# SPEC® CINT2006 Result

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## HITACHI

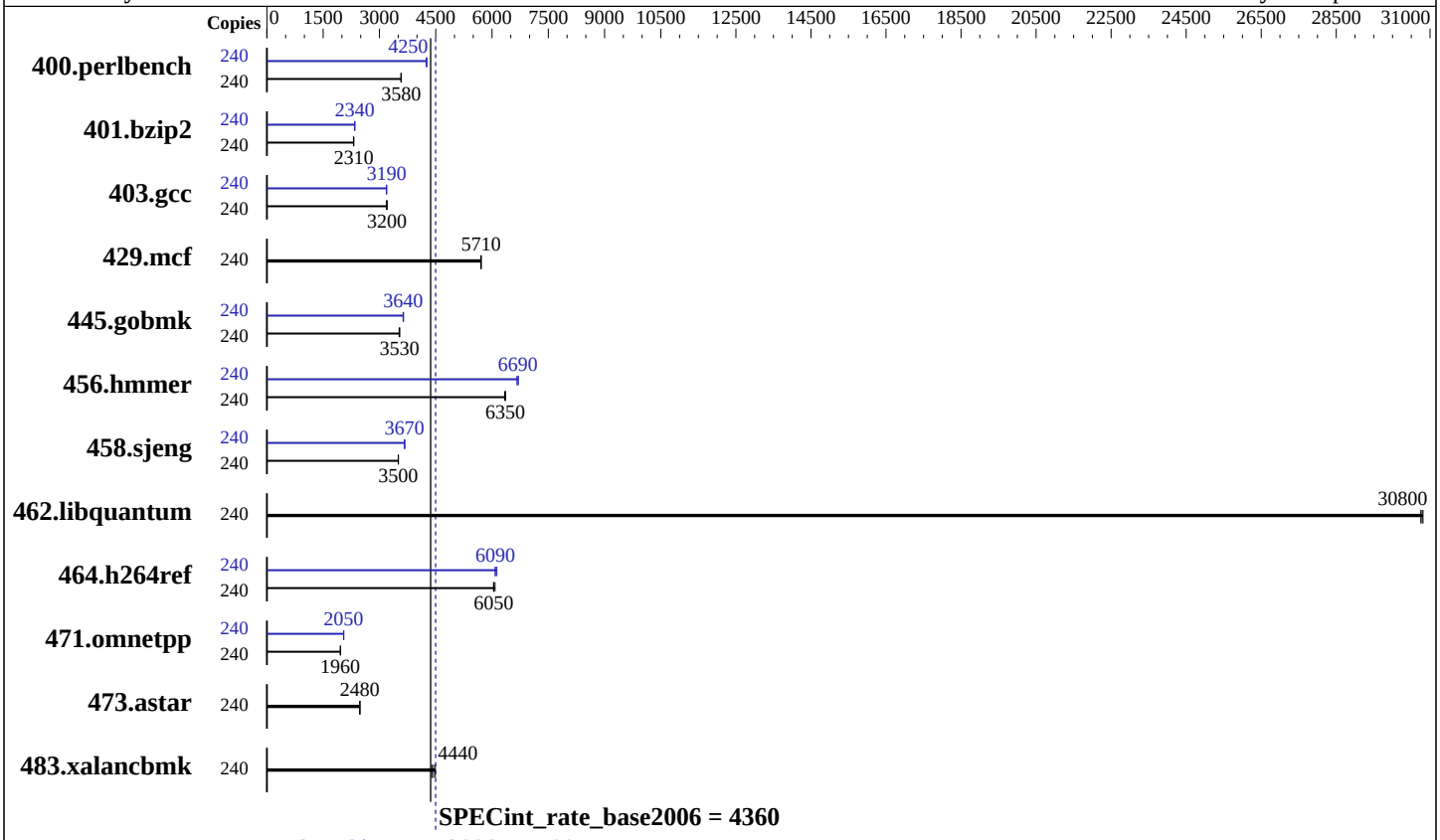
BladeSymphony BS520X (Intel Xeon E7-8890 v2)

