# SPEC® CFP2006 Result
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## HITACHI

### HA8000-bd (Intel Xeon E3-1275L v3)

$SPECfp^®\_rate2006 = 144$

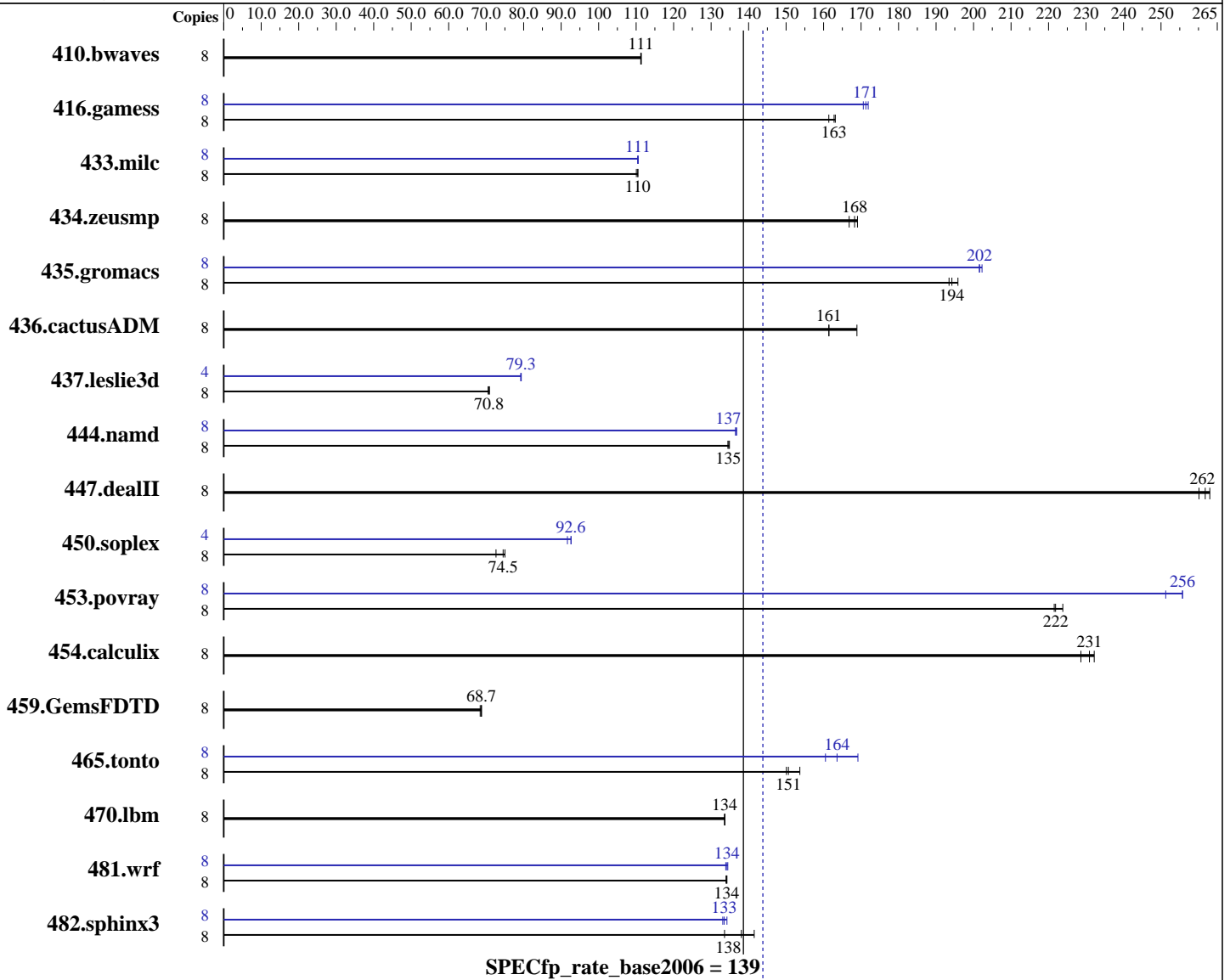$SPECfp\_rate\_base2006 = 139$

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

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



| | Copies | |
|---|---|---|
| 410.bwaves | 8 | 111 |
| 416.gamess | 8 / 8 | 171 / 163 |
| 433.milc | 8 / 8 | 111 / 110 |
| 434.zeusmp | 8 | 168 |
| 435.gromacs | 8 / 8 | 202 / 194 |
| 436.cactusADM | 8 | 161 |
| 437.leslie3d | 4 / 8 | 79.3 / 70.8 |
| 444.namd | 8 / 8 | 137 / 135 |
| 447.dealII | 8 | 262 |
| 450.soplex | 4 / 8 | 92.6 / 74.5 |
| 453.povray | 8 / 8 | 256 / 222 |
| 454.calculix | 8 | 231 |
| 459.GemsFDTD | 8 | 68.7 |
| 465.tonto | 8 / 8 | 164 / 151 |
| 470.lbm | 8 | 134 |
| 481.wrf | 8 / 8 | 134 / 134 |
| 482.sphinx3 | 8 / 8 | 133 / 138 |

SPECfp_rate_base2006 = 139

SPECfp_rate2006 = 144

## Hardware

**CPU Name:** Intel Xeon E3-1275L v3
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.90 GHz
**CPU MHz:** 2700
**FPU:** Integrated
**CPU(s) enabled:** 4 cores, 1 chip, 4 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:** No
**File System:** ext4

