# SPEC® CFP2006 Result

## HITACHI

BladeSymphony BS1000 (Intel Xeon X5460)

$SPECfp^{®}2006 =$ 23.1
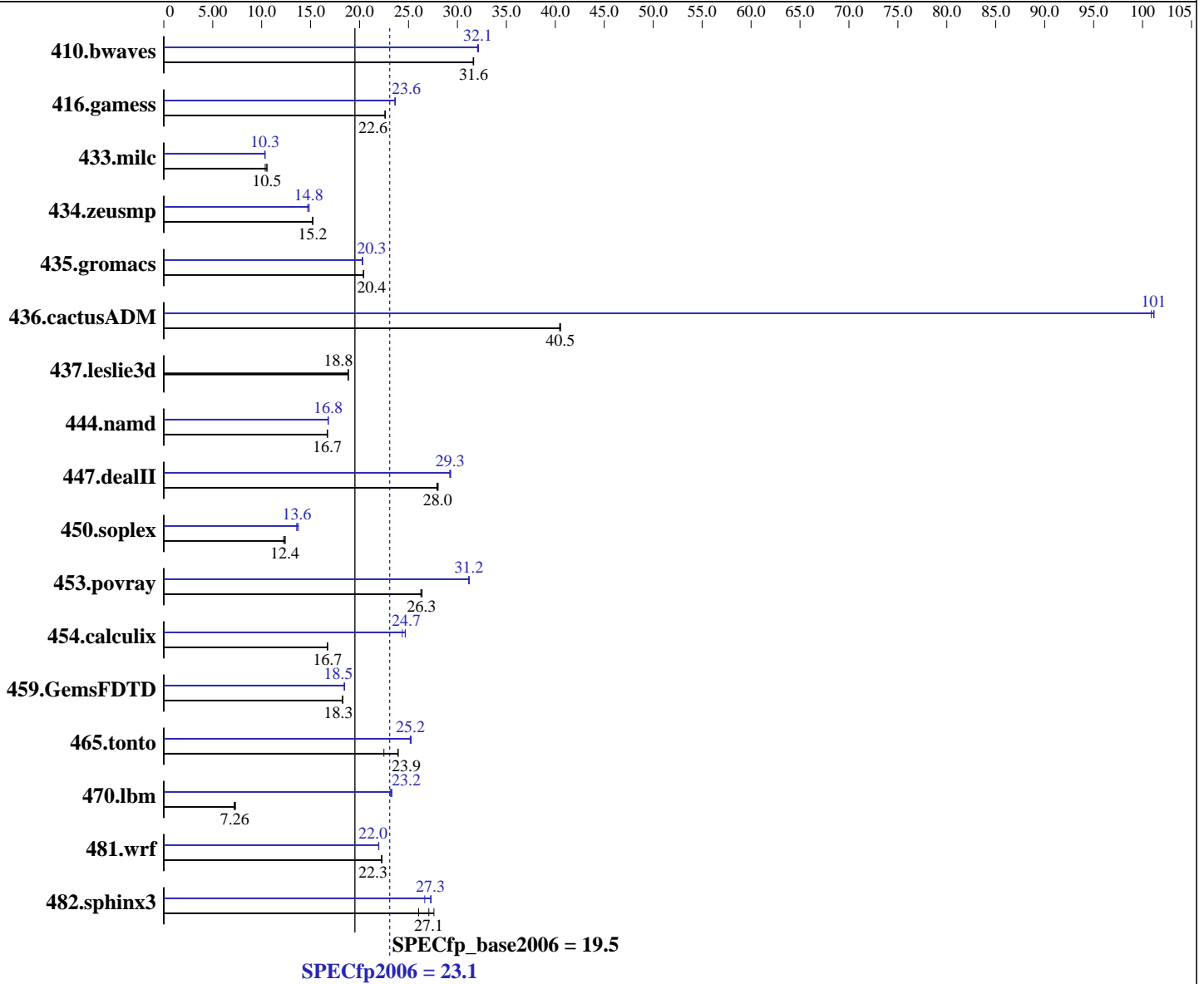
$SPECfp\_base2006 =$ 19.5

