SPEC® CFP2006 Result

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Lenovo Group Limited

(Test Sponsor: Intel Corporation)

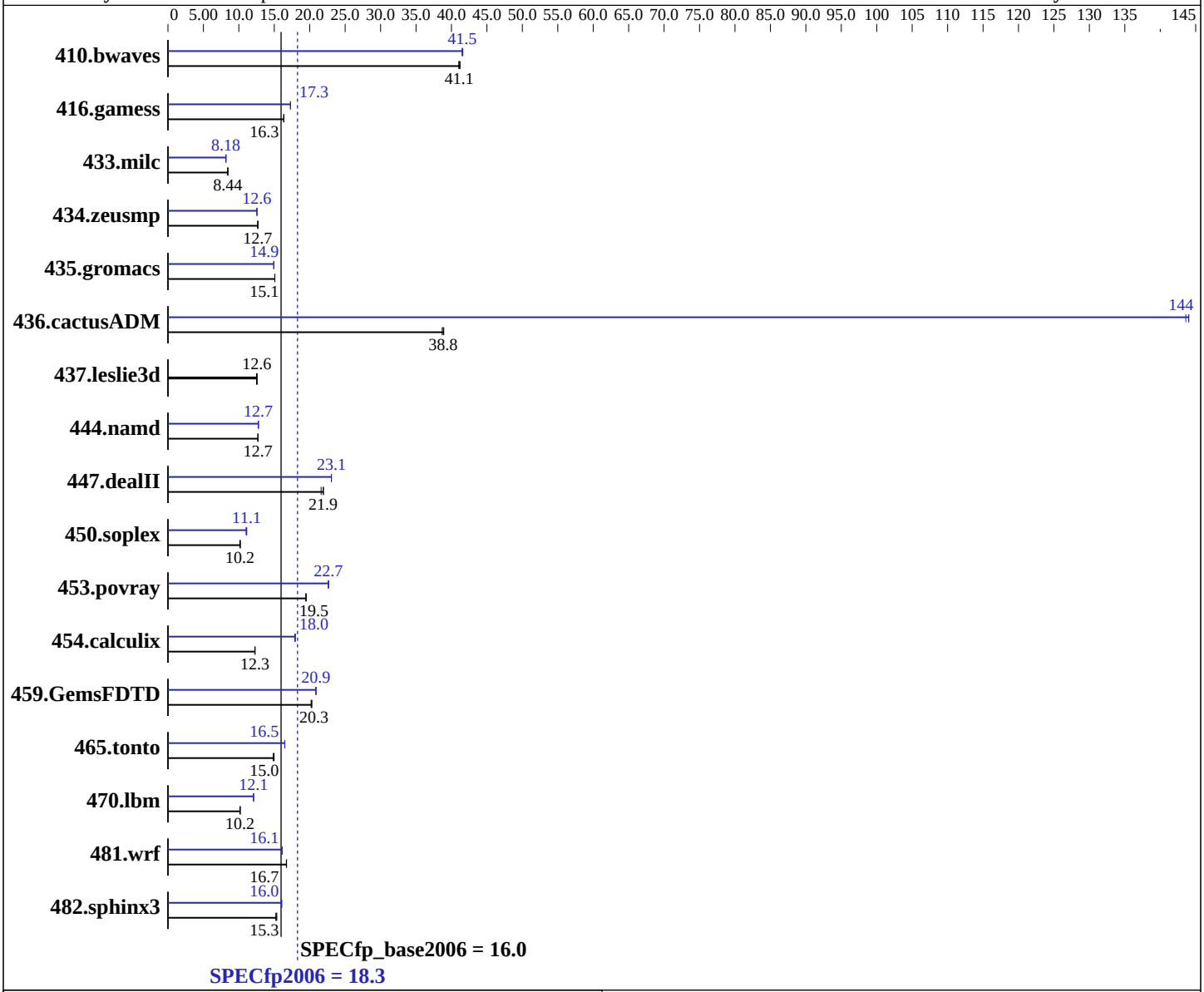
Lenovo R630 G7 (Intel Xeon processor E7330, 2.40 GHz)

