# SPEC® CINT2006 Result

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## Huawei

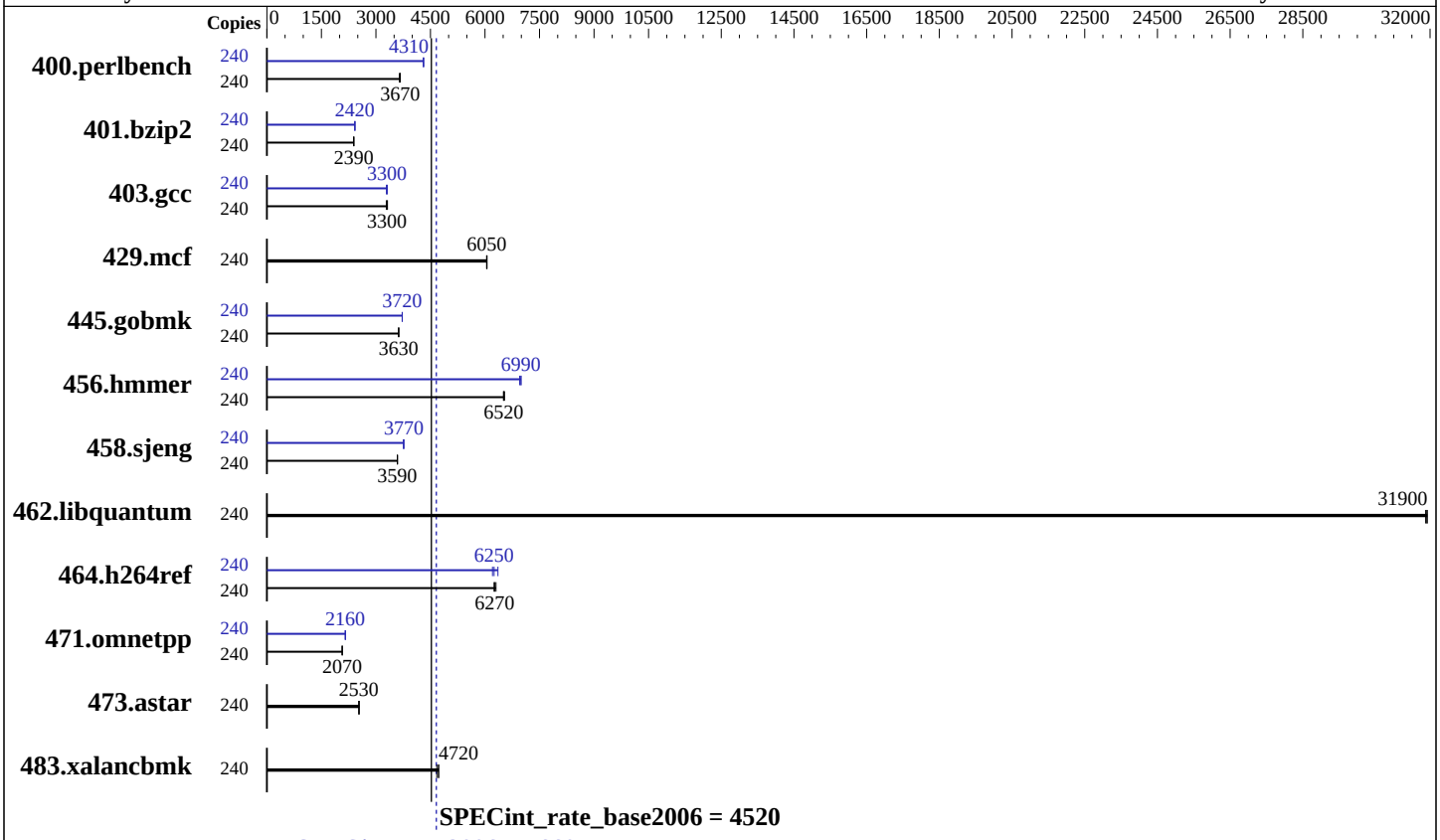
## Huawei RH8100 V3 (Intel Xeon E7-8890 v2)

**SPECint®_rate2006 = 4660**

**SPECint_rate_base2006 = 4520**

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

**Test date:** Jul-2014
**Hardware Availability:** Feb-2014
**Software Availability:** Nov-2013




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7-8890 v2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.40 GHz |
| CPU MHz: | 2800 |
| FPU: | Integrated |
| CPU(s) enabled: | 120 cores, 8 chips, 15 cores/chip, 2 threads/core |
| 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: | 37.5 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 600 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 | 240 | 644 | 3640 | **640** | **3670** | 639 | 3670 | 240 | 545 | 4310 | 544 | 4310 | **544** | **4310** |
| 401.bzip2 | 240 | 970 | 2390 | 968 | 2390 | **970** | **2390** | 240 | **957** | **2420** | 957 | 2420 | 956 | 2420 |
| 403.gcc | 240 | 588 | 3290 | **585** | **3300** | 582 | 3320 | 240 | 587 | 3290 | 584 | 3310 | **585** | **3300** |
| 429.mcf | 240 | **362** | **6050** | 361 | 6060 | 362 | 6040 | 240 | **362** | **6050** | 361 | 6060 | 362 | 6040 |
| 445.gobmk | 240 | **694** | **3630** | 695 | 3620 | 694 | 3630 | 240 | **676** | **3720** | 676 | 3720 | 676 | 3730 |
| 456.hmmer | 240 | 344 | 6510 | **344** | **6520** | 343 | 6540 | 240 | 320 | 6990 | 322 | 6950 | **320** | **6990** |
| 458.sjeng | 240 | **809** | **3590** | 809 | 3590 | 808 | 3590 | 240 | 773 | 3760 | **771** | **3770** | 771 | 3770 |
| 462.libquantum | 240 | 156 | 31900 | **156** | **31900** | 156 | 31900 | 240 | 156 | 31900 | **156** | **31900** | 156 | 31900 |
| 464.h264ref | 240 | 850 | 6250 | 843 | 6300 | **847** | **6270** | 240 | 856 | 6210 | 836 | 6360 | **850** | **6250** |
| 471.omnetpp | 240 | 724 | 2070 | **724** | **2070** | 724 | 2070 | 240 | 694 | 2160 | **695** | **2160** | 696 | 2160 |
| 473.astar | 240 | **665** | **2530** | 663 | 2540 | 667 | 2530 | 240 | **665** | **2530** | 663 | 2540 | 667 | 2530 |
| 483.xalancbmk | 240 | 351 | 4720 | **351** | **4720** | 354 | 4670 | 240 | 351 | 4720 | **351** | **4720** | 354 | 4670 |

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 rh8100v3 Sat Jul 26 09:33:32 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 E7-8890 v2 @ 2.80GHz
      8 "physical id"s (chips)
      240 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
```

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## Platform Notes (Continued)

```
      following excerpts from /proc/cpuinfo might not be reliable.  Use with
      caution.)
         cpu cores : 15
         siblings  : 30
         physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      cache size : 38400 KB

   From /proc/meminfo
      MemTotal:       2117574308 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 rh8100v3 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 Jul 26 06:46

   SPEC is set to: /spec
      Filesystem     Type  Size  Used Avail Use% Mounted on
      /dev/sdb1      ext4  673G   12G  628G   2% /spec

   Additional information from dmidecode:
     BIOS American Megatrends Inc. BLHSV016 06/05/2014
     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
```

## 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`

## 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

Continued on next page

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

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