**CPU2006 license:** 872
**Test sponsor:** HITACHI
**Tested by:** HITACHI

**Test date:** Feb-2008
**Hardware Availability:** Nov-2007
**Software Availability:** Nov-2007



| Benchmark | base | peak |
|---|---|---|
| 410.bwaves | 31.6 | 32.1 |
| 416.gamess | 22.6 | 23.6 |
| 433.milc | 10.5 | 10.3 |
| 434.zeusmp | 15.2 | 14.8 |
| 435.gromacs | 20.4 | 20.3 |
| 436.cactusADM | 40.5 | 101 |
| 437.leslie3d | 18.8 | |
| 444.namd | 16.7 | 16.8 |
| 447.dealII | 28.0 | 29.3 |
| 450.soplex | 12.4 | 13.6 |
| 453.povray | 26.3 | 31.2 |
| 454.calculix | 16.7 | 24.7 |
| 459.GemsFDTD | 18.3 | 18.5 |
| 465.tonto | 23.9 | 25.2 |
| 470.lbm | 7.26 | 23.2 |
| 481.wrf | 22.3 | 22.0 |
| 482.sphinx3 | 27.1 | 27.3 |

SPECfp_base2006 = 19.5

SPECfp2006 = 23.1

## Hardware

CPU Name: Intel Xeon X5460
CPU Characteristics: 1333MHz system bus
CPU MHz: 3160
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1, 2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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## Software

Operating System: Red Hat Enterprise Linux
Server release 5.1 (Tikanga)
Kernel 2.6.18-53.el5 on an x86_64
Compiler: Intel C++ and Fortran Compiler 10.1 for
Linux
Build 20070913 Package ID:
l_cc_p_10.1.008,
l_fc_p_10.1.008

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| | | | |
|---|---|---|---|
| L3 Cache: | None | Auto Parallel: | Yes |
| Other Cache: | None | File System: | ext3 |
| Memory: | 16 GB(8 x 2 GB PC2-5300F CAS 5-5-5) | System State: | Multi-user run level 3 |
| Disk Subsystem: | 1 x 73 GB 10000 rpm SAS | Base Pointers: | 64-bit |
| Other Hardware: | None | Peak Pointers: | 32/64-bit |
| | | Other Software: | None |

