# SPEC® CINT2006 Result

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## Huawei

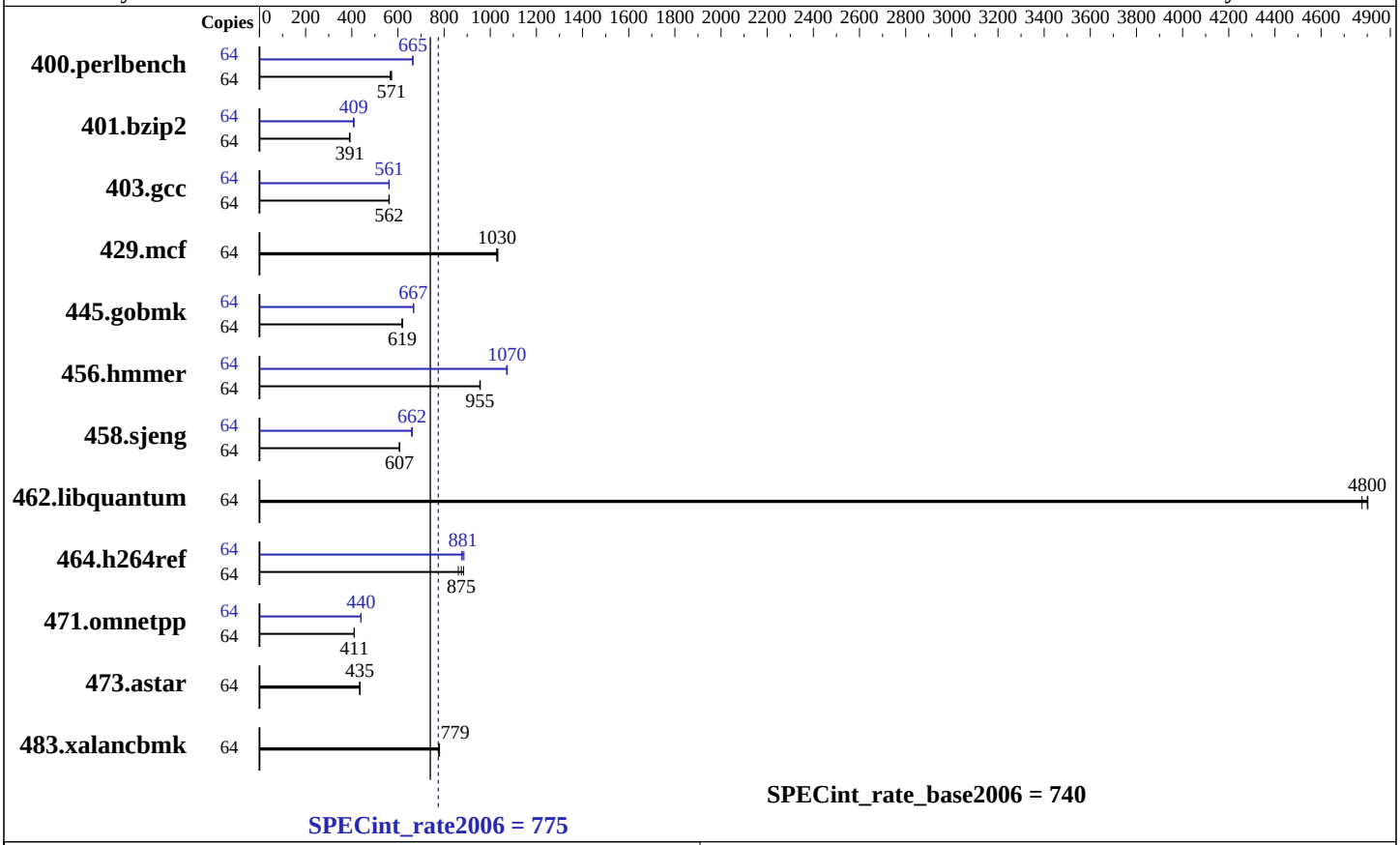
## Tecal RH5885 V2 (Intel Xeon E7-4820)

**SPECint®_rate2006 = 775**

**SPECint_rate_base2006 = 740**

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

**Test date:** Jan-2013
**Hardware Availability:** Oct-2012
**Software Availability:** Oct-2012




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7-4820 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.27 GHz |
| CPU MHz: | 2000 |
| FPU: | Integrated |
| CPU(s) enabled: | 32 cores, 4 chips, 8 cores/chip, 2 threads/core |
| CPU(s) orderable: | 2,4 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: | 18 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 1 TB (64 x 16 GB 4Rx4 PC3-10600R-9, ECC, running at 978 MHz) |
| Disk Subsystem: | 1 x 500 GB SATA, 7200 RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64 |
| Compiler: | C/C++: Version 13.0.0.079 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 V9.01 |

