SPEC® CFP2006 Result
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HITACHI

HA8000-bd (Intel Core i3-4150T)

$SPECfp^{®}2006 =$ 57.0
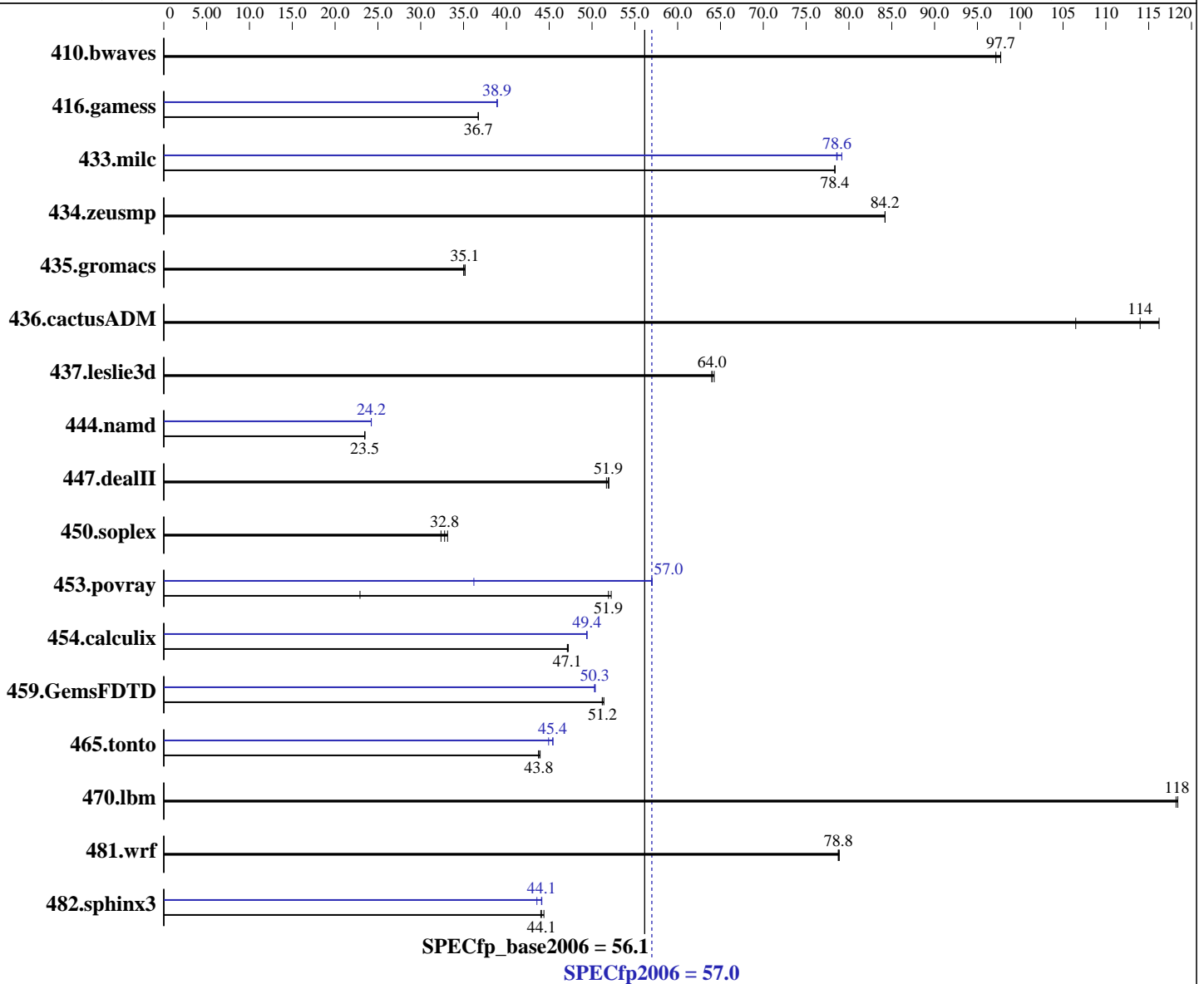
$SPECfp\_base2006 =$ 56.1

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

Test date: Sep-2014
Hardware Availability: Oct-2014
Software Availability: Feb-2013

