



# SPEC<sup>®</sup> CINT2006 Result

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## Huawei

### SPECint<sup>®</sup>\_rate2006 = 3280

### Huawei RH8100 V3 (Intel Xeon E7-8857 v2)

### SPECint\_rate\_base2006 = 3190

CPU2006 license: 3175

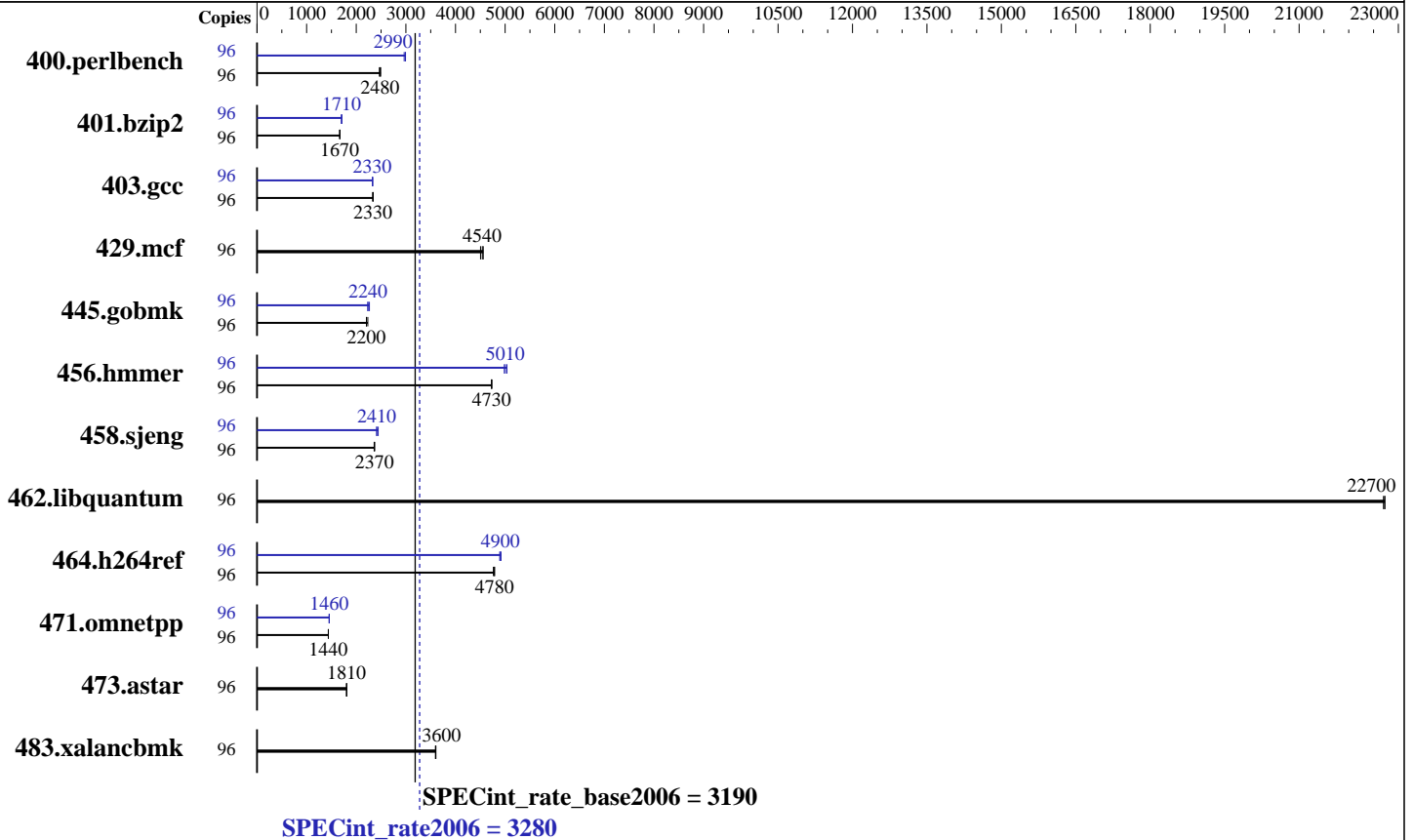
Test date: Aug-2014

Test sponsor: Huawei

Hardware Availability: Feb-2014

Tested by: Huawei

Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E7-8857 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 96 cores, 8 chips, 12 cores/chip  
 CPU(s) orderable: 4,8 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: 30 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 2 TB (128 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)  
 Disk Subsystem: 2 x 300 GB SAS, 10K RPM  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)  
 2.6.32-431.el6.x86\_64  
 Compiler: C/C++: Version 14.0.0.080 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



