# SPEC® CINT2006 Result

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## Huawei

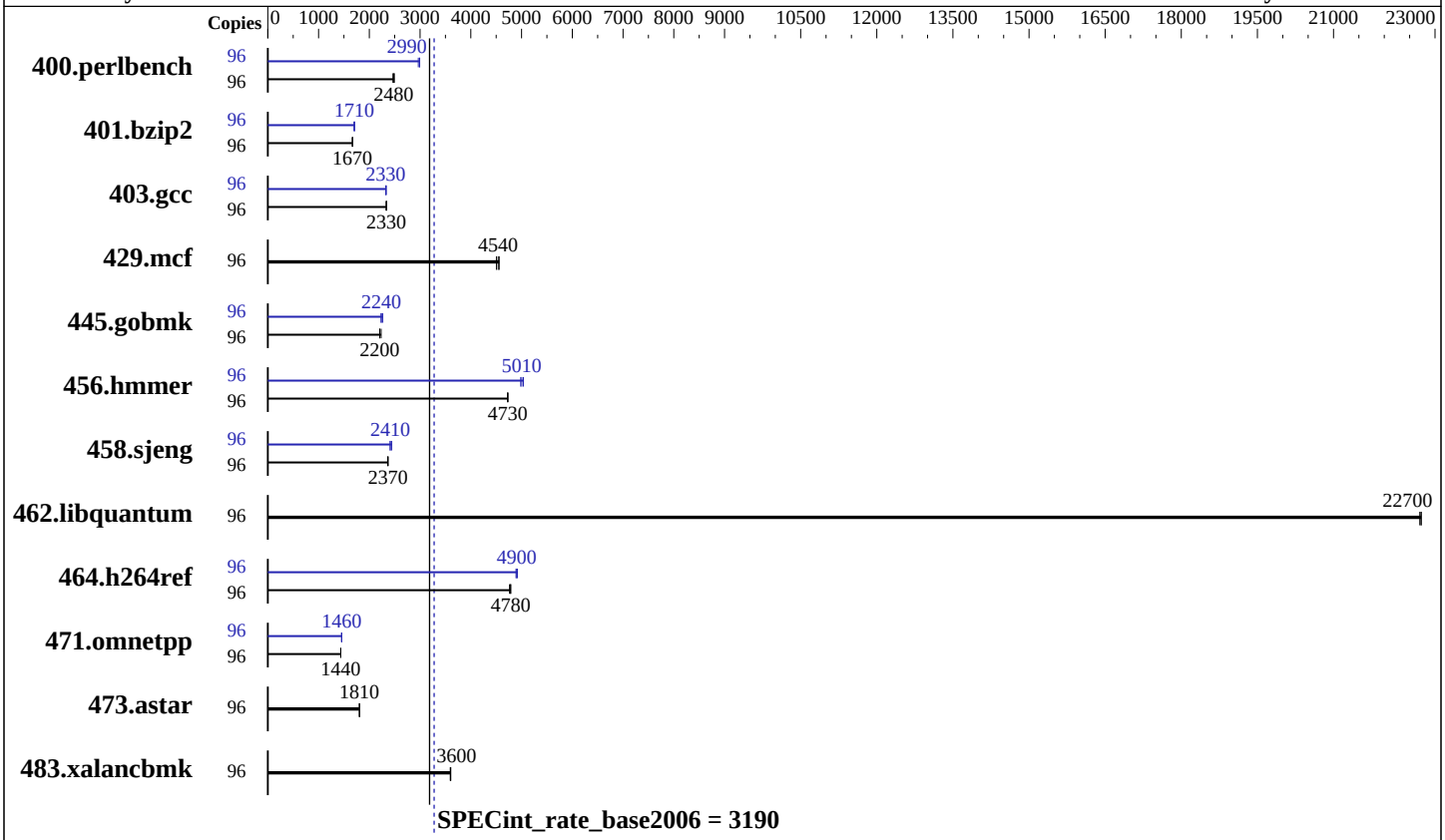
## Huawei RH8100 V3 (Intel Xeon E7-8857 v2)

**SPECint®_rate2006 = 3280**

**SPECint_rate_base2006 = 3190**

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

**Test date:** Aug-2014
**Hardware Availability:** Feb-2014
**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 | **378** | **2480** | 380 | 2470 | 96 | 316 | 2970 | 313 | 2990 | **314** | **2990** |
| 401.bzip2 | 96 | 554 | 1670 | **556** | **1670** | 556 | 1670 | 96 | 545 | 1700 | **543** | **1710** | 542 | 1710 |
| 403.gcc | 96 | **331** | **2330** | 331 | 2330 | 330 | 2340 | 96 | **332** | **2330** | 332 | 2330 | 331 | 2330 |
| 429.mcf | 96 | 192 | 4560 | 194 | 4500 | **193** | **4540** | 96 | 192 | 4560 | 194 | 4500 | **193** | **4540** |
| 445.gobmk | 96 | 457 | 2200 | 451 | 2230 | **457** | **2200** | 96 | 445 | 2270 | 451 | 2230 | **450** | **2240** |
| 456.hmmer | 96 | 189 | 4730 | 190 | 4730 | **189** | **4730** | 96 | 180 | 4980 | **179** | **5010** | 178 | 5040 |
| 458.sjeng | 96 | **491** | **2370** | 492 | 2360 | 490 | 2370 | 96 | **481** | **2410** | 482 | 2410 | 476 | 2440 |
| 462.libquantum | 96 | **87.5** | **22700** | 87.5 | 22700 | 87.6 | 22700 | 96 | **87.5** | **22700** | 87.5 | 22700 | 87.6 | 22700 |
| 464.h264ref | 96 | 446 | 4760 | **444** | **4780** | 444 | 4790 | 96 | 432 | 4920 | 434 | 4890 | **433** | **4900** |
| 471.omnetpp | 96 | **417** | **1440** | 418 | 1440 | 417 | 1440 | 96 | 413 | 1450 | **412** | **1460** | 412 | 1460 |
| 473.astar | 96 | 373 | 1810 | **373** | **1810** | 373 | 1810 | 96 | 373 | 1810 | **373** | **1810** | 373 | 1810 |
| 483.xalancbmk | 96 | 184 | 3610 | **184** | **3600** | 184 | 3600 | 96 | 184 | 3610 | **184** | **3600** | 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
```

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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
```

## 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

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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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