



# SPEC<sup>®</sup> CFP2006 Result

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Lenovo Group Limited

(Test Sponsor: Intel Corporation)

Lenovo R630 G7 (Intel Xeon processor L7345, 1.86 GHz)

SPECfp<sup>®</sup>2006 = 16.2

SPECfp\_base2006 = 14.2

CPU2006 license: 13

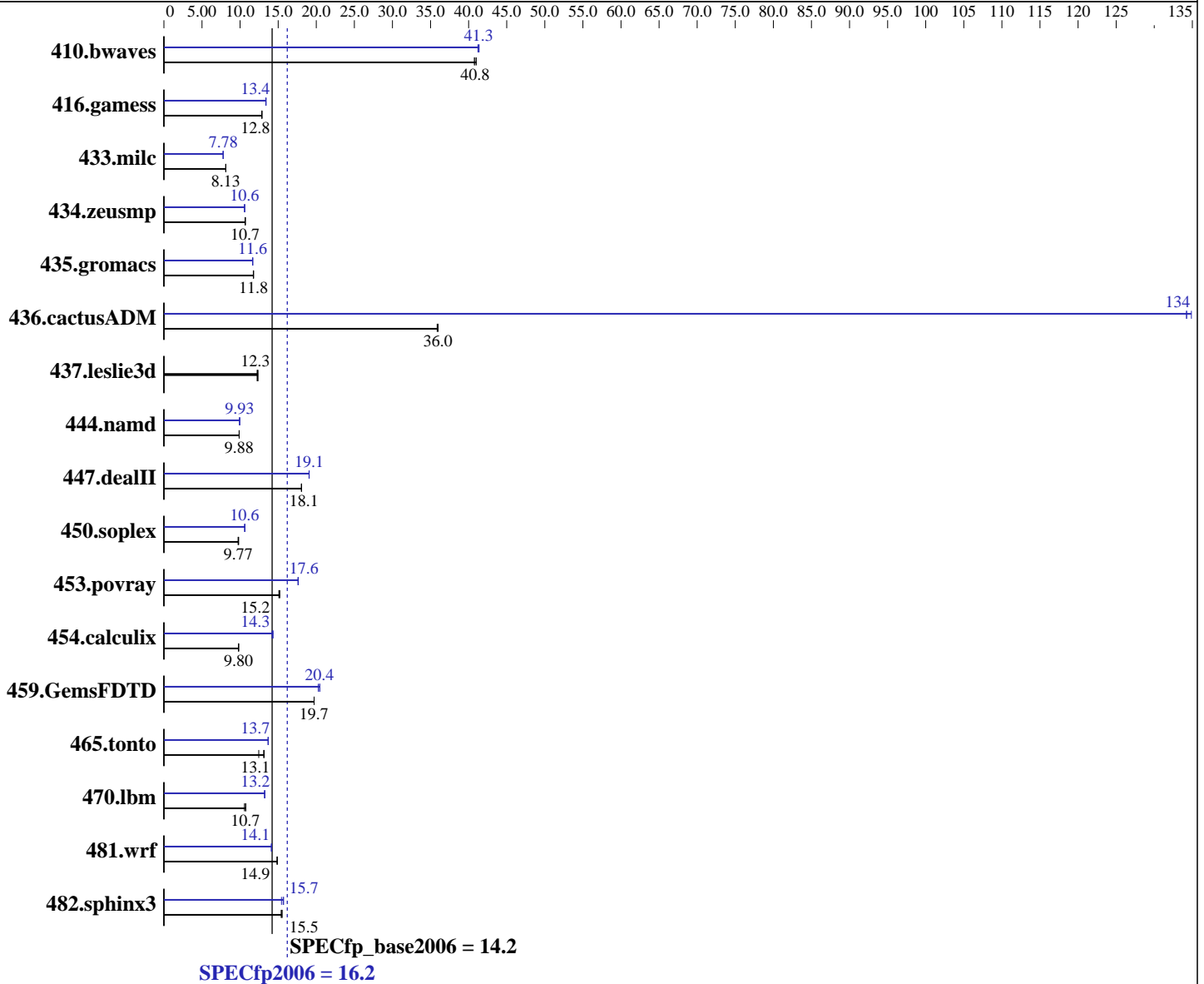
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Aug-2007

Hardware Availability: Oct-2007

Software Availability: Nov-2007



SPECfp2006 = 16.2

## Hardware

CPU Name: Intel Xeon L7345  
 CPU Characteristics: Quad Core, 1.86 GHz  
 CPU MHz: 1866  
 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: 8 MB I+D on chip per chip, 4 MB shared / 2 cores

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## Software

Operating System: 64-Bit SUSE LINUX Enterprise Server 10 SP1 RC1, Kernel linux-cbmg 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	<b>333</b>	<b>40.8</b>	334	40.7	331	41.0	<b>329</b>	<b>41.3</b>	330	41.2	328	41.4
416.gamess	1520	12.9	<b>1524</b>	<b>12.8</b>	1524	12.8	1465	13.4	1460	13.4	<b>1462</b>	<b>13.4</b>
433.milc	1128	8.14	1132	8.11	<b>1129</b>	<b>8.13</b>	1179	7.78	1181	7.77	<b>1180</b>	<b>7.78</b>
434.zeusmp	853	10.7	852	10.7	<b>852</b>	<b>10.7</b>	859	10.6	<b>859</b>	<b>10.6</b>	859	10.6
435.gromacs	607	11.8	608	11.7	<b>607</b>	<b>11.8</b>	612	11.7	613	11.6	<b>613</b>	<b>11.6</b>
436.cactusADM	333	35.9	<b>332</b>	<b>36.0</b>	332	36.0	<b>89.0</b>	<b>134</b>	89.0	134	88.6	135
437.leslie3d	761	12.4	768	12.2	<b>766</b>	<b>12.3</b>	761	12.4	768	12.2	<b>766</b>	<b>12.3</b>
444.namd	813	9.87	811	9.89	<b>812</b>	<b>9.88</b>	808	9.93	<b>807</b>	<b>9.93</b>	806	9.96
447.dealII	634	18.0	<b>633</b>	<b>18.1</b>	633	18.1	601	19.0	600	19.1	<b>600</b>	<b>19.1</b>
450.soplex	850	9.81	856	9.74	<b>853</b>	<b>9.77</b>	<b>786</b>	<b>10.6</b>	784	10.6	787	10.6
453.povray	<b>351</b>	<b>15.2</b>	353	15.1	350	15.2	301	17.6	<b>302</b>	<b>17.6</b>	302	17.6
454.calculix	843	9.79	<b>841</b>	<b>9.80</b>	841	9.81	<b>579</b>	<b>14.3</b>	581	14.2	576	14.3
459.GemsFDTD	538	19.7	538	19.7	<b>538</b>	<b>19.7</b>	519	20.5	<b>519</b>	<b>20.4</b>	524	20.3
465.tonto	790	12.4	747	13.2	<b>752</b>	<b>13.1</b>	<b>719</b>	<b>13.7</b>	718	13.7	720	13.7
470.lbm	1299	10.6	<b>1282</b>	<b>10.7</b>	1279	10.7	1040	13.2	<b>1038</b>	<b>13.2</b>	1038	13.2
481.wrf	752	14.9	<b>751</b>	<b>14.9</b>	750	14.9	791	14.1	<b>791</b>	<b>14.1</b>	791	14.1
482.sphinx3	1266	15.4	1257	15.5	<b>1259</b>	<b>15.5</b>	1240	15.7	<b>1245</b>	<b>15.7</b>	1263	15.4

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



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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.20090714.33.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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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