



# SPEC® CFP2006 Result

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## Lenovo Group Limited

(Test Sponsor: Intel Corporation)

### Lenovo R630 G7 (Intel Xeon processor E7220, 2.93 GHz)

**SPECfp®2006 = 20.8**

**SPECfp\_base2006 = 18.4**

CPU2006 license: 13

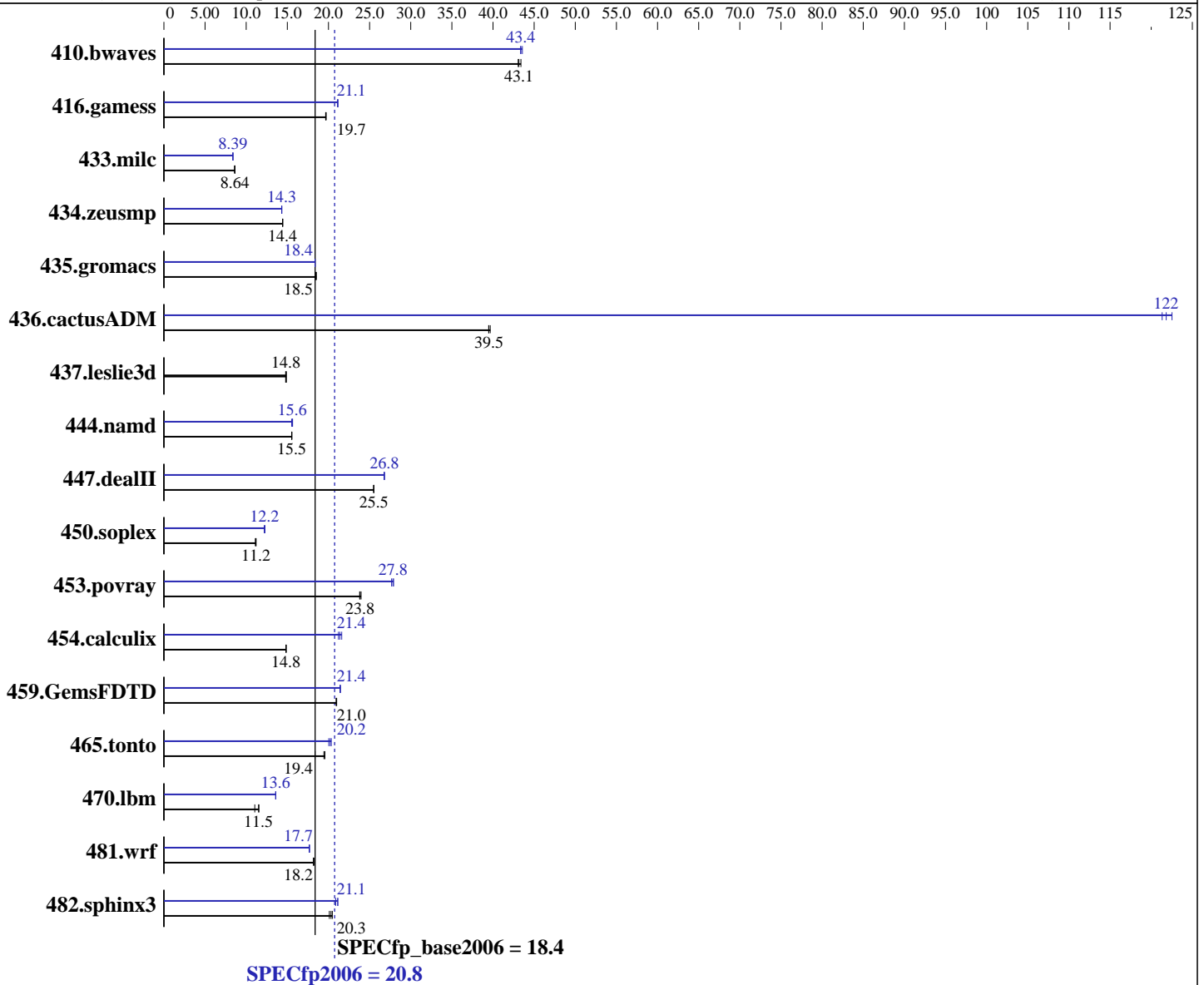
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Aug-2007