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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 | 64 | **1095** | **571** | 1104 | 566 | 1093 | 572 | 64 | **941** | **665** | 942 | 664 | 941 | 665 |
| 401.bzip2 | 64 | **1578** | **391** | 1576 | 392 | 1585 | 390 | 64 | 1519 | 407 | **1510** | **409** | 1508 | 410 |
| 403.gcc | 64 | 916 | 563 | 919 | 561 | **917** | **562** | 64 | **918** | **561** | 917 | 562 | 918 | 561 |
| 429.mcf | 64 | **567** | **1030** | 568 | 1030 | 565 | 1030 | 64 | **567** | **1030** | 568 | 1030 | 565 | 1030 |
| 445.gobmk | 64 | **1085** | **619** | 1084 | 619 | 1086 | 618 | 64 | **1006** | **667** | 1004 | 668 | 1007 | 666 |
| 456.hmmer | 64 | 624 | 957 | **625** | **955** | 625 | 955 | 64 | 556 | 1070 | **556** | **1070** | 558 | 1070 |
| 458.sjeng | 64 | 1277 | 606 | **1277** | **607** | 1274 | 608 | 64 | 1170 | 662 | 1175 | 659 | **1170** | **662** |
| 462.libquantum | 64 | 276 | 4800 | **276** | **4800** | 278 | 4780 | 64 | 276 | 4800 | **276** | **4800** | 278 | 4780 |
| 464.h264ref | 64 | 1601 | 885 | 1644 | 862 | **1619** | **875** | 64 | **1607** | **881** | 1618 | 875 | 1598 | 886 |
| 471.omnetpp | 64 | 974 | 411 | 975 | 410 | **974** | **411** | 64 | 911 | 439 | 909 | 440 | **909** | **440** |
| 473.astar | 64 | 1034 | 435 | **1033** | **435** | 1032 | 435 | 64 | 1034 | 435 | **1033** | **435** | 1032 | 435 |
| 483.xalancbmk | 64 | **567** | **779** | 568 | 777 | 566 | 780 | 64 | **567** | **779** | 568 | 777 | 566 | 780 |

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:
Power Technology set to Custom, Performance/Watt set to Traditional
Sysinfo program /home/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ 5569a0425e2ad530534e4c79a46e4d28
running on RH5885-24 Mon Jan 28 09:25:22 2013

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- 4820 @ 2.00GHz
      4 "physical id"s (chips)
      64 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
```

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## Platform Notes (Continued)

```
        cpu cores : 8
        siblings  : 16
        physical 0: cores 0 1 2 8 17 18 24 25
        physical 1: cores 0 1 2 8 17 18 24 25
        physical 2: cores 0 1 2 8 17 18 24 25
        physical 3: cores 0 1 2 8 17 18 24 25
     cache size : 18432 KB

  From /proc/meminfo
     MemTotal:       1058805592 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.2 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux RH5885-24 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
     x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Jan 1 20:27

  SPEC is set to: /home/cpu2006
     Filesystem     Type    Size  Used Avail Use% Mounted on
     /dev/mapper/vg_rh588524-lv_home
                    ext4    409G   14G  375G   4% /home

  Additional information from dmidecode:
    BIOS American Megatrends Inc. RGPUC-BIOS-V023 12/17/2012
    Memory:
     64x   16 GB
     64x Hyundai HMT42GR7BMR4C-H9 16 GB 978 MHz 4 rank

  (End of data from sysinfo program)
     Descriptions about memory generated by sysinfo are not correct,
     only 64 DIMMs are installed not 128, see descriptions below.
     Memory:
      64x Hyundai HMT42GR7BMR4C-H9 16 GB 978 MHz 4 rank
```

## General Notes

```
 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"

  Binaries compiled on a system with 4x Xeon E7-8870 CPU + 1024GB
  memory using RHEL6.2
```

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## General Notes (Continued)

```
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/home/cpu2006/smartheap -lsmartheap
```

## Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc  -m32
```

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## Peak Compiler Invocation (Continued)

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/home/cpu2006/smartheap -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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-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-revG.xml


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