## Results Table

| Benchmark | Base Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Peak Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 410.bwaves | 430 | 31.6 | 429 | 31.7 | **429** | **31.6** | **424** | **32.1** | 424 | 32.1 | 423 | 32.2 |
| 416.gamess | **866** | **22.6** | 866 | 22.6 | 865 | 22.6 | 827 | 23.7 | **829** | **23.6** | 829 | 23.6 |
| 433.milc | 886 | 10.4 | **872** | **10.5** | 871 | 10.5 | 888 | 10.3 | **888** | **10.3** | 888 | 10.3 |
| 434.zeusmp | 598 | 15.2 | **598** | **15.2** | 598 | 15.2 | **614** | **14.8** | 619 | 14.7 | 613 | 14.9 |
| 435.gromacs | 350 | 20.4 | **350** | **20.4** | 349 | 20.4 | 352 | 20.3 | 352 | 20.3 | **352** | **20.3** |
| 436.cactusADM | 295 | 40.4 | 295 | 40.5 | **295** | **40.5** | 118 | 101 | **118** | **101** | 118 | 101 |
| 437.leslie3d | 499 | 18.9 | **499** | **18.8** | 499 | 18.8 | 499 | 18.9 | **499** | **18.8** | 499 | 18.8 |
| 444.namd | 480 | 16.7 | **480** | **16.7** | 480 | 16.7 | 477 | 16.8 | 478 | 16.8 | **477** | **16.8** |
| 447.dealII | **409** | **28.0** | 410 | 27.9 | 408 | 28.0 | 390 | 29.3 | **391** | **29.3** | 392 | 29.2 |
| 450.soplex | **674** | **12.4** | 682 | 12.2 | 672 | 12.4 | 614 | 13.6 | **613** | **13.6** | 606 | 13.8 |
| 453.povray | 203 | 26.3 | **202** | **26.3** | 202 | 26.4 | **171** | **31.2** | 170 | 31.2 | 171 | 31.2 |
| 454.calculix | 494 | 16.7 | 493 | 16.7 | **493** | **16.7** | **334** | **24.7** | 339 | 24.4 | 334 | 24.7 |
| 459.GemsFDTD | 581 | 18.3 | **581** | **18.3** | 581 | 18.3 | **575** | **18.5** | 575 | 18.5 | 576 | 18.4 |
| 465.tonto | 411 | 24.0 | **411** | **23.9** | 438 | 22.5 | **391** | **25.2** | 389 | 25.3 | 391 | 25.2 |
| 470.lbm | 1911 | 7.19 | **1893** | **7.26** | 1877 | 7.32 | 590 | 23.3 | 593 | 23.2 | **592** | **23.2** |
| 481.wrf | 502 | 22.2 | 501 | 22.3 | **501** | **22.3** | **509** | **22.0** | 509 | 21.9 | 508 | 22.0 |
| 482.sphinx3 | 706 | 27.6 | **720** | **27.1** | 749 | 26.0 | 731 | 26.7 | **715** | **27.3** | 714 | 27.3 |

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

## General Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
```

## Base Compiler Invocation

C benchmarks:
　　icc

C++ benchmarks:
　　icpc

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# Base Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort
```

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

# 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:
```
-fast -parallel
```

C++ benchmarks:
```
-fast -parallel
```

Fortran benchmarks:
```
-fast -parallel
```

Benchmarks using both Fortran and C:
```
-fast -parallel
```

# Peak Compiler Invocation

C benchmarks (except as noted below):
```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include
```

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# Peak Compiler Invocation (Continued)

433.milc: `icc`

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

450.soplex: `/opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib`
`-I/opt/intel/cc/10.1.008/include`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icc ifort`

# 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`
465.tonto: `-DSPEC_CPU_LP64`
481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`

# Peak Optimization Flags

C benchmarks:

433.milc: `-prof_gen`(pass 1) `-prof_use`(pass 2) `-fast -fno-alias`
`-auto-ilp32`

470.lbm: `-prof_gen`(pass 1) `-prof_use`(pass 2) `-fast -unroll2`
`-scalar-rep- -prefetch -opt-malloc-options=3`

482.sphinx3: `-fast -unroll2`

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# Peak Optimization Flags (Continued)

C++ benchmarks:

      444.namd: `-prof_gen(pass 1) -prof_use(pass 2) -fast -fno-alias -auto-ilp32`

      447.dealII: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-`

      450.soplex: `-prof_gen(pass 1) -prof_use(pass 2) -fast -opt-malloc-options=3`

      453.povray: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll4 -ansi-alias`

Fortran benchmarks:

      410.bwaves: `-fast -prefetch -parallel`

      416.gamess: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-`

      434.zeusmp: `-prof_gen(pass 1) -prof_use(pass 2) -fast`

      437.leslie3d: `basepeak = yes`

      459.GemsFDTD: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -Ob0 -prefetch -parallel`

      465.tonto: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll4 -auto`

Benchmarks using both Fortran and C:

      435.gromacs: `-prof_gen(pass 1) -prof_use(pass 2) -fast -prefetch -auto-ilp32`

      436.cactusADM: `-prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -prefetch -parallel -auto-ilp32`

      454.calculix: `-fast -unroll-aggressive -auto-ilp32`

      481.wrf: `-fast -parallel -prefetch -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090713.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090713.01.xml`

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

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