



# SPEC<sup>®</sup> CFP2006 Result

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## Lenovo Group Limited

(Test Sponsor: Intel Corporation)

Lenovo R630 G7 (Intel Xeon processor E7340, 2.40 GHz)

SPECfp<sup>®</sup>2006 = 18.8

SPECfp\_base2006 = 16.5

CPU2006 license: 13

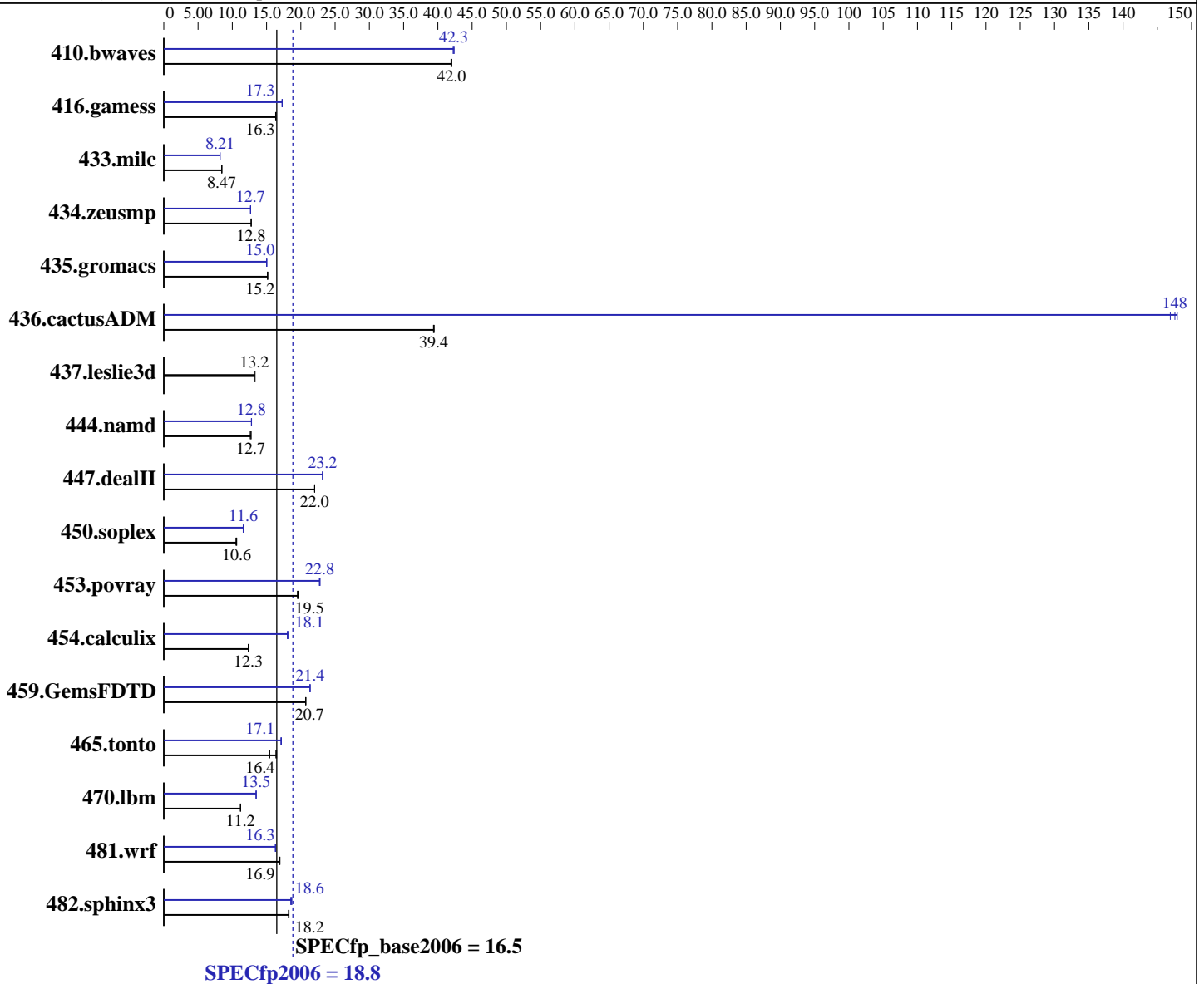
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Aug-2007

