



# SPEC® CINT2006 Result

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## Huawei

SPECint®2006 = 43.1

## Huawei CH220 (Intel Xeon E5-2640v2)

SPECint\_base2006 = 39.9

CPU2006 license: 3175

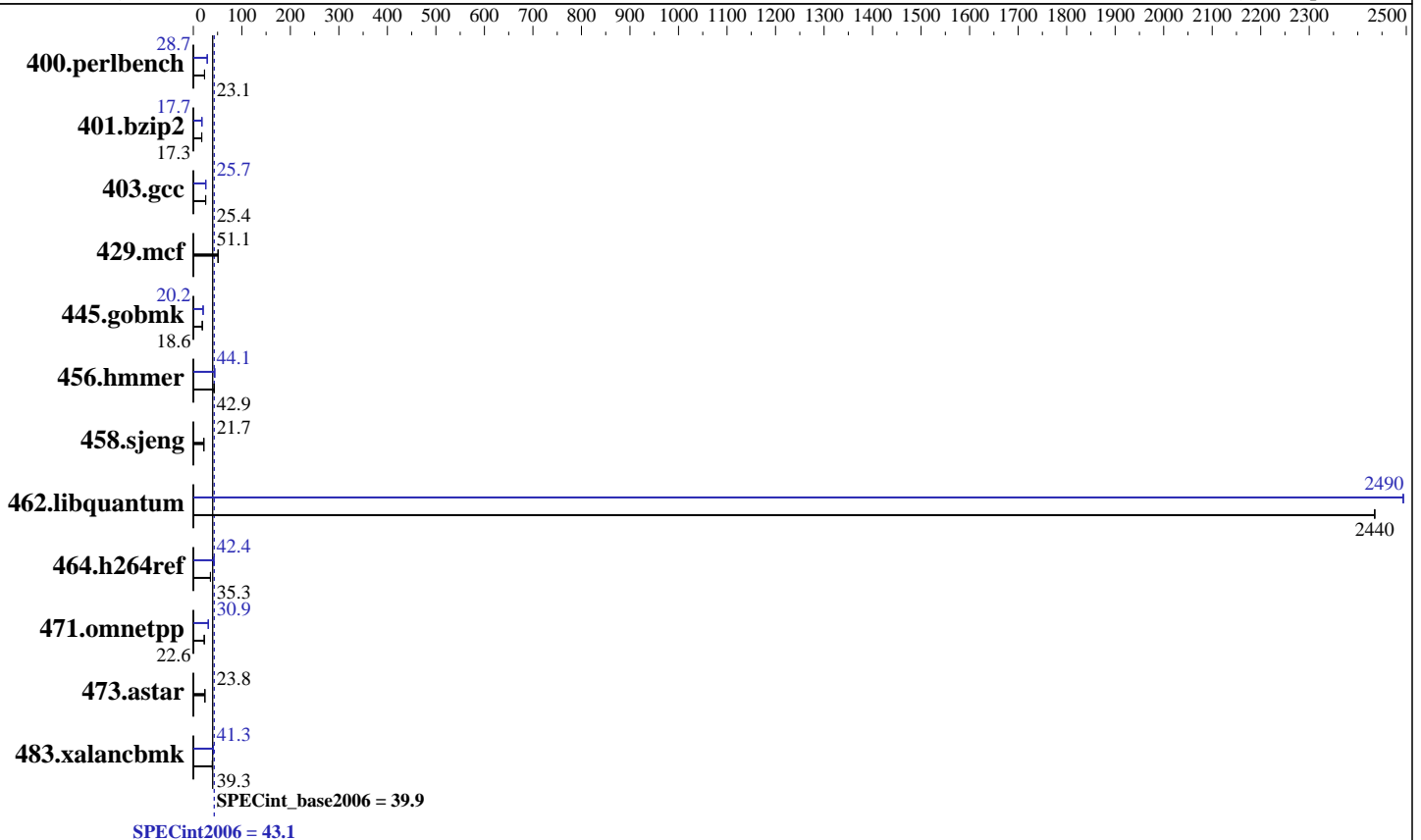
Test sponsor: Huawei

Tested by: Huawei

Test date: Aug-2014

Hardware Availability: Sep-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2640 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip  
 CPU(s) orderable: 1,2 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 128 GB (16 x 8 GB 2Rx8 PC3-12800R-11, ECC)  
 Disk Subsystem: 1 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 12.1.0.225 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V9.01