*Continued on next page*

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| | |
|---|---|
| L3 Cache: | 8 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 32 GB (4 x 8 GB 2Rx8 PC3-12800E-11, ECC) |
| Disk Subsystem: | 3 x 1000 GB SATA, 7200RPM |
| Other Hardware: | None |

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

## Results Table

| Benchmark | Base Copies | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Peak Copies | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 410.bwaves | 8 | 976 | 111 | **977** | **111** | 977 | 111 | 8 | 976 | 111 | **977** | **111** | 977 | 111 |
| 416.gamess | 8 | **962** | **163** | 960 | 163 | 971 | 161 | 8 | 918 | 171 | 911 | 172 | **915** | **171** |
| 433.milc | 8 | 665 | 110 | **665** | **110** | 667 | 110 | 8 | **665** | **111** | 664 | 111 | 665 | 110 |
| 434.zeusmp | 8 | **433** | **168** | 436 | 167 | 431 | 169 | 8 | **433** | **168** | 436 | 167 | 431 | 169 |
| 435.gromacs | 8 | **294** | **194** | 295 | 193 | 292 | 196 | 8 | **283** | **202** | 283 | 202 | 282 | 202 |
| 436.cactusADM | 8 | **592** | **161** | 566 | 169 | 592 | 161 | 8 | **592** | **161** | 566 | 169 | 592 | 161 |
| 437.leslie3d | 8 | **1063** | **70.8** | 1066 | 70.5 | 1061 | 70.9 | 4 | 475 | 79.2 | 474 | 79.4 | **474** | **79.3** |
| 444.namd | 8 | **476** | **135** | 477 | 134 | 476 | 135 | 8 | 470 | 137 | **470** | **137** | 469 | 137 |
| 447.dealII | 8 | 348 | 263 | 352 | 260 | **350** | **262** | 8 | 348 | 263 | 352 | 260 | **350** | **262** |
| 450.soplex | 8 | 919 | 72.6 | 889 | 75.0 | **895** | **74.5** | 4 | 360 | 92.7 | 364 | 91.7 | **360** | **92.6** |
| 453.povray | 8 | 192 | 222 | **192** | **222** | 190 | 224 | 8 | 166 | 256 | 169 | 251 | **166** | **256** |
| 454.calculix | 8 | **286** | **231** | 289 | 229 | 284 | 232 | 8 | **286** | **231** | 289 | 229 | 284 | 232 |
| 459.GemsFDTD | 8 | **1236** | **68.7** | 1241 | 68.4 | 1234 | 68.8 | 8 | **1236** | **68.7** | 1241 | 68.4 | 1234 | 68.8 |
| 465.tonto | 8 | 525 | 150 | **523** | **151** | 512 | 154 | 8 | **481** | **164** | 465 | 169 | 490 | 161 |
| 470.lbm | 8 | 823 | 134 | 822 | 134 | **822** | **134** | 8 | 823 | 134 | 822 | 134 | **822** | **134** |
| 481.wrf | 8 | **666** | **134** | 666 | 134 | 667 | 134 | 8 | 665 | 134 | 667 | 134 | **666** | **134** |
| 482.sphinx3 | 8 | **1129** | **138** | 1102 | 141 | 1167 | 134 | 8 | 1162 | 134 | 1171 | 133 | **1168** | **133** |

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

## Submit Notes

    The taskset mechanism was used to bind copies to processors. The config file option 'submit'
    was used to generate taskset 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

    Sysinfo program /home/cpu2006/cpu2006/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on localhost.localdomain Tue Sep  9 05:35:09 2014

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SPECfp_rate_base2006 =  139

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## Platform Notes (Continued)

```
   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 E3-1275L v3 @ 2.70GHz
         1 "physical id"s (chips)
         8 "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 : 4
         siblings  : 8
         physical 0: cores 0 1 2 3
      cache size : 8192 KB

   From /proc/meminfo
      MemTotal:       32958224 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 19:58

   SPEC is set to: /home/cpu2006/cpu2006
      Filesystem     Type    Size  Used Avail Use% Mounted on
      /dev/mapper/VolGroup-lv_home
                     ext4    172G   13G  151G   8% /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)
```

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## General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/cpu2006/libs/32:/home/cpu2006/cpu2006/libs/64:/home/cpu2006/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

## 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 -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3

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## Base Optimization Flags (Continued)

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

## Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc    -m64
```

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):
```
icpc   -m64
```

450.soplex: `icpc -m32`

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

## Peak 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
       453.povray: -DSPEC_CPU_LP64
      454.calculix: -DSPEC_CPU_LP64 -nofor_main
     459.GemsFDTD: -DSPEC_CPU_LP64
```

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# Peak Portability Flags (Continued)

```
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

# 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)
          -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
          -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
             -unroll2
```

C++ benchmarks:

```
444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
          -O3(pass 2) -no-prec-div(pass 2)
          -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
          -auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div(pass 2)
            -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
            -opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div(pass 2)
            -opt-mem-layout-trans=3(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
```

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$SPECfp\_rate\_base2006 =$   139

| | | | |
|---|---|---|---|
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# Peak Optimization Flags (Continued)

437.leslie3d: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`

459.GemsFDTD: `basepeak = yes`

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) -unroll4`
`-auto -inline-calloc -opt-malloc-options=3`

Benchmarks using both Fortran and C:

435.gromacs: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2)`
`-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)`
`-opt-prefetch -auto-ilp32`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32`

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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

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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.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Dec 16 13:09:34 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 16 December 2014.