



# SPEC® CFP2006 Result

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## HITACHI

**SPECfp®2006 = 110**

BladeSymphony BS520H (Intel Xeon E5-2697 v3)

**SPECfp\_base2006 = 106**

CPU2006 license: 35

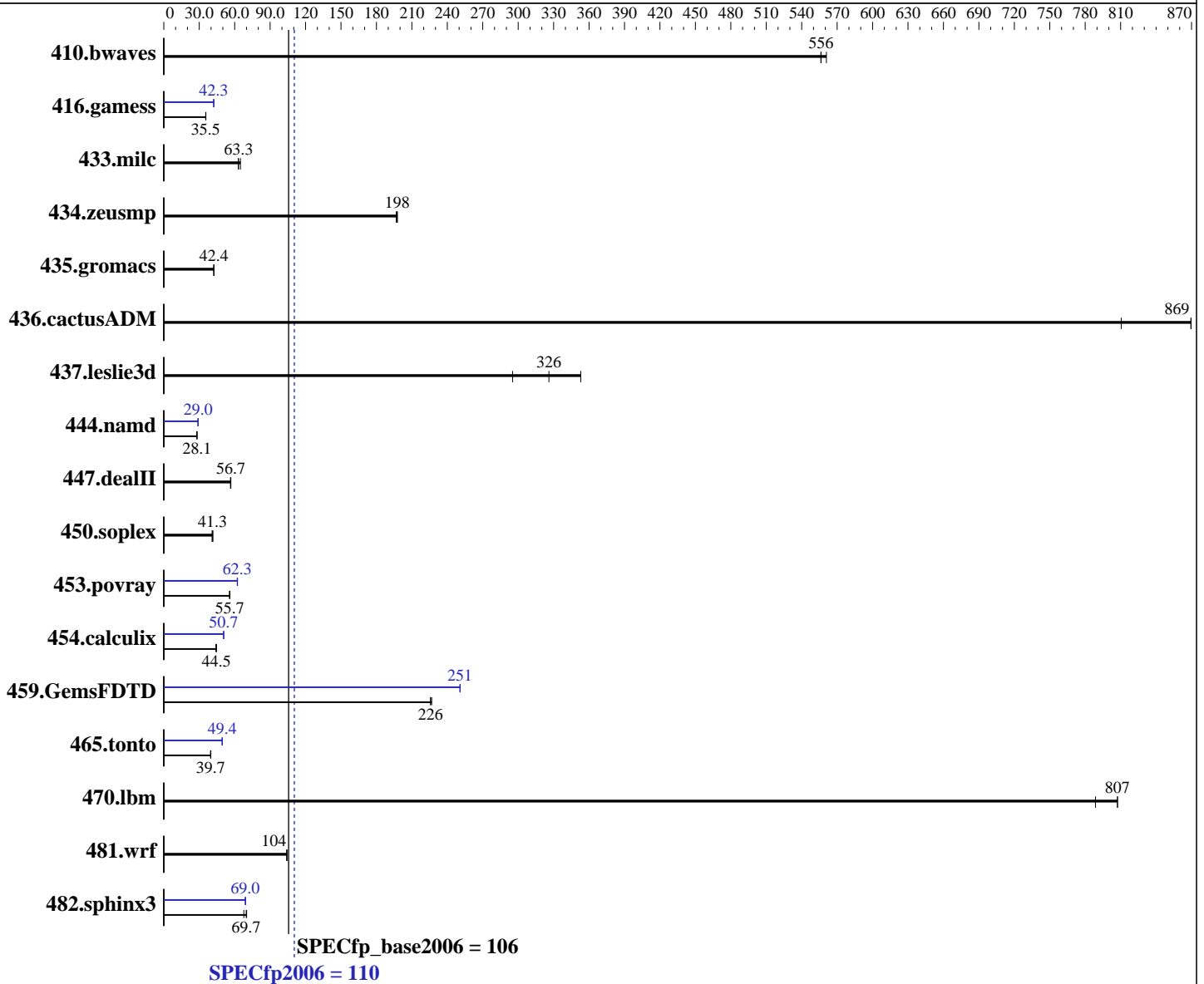
Test date: Jan-2015

Test sponsor: HITACHI

Hardware Availability: Dec-2014

Tested by: HITACHI

Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E5-2697 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 28 cores, 2 chips, 14 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

