



# SPEC® CINT2006 Result

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## HITACHI

SPECint®\_rate2006 = 5390

Compute Blade 520X (Intel Xeon E7-8880 v3)

SPECint\_rate\_base2006 = 5230

CPU2006 license: 35

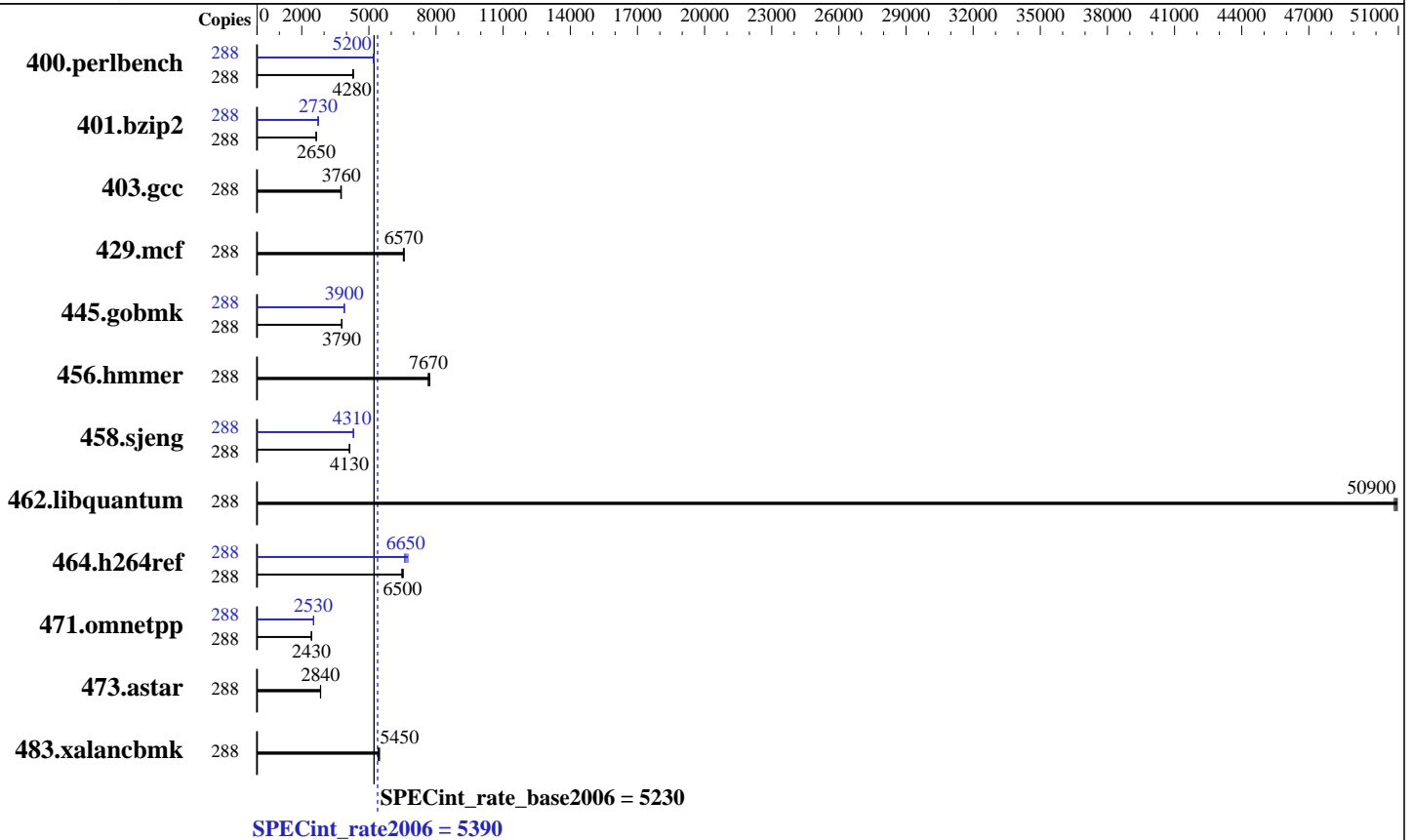
Test sponsor: HITACHI

Tested by: HITACHI

Test date: Aug-2015

Hardware Availability: Jun-2015

Software Availability: Oct-2014



### Hardware

CPU Name: Intel Xeon E7-8880 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 144 cores, 8 chips, 18 cores/chip, 2 threads/core  
 CPU(s) orderable: 2,4,8 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 600 GB SAS, 10000 RPM, RAID1  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.6 (Santiago)  
 2.6.32-504.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	288	652	4310	<b>657</b>	<b>4280</b>	658	4280	288	542	5190	537	5240	<b>541</b>	<b>5200</b>
401.bzip2	288	1048	2650	<b>1050</b>	<b>2650</b>	1052	2640	288	<b>1017</b>	<b>2730</b>	1018	2730	1016	2740
403.gcc	288	616	3760	<b>616</b>	<b>3760</b>	620	3740	288	616	3760	<b>616</b>	<b>3760</b>	620	3740
429.mcf	288	<b>400</b>	<b>6570</b>	399	6580	402	6540	288	<b>400</b>	<b>6570</b>	399	6580	402	6540
445.gobmk	288	796	3790	<b>798</b>	<b>3790</b>	799	3780	288	775	3900	<b>775</b>	<b>3900</b>	774	3900
456.hammer	288	351	7650	348	7720	<b>350</b>	<b>7670</b>	288	351	7650	348	7720	<b>350</b>	<b>7670</b>
458.sjeng	288	843	4130	843	4140	<b>843</b>	<b>4130</b>	288	809	4310	809	4310	<b>809</b>	<b>4310</b>
462.libquantum	288	117	51000	117	50800	<b>117</b>	<b>50900</b>	288	117	51000	117	50800	<b>117</b>	<b>50900</b>
464.h264ref	288	<b>980</b>	<b>6500</b>	975	6540	985	6470	288	<b>958</b>	<b>6650</b>	945	6740	966	6600
471.omnetpp	288	<b>740</b>	<b>2430</b>	738	2440	741	2430	288	713	2520	711	2530	<b>712</b>	<b>2530</b>
473.astar	288	711	2840	713	2830	<b>712</b>	<b>2840</b>	288	711	2840	713	2830	<b>712</b>	<b>2840</b>
483.xalancbmk	288	363	5480	367	5410	<b>365</b>	<b>5450</b>	288	363	5480	367	5410	<b>365</b>	<b>5450</b>

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/speccpu2006/cpu2006/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on RHEL6.6 Tue Aug 4 23:09:17 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 E7-8880 v3 @ 2.30GHz
 8 "physical id"s (chips)
288 "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 : 18
