



# SPEC<sup>®</sup> CFP2006 Result

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## HITACHI

SPECfp<sup>®</sup>2006 = **59.2**

### Compute Blade 520A (Intel Xeon E5-2420)

SPECfp\_base2006 = **56.3**

CPU2006 license: 35

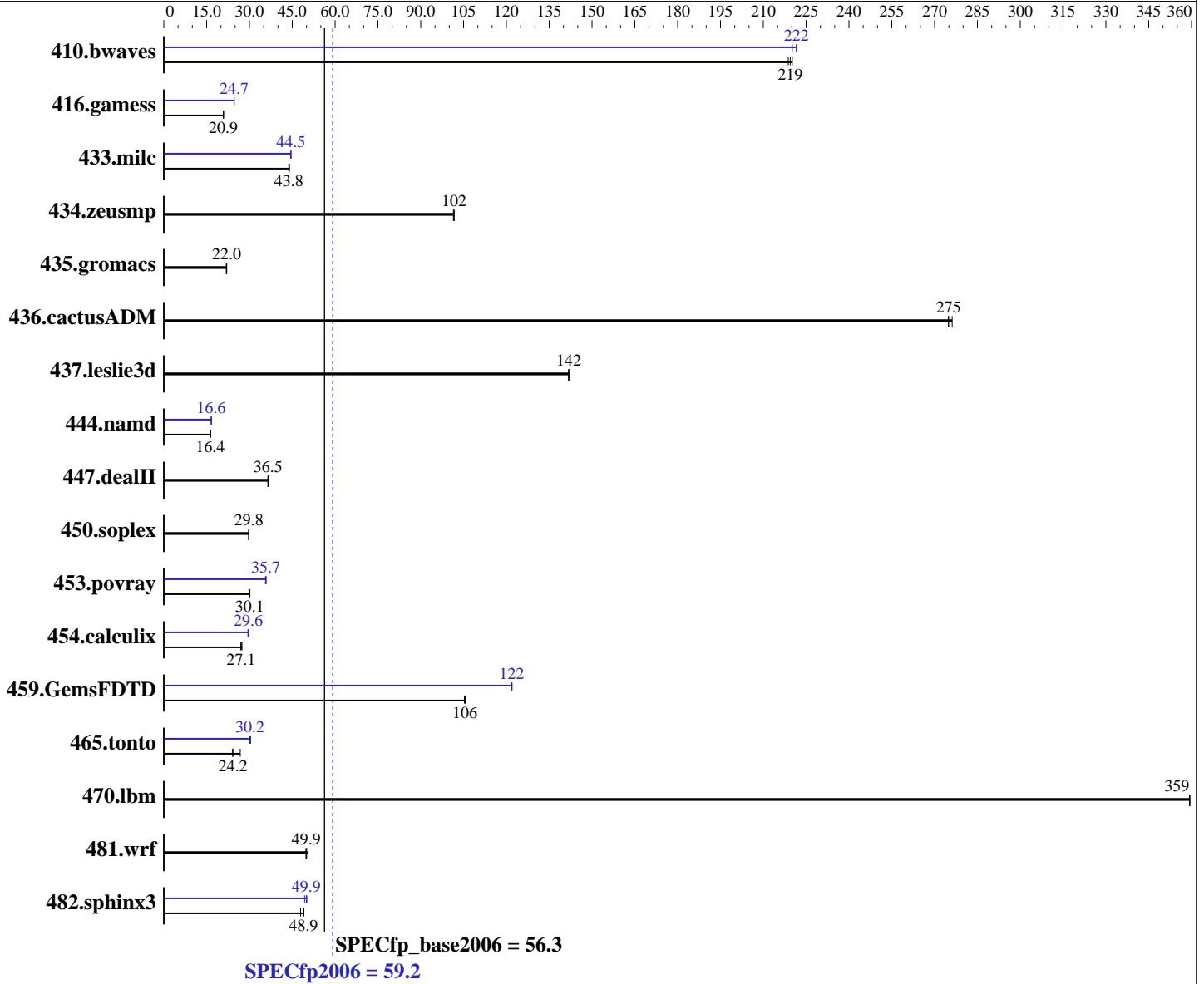
Test sponsor: HITACHI

Tested by: HITACHI

Test date: Jul-2012

Hardware Availability: Jun-2012

Software Availability: Feb-2012



#### Hardware

CPU Name: Intel Xeon E5-2420  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz  
 CPU MHz: 1900  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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 6.2, Kernel 2.6.32-220.4.2.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4  
 System State: Run level 3 (multi-user)

