# SPEC® CINT2006 Result

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## Huawei

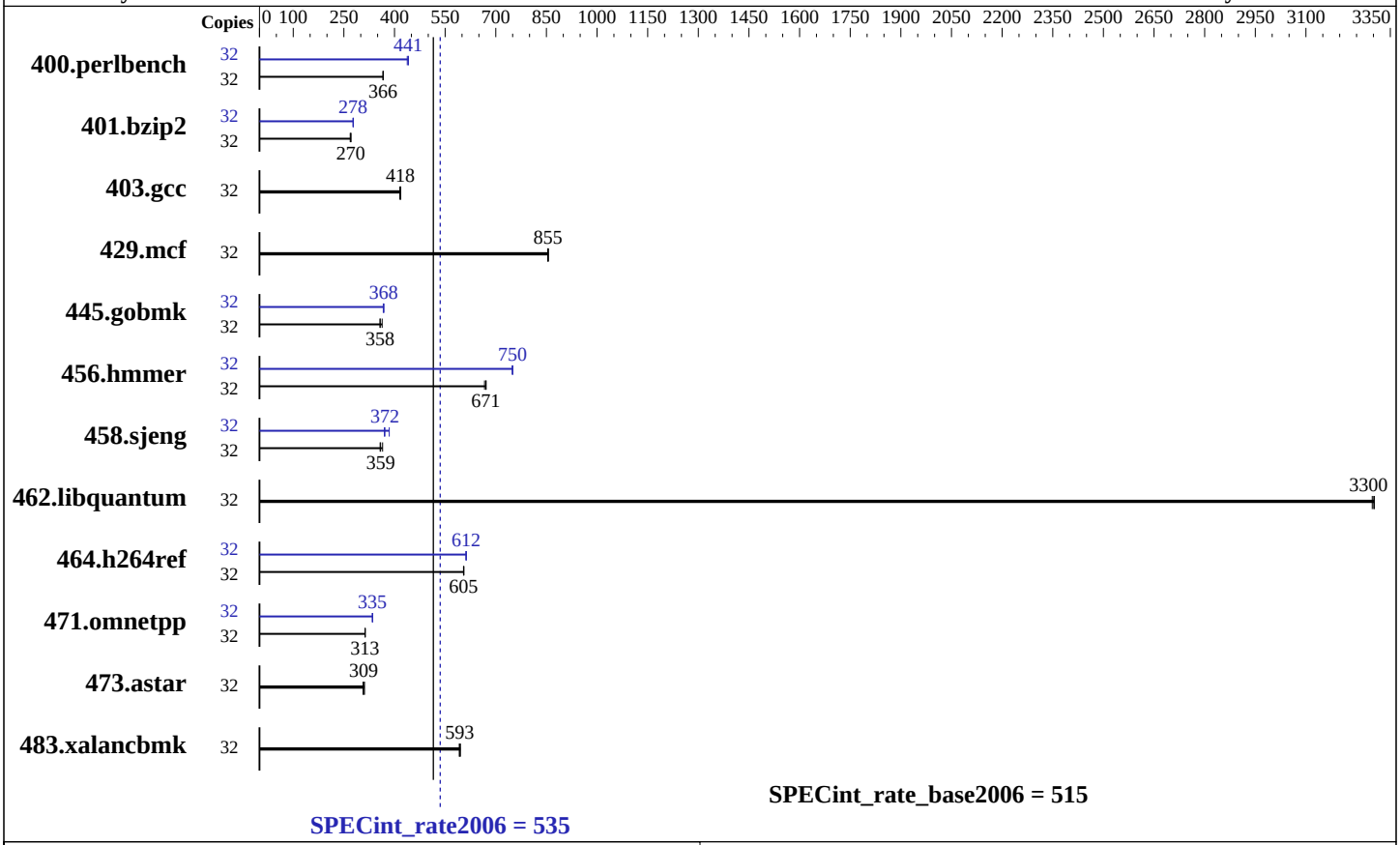
## Huawei CH240 (Intel Xeon E5-4603 v2)