Benchmark	Result
410.bwaves	97.7
416.gamess	38.9 / 36.7
433.milc	78.6 / 78.4
434.zeusmp	84.2
435.gromacs	35.1
436.cactusADM	114
437.leslie3d	64.0
444.namd	24.2 / 23.5
447.dealII	51.9
450.soplex	32.8
453.povray	57.0 / 51.9
454.calculix	49.4 / 47.1
459.GemsFDTD	50.3 / 51.2
465.tonto	45.4 / 43.8
470.lbm	118
481.wrf	78.8
482.sphinx3	44.1 / 44.1

SPECfp_base2006 = 56.1

SPECfp2006 = 57.0

Hardware

CPU Name:	Intel Core i3-4150T
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip, 2 threads/core
CPU(s) orderable:	1 chip
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 6.4 (Santiago) 2.6.32-358.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:	3 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	32 GB (4 x 8 GB 2Rx8 PC3-12800E-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 1000 GB SATA, 7200RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	140	97.2	**139**	**97.7**	139	97.7	140	97.2	**139**	**97.7**	139	97.7
416.gamess	533	36.7	**533**	**36.7**	533	36.7	**503**	**38.9**	503	39.0	503	38.9
433.milc	**117**	**78.4**	117	78.4	117	78.3	**117**	**78.6**	117	78.6	116	79.2
434.zeusmp	**108**	**84.2**	108	84.2	108	84.2	**108**	**84.2**	108	84.2	108	84.2
435.gromacs	**203**	**35.1**	203	35.2	204	35.0	**203**	**35.1**	203	35.2	204	35.0
436.cactusADM	112	106	**105**	**114**	103	116	112	106	**105**	**114**	103	116
437.leslie3d	147	64.0	**147**	**64.0**	146	64.3	147	64.0	**147**	**64.0**	146	64.3
444.namd	**342**	**23.5**	342	23.5	342	23.5	**331**	**24.2**	331	24.2	331	24.2
447.dealII	221	51.7	220	52.0	**220**	**51.9**	221	51.7	220	52.0	**220**	**51.9**
450.soplex	258	32.4	252	33.1	**254**	**32.8**	258	32.4	252	33.1	**254**	**32.8**
453.povray	**102**	**51.9**	102	52.2	232	22.9	**93.4**	**57.0**	147	36.2	93.3	57.0
454.calculix	175	47.2	175	47.1	**175**	**47.1**	167	49.4	167	49.4	**167**	**49.4**
459.GemsFDTD	**207**	**51.2**	206	51.4	207	51.2	211	50.4	**211**	**50.3**	211	50.3
465.tonto	225	43.7	**225**	**43.8**	224	43.9	217	45.4	219	44.9	**217**	**45.4**
470.lbm	**116**	**118**	116	118	116	118	**116**	**118**	116	118	116	118
481.wrf	142	78.8	142	78.9	**142**	**78.8**	142	78.8	142	78.9	**142**	**78.8**
482.sphinx3	439	44.4	443	44.0	**442**	**44.1**	442	44.1	447	43.6	**442**	**44.1**

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/user/cpu2006/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Wed Sep 10 02:28:51 2014

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) Core(TM) i3-4150T CPU @ 3.00GHz
```
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Platform Notes (Continued)

```
     1 "physical id"s (chips)
     4 "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 : 2
     siblings  : 4
     physical 0: cores 0 1
  cache size : 3072 KB

From /proc/meminfo
   MemTotal:       32827836 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux localhost.localdomain 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41
   EST 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Sep 8 19:49

SPEC is set to: /home/user/cpu2006/cpu2006
   Filesystem     Type    Size   Used Avail Use% Mounted on
   /dev/mapper/VolGroup-lv_home
                  ext4     20G    16G  3.9G  80% /home

Additional information from dmidecode:
  BIOS American Megatrends Inc. P2_03 09/04/2014
  Memory:
   4x    8 GB
   4x 1323 SMD3L-N8G28HA-16K 8 GB 1600 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/user/cpu2006/cpu2006/libs/32:/home/user/cpu2006/cpu2006/libs/64:/home/user/cpu2006/cpu2006/sh"
OMP_NUM_THREADS = "2"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
```

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General Notes (Continued)

```
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>
```

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
```

Base Optimization Flags

C benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias
```

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Base Optimization Flags (Continued)

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: `-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 -ansi-alias`

> 470.lbm: `basepeak = yes`

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

C++ benchmarks:

Continued on next page

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Peak Optimization Flags (Continued)

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.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.xml

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