SPEC® CFP2006 Result

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Lenovo Group Limited

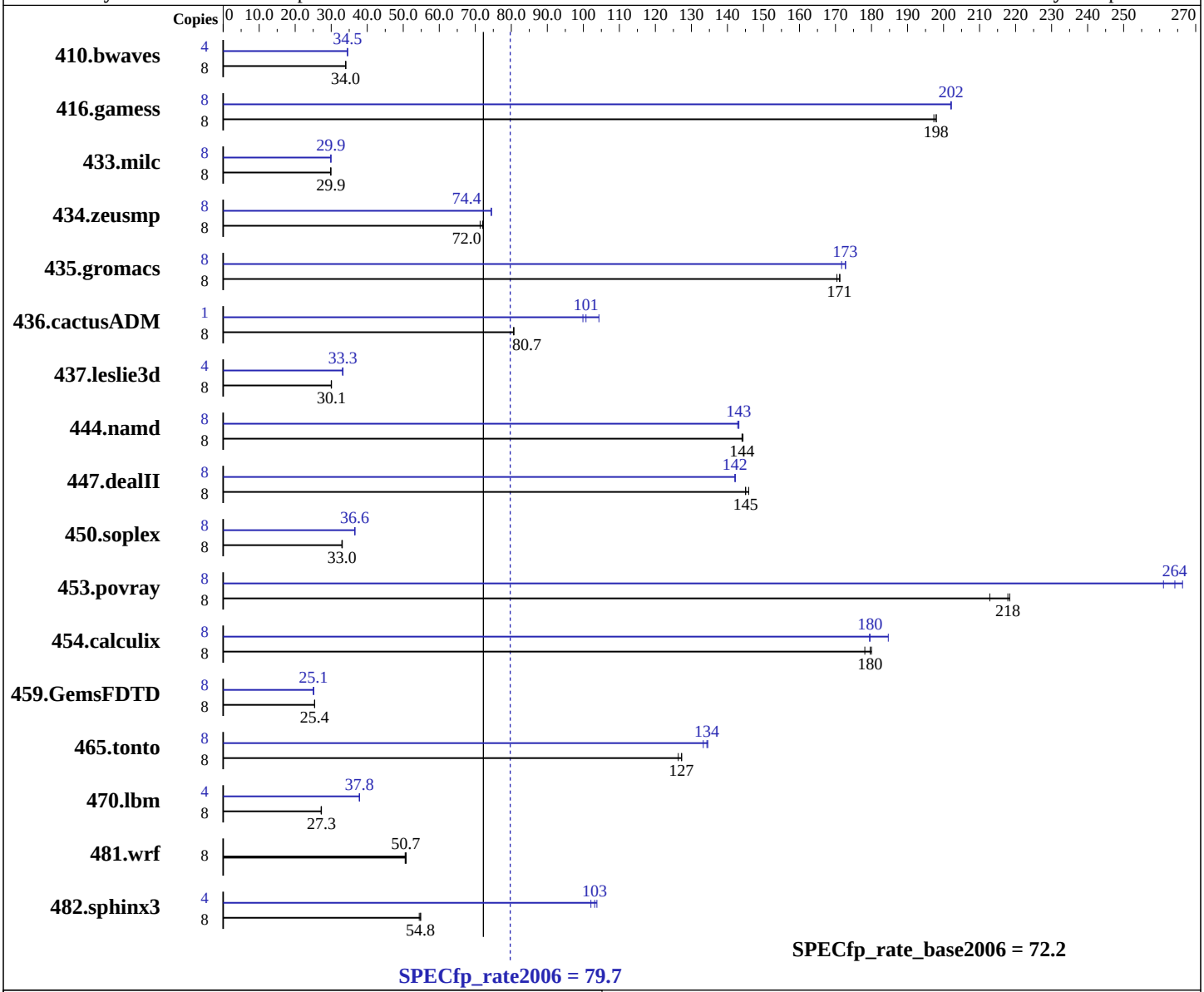
Lenovo ThinkServer TD100x(Intel Xeon X5470)

SPECfp®_rate2006 = 79.7

SPECfp_rate_base2006 = 72.2

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: May-2009
Hardware Availability: Apr-2009
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 20090209 Package ID: l_cproc_b_11.0.081, l_fproc_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)

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

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3198	34.0	3194	34.0	**3194**	**34.0**	4	**1574**	**34.5**	1574	34.5	1575	34.5
416.gamess	8	791	198	794	197	**791**	**198**	8	**775**	**202**	775	202	776	202
433.milc	8	2457	29.9	**2458**	**29.9**	2458	29.9	8	2456	29.9	2455	29.9	**2456**	**29.9**
434.zeusmp	8	1009	72.1	1021	71.3	**1011**	**72.0**	8	977	74.5	978	74.4	**978**	**74.4**
435.gromacs	8	**334**	**171**	334	171	335	170	8	**331**	**173**	331	173	333	172
436.cactusADM	8	1185	80.7	**1185**	**80.7**	1185	80.7	1	**119**	**101**	120	99.9	115	104
437.leslie3d	8	2507	30.0	**2502**	**30.1**	2500	30.1	4	**1131**	**33.3**	1135	33.1	1130	33.3
444.namd	8	445	144	445	144	**445**	**144**	8	**448**	**143**	449	143	448	143
447.dealII	8	631	145	**631**	**145**	627	146	8	644	142	644	142	**644**	**142**
450.soplex	8	2024	33.0	**2021**	**33.0**	2016	33.1	8	1824	36.6	**1825**	**36.6**	1825	36.6
453.povray	8	200	213	195	218	**195**	**218**	8	**161**	**264**	160	266	163	261
454.calculix	8	**367**	**180**	367	180	370	178	8	368	179	**367**	**180**	357	185
459.GemsFDTD	8	3345	25.4	**3343**	**25.4**	3338	25.4	8	3389	25.0	**3386**	**25.1**	3370	25.2
465.tonto	8	623	126	618	127	**619**	**127**	8	591	133	585	135	**586**	**134**
470.lbm	8	4029	27.3	**4029**	**27.3**	4043	27.2	4	**1452**	**37.8**	1454	37.8	1451	37.9
481.wrf	8	1759	50.8	1769	50.5	**1764**	**50.7**	8	1759	50.8	1769	50.5	**1764**	**50.7**
482.sphinx3	8	**2845**	**54.8**	2844	54.8	2864	54.4	4	764	102	**756**	**103**	751	104

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

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

```
taskset was used to bind processes to cores except
for 436.cactusADM peak
OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 64M
```

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

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 -opt-prefetch

C++ benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Fortran benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Peak Compiler Invocation

C benchmarks (except as noted below):

```
icc
```

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 (except as noted below):

```
ifort
```

437.leslie3d:
```
/opt/intel/Compiler/11.0/081/bin/ia32/ifort
-L/opt/intel/Compiler/11.0/081/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/081/ipp/ia32/include
```

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
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
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

Continued on next page

Peak Optimization Flags (Continued)

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

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-ilp32

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

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-

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

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

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

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

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

Continued on next page

Peak Optimization Flags (Continued)

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

481.wrf: `basepeak = yes`

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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