SPEC® CFP2006 Result
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HITACHI

BladeSymphony BS2500 (Intel Xeon E5-2697 v3)

$SPECfp®2006 =$ 110
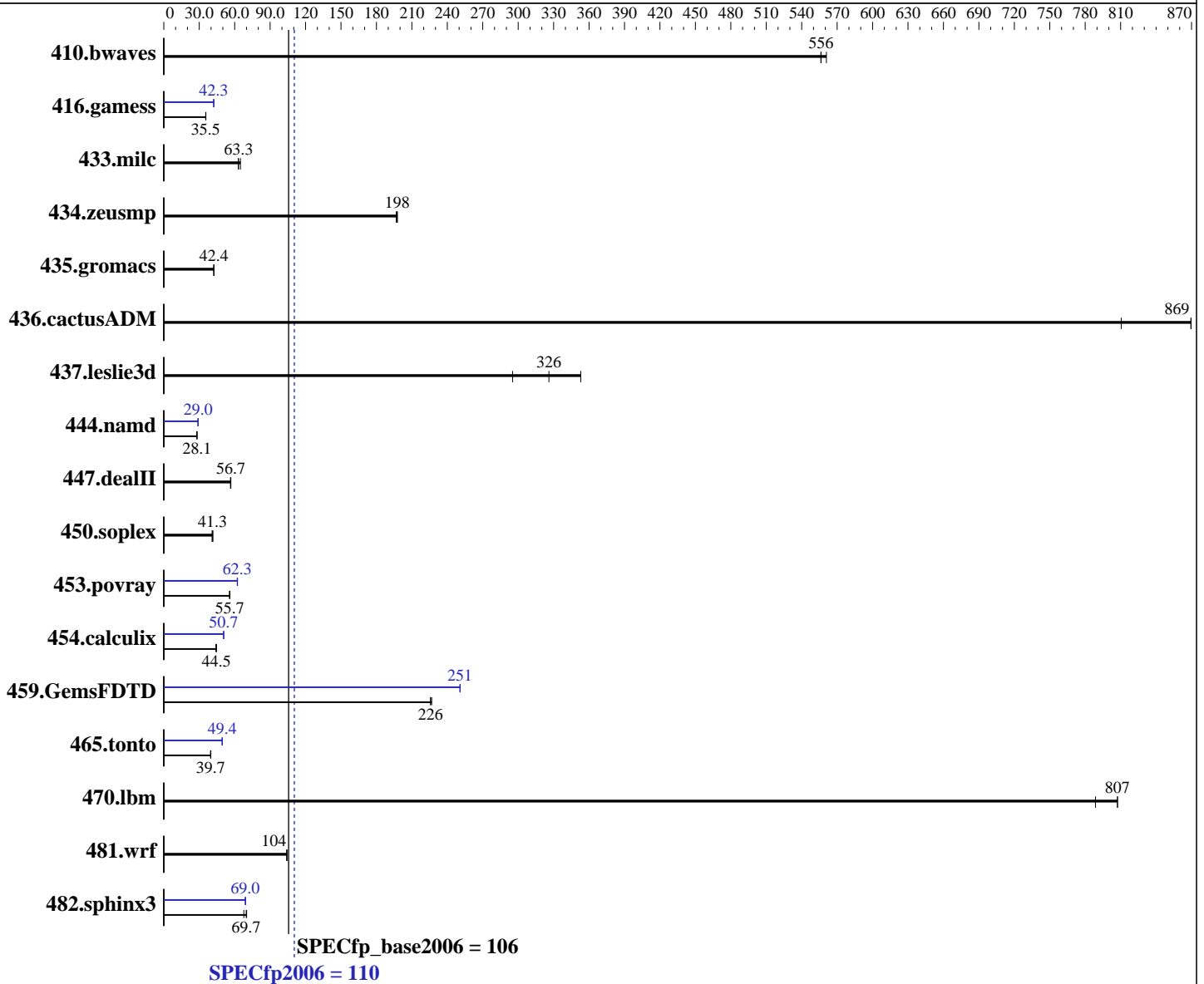
$SPECfp\_base2006 =$ 106

CPU2006 license: 35
Test sponsor: HITACHI
Tested by: HITACHI

Test date: Jan-2015
Hardware Availability: Dec-2014
Software Availability: Nov-2013

Benchmark	Base	Peak
410.bwaves	556	
416.gamess	35.5	42.3
433.milc	63.3	
434.zeusmp	198	
435.gromacs	42.4	
436.cactusADM	869	
437.leslie3d	326	
444.namd	28.1	29.0
447.dealII	56.7	
450.soplex	41.3	
453.povray	55.7	62.3
454.calculix	44.5	50.7
459.GemsFDTD	226	251
465.tonto	39.7	49.4
470.lbm	807	
481.wrf	104	
482.sphinx3	69.7	69.0

SPECfp_base2006 = 106

SPECfp2006 = 110

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
Continued on next page

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
Continued on next page

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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	**24.4**	**556**	24.4	556	24.2	561	**24.4**	**556**	24.4	556
416.gamess	**551**	**35.5**	549	35.6	552	35.5	462	42.3	**463**	**42.3**	464	42.2
433.milc	146	63.1	141	64.9	**145**	**63.3**	146	63.1	141	64.9	**145**	**63.3**
434.zeusmp	46.2	197	**46.0**	**198**	46.0	198	46.2	197	**46.0**	**198**	46.0	198
435.gromacs	**168**	**42.4**	168	42.4	169	42.3	**168**	**42.4**	168	42.4	169	42.3
436.cactusADM	13.7	870	**13.7**	**869**	14.7	810	13.7	870	**13.7**	**869**	14.7	810
437.leslie3d	**28.8**	**326**	26.6	353	31.8	295	**28.8**	**326**	26.6	353	31.8	295
444.namd	286	28.1	286	28.1	**286**	**28.1**	277	29.0	277	29.0	**277**	**29.0**
447.dealII	202	56.8	**202**	**56.7**	203	56.4	202	56.8	**202**	**56.7**	203	56.4
450.soplex	**202**	**41.3**	204	40.8	201	41.6	**202**	**41.3**	204	40.8	201	41.6
453.povray	**95.4**	**55.7**	95.7	55.6	95.0	56.0	85.6	62.2	**85.4**	**62.3**	85.2	62.4
454.calculix	**185**	**44.5**	185	44.5	187	44.2	163	50.7	**163**	**50.7**	163	50.6
459.GemsFDTD	**47.0**	**226**	46.8	227	47.0	226	42.3	251	42.3	251	**42.3**	**251**
465.tonto	**248**	**39.7**	247	39.8	249	39.6	199	49.4	**199**	**49.4**	199	49.5
470.lbm	17.4	789	17.0	807	**17.0**	**807**	17.4	789	17.0	807	**17.0**	**807**
481.wrf	**107**	**104**	107	104	107	104	**107**	**104**	107	104	107	104
482.sphinx3	278	70.1	288	67.7	**279**	**69.7**	281	69.3	**282**	**69.0**	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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Test sponsor: HITACHI		**Hardware Availability:**	Dec-2014
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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"
```

Continued on next page

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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`

Continued on next page

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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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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