td>
<td>561</td>
<td>3680</td>
<td>563</td>
<td>3660</td>
<td>559</td>
<td>3690</td>
<td>558</td>
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<tr>
<td>mcf</td>
<td>256</td>
<td>382</td>
<td>6120</td>
<td>378</td>
<td>6180</td>
<td>377</td>
<td>6190</td>
<td>382</td>
<td>6120</td>
<td>377</td>
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<tr>
<td>gobmk</td>
<td>256</td>
<td>783</td>
<td>3430</td>
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<td>3430</td>
<td>785</td>
<td>3420</td>
<td>778</td>
<td>3450</td>
<td>779</td>
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<tr>
<td>hammer</td>
<td>256</td>
<td>313</td>
<td>7620</td>
<td>314</td>
<td>7610</td>
<td>318</td>
<td>7520</td>
<td>315</td>
<td>7615</td>
<td>318</td>
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<td>sjeng</td>
<td>256</td>
<td>837</td>
<td>3700</td>
<td>837</td>
<td>3700</td>
<td>837</td>
<td>3700</td>
<td>837</td>
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<td>837</td>
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<tr>
<td>libquantum</td>
<td>256</td>
<td>107</td>
<td>49500</td>
<td>107</td>
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<td>49500</td>
<td>107</td>
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<td>107</td>
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<td>h264ref</td>
<td>256</td>
<td>908</td>
<td>6240</td>
<td>909</td>
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<td>908</td>
<td>6240</td>
<td>897</td>
<td>6320</td>
<td>895</td>
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<tr>
<td>omnetpp</td>
<td>256</td>
<td>685</td>
<td>2340</td>
<td>684</td>
<td>2340</td>
<td>682</td>
<td>2350</td>
<td>663</td>
<td>2410</td>
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<td>astar</td>
<td>256</td>
<td>661</td>
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<td>661</td>
<td>2720</td>
<td>661</td>
<td>2720</td>
<td>661</td>
<td>2720</td>
<td>661</td>
</tr>
<tr>
<td>salanchmk</td>
<td>256</td>
<td>340</td>
<td>5200</td>
<td>340</td>
<td>5190</td>
<td>352</td>
<td>5020</td>
<td>352</td>
<td>5190</td>
<td>352</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 Maintance to Manual
Set DRAM Maintance 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 Tue Jun 2 06:13:53 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 = 5120
SPECint_rate_base2006 = 4930

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Platform Notes (Continued)

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E7-8867 v3 @ 2.50GHz
  8 "physical id"s (chips)
  256 "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 : 16
siblings : 32
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 6: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
physical 7: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
cache size : 46080 KB

From /proc/meminfo

MemTotal: 2113346500 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 Jun 2 06:06

SPEC is set to: /spec
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 452G 5.8G 424G 2% /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
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**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:
- 1x Hynix HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1600 MHz
- 64x NO DIMM NO DIMM
- 127x 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 three lines reading as:
- 64x NO DIMM NO DIMM
- 1x Hynix HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1600 MHz
- 127x 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.:
umactl --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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CPU2006 license: 3175
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Hardware Availability: May-2015
Software Availability: Sep-2014

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
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Huawei RH8100 V3 (Intel Xeon E7-8867 v3)

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CPU2006 license: 3175
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Software Availability: Sep-2014

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)
-unroll14 -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
Huawei RH8100 V3 (Intel Xeon E7-8867 v3)  

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</table>

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 other inquiries, please contact webmaster@spec.org.

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