SPEC® CFP2006 Result
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Lenovo Group Limited
(Test Sponsor: Intel Corporation)

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

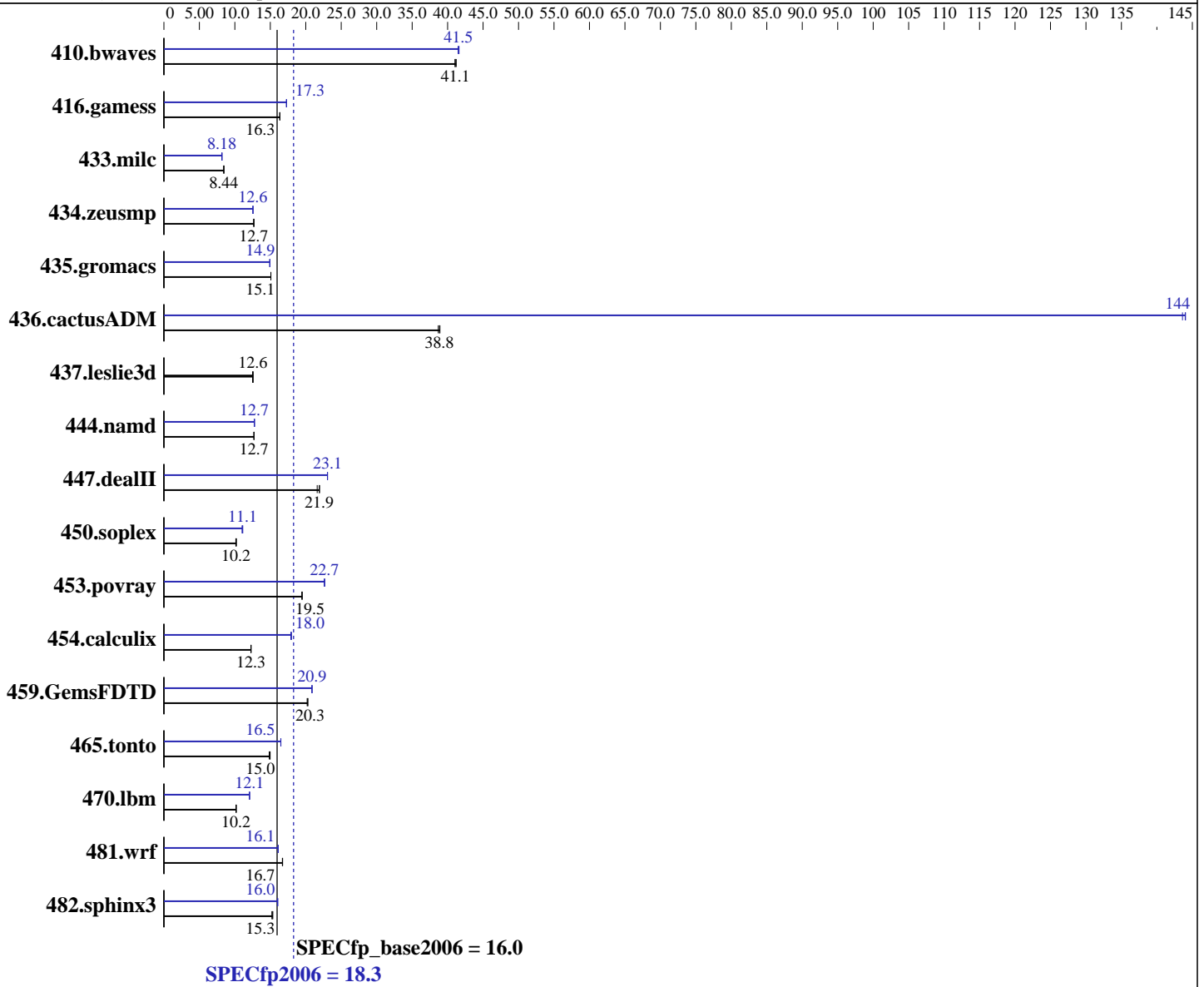$SPECfp^{®}2006 =$ 18.3

$SPECfp\_base2006 =$ 16.0

CPU2006 license: 13	**Test date:** Aug-2007
Test sponsor: Intel Corporation	**Hardware Availability:** Oct-2007
Tested by: Intel Corporation	**Software Availability:** Nov-2007

Results chart (scale 0 to 145):

Benchmark	Peak	Base
410.bwaves	41.5	41.1
416.gamess	17.3	16.3
433.milc	8.18	8.44
434.zeusmp	12.6	12.7
435.gromacs	14.9	15.1
436.cactusADM	144	38.8
437.leslie3d		12.6
444.namd	12.7	12.7
447.dealII	23.1	21.9
450.soplex	11.1	10.2
453.povray	22.7	19.5
454.calculix	18.0	12.3
459.GemsFDTD	20.9	20.3
465.tonto	16.5	15.0
470.lbm	12.1	10.2
481.wrf	16.1	16.7
482.sphinx3	16.0	15.3

SPECfp_base2006 = 16.0

SPECfp2006 = 18.3

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

Continued on next page

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	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	16 GB (16 * 1GB Samsung PC2-5300F, 2 rank, CL5-5-5, ECC)	Other Software:	Binutils 2.17.50.0.15
Disk Subsystem:	Seagate, SAS, 73GB, 10Krpm, 1 disk only		
Other Hardware:	None		

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
```

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CPU2006 license: 13

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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.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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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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