



# SPEC® CINT2006 Result

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## HITACHI

SPECint®\_rate2006 = 1780

BladeSymphony BS2500 (Intel Xeon E7-8893 v3)

SPECint\_rate\_base2006 = 1700

CPU2006 license: 35

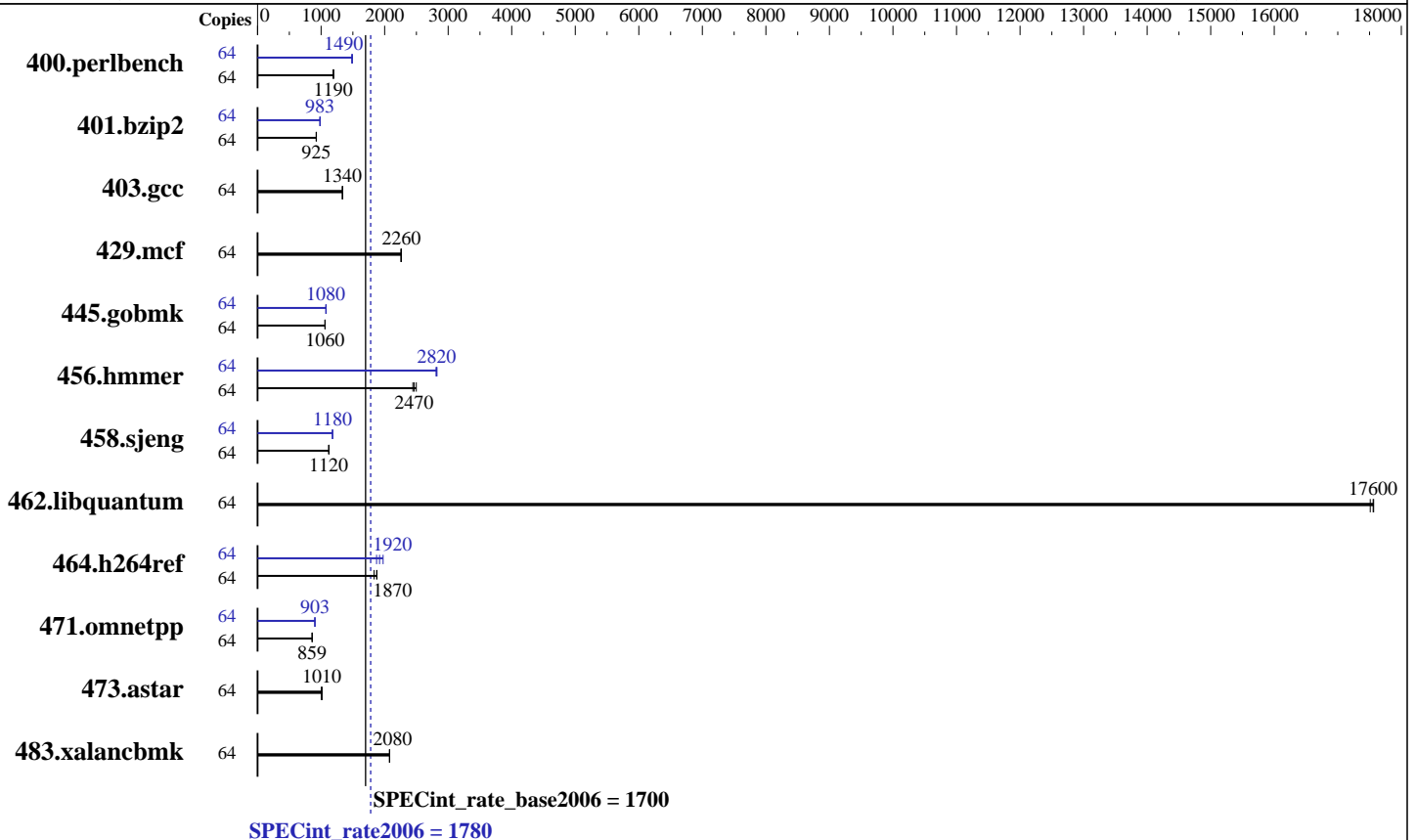
Test sponsor: HITACHI

Tested by: HITACHI

Test date: Aug-2015

Hardware Availability: Jun-2015

Software Availability: Mar-2015



### Hardware

CPU Name: Intel Xeon E7-8893 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3200  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 8 chips, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2,3,4,8 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: 45 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 2 TB (128 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
 Disk Subsystem: 2 x 450 GB SAS, 10000 RPM, RAID1  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo)  
 3.10.0-229.el7.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux  
 Auto Parallel: No  
 File System: xfs  
 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  | 64     | <b>524</b>  | <b>1190</b>  | 522        | 1200        | 525        | 1190        | 64     | 422         | 1480         | <b>420</b> | <b>1490</b> | 419        | 1490        |
| 401.bzip2      | 64     | 670         | 922          | 667        | 926         | <b>668</b> | <b>925</b>  | 64     | <b>628</b>  | <b>983</b>   | 628        | 984         | 629        | 982         |
| 403.gcc        | 64     | 385         | 1340         | 387        | 1330        | <b>385</b> | <b>1340</b> | 64     | 385         | 1340         | 387        | 1330        | <b>385</b> | <b>1340</b> |
| 429.mcf        | 64     | 258         | 2260         | 259        | 2260        | <b>258</b> | <b>2260</b> | 64     | 258         | 2260         | 259        | 2260        | <b>258</b> | <b>2260</b> |
| 445.gobmk      | 64     | <b>632</b>  | <b>1060</b>  | 632        | 1060        | 633        | 1060        | 64     | 622         | 1080         | 624        | 1080        | <b>624</b> | <b>1080</b> |
| 456.hammer     | 64     | 239         | 2500         | <b>242</b> | <b>2470</b> | 244        | 2440        | 64     | 211         | 2820         | 213        | 2810        | <b>212</b> | <b>2820</b> |
| 458.sjeng      | 64     | 690         | 1120         | 690        | 1120        | <b>690</b> | <b>1120</b> | 64     | 656         | 1180         | 657        | 1180        | <b>656</b> | <b>1180</b> |
| 462.libquantum | 64     | <b>75.5</b> | <b>17600</b> | 75.7       | 17500       | 75.5       | 17600       | 64     | <b>75.5</b> | <b>17600</b> | 75.7       | 17500       | 75.5       | 17600       |
| 464.h264ref    | 64     | 773         | 1830         | <b>756</b> | <b>1870</b> | 754        | 1880        | 64     | 717         | 1980         | 756        | 1870        | <b>738</b> | <b>1920</b> |
| 471.omnetpp    | 64     | 465         | 860          | 466        | 859         | <b>465</b> | <b>859</b>  | 64     | 443         | 904          | 444        | 902         | <b>443</b> | <b>903</b>  |
| 473.astar      | 64     | 443         | 1010         | 448        | 1000        | <b>444</b> | <b>1010</b> | 64     | 443         | 1010         | 448        | 1000        | <b>444</b> | <b>1010</b> |
| 483.xalancbmk  | 64     | <b>213</b>  | <b>2080</b>  | 212        | 2080        | 213        | 2080        | 64     | <b>213</b>  | <b>2080</b>  | 212        | 2080        | 213        | 2080        |

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:

C-State = Disable  
C1 Enhanced Mode = Disable  
EnergyEfficientTurbo = Disable  
ProcessorPerformanceStates = Disable  
UncoreFrequencyScaling = Disable  
Platform Controlled Type = Maximum Performance  
