



# SPEC® CINT2006 Result

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## HITACHI

**SPECint®2006 = 59.5**

BladeSymphony BS2500 (Intel Xeon E5-2660 v3)

**SPECint\_base2006 = 56.0**

CPU2006 license: 35

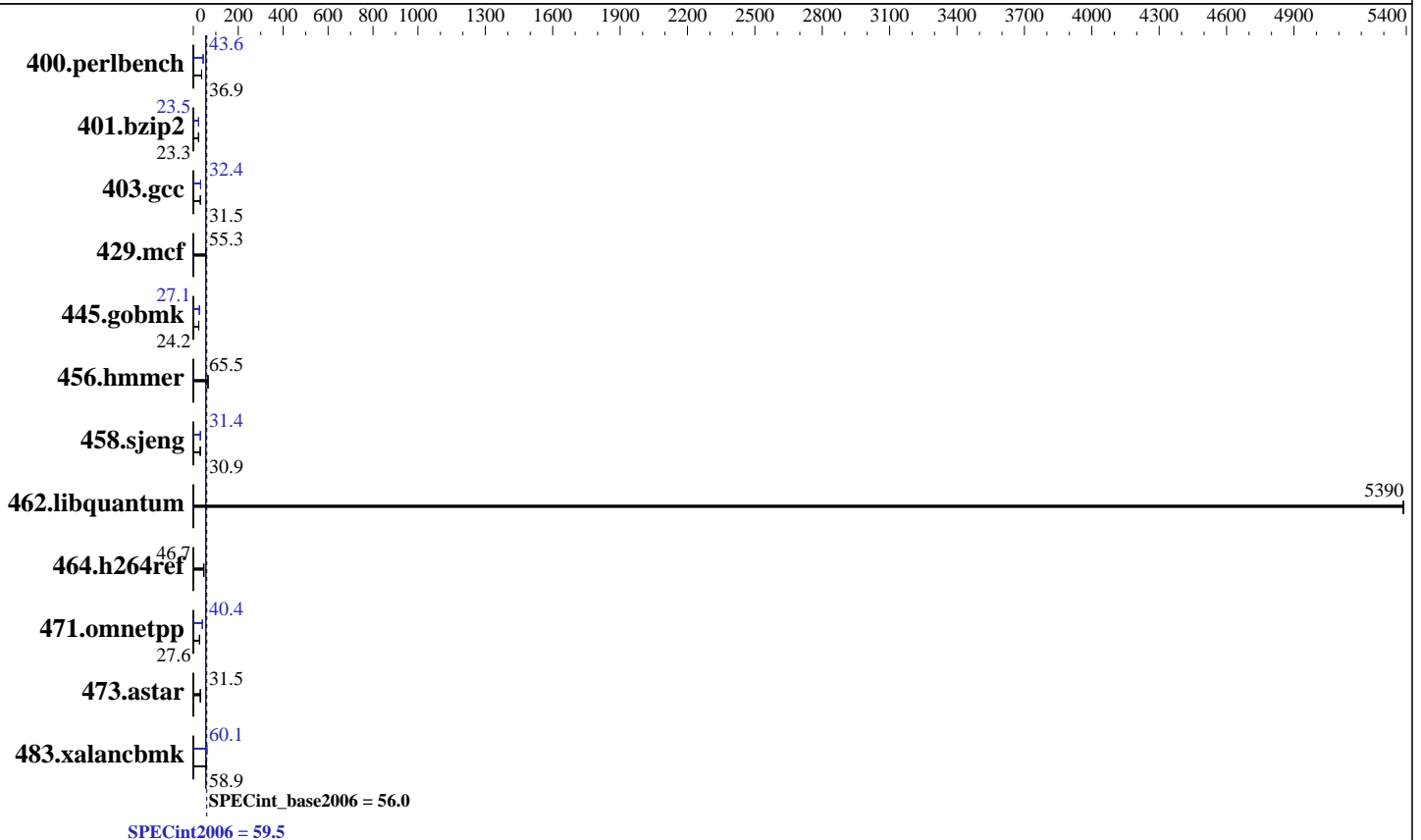
Test date: Jan-2015

Test sponsor: HITACHI

Hardware Availability: Dec-2014

Tested by: HITACHI

Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E5-2660 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 1, 2 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: 25 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
 Disk Subsystem: 2 x 600 GB SAS, 10000 RPM, RAID1  
 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: 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 V10.0