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### 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;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 35 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

System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: none

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24.2	561	<b>24.4</b>	<b>556</b>	24.4	556	24.2	561	<b>24.4</b>	<b>556</b>	24.4	556
416.gamess	<b>551</b>	<b>35.5</b>	549	35.6	552	35.5	462	42.3	<b>463</b>	<b>42.3</b>	464	42.2
433.milc	146	63.1	141	64.9	<b>145</b>	<b>63.3</b>	146	63.1	141	64.9	<b>145</b>	<b>63.3</b>
434.zeusmp	46.2	197	<b>46.0</b>	<b>198</b>	46.0	198	46.2	197	<b>46.0</b>	<b>198</b>	46.0	198
435.gromacs	<b>168</b>	<b>42.4</b>	168	42.4	169	42.3	<b>168</b>	<b>42.4</b>	168	42.4	169	42.3
436.cactusADM	13.7	870	<b>13.7</b>	<b>869</b>	14.7	810	13.7	870	<b>13.7</b>	<b>869</b>	14.7	810
437.leslie3d	<b>28.8</b>	<b>326</b>	26.6	353	31.8	295	<b>28.8</b>	<b>326</b>	26.6	353	31.8	295
444.namd	286	28.1	286	28.1	<b>286</b>	<b>28.1</b>	277	29.0	277	29.0	<b>277</b>	<b>29.0</b>
447.dealII	202	56.8	<b>202</b>	<b>56.7</b>	203	56.4	202	56.8	<b>202</b>	<b>56.7</b>	203	56.4
450.soplex	<b>202</b>	<b>41.3</b>	204	40.8	201	41.6	<b>202</b>	<b>41.3</b>	204	40.8	201	41.6
453.povray	<b>95.4</b>	<b>55.7</b>	95.7	55.6	95.0	56.0	<b>85.6</b>	<b>62.2</b>	<b>85.4</b>	<b>62.3</b>	85.2	62.4
454.calculix	<b>185</b>	<b>44.5</b>	185	44.5	187	44.2	163	50.7	<b>163</b>	<b>50.7</b>	163	50.6
459.GemsFDTD	<b>47.0</b>	<b>226</b>	46.8	227	47.0	226	42.3	251	42.3	251	<b>42.3</b>	<b>251</b>
465.tonto	<b>248</b>	<b>39.7</b>	247	39.8	249	39.6	199	49.4	<b>199</b>	<b>49.4</b>	199	49.5
470.lbm	17.4	789	17.0	807	<b>17.0</b>	<b>807</b>	17.4	789	17.0	807	<b>17.0</b>	<b>807</b>
481.wrf	<b>107</b>	<b>104</b>	107	104	107	104	<b>107</b>	<b>104</b>	107	104	107	104
482.sphinx3	278	70.1	288	67.7	<b>279</b>	<b>69.7</b>	281	69.3	<b>282</b>	<b>69.0</b>	282	69.0

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

## 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 Mon Jan 19 03:14:11 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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### Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

```

model name      : Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz
 2 "physical id"s (chips)
 56 "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     : 14
  siblings      : 28
  physical 0:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size     : 35840 KB

```

From /proc/meminfo

```

MemTotal:      263987928 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 18 21:52

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"

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info@spec.org

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## General Notes (Continued)

OMP\_NUM\_THREADS = "28"

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.

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

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
416.gamess: -DSPEC\_CPU\_LP64  
433.milc: -DSPEC\_CPU\_LP64  
434.zeusmp: -DSPEC\_CPU\_LP64  
435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main  
436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64  
450.soplex: -DSPEC\_CPU\_LP64  
453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
459.GemsFDTD: -DSPEC\_CPU\_LP64  
465.tonto: -DSPEC\_CPU\_LP64  
470.lbm: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
482.sphinx3: -DSPEC\_CPU\_LP64



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## Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

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## Peak Optimization Flags (Continued)

### C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-inline-calloc -opt-malloc-options=3 -auto -unroll4

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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>



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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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