



# SPEC® CINT2006 Result

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**Lenovo Group Limited**

(Test Sponsor: Intel Corporation)

Lenovo R630 G7 (Intel Xeon processor E7310, 1.60 GHz)

**SPECint®2006 = 13.4**

**SPECint\_base2006 = 11.7**

CPU2006 license: 13

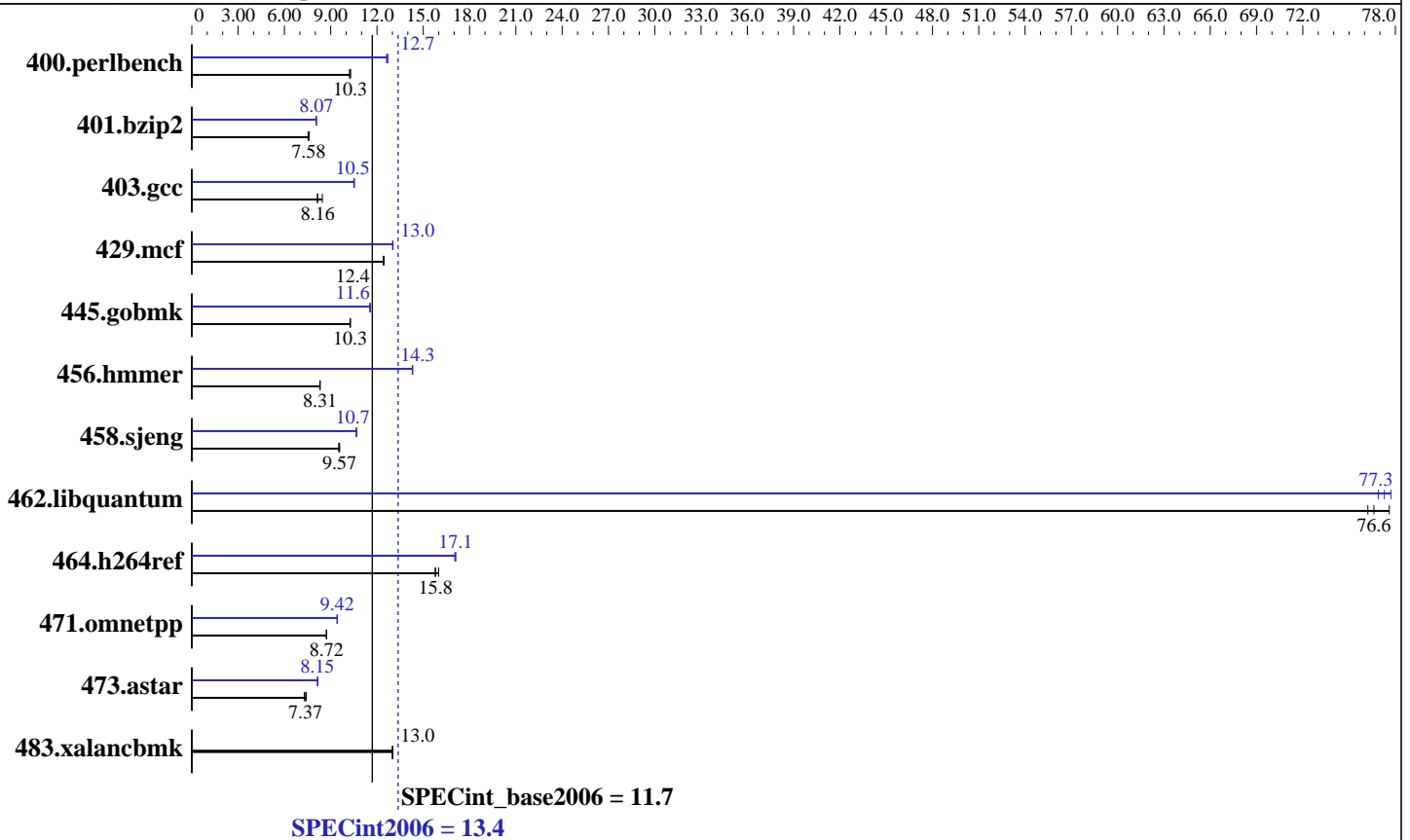
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Aug-2007

Hardware Availability: Oct-2007

Software Availability: Nov-2007



**Hardware**

CPU Name: Intel Xeon E7310  
 CPU Characteristics: Quad Core, 1.60 GHz  
 CPU MHz: 1600  
 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: 4 MB I+D on chip per chip, 2 MB shared / 2 cores  
 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

