



SPEC[®] CFP2006 Result

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Lenovo Group Limited

SPECfp[®]_rate2006 = 80.2

M78
AMD A10-5800B

SPECfp_rate_base2006 = 72.9

CPU2006 license: 9017

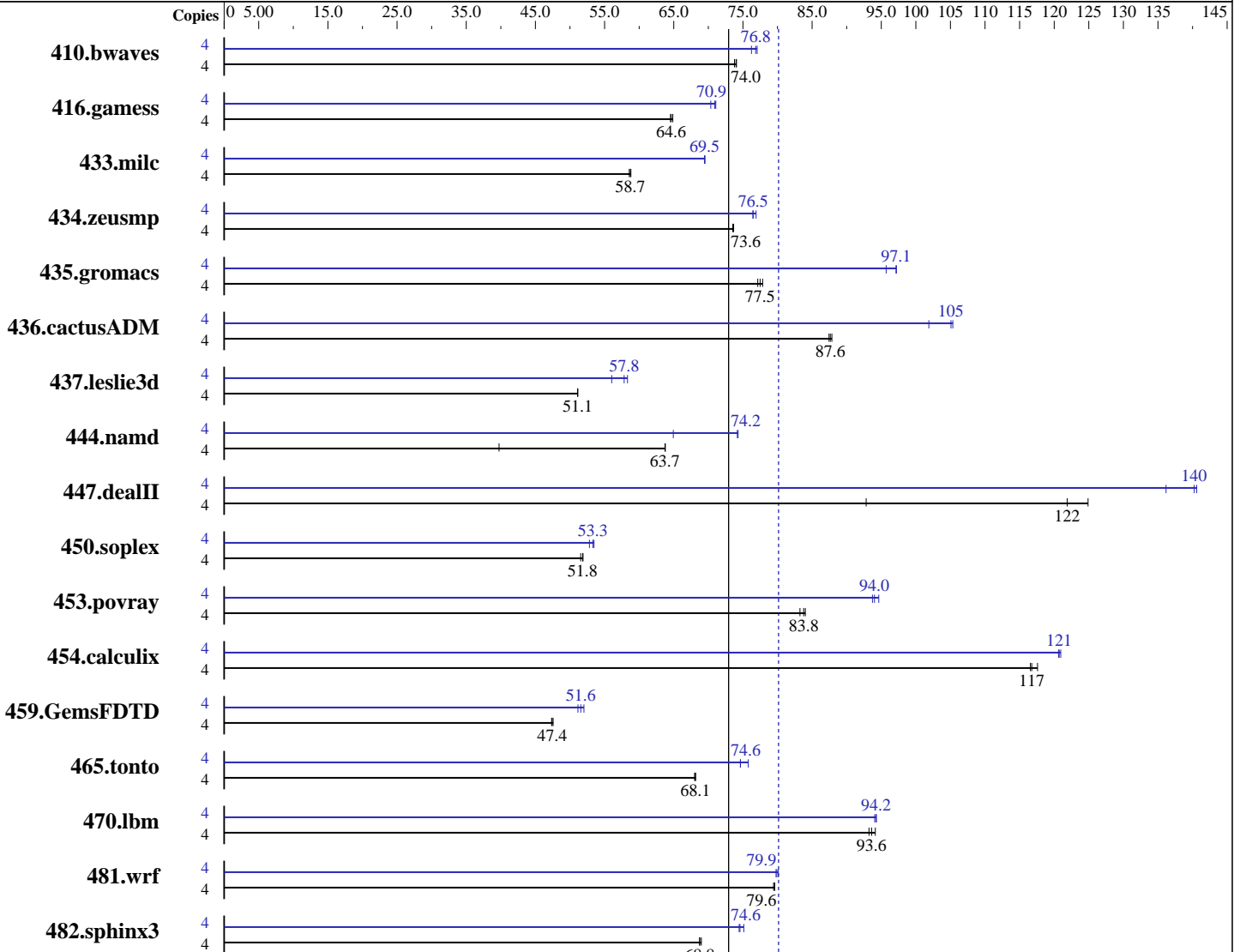
Test date: Feb-2013

Test sponsor: Lenovo Group Limited

Hardware Availability: Oct-2012

Tested by: Lenovo Group Limited

Software Availability: Aug-2012



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Hardware

CPU Name: AMD A10-5800B
 CPU Characteristics: AMD Turbo CORE technology up to 4.2 GHz
 CPU MHz: 3800
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 CPU(s) orderable: 1 chip

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Software

Operating System: Red Hat Enterprise Linux Server release 6.2, Kernel 2.6.32-220.el6.x86_64
 Compiler: C/C++/Fortran: Version 4.5.2 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: ext4
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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Primary Cache: 128 KB I on chip per chip,
64 KB I shared / 2 cores;
16 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: 8 GB (2 x 4 GB 2Rx8 PC3-12800U-11)