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## Results Table

| Benchmark      | Base       |             |             |             |            |             | Peak       |             |            |             |             |             |
|----------------|------------|-------------|-------------|-------------|------------|-------------|------------|-------------|------------|-------------|-------------|-------------|
|                | Seconds    | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       |
| 400.perlbench  | 422        | 23.2        | 423         | 23.1        | <u>422</u> | <u>23.1</u> | 340        | 28.7        | 340        | 28.7        | <u>340</u>  | <u>28.7</u> |
| 401.bzip2      | 557        | 17.3        | 557         | 17.3        | <u>557</u> | <u>17.3</u> | 545        | 17.7        | <u>547</u> | <u>17.7</u> | 547         | 17.6        |
| 403.gcc        | 316        | 25.5        | <u>316</u>  | <u>25.4</u> | 317        | 25.4        | 314        | 25.7        | <u>313</u> | <u>25.7</u> | 313         | 25.7        |
| 429.mcf        | 177        | 51.4        | <u>178</u>  | <u>51.1</u> | 180        | 50.7        | 177        | 51.4        | <u>178</u> | <u>51.1</u> | 180         | 50.7        |
| 445.gobmk      | 566        | 18.5        | 565         | 18.6        | <u>565</u> | <u>18.6</u> | 520        | 20.2        | <u>520</u> | <u>20.2</u> | 520         | 20.2        |
| 456.hammer     | 217        | 43.0        | 218         | 42.8        | <u>218</u> | <u>42.9</u> | 211        | 44.2        | 212        | 44.0        | <u>212</u>  | <u>44.1</u> |
| 458.sjeng      | 559        | 21.7        | <u>559</u>  | <u>21.7</u> | 559        | 21.6        | 559        | 21.7        | <u>559</u> | <u>21.7</u> | 559         | 21.6        |
| 462.libquantum | 8.51       | 2430        | <u>8.51</u> | <u>2440</u> | 8.51       | 2440        | 8.31       | 2490        | 8.31       | 2490        | <u>8.31</u> | <u>2490</u> |
| 464.h264ref    | 626        | 35.3        | 628         | 35.3        | <u>627</u> | <u>35.3</u> | <u>522</u> | <u>42.4</u> | 522        | 42.4        | 521         | 42.5        |
| 471.omnetpp    | <u>277</u> | <u>22.6</u> | 276         | 22.6        | 277        | 22.6        | <u>203</u> | <u>30.9</u> | 203        | 30.8        | 202         | 30.9        |
| 473.astar      | 295        | 23.8        | <u>295</u>  | <u>23.8</u> | 295        | 23.8        | 295        | 23.8        | <u>295</u> | <u>23.8</u> | 295         | 23.8        |
| 483.xalancbmk  | 177        | 39.0        | <u>176</u>  | <u>39.3</u> | 175        | 39.5        | <u>167</u> | <u>41.3</u> | 167        | 41.3        | 167         | 41.3        |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

BIOS configuration:  
Set Power Efficiency Mode to Custom  
Baseboard Management Controller used to adjust the fan speed to 100%  
Sysinfo program /spec/config/sysinfo.rev6800  
\$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
running on wbspeccpu Thu Aug 7 03:13:45 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 E5-2640 v2 @ 2.00GHz
 2 "physical id"s (chips)
 16 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB
```

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## Platform Notes (Continued)

```

From /proc/meminfo
MemTotal:      132103760 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 wbspeccpu 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 4 18:31

SPEC is set to: /spec
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal        ext4  270G   73G  184G  29% /

Additional information from dmidecode:
Memory:
    16x Micron 18JSF1G72PDZ-1G6E 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)

```

## General Notes

Environment variables set by runspec before the start of the run:

```

KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
OMP_NUM_THREADS = "16"

```

Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory using RHEL 6.1

Transparent Huge Pages enabled with:

```

echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled

```

## Base Compiler Invocation

C benchmarks:

```

icc -m64

```

C++ benchmarks:

```

icpc -m64

```



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## Base Portability Flags

```

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

```

## Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-Wl,-z,muldefs -L/smartheap -lsmartheap64

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

400.perlbench: icc -m32

445.gobmk: icc -m32

464.h264ref: icc -m32

C++ benchmarks (except as noted below):

icpc -m32

473.astar: icpc -m64



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Software Availability: Sep-2013

## Peak Portability Flags

```

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
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)
               -opt-prefetch -ansi-alias

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
            -opt-prefetch -ansi-alias

403.gcc: -xAVX -ipo -O3 -no-prec-div -inline-calloc
          -opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
           -ansi-alias

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
           -ansi-alias

458.sjeng: basepeak = yes

462.libquantum: -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
                -auto-p32

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)
              -opt-ra-region-strategy=block -ansi-alias
              -Wl,-z,muldefs -L/smartheap -lsmartheap

```

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## Peak Optimization Flags (Continued)

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias  
-Wl,-z,muldefs -L/smartheap -lsmartheap

## 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-ic12.1-official-linux64.20111122.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-ic12.1-official-linux64.20111122.xml>

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

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.

Report generated on Mon Sep 15 16:49:13 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 26 August 2014.