SPECfp®2006 = 18.3

SPECfp_base2006 = 16.0

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: Aug-2007
Hardware Availability: Oct-2007
Software Availability: Nov-2007



Hardware

CPU Name:	Intel Xeon E7330
CPU Characteristics:	Quad Core, 2.40 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	1,2,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	6 MB I+D on chip per chip, 3 MB shared / 2 cores

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Software

Operating System:	64-Bit SUSE LINUX Enterprise Server 10 SP1 RC1, Kernel linux-cbgm 2.6.16.43-0.5-smp for x86_64
Compiler:	Intel C++ and Fortran Compiler for Linux32 and Linux64 Version 10.1 Build 20070824
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Multi-user, run level 3

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L3 Cache: None
Other Cache: None
Memory: 16 GB (16 * 1GB Samsung PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem: Seagate, SAS, 73GB, 10Krpm, 1 disk only
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: Binutils 2.17.50.0.15

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**331**	**41.1**	331	41.0	330	41.2	**327**	**41.5**	327	41.6	328	41.5
416.gamess	1199	16.3	1197	16.4	**1198**	**16.3**	1133	17.3	1133	17.3	**1133**	**17.3**
433.milc	1086	8.45	**1087**	**8.44**	1088	8.44	1122	8.18	**1122**	**8.18**	1123	8.18
434.zeusmp	718	12.7	**718**	**12.7**	718	12.7	725	12.6	**725**	**12.6**	725	12.6
435.gromacs	**474**	**15.1**	474	15.1	473	15.1	**478**	**14.9**	479	14.9	478	15.0
436.cactusADM	309	38.7	307	38.9	**308**	**38.8**	83.0	144	**83.0**	**144**	83.2	144
437.leslie3d	**749**	**12.6**	748	12.6	752	12.5	**749**	**12.6**	748	12.6	752	12.5
444.namd	**631**	**12.7**	631	12.7	632	12.7	**629**	**12.7**	628	12.8	629	12.7
447.dealII	529	21.6	**522**	**21.9**	521	21.9	496	23.1	**496**	**23.1**	496	23.1
450.soplex	816	10.2	**820**	**10.2**	823	10.1	751	11.1	757	11.0	**751**	**11.1**
453.povray	273	19.5	273	19.5	**273**	**19.5**	235	22.6	**235**	**22.7**	235	22.7
454.calculix	672	12.3	**672**	**12.3**	672	12.3	459	18.0	**459**	**18.0**	461	17.9
459.GemsFDTD	523	20.3	**523**	**20.3**	525	20.2	508	20.9	**508**	**20.9**	508	20.9
465.tonto	657	15.0	**658**	**15.0**	663	14.8	597	16.5	597	16.5	**597**	**16.5**
470.lbm	1346	10.2	1353	10.2	**1350**	**10.2**	1140	12.1	**1138**	**12.1**	1137	12.1
481.wrf	668	16.7	**668**	**16.7**	669	16.7	693	16.1	**693**	**16.1**	694	16.1
482.sphinx3	1280	15.2	1269	15.4	**1276**	**15.3**	1214	16.1	**1216**	**16.0**	1218	16.0

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

General Notes

```
Bios settings:
Hardware Prefetcher:      Enabled
Adjacent Sector Prefetch: Enabled
All benchmarks compiled in 64-bit mode except
450.soplex, 470.lbm and 482.sphinx3, for peak, are
compiled in 32-bit mode
```

Base Compiler Invocation

C benchmarks:

```
icc
```

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Base Compiler Invocation (Continued)

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:
-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):
```
/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/bin/icc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/include
```

433.milc: `icc`

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

450.soplex: `/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/bin/icpc -L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/lib -I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/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`

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Peak Optimization Flags (Continued)

482.sphinx3: `-fast -unroll2`

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.20090714.33.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.20090714.33.xml`

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