Memory Power Management = Disable  
Patrol Scrub = Disable

Sysinfo program /home/spec/speccpu2006/cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on localhost.localdomain Thu Aug 20 09:31:23 2015

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>

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### Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E7-8893 v3 @ 3.20GHz
 8 "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.)
  cpu cores : 4
  siblings  : 8
  physical 0: cores 1 5 16 20
  physical 1: cores 1 5 16 20
  physical 2: cores 1 5 16 20
  physical 3: cores 1 5 16 20
  physical 4: cores 1 5 16 20
  physical 5: cores 1 5 16 20
  physical 6: cores 1 5 16 20
  physical 7: cores 1 5 16 20
cache size : 46080 KB

```

```

From /proc/meminfo
MemTotal:      2112900508 kB
HugePages_Total:    0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.1 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.1"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.1:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38
EST 2015 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Aug 17 23:52

```

SPEC is set to: /home/spec/speccpu2006/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   364G  13G  352G   4% /home

```

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately

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### Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS HITACHI 09-14 07/09/2015

Memory:

64x NO DIMM Unknown

1x Samsung M39.A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

127x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

(End of data from sysinfo program)

### General Notes

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

LD\_LIBRARY\_PATH = "/home/spec/speccpu2006/cpu2006/libs/32:/home/spec/speccpu2006/cpu2006/libs/64:/home/spec/speccpu2006/cpu2006/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/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, BladeSymphony BS2500 and Hitachi Compute Blade 520X are electronically equivalent.

The results have been measured on a Hitachi Compute Blade 520X.

### Base Compiler Invocation

C benchmarks:

icc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

C++ benchmarks:

icpc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

### Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32

462.libquantum: -DSPEC\_CPU\_LINUX

483.xalancbmk: -DSPEC\_CPU\_LINUX

### Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

-opt-mem-layout-trans=3

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## Base Optimization Flags (Continued)

C++ benchmarks:

-xCORE-AVX2 -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 -L/opt/intel/composer\_xe\_2015/lib/ia32

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

458.sjeng: icc -m64

C++ benchmarks:

icpc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

## 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:

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## Peak Optimization Flags (Continued)

400.perlbench: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias -opt-mem-layout-trans=3

456.hmmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-unroll14 -auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(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: -xCORE-AVX2(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-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150729.html>



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You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>  
<http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150729.xml>

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

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