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L3 Cache: 15 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 96 GB (12 x 8 GB 2Rx4 PC3L-10600R-9, ECC)  
 Disk Subsystem: 2 x 147 GB SAS, 15000 RPM RAID1 configuration  
 Other Hardware: None

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	62.1	219	<b>61.9</b>	<b>219</b>	61.7	220	<b>61.3</b>	<b>222</b>	61.7	220	61.3	222
416.gamess	937	20.9	938	20.9	<b>937</b>	<b>20.9</b>	796	24.6	<b>794</b>	<b>24.7</b>	794	24.7
433.milc	<b>210</b>	<b>43.8</b>	209	44.0	210	43.8	206	44.5	206	44.5	<b>206</b>	<b>44.5</b>
434.zeusmp	89.7	101	<b>89.5</b>	<b>102</b>	89.5	102	89.7	101	<b>89.5</b>	<b>102</b>	89.5	102
435.gromacs	326	21.9	324	22.0	<b>324</b>	<b>22.0</b>	326	21.9	324	22.0	<b>324</b>	<b>22.0</b>
436.cactusADM	<b>43.5</b>	<b>275</b>	43.3	276	43.5	275	<b>43.5</b>	<b>275</b>	43.3	276	43.5	275
437.leslie3d	66.3	142	66.3	142	<b>66.3</b>	<b>142</b>	66.3	142	66.3	142	<b>66.3</b>	<b>142</b>
444.namd	<b>490</b>	<b>16.4</b>	491	16.3	490	16.4	482	16.6	<b>482</b>	<b>16.6</b>	482	16.6
447.dealII	<b>313</b>	<b>36.5</b>	312	36.6	314	36.5	<b>313</b>	<b>36.5</b>	312	36.6	314	36.5
450.soplex	<b>280</b>	<b>29.8</b>	279	29.8	281	29.7	<b>280</b>	<b>29.8</b>	279	29.8	281	29.7
453.povray	176	30.2	<b>177</b>	<b>30.1</b>	177	30.0	<b>149</b>	<b>35.7</b>	149	35.6	148	35.9
454.calculix	<b>304</b>	<b>27.1</b>	306	27.0	301	27.4	278	29.6	280	29.5	<b>278</b>	<b>29.6</b>
459.GemsFDTD	101	105	<b>101</b>	<b>106</b>	101	106	87.0	122	87.0	122	<b>87.0</b>	<b>122</b>
465.tonto	367	26.8	<b>406</b>	<b>24.2</b>	409	24.1	326	30.2	323	30.4	<b>326</b>	<b>30.2</b>
470.lbm	<b>38.2</b>	<b>359</b>	38.2	359	38.2	359	<b>38.2</b>	<b>359</b>	38.2	359	38.2	359
481.wrf	<b>224</b>	<b>49.9</b>	224	49.8	221	50.4	<b>224</b>	<b>49.9</b>	224	49.8	221	50.4
482.sphinx3	<b>398</b>	<b>48.9</b>	397	49.1	407	47.9	395	49.3	<b>390</b>	<b>49.9</b>	389	50.1

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

Sysinfo program /home/cpu2006/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on localhost.localdomain Sun Jul 1 11:04:53 2012

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 E5-2420 0 @ 1.90GHz  
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**Compute Blade 520A (Intel Xeon E5-2420)**

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**CPU2006 license:** 35

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**Tested by:** HITACHI

**Test date:** Jul-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Feb-2012

### Platform Notes (Continued)

```

2 "physical id"s (chips)
24 "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 : 6
siblings  : 12
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
cache size : 15360 KB

From /proc/meminfo
MemTotal:      99044504 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
Linux localhost.localdomain 2.6.32-220.4.2.el6.x86_64 #1 SMP Mon Feb 6
16:39:28 EST 2012 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 29 17:44

(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/cpu2006/libs/32:/home/cpu2006/libs/64"

OMP\_NUM\_THREADS = "12"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5

Transparent Huge Pages disabled with:

echo never > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

HITACHI BladeSymphony BS520A and HITACHI Compute Blade 520A are electronically equivalent. The results have been measured on a HITACHI BladeSymphony BS520A.



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## 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.lelie3d: -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

## Base Optimization Flags

C benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias



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## 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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias

470.lbm: basepeak = yes

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

C++ benchmarks:

444.namd: -xAVX(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.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-static

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## Peak Optimization Flags (Continued)

416.gamess: -xAVX(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- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xAVX(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: -xAVX(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: -xAVX -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-ic12.1-official-linux64.20111122.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-ic12.1-official-linux64.20111122.xml>

<http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.xml>

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

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