SPECint®_rate2006 = 535

SPECint_rate_base2006 = 515

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

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




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-4603 v2 |
| CPU Characteristics: | |
| CPU MHz: | 2200 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 4 chips, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 2,4 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: | 10 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (32 x 8 GB 2Rx4 PC3-10600R-09 ,ECC) |
| Disk Subsystem: | 1 x 300 GB SAS, 10000 RPM |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.5 (Santiago)<br>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 | 32 | **854** | **366** | 852 | 367 | 854 | 366 | 32 | 714 | 438 | **710** | **441** | 709 | 441 |
| 401.bzip2 | 32 | 1140 | 271 | 1149 | 269 | **1142** | **270** | 32 | 1111 | 278 | 1114 | 277 | **1112** | **278** |
| 403.gcc | 32 | 616 | 418 | **617** | **418** | 620 | 416 | 32 | 616 | 418 | **617** | **418** | 620 | 416 |
| 429.mcf | 32 | **341** | **855** | 342 | 854 | 341 | 856 | 32 | **341** | **855** | 342 | 854 | 341 | 856 |
| 445.gobmk | 32 | 924 | 363 | **939** | **358** | 940 | 357 | 32 | 911 | 368 | **913** | **368** | 915 | 367 |
| 456.hmmer | 32 | 445 | 671 | **445** | **671** | 448 | 667 | 32 | 399 | 749 | 398 | 750 | **398** | **750** |
| 458.sjeng | 32 | **1079** | **359** | 1083 | 357 | 1061 | 365 | 32 | 1047 | 370 | **1042** | **372** | 1007 | 384 |
| 462.libquantum | 32 | **201** | **3300** | 201 | 3300 | 201 | 3300 | 32 | **201** | **3300** | 201 | 3300 | 201 | 3300 |
| 464.h264ref | 32 | 1170 | 605 | 1172 | 604 | **1170** | **605** | 32 | **1156** | **612** | 1158 | 612 | 1156 | 613 |
| 471.omnetpp | 32 | 638 | 313 | **639** | **313** | 640 | 313 | 32 | 597 | 335 | 598 | 335 | **597** | **335** |
| 473.astar | 32 | 722 | 311 | **727** | **309** | 732 | 307 | 32 | 722 | 311 | **727** | **309** | 732 | 307 |
| 483.xalancbmk | 32 | 371 | 595 | **372** | **593** | 373 | 592 | 32 | 371 | 595 | **372** | **593** | 373 | 592 |

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

```
Sysinfo program /spec14/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Wed Jul  2 03:52:29 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 E5-4603 v2 @ 2.20GHz
      4 "physical id"s (chips)
      32 "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 : 4
      siblings  : 8
```

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## Platform Notes (Continued)

```
        physical 0: cores 0 1 2 3
        physical 1: cores 0 1 2 3
        physical 2: cores 0 1 2 3
        physical 3: cores 0 1 2 3
     cache size : 10240 KB

  From /proc/meminfo
     MemTotal:       264479480 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 localhost.localdomain 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 2 03:44

  SPEC is set to: /spec14
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda1      ext4  268G   16G  238G   7% /

  Additional information from dmidecode:
    BIOS Insyde Corp. OARYV388 04/23/2014
    Memory:
     7x Hynix HMT31GR7AFR4C-H9 8 GB 1333 MHz 2 rank
     25x Hynix HMT31GR7BFR4C-H9 8 GB 1333 MHz 2 rank
     16x NO DIMM NO DIMM

  (End of data from sysinfo program)
```

## General Notes

```
 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/spec14/libs/32:/spec14/libs/64:/spec14/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: basepeak = yes

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

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

Continued on next page

## Peak Optimization Flags (Continued)

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-linux64.20140128.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-linux64.20140128.xml`
`http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml`


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