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## Results Table

| Benchmark      | Base   |                    |                     |                   |                    |                   |                    |        | Peak               |                     |                   |                    |                   |                    |  |  |
|----------------|--------|--------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--------|--------------------|---------------------|-------------------|--------------------|-------------------|--------------------|--|--|
|                | Copies | Seconds            | Ratio               | Seconds           | Ratio              | Seconds           | Ratio              | Copies | Seconds            | Ratio               | Seconds           | Ratio              | Seconds           | Ratio              |  |  |
| 400.perlbench  | 96     | 376                | 2490                | <b><u>378</u></b> | <b><u>2480</u></b> | 380               | 2470               | 96     | 316                | 2970                | 313               | 2990               | <b><u>314</u></b> | <b><u>2990</u></b> |  |  |
| 401.bzip2      | 96     | 554                | 1670                | <b><u>556</u></b> | <b><u>1670</u></b> | 556               | 1670               | 96     | 545                | 1700                | <b><u>543</u></b> | <b><u>1710</u></b> | 542               | 1710               |  |  |
| 403.gcc        | 96     | <b><u>331</u></b>  | <b><u>2330</u></b>  | 331               | 2330               | 330               | 2340               | 96     | <b><u>332</u></b>  | <b><u>2330</u></b>  | 332               | 2330               | 331               | 2330               |  |  |
| 429.mcf        | 96     | 192                | 4560                | 194               | 4500               | <b><u>193</u></b> | <b><u>4540</u></b> | 96     | 192                | 4560                | 194               | 4500               | <b><u>193</u></b> | <b><u>4540</u></b> |  |  |
| 445.gobmk      | 96     | 457                | 2200                | 451               | 2230               | <b><u>457</u></b> | <b><u>2200</u></b> | 96     | 445                | 2270                | 451               | 2230               | <b><u>450</u></b> | <b><u>2240</u></b> |  |  |
| 456.hammer     | 96     | 189                | 4730                | 190               | 4730               | <b><u>189</u></b> | <b><u>4730</u></b> | 96     | 180                | 4980                | <b><u>179</u></b> | <b><u>5010</u></b> | 178               | 5040               |  |  |
| 458.sjeng      | 96     | <b><u>491</u></b>  | <b><u>2370</u></b>  | 492               | 2360               | 490               | 2370               | 96     | <b><u>481</u></b>  | <b><u>2410</u></b>  | 482               | 2410               | 476               | 2440               |  |  |
| 462.libquantum | 96     | <b><u>87.5</u></b> | <b><u>22700</u></b> | 87.5              | 22700              | 87.6              | 22700              | 96     | <b><u>87.5</u></b> | <b><u>22700</u></b> | 87.5              | 22700              | 87.6              | 22700              |  |  |
| 464.h264ref    | 96     | 446                | 4760                | <b><u>444</u></b> | <b><u>4780</u></b> | 444               | 4790               | 96     | 432                | 4920                | 434               | 4890               | <b><u>433</u></b> | <b><u>4900</u></b> |  |  |
| 471.omnetpp    | 96     | <b><u>417</u></b>  | <b><u>1440</u></b>  | 418               | 1440               | 417               | 1440               | 96     | 413                | 1450                | <b><u>412</u></b> | <b><u>1460</u></b> | 412               | 1460               |  |  |
| 473.astar      | 96     | 373                | 1810                | <b><u>373</u></b> | <b><u>1810</u></b> | 373               | 1810               | 96     | 373                | 1810                | <b><u>373</u></b> | <b><u>1810</u></b> | 373               | 1810               |  |  |
| 483.xalancbmk  | 96     | 184                | 3610                | <b><u>184</u></b> | <b><u>3600</u></b> | 184               | 3600               | 96     | 184                | 3610                | <b><u>184</u></b> | <b><u>3600</u></b> | 184               | 3600               |  |  |

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"

## 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%  
Sysinfo program /spec/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on RH8100 Mon Aug 25 06:02:31 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 E7-8857 v2 @ 3.00GHz  
8 "physical id"s (chips)  
96 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The  
Continued on next page



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## Platform Notes (Continued)

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

```

cpu cores : 12
siblings  : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 4: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 5: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 6: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 7: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 30720 KB

```

From /proc/meminfo

```

MemTotal:      2117591996 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)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

uname -a:

```

Linux RH8100 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 Aug 25 04:19

SPEC is set to: /spec

```

Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda5        ext4  452G  5.5G  424G   2% /spec

```

Additional information from dmidecode:

BIOS American Megatrends Inc. BLHSV020 07/29/2014

Memory:

```

128x 16 GB
123x Hynix HMT42GR7AFR4C-PB 16 GB 1333 MHz 2 rank
5x Hynix HMT42GR7MFR4C-PB 16 GB 1333 MHz 2 rank
64x NO DIMM NO DIMM

```

(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:

```

123x Hynix HMT42GR7AFR4C-PB 16 GB 1333 MHz 2 rank
5x Hynix HMT42GR7MFR4C-PB 16 GB 1333 MHz 2 rank

```



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## 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  
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:  
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:  
-xSSE4.2 -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



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## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m32  
  
400.perlbench: icc -m64  
401.bzip2: icc -m64  
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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div  
  
429.mcf: basepeak = yes  
  
445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias -opt-mem-layout-trans=3  
  
456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
  
458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-unroll4 -auto-ilp32

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## Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: -xSSE4.2(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: -xSSE4.2(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-revC.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.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-revC.xml>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml>

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