Hardware Availability: Oct-2007

Software Availability: Nov-2007



Hardware	Software
CPU Name: Intel Xeon E7340	Operating System: 64-Bit SUSE LINUX Enterprise Server 10 SP1 RC1, Kernel
CPU Characteristics: Quad Core, 2.40 GHz	linux-cbmg 2.6.16.43-0.5-smp for x86_64
CPU MHz: 2400	Compiler: Intel C++ and Fortran Compiler for Linux32 and Linux64
FPU: Integrated	Version 10.1 Build 20070824
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip	Auto Parallel: Yes
CPU(s) orderable: 1,2,4 chips	File System: ReiserFS
Primary Cache: 32 KB I + 32 KB D on chip per core	System State: Multi-user, run level 3
Secondary Cache: 8 MB I+D on chip per chip, 4 MB shared / 2 cores	
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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	324	41.9	323	42.0	<b>324</b>	<b>42.0</b>	321	42.4	<b>321</b>	<b>42.3</b>	322	42.2
416.gamess	<b>1198</b>	<b>16.3</b>	1195	16.4	1200	16.3	1133	17.3	<b>1133</b>	<b>17.3</b>	1134	17.3
433.milc	1084	8.47	1085	8.46	<b>1084</b>	<b>8.47</b>	1118	8.21	<b>1118</b>	<b>8.21</b>	1119	8.20
434.zeusmp	713	12.8	<b>713</b>	<b>12.8</b>	714	12.7	719	12.7	<b>718</b>	<b>12.7</b>	718	12.7
435.gromacs	471	15.1	<b>471</b>	<b>15.2</b>	471	15.2	476	15.0	<b>475</b>	<b>15.0</b>	475	15.0
436.cactusADM	303	39.5	<b>303</b>	<b>39.4</b>	304	39.4	80.8	148	81.3	147	<b>81.0</b>	<b>148</b>
437.leslie3d	706	13.3	714	13.2	<b>711</b>	<b>13.2</b>	706	13.3	714	13.2	<b>711</b>	<b>13.2</b>
444.namd	636	12.6	629	12.7	<b>631</b>	<b>12.7</b>	627	12.8	626	12.8	<b>627</b>	<b>12.8</b>
447.dealII	<b>520</b>	<b>22.0</b>	519	22.0	520	22.0	493	23.2	494	23.2	<b>493</b>	<b>23.2</b>
450.soplex	792	10.5	<b>784</b>	<b>10.6</b>	784	10.6	720	11.6	<b>717</b>	<b>11.6</b>	716	11.6
453.povray	271	19.6	<b>272</b>	<b>19.5</b>	273	19.5	233	22.8	234	22.7	<b>234</b>	<b>22.8</b>
454.calculix	668	12.3	<b>668</b>	<b>12.3</b>	669	12.3	456	18.1	<b>456</b>	<b>18.1</b>	457	18.0
459.GemsFDTD	<b>512</b>	<b>20.7</b>	512	20.7	512	20.7	497	21.4	<b>497</b>	<b>21.4</b>	497	21.3
465.tonto	598	16.5	<b>602</b>	<b>16.4</b>	636	15.5	<b>575</b>	<b>17.1</b>	575	17.1	573	17.2
470.lbm	1247	11.0	<b>1228</b>	<b>11.2</b>	1225	11.2	1021	13.5	<b>1019</b>	<b>13.5</b>	1019	13.5
481.wrf	<b>659</b>	<b>16.9</b>	659	16.9	660	16.9	686	16.3	684	16.3	<b>685</b>	<b>16.3</b>
482.sphinx3	1070	18.2	<b>1070</b>	<b>18.2</b>	1066	18.3	1042	18.7	1052	18.5	<b>1047</b>	<b>18.6</b>

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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**Tested by:** Intel Corporation

**Test date:** Aug-2007

**Hardware Availability:** Oct-2007

**Software Availability:** Nov-2007

## 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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**Software Availability:** Nov-2007

## 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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