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### Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	264	37.0	<b>265</b>	<b>36.9</b>	265	36.9	<b>224</b>	<b>43.6</b>	225	43.5	224	43.7
401.bzip2	413	23.4	415	23.3	<b>414</b>	<b>23.3</b>	<b>411</b>	<b>23.5</b>	411	23.5	411	23.5
403.gcc	255	31.6	<b>256</b>	<b>31.5</b>	256	31.5	248	32.4	<b>248</b>	<b>32.4</b>	247	32.6
429.mcf	<b>165</b>	<b>55.3</b>	165	55.3	162	56.1	<b>165</b>	<b>55.3</b>	165	55.3	162	56.1
445.gobmk	<b>433</b>	<b>24.2</b>	434	24.2	433	24.2	387	27.1	<b>387</b>	<b>27.1</b>	387	27.1
456.hmmer	142	65.5	<b>142</b>	<b>65.5</b>	143	65.2	142	65.5	<b>142</b>	<b>65.5</b>	143	65.2
458.sjeng	391	30.9	<b>392</b>	<b>30.9</b>	393	30.8	385	31.4	<b>385</b>	<b>31.4</b>	386	31.4
462.libquantum	3.85	5390	3.84	5390	<b>3.85</b>	<b>5390</b>	3.85	5390	3.84	5390	<b>3.85</b>	<b>5390</b>
464.h264ref	473	46.8	<b>474</b>	<b>46.7</b>	477	46.4	473	46.8	<b>474</b>	<b>46.7</b>	477	46.4
471.omnetpp	230	27.2	223	28.0	<b>226</b>	<b>27.6</b>	154	40.6	155	40.3	<b>155</b>	<b>40.4</b>
473.astar	222	31.6	<b>223</b>	<b>31.5</b>	225	31.2	222	31.6	<b>223</b>	<b>31.5</b>	225	31.2
483.xalancbmk	118	58.6	117	59.0	<b>117</b>	<b>58.9</b>	<b>115</b>	<b>60.1</b>	114	60.5	115	59.9

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

### Submit Notes

The config file option 'submit' was used.

### Operating System Notes

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

### Platform Notes

BIOS configuration:

Patrol Scrub = Disable  
Per Core P-state = Disable

Sysinfo program /home/speccpu2006/cpu2006/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on 520Hx36564 Sun Jan 25 17:55:46 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>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2660 v3 @ 2.60GHz  
2 "physical id"s (chips)  
40 "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 : 10
siblings  : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

```

From /proc/meminfo

```

MemTotal:      263989936 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 520Hx36564 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 Jan 25 17:49

SPEC is set to: /home/speccpu2006/cpu2006

```

Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_520hx36564-lv_home ext4      485G  5.5G  455G   2% /home

```

Additional information from dmidecode:

```

BIOS HITACHI 08-20 01/06/2015
Memory:
 8x NO DIMM Unknown
16x Samsung M393A2G40DB0-CPB 16 GB 2133 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,1,0"
LD_LIBRARY_PATH = "/home/speccpu2006/cpu2006/libs/32:/home/speccpu2006/cpu2006/libs/64:/home/speccpu2006/cpu2006/sh"
OMP_NUM_THREADS = "20"

```

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

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

BladeSymphony BS520H, Hitachi Compute Blade 520H and BladeSymphony BS2500 HC0A1 are electronically equivalent.

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## General Notes (Continued)

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

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

## 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.hmmer: -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:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32

-Wl,-z,muldefs -L/sh -lsmartheap64

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca



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## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

400.perlbench: icc -m32

445.gobmk: icc -m32

C++ benchmarks (except as noted below):

icpc -m32

473.astar: icpc -m64

## 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  
 464.h264ref: -DSPEC\_CPU\_LP64  
 473.astar: -DSPEC\_CPU\_LP64  
 483.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

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)  
 -opt-prefetch -ansi-alias

401.bzip2: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc  
 -opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
 -ansi-alias

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## Peak Optimization Flags (Continued)

456.hmmr: basepeak = yes

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)  
-unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

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

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-ansi-alias -Wl,-z,muldefs -L/sh -lsmarheap

## 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-V1.2.20150127.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-V1.2.20150127.xml>

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

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