SPECint®_rate2006 = 4500

SPECint_rate_base2006 = 4360

**CPU2006 license:** 35
**Test sponsor:** HITACHI
**Tested by:** HITACHI

**Test date:** Jun-2014
**Hardware Availability:** Sep-2014
**Software Availability:** Sep-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: | 2,4,8 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 PC3L-12800R-11, ECC, running at 1333 MHz) |
| Disk Subsystem: | 2 x 300 GB SAS, 15000 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 |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 240 | 656 | 3580 | 655 | 3580 | **656** | **3580** | 240 | **552** | **4250** | 552 | 4250 | 550 | 4260 |
| 401.bzip2 | 240 | 1001 | 2310 | **1001** | **2310** | 1003 | 2310 | 240 | 989 | 2340 | 991 | 2340 | **989** | **2340** |
| 403.gcc | 240 | **604** | **3200** | 606 | 3190 | 603 | 3200 | 240 | 607 | 3180 | **606** | **3190** | 605 | 3190 |
| 429.mcf | 240 | **383** | **5710** | 384 | 5700 | 383 | 5710 | 240 | **383** | **5710** | 384 | 5700 | 383 | 5710 |
| 445.gobmk | 240 | **712** | **3530** | 714 | 3520 | 712 | 3540 | 240 | 694 | 3630 | 692 | 3640 | **692** | **3640** |
| 456.hmmer | 240 | 353 | 6340 | **352** | **6350** | 352 | 6360 | 240 | **334** | **6690** | 334 | 6700 | 336 | 6660 |
| 458.sjeng | 240 | 830 | 3500 | **829** | **3500** | 828 | 3510 | 240 | 790 | 3680 | 793 | 3660 | **792** | **3670** |
| 462.libquantum | 240 | 162 | 30800 | **162** | **30800** | 161 | 30800 | 240 | 162 | 30800 | **162** | **30800** | 161 | 30800 |
| 464.h264ref | 240 | 879 | 6040 | **878** | **6050** | 873 | 6080 | 240 | 866 | 6130 | **872** | **6090** | 873 | 6080 |
| 471.omnetpp | 240 | **765** | **1960** | 765 | 1960 | 765 | 1960 | 240 | **732** | **2050** | 732 | 2050 | 734 | 2040 |
| 473.astar | 240 | **681** | **2480** | 679 | 2480 | 681 | 2480 | 240 | **681** | **2480** | 679 | 2480 | 681 | 2480 |
| 483.xalancbmk | 240 | **373** | **4440** | 377 | 4400 | 369 | 4490 | 240 | **373** | **4440** | 377 | 4400 | 369 | 4490 |

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 /home/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RHEL6.5x8664 Sun Jun  1 08:06:49 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
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 15
      siblings  : 30
```

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## Platform Notes (Continued)

```
        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:       2117225796 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 RHEL6.5x8664 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 May 30 18:57

  SPEC is set to: /home/cpu2006
     Filesystem                  Type  Size  Used Avail Use% Mounted on
     /dev/mapper/vg_rhel6-lv_home ext4  359G  8.9G  332G   3% /home

  Additional information from dmidecode:
    BIOS HITACHI 06-06 05/29/2014
    Memory:
     64x NO DIMM Unknown
     1x Samsung 393B2G7 BH0 YH9 16 GB 1333 MHz 2 rank
     1x Samsung 393B2G7 BH0 YK0 16 GB 1333 MHz 2 rank
     5x Samsung M393B2G7 BH0 YK0 16 GB 1333 MHz 2 rank
     32x Samsung M393B2G70BH0-YK0 16 GB 1333 MHz 2 rank
     89x Samsung M393B2G70QH0-YK0 16 GB 1333 MHz 2 rank

  (End of data from sysinfo program)
```

## General Notes

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

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
```

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## General Notes (Continued)

```
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>
BladeSymphony BS520X and Hitachi Compute Blade 520X are electronically equivalent.
The results have been measured on a Compute Blade 520X
```

## 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/PlatformHitachi-V1.2.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/PlatformHitachi-V1.2.xml


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