



SPEC® CFP2006 Result

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Lenovo Group Limited

SPECfp®2006 = 25.8

Lenovo ThinkServer TD100x(Intel Xeon X5470)

SPECfp_base2006 = 24.7

CPU2006 license: 9017

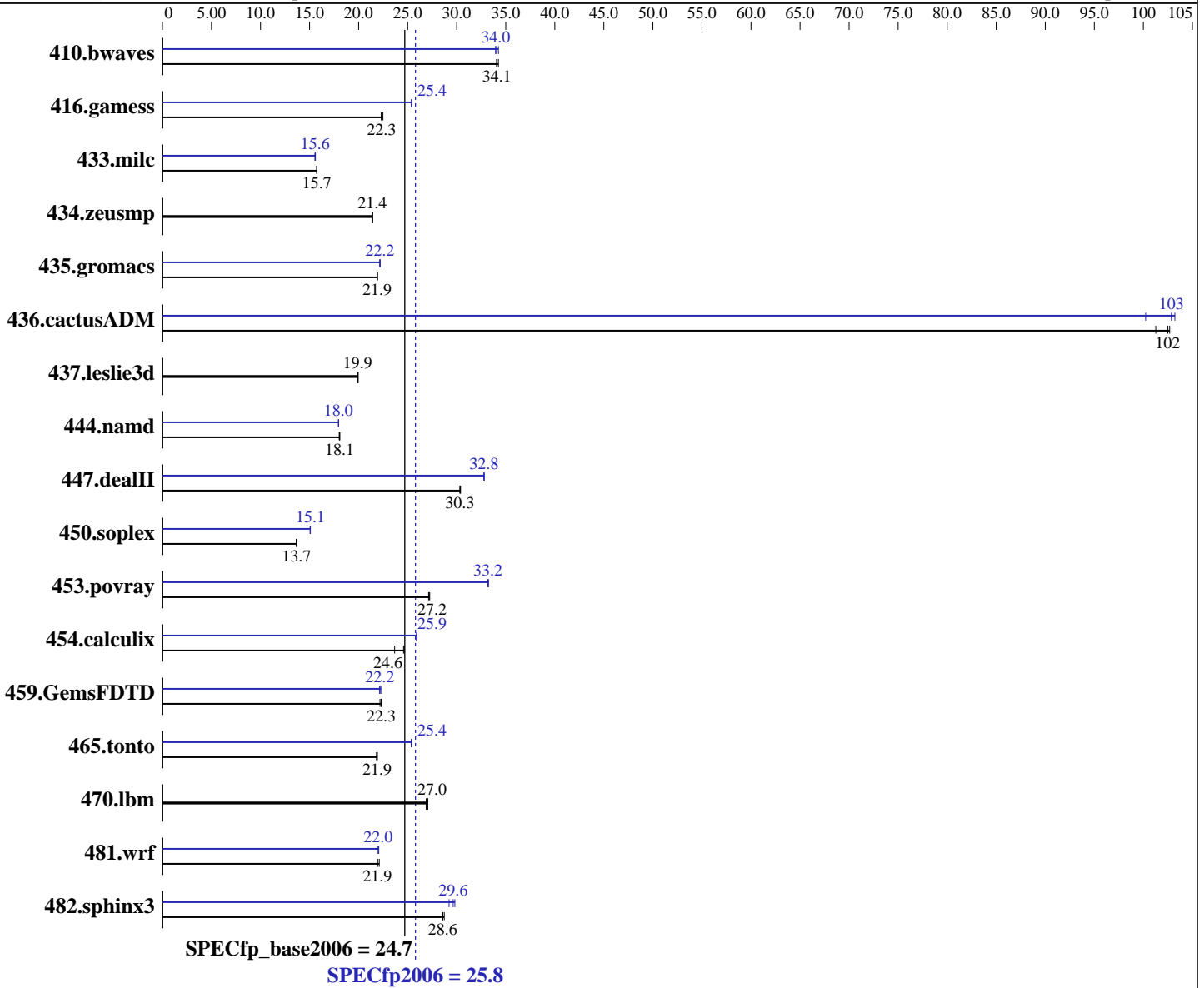
Test date: May-2009

Test sponsor: Lenovo Group Limited

Hardware Availability: Apr-2009

Tested by: Lenovo Group Limited

Software Availability: Apr-2009



Hardware

CPU Name: Intel Xeon X5470
 CPU Characteristics: 1333MHz system bus
 CPU MHz: 3333
 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: SuSE Linux Enterprise Server 10 (x86_64) SP2
 Kernel 2.6.16.60-0.21-smp
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux
 Build 20090318 Package ID: l_cc_b_11.0.081,
 l_fc_b_11.0.081
 Auto Parallel: Yes
 File System: ReiserFS
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2GB 2Rx8 PC2 5300F)

Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V8.1
Binutils 2.18.50.0.7.20080502

Disk Subsystem: 1 x 146 GB, SAS 15K RPM
Other Hardware: None

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 399 | 34.1 | 397 | 34.2 | 399 | 34.1 | 397 | 34.3 | 400 | 34.0 | 400 | 34.0 |
| 416.gamess | 878 | 22.3 | 871 | 22.5 | 876 | 22.3 | 771 | 25.4 | 771 | 25.4 | 772 | 25.4 |
| 433.milc | 583 | 15.7 | 584 | 15.7 | 583 | 15.7 | 590 | 15.6 | 588 | 15.6 | 590 | 15.6 |
| 434.zeusmp | 425 | 21.4 | 425 | 21.4 | 425 | 21.4 | 425 | 21.4 | 425 | 21.4 | 425 | 21.4 |
| 435.gromacs | 326 | 21.9 | 326 | 21.9 | 326 | 21.9 | 322 | 22.1 | 322 | 22.2 | 322 | 22.2 |
| 436.cactusADM | 116 | 103 | 118 | 101 | 117 | 102 | 116 | 103 | 116 | 103 | 119 | 100 |
| 437.leslie3d | 472 | 19.9 | 471 | 20.0 | 472 | 19.9 | 472 | 19.9 | 471 | 20.0 | 472 | 19.9 |
| 444.namd | 444 | 18.1 | 445 | 18.0 | 444 | 18.1 | 447 | 18.0 | 446 | 18.0 | 447 | 17.9 |
| 447.dealII | 376 | 30.4 | 377 | 30.3 | 377 | 30.3 | 349 | 32.8 | 349 | 32.8 | 349 | 32.8 |
| 450.soplex | 610 | 13.7 | 608 | 13.7 | 611 | 13.6 | 553 | 15.1 | 553 | 15.1 | 554 | 15.0 |
| 453.povray | 195 | 27.2 | 196 | 27.1 | 196 | 27.2 | 160 | 33.2 | 160 | 33.2 | 160 | 33.2 |
| 454.calculix | 336 | 24.6 | 348 | 23.7 | 335 | 24.7 | 319 | 25.9 | 318 | 26.0 | 318 | 25.9 |
| 459.GemsFDTD | 478 | 22.2 | 476 | 22.3 | 476 | 22.3 | 479 | 22.1 | 478 | 22.2 | 476 | 22.3 |
| 465.tonto | 449 | 21.9 | 449 | 21.9 | 451 | 21.8 | 387 | 25.4 | 388 | 25.4 | 388 | 25.4 |
| 470.lbm | 511 | 26.9 | 508 | 27.0 | 508 | 27.0 | 511 | 26.9 | 508 | 27.0 | 508 | 27.0 |
| 481.wrf | 510 | 21.9 | 505 | 22.1 | 509 | 21.9 | 506 | 22.1 | 508 | 22.0 | 508 | 22.0 |
| 482.sphinx3 | 678 | 28.7 | 682 | 28.6 | 682 | 28.6 | 654 | 29.8 | 658 | 29.6 | 667 | 29.2 |

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

General Notes

OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 200M

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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Peak Compiler Invocation

C benchmarks (except as noted below):

icc

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Peak Compiler Invocation (Continued)

```
482.sphinx3: /opt/intel/Compiler/11.0/081/bin/ia32/icc
             -L/opt/intel/Compiler/11.0/081/ipp/ia32/lib
             -I/opt/intel/Compiler/11.0/081/ipp/ia32/include
```

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/Compiler/11.0/081/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/081/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/081/ipp/ia32/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.deallI: -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
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias
```

```
470.lbm: basepeak = yes
```

```
482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-
-opt-prefetch

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -ansi-alias
-scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch
-parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -opt-prefetch -parallel
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel -auto-ilp32



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The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.16.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.16.xml>

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