**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: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap library V8.1 Binutils 2.17.50.0.15



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<u>951</u>	<u>10.3</u>	956	10.2	950	10.3	<u>770</u>	<u>12.7</u>	769	12.7	774	12.6
401.bzip2	1280	7.54	<u>1273</u>	<u>7.58</u>	1271	7.59	<u>1196</u>	<u>8.07</u>	1199	8.05	1195	8.07
403.gcc	<u>987</u>	<u>8.16</u>	990	8.13	952	8.46	764	10.5	766	10.5	<u>765</u>	<u>10.5</u>
429.mcf	732	12.5	<u>733</u>	<u>12.4</u>	735	12.4	701	13.0	699	13.0	<u>700</u>	<u>13.0</u>
445.gobmk	1021	10.3	1022	10.3	<u>1021</u>	<u>10.3</u>	908	11.5	908	11.6	<u>908</u>	<u>11.6</u>
456.hmmer	1122	8.32	<u>1123</u>	<u>8.31</u>	1124	8.30	<u>652</u>	<u>14.3</u>	653	14.3	652	14.3
458.sjeng	<u>1264</u>	<u>9.57</u>	1271	9.52	1264	9.58	<u>1134</u>	<u>10.7</u>	1134	10.7	1134	10.7
462.libquantum	<u>270</u>	<u>76.6</u>	267	77.6	272	76.2	267	77.7	<u>268</u>	<u>77.3</u>	269	76.9
464.h264ref	1403	15.8	<u>1400</u>	<u>15.8</u>	1383	16.0	1299	17.0	<u>1295</u>	<u>17.1</u>	1294	17.1
471.omnetpp	716	8.72	<u>716</u>	<u>8.72</u>	716	8.73	<u>663</u>	<u>9.42</u>	662	9.44	664	9.41
473.astar	<u>952</u>	<u>7.37</u>	946	7.42	964	7.28	860	8.17	<u>862</u>	<u>8.15</u>	862	8.15
483.xalancbmk	530	13.0	<u>530</u>	<u>13.0</u>	531	13.0	530	13.0	<u>530</u>	<u>13.0</u>	531	13.0

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 32-bit mode except 401.bzip2 and 456.hmmer, for peak, are compiled in 64-bit mode

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32

462.libquantum: -DSPEC\_CPU\_LINUX

483.xalancbmk: -DSPEC\_CPU\_LINUX



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## Base Optimization Flags

C benchmarks:

`-fast -vec-guard-write -parallel -par-runtime-control`

C++ benchmarks:

`-xT -ipo -O3 -no-prec-div -Wl,-z,muldefs  
-L/home/cmplr/usr3/alrahate/cpu2006.1.0/lib -lsmartheap`

## Base Other Flags

C benchmarks:

`403.gcc: -Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):

`icc`

`401.bzip2: /home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/bin/icc  
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/lib  
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/include`

`456.hmmer: /home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/bin/icc  
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/lib  
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux64/include`

C++ benchmarks:

`icpc`

## Peak Portability Flags

`400.perlbench: -DSPEC_CPU_LINUX_IA32  
401.bzip2: -DSPEC_CPU_LP64  
456.hmmer: -DSPEC_CPU_LP64  
462.libquantum: -DSPEC_CPU_LINUX  
483.xalancbmk: -DSPEC_CPU_LINUX`

## Peak Optimization Flags

C benchmarks:

Continued on next page



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## Peak Optimization Flags (Continued)

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -fast -ansi-alias  
-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

403.gcc: -fast -inline-calloc -opt-malloc-options=3

429.mcf: -fast -prefetch

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xT -O2 -ipo  
-no-prec-div -ansi-alias

456.hmmer: -fast -unroll2 -ansi-alias -opt-multi-version-aggressive  
-auto-ilp32

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4

462.libquantum: -fast -unroll4 -Ob0 -prefetch  
-opt-streaming-stores always -vec-guard-write  
-opt-malloc-options=3 -parallel -par-runtime-control

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo  
-no-prec-div -ansi-alias -opt-ra-region-strategy=block  
-Wl,-z,muldefs  
-L/home/cmplr/usr3/alrahate/cpu2006.1.0/lib -lsmartheap

473.astar: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo  
-no-prec-div -ansi-alias -opt-ra-region-strategy=routine  
-Wl,-z,muldefs  
-L/home/cmplr/usr3/alrahate/cpu2006.1.0/lib -lsmartheap

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca



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The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic10-ia32-intel64-linux-flags.20090714.28.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic10-ia32-intel64-linux-flags.20090714.28.xml>

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

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