  siblings  : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 6: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 7: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
cache size : 46080 KB

```

```

From /proc/meminfo
MemTotal:      2117096220 kB
HugePages_Total:    0
Hugepagesize:    2048 kB

```

```

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.6 (Santiago)

```

```

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.6 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.6 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

```

uname -a:
Linux RHEL6.6 2.6.32-504.el6.x86_64 #1 SMP Tue Sep 16 01:56:35 EDT 2014
x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Aug 4 15:47

```

SPEC is set to: /home/speccpu2006/cpu2006
Filesystem      Type Size Used Avail Use% Mounted on
/dev/mapper/vg_rhel6-lv_home
                ext4 496G 7.6G 463G 2% /home

```

```

Additional information from dmidecode:
BIOS HITACHI 09-14 07/09/2015
Memory:
64x NO DIMM Unknown
1x Samsung M39.A2G40DB0-CPB 16 GB 1600 MHz 2 rank
127x Samsung M393A2G40DB0-CPB 16 GB 1600 MHz 2 rank

```

(End of data from sysinfo program)



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## General Notes

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

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

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

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:

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

-opt-mem-layout-trans=3

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



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## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m32

400.perlbench: icc -m64

401.bzip2: 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

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LINUX

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)  
-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.hmmer: 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)  
-unroll14 -auto-ilp32

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## Peak Optimization Flags (Continued)

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-ic14.0-official-linux64-revC.html>

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

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

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