Disk Subsystem: 1 x 500 GB SATA, 7200 RPM

Other Hardware: None

Other Software: None

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	4	<u>735</u>	<u>74.0</u>	737	73.8	734	74.1	4	<u>707</u>	<u>76.8</u>	713	76.2	705	77.1		
416.gamess	4	1208	64.9	1214	64.5	<u>1212</u>	<u>64.6</u>	4	1113	70.4	<u>1104</u>	<u>70.9</u>	1102	71.1		
433.milc	4	<u>625</u>	<u>58.7</u>	627	58.6	624	58.8	4	<u>529</u>	<u>69.5</u>	528	69.5	529	69.4		
434.zeusmp	4	494	73.7	<u>495</u>	<u>73.6</u>	495	73.5	4	<u>476</u>	<u>76.5</u>	476	76.4	473	76.9		
435.gromacs	4	<u>369</u>	<u>77.5</u>	370	77.1	367	77.9	4	294	97.2	298	95.7	<u>294</u>	<u>97.1</u>		
436.cactusADM	4	544	87.9	547	87.4	<u>545</u>	<u>87.6</u>	4	<u>455</u>	<u>105</u>	469	102	454	105		
437.leslie3d	4	735	51.1	736	51.1	<u>736</u>	<u>51.1</u>	4	645	58.3	671	56.0	<u>650</u>	<u>57.8</u>		
444.namd	4	503	63.8	807	39.7	<u>503</u>	<u>63.7</u>	4	<u>432</u>	<u>74.2</u>	494	64.9	432	74.3		
447.dealII	4	<u>375</u>	<u>122</u>	493	92.8	366	125	4	325	141	336	136	<u>326</u>	<u>140</u>		
450.soplex	4	647	51.6	<u>644</u>	<u>51.8</u>	643	51.9	4	632	52.8	<u>626</u>	<u>53.3</u>	624	53.5		
453.povray	4	<u>254</u>	<u>83.8</u>	256	83.2	253	84.0	4	225	94.6	<u>226</u>	<u>94.0</u>	227	93.7		
454.calculix	4	281	118	283	117	<u>283</u>	<u>117</u>	4	273	121	274	121	<u>273</u>	<u>121</u>		
459.GemsFDTD	4	<u>895</u>	<u>47.4</u>	892	47.6	897	47.3	4	830	51.2	<u>823</u>	<u>51.6</u>	816	52.0		
465.tonto	4	577	68.2	<u>578</u>	<u>68.1</u>	579	68.0	4	527	74.6	<u>527</u>	<u>74.6</u>	519	75.8		
470.lbm	4	584	94.1	<u>587</u>	<u>93.6</u>	590	93.2	4	584	94.0	583	94.3	<u>583</u>	<u>94.2</u>		
481.wrf	4	<u>561</u>	<u>79.6</u>	561	79.6	562	79.4	4	560	79.8	558	80.1	<u>559</u>	<u>79.9</u>		
482.sphinx3	4	1130	69.0	<u>1134</u>	<u>68.8</u>	1134	68.7	4	1047	74.5	<u>1045</u>	<u>74.6</u>	1038	75.1		

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

Submit Notes

The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

Transparent huge pages were enabled for this run (OS default)

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Operating System Notes (Continued)

Huge pages were not configured for this run.

General Notes

Environment variables set by runspec before the start of the run:

HUGETLB_LIMIT = "0"

LD_LIBRARY_PATH = "/usr/cpu2006/amd1206-rate-libs-revA/32:/usr/cpu2006/amd1206-rate-libs-revA/64"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at <http://developer.amd.com/cpu/open64>

Binaries were compiled on a system with 2x AMD Opteron 6386SE chips + 128GB Memory using RHEL 6.3

Base Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

opencc openf95

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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deallI: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
-fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000
-IPA:small_pu=100 -mso -march=bdver1

C++ benchmarks:

-Ofast -static -CG:load_exe=0 -OPT:malloc_alg=1 -INLINE:aggressive=on
-HP:bd=2m:heap=2m -D__OPEN64_FAST_SET -march=bdver1

Fortran benchmarks:

-Ofast -LNO:blocking=off -LNO:simd_peel_align=on -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso -march=bdver1

Benchmarks using both Fortran and C:

-Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000
-IPA:small_pu=100 -mso -march=bdver1 -LNO:blocking=off
-LNO:simd_peel_align=on -OPT:rsqrt=2 -OPT:unroll_size=256

Peak Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

openc openf95

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

435.gromacs: -DSPEC_CPU_LP64
 436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
 437.leslie3d: -DSPEC_CPU_LP64
 444.namd: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64
 459.GemsFDTD: -DSPEC_CPU_LP64
 465.tonto: -DSPEC_CPU_LP64
 470.lbm: -DSPEC_CPU_LP64
 481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
 -fno-second-underscore

Peak Optimization Flags

C benchmarks:

433.milc: -Ofast -CG:movnti=1 -CG:locs_best=on -HP:bdt=2m:heap=2m
 -IPA:plimit=7000 -IPA:callee_limit=1200
 -OPT:struct_array_copy=2 -OPT:alias=field_sensitive -mso
 -march=bdver1

470.lbm: -Ofast -CG:cmp_peep=on -OPT:keep_ext=on -HP:bdt=2m:heap=2m
 -IPA:plimit=8000 -IPA:small_pu=100 -march=bdver1 -mso

482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -m32 -IPA:plimit=1000 -OPT:malloc_alg=2 -CG:cmp_peep=on
 -CG:p2align=0 -CG:load_exe=1 -CG:dsched=on
 -INLINE:aggressive=on -LNO:prefetch=2 -LNO:prefetch_ahead=4
 -mso -march=bdver2

C++ benchmarks:

444.namd: -Ofast -IPA:plimit=3000 -LNO:ignore_feedback=off
 -CG:local_sched_alg=0 -CG:load_exe=0 -OPT:unroll_size=256
 -fno-exceptions -HP:bdt=2m:heap=2m -LNO:if_select_conv=1
 -OPT:alias=disjoint -LNO:psimd_iso_unroll=ON -march=bdver1

447.dealIII: -Ofast -D__OPEN64_FAST_SET -static -INLINE:aggressive=on
 -LNO:opt=1 -LNO:simd=2 -fno-emit-exceptions -m32
 -OPT:unroll_times_max=8 -OPT:unroll_size=256
 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m -GRA:unspill=on
 -CG:cmp_peep=on -CG:movext_icmp=off -TENV:frame_pointer=off
 -march=bdver1

450.soplex: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
 -LNO:ignore_feedback=off -INLINE:aggressive=on -OPT:RO=1
 -OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off
 -OPT:fold_unsigned_relops=on -fno-exceptions -CG:p2align=0
 -m32 -mno-fma4 -HP:bdt=2m:heap=2m -WOPT:sib=on

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Peak Optimization Flags (Continued)

450.soplex (continued):

-march=bdver1

453.povray: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-CG:pre_local_sched=off -CG:p2align=0 -CG:p2align_split=on
-CG:dsched=on -INLINE:aggressive=on -HP:bd=2m:heap=2m
-OPT:transform=2 -OPT:alias=disjoint -WOPT:aggcm=0
-march=bdver2

Fortran benchmarks:

410.bwaves: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-OPT:Ofast -OPT:treeheight=on -LNO:blocking=off
-LNO:ignore_feedback=off -LNO:fu=4 -LNO:loop_model_simd=on
-LNO:simd_rm_unity_remainder=on -WOPT:aggstr=0
-HP:bd=2m:heap=2m -CG:cmp_peep=on -march=bdver1

416.gamess: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:fu=6 -LNO:blocking=0 -LNO:simd=2 -OPT:ro=3
-OPT:recip=on -CG:local_sched_alg=1 -HP:bd=2m:heap=2m
-WOPT:sib=on -march=bdver1

434.zeusmp: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:blocking=off -LNO:interchange=off -IPA:plimit=1500
-HP:bd=2m:heap=2m -march=bdver1

437.leslie3d: -Ofast -CG:pre_minreg_level=2 -LNO:simd=0 -LNO:fusion=2
-HP:bd=2m:heap=2m -mso -march=bdver1

459.GemsFDTD: -Ofast -IPA:plimit=1500 -OPT:unroll_size=1024
-OPT:unroll_times_max=16 -LNO:fission=2
-CG:local_sched_alg=2 -HP -march=bdver1

465.tonto: -Ofast -OPT:alias=no_f90_pointer_alias -LNO:blocking=off
-CG:load_exe=1 -CG:local_sched_alg=3 -IPA:plimit=525
-HP:bd=2m:heap=2m -march=bdver1

Benchmarks using both Fortran and C:

435.gromacs: -Ofast -OPT:rsqrt=2 -HP:bd=2m:heap=2m
-CG:local_sched_alg=2 -CG:load_exe=3 -GRA:unspill=on
-march=bdver1 -LNO:simd=3

436.cactusADM: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:blocking=off -LNO:prefetch=2 -LNO:pf2=0
-LNO:prefetch_ahead=4 -HP -CG:locs_shallow_depth=1
-CG:load_exe=0 -CG:dsched=on -WOPT:sib=on -march=bdver1

454.calculix: -Ofast -OPT:unroll_size=256 -OPT:alias=disjoint
-GRA:optimize_boundary=on -CG:dsched=on -HP:bd=2m:heap=2m
-march=bdver1

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Peak Optimization Flags (Continued)

```
481.wrf: -Ofast -LNO:blocking=off -LANG:copyinout=off  
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on -HP  
-WOPT:sib=on -march=bdver1
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.html>
<http://www.spec.org/cpu2006/flags/amd-LENOVO-platform-rate-revC-I.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.xml>
<http://www.spec.org/cpu2006/flags/amd-LENOVO-platform-rate-revC-I.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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