Hardware Availability: Oct-2007

Software Availability: Nov-2007



**Hardware**

CPU Name: Intel Xeon E7220  
 CPU Characteristics: Dual Core, 2.93 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip  
 CPU(s) orderable: 1,2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per core

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**Software**

Operating System: 64-Bit SUSE LINUX Enterprise Server 10 SP1 RC1, Kernel linux-cbgn 2.6.16.43-0.5-smp for x86\_64  
 Compiler: Intel C++ Compiler for Linux32 and Linux64 Version 10.1 Build 20070725  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (16 \* 1GB Samsung DDR2 5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: Seagate, SAS, 73GB, 10Krpm, 1 disk only  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: SmartHeap library V8.1  
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	316	43.1	<b>315</b>	<b>43.1</b>	313	43.4	312	43.6	<b>313</b>	<b>43.4</b>	313	43.4
416.gamess	993	19.7	996	19.7	<b>995</b>	<b>19.7</b>	<b>927</b>	<b>21.1</b>	926	21.1	927	21.1
433.milc	1062	8.65	<b>1062</b>	<b>8.64</b>	1071	8.57	1094	8.39	1096	8.38	<b>1094</b>	<b>8.39</b>
434.zeusmp	<b>631</b>	<b>14.4</b>	630	14.4	631	14.4	636	14.3	<b>635</b>	<b>14.3</b>	635	14.3
435.gromacs	387	18.4	<b>386</b>	<b>18.5</b>	385	18.5	<b>389</b>	<b>18.4</b>	388	18.4	389	18.4
436.cactusADM	301	39.7	303	39.5	<b>303</b>	<b>39.5</b>	<b>98.1</b>	<b>122</b>	97.5	123	98.5	121
437.leslie3d	631	14.9	<b>634</b>	<b>14.8</b>	635	14.8	631	14.9	<b>634</b>	<b>14.8</b>	635	14.8
444.namd	516	15.6	516	15.5	<b>516</b>	<b>15.5</b>	517	15.5	<b>513</b>	<b>15.6</b>	513	15.6
447.dealII	448	25.5	<b>449</b>	<b>25.5</b>	449	25.5	428	26.8	427	26.8	<b>427</b>	<b>26.8</b>
450.soplex	745	11.2	751	11.1	<b>746</b>	<b>11.2</b>	<b>681</b>	<b>12.2</b>	684	12.2	679	12.3
453.povray	222	24.0	224	23.8	<b>223</b>	<b>23.8</b>	191	27.9	<b>191</b>	<b>27.8</b>	192	27.7
454.calculix	555	14.9	556	14.8	<b>556</b>	<b>14.8</b>	382	21.6	389	21.2	<b>386</b>	<b>21.4</b>
459.GemsFDTD	505	21.0	<b>506</b>	<b>21.0</b>	507	20.9	494	21.5	<b>495</b>	<b>21.4</b>	495	21.4
465.tonto	503	19.6	<b>506</b>	<b>19.4</b>	536	18.4	<b>487</b>	<b>20.2</b>	484	20.3	491	20.0
470.lbm	1244	11.0	<b>1194</b>	<b>11.5</b>	1190	11.5	1011	13.6	<b>1011</b>	<b>13.6</b>	1012	13.6
481.wrf	615	18.2	<b>614</b>	<b>18.2</b>	613	18.2	632	17.7	631	17.7	<b>632</b>	<b>17.7</b>
482.sphinx3	<b>959</b>	<b>20.3</b>	969	20.1	952	20.5	934	20.9	<b>923</b>	<b>21.1</b>	922	21.1

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

## General Notes

Bios settings:

Hardware Prefetcher: Disabled

Adjacent Sector Prefetch: Disabled

High Bandwidth Option: Disabled

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, at 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



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## 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.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
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.dealIII: -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.20090714.21.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.20090714.21.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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