



SPEC® CINT2006 Result

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Sugon

SPECint®_rate2006 = 1210

Sugon A320-G30 (AMD EPYC 7601)

SPECint_rate_base2006 = 1080

CPU2006 license: 9046

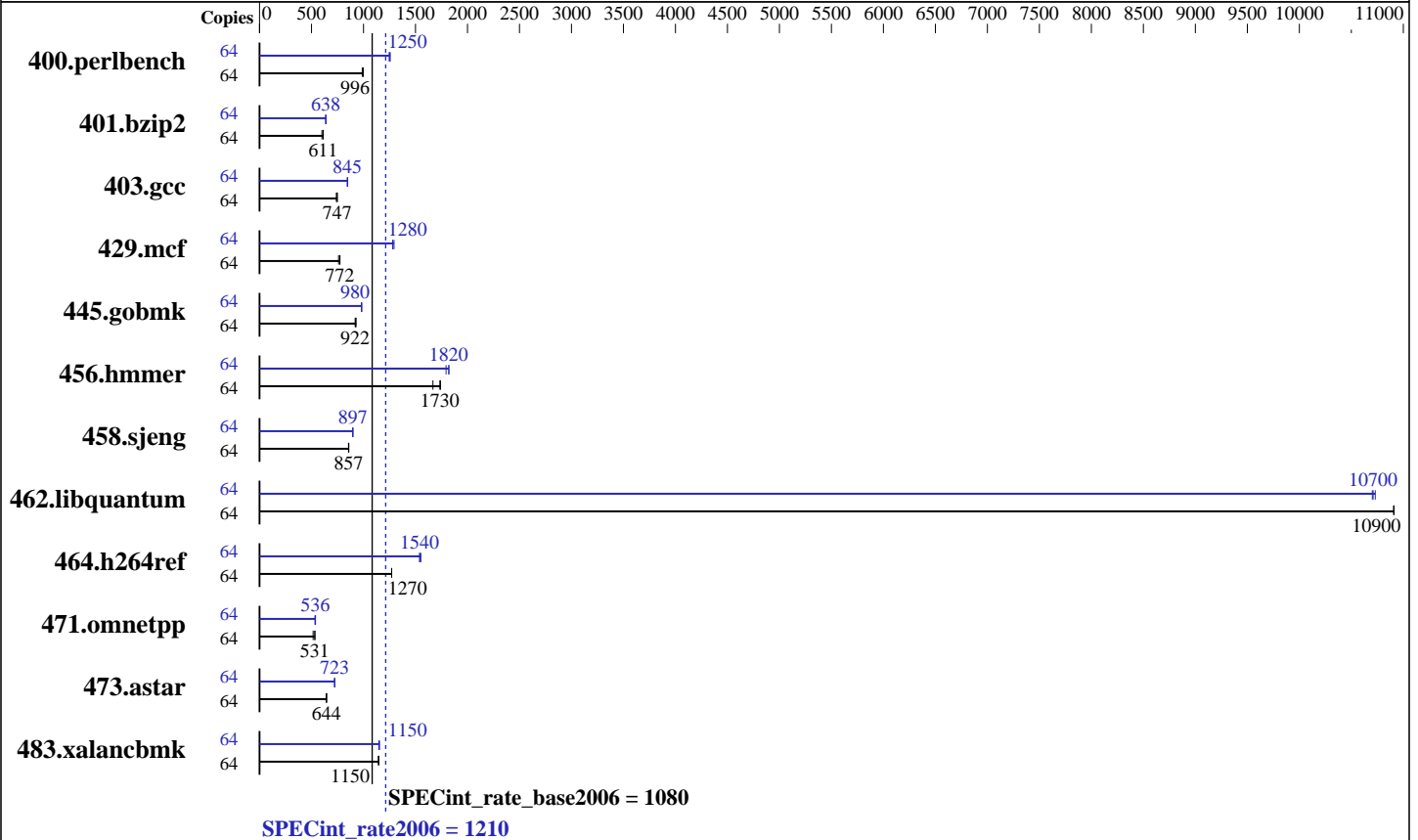
Test date: Dec-2017

Test sponsor: Sugon

Hardware Availability: Dec-2017

Tested by: Sugon

Software Availability: Oct-2017



Hardware

CPU Name: AMD EPYC 7601
 CPU Characteristics: AMD Turbo CORE technology up to 3.20 GHz
 CPU MHz: 2200
 FPU: Integrated
 CPU(s) enabled: 32 cores, 1 chip, 32 cores/chip, 2 threads/core
 CPU(s) orderable: 1 chip
 Primary Cache: 64 KB I + 32 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 64 MB I+D on chip per chip, 8 MB shared / 4 cores
 Other Cache: None
 Memory: 256 GB (8 x 32 GB 2Rx4 PC4-2667V-R, running at 2400)
 Disk Subsystem: 1 x 1000 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server 7.4
 Kernel 3.10.0-693.2.2
 Compiler: C/C++: Version 4.5.2.1 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: xfs
 System State: Run level 3 (Multi User)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: MicroQuill SmartHeap 10.0 32-bit Library for Linux



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	627	997	633	988	628	996	64	500	1250	497	1260	501	1250
401.bzip2	64	1029	600	1010	611	1007	613	64	970	636	966	639	968	638
403.gcc	64	697	739	689	747	690	747	64	610	845	608	848	610	845
429.mcf	64	768	760	754	774	756	772	64	455	1280	451	1290	456	1280
445.gobmk	64	728	922	729	920	723	929	64	682	984	685	980	685	980
456.hammer	64	358	1670	343	1740	344	1730	64	333	1790	328	1820	328	1820
458.sjeng	64	903	857	905	856	902	859	64	863	897	864	897	862	898
462.libquantum	64	122	10900	122	10900	122	10900	64	124	10700	124	10700	124	10700
464.h264ref	64	1115	1270	1114	1270	1114	1270	64	913	1550	919	1540	920	1540
471.omnetpp	64	776	515	753	531	750	533	64	750	533	746	536	743	539
473.astar	64	700	641	696	645	697	644	64	623	721	621	724	621	723
483.xalancbmk	64	385	1150	386	1140	386	1150	64	384	1150	383	1150	385	1150

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

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory
sync then drop_caches=3 to reset caches before invoking runcpu

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

Set vm/nr_hugepages=57344 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Platform Notes

BIOS settings:
Determinism Slider = Power
cTDP Control = Manual

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Platform Notes (Continued)

cTDP = 200

General Notes

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

HUGETLB_LIMIT = "896"

LD_LIBRARY_PATH = "/home/cpu2006/amd1603-rate-libs-revB/32:/home/cpu2006/amd1603-rate-libs-revB/64"

The binaries were built with the AMD supported x86 Open64 Compiler Suite, which is only available from AMD at

<http://developer.amd.com/tools-and-sdks/cpu-development/x86-open64-compiler-suite/>

Binaries were compiled on a system with 2 x AMD Opteron 6378 chips + 128 GB Memory using RHEL 6.3

Base Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:

-Ofast -CG:local_sched_alg=1 -INLINE:aggressive=ON -IPA:plimit=8000
-IPA:small_pu=100 -HP:bd=2m:heap=2m -mso -LNO:prefetch=2
-march=bdver1 -mno-fma4 -mno-xop -mno-tbm

C++ benchmarks:

-Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on -D__OPEN64_FAST_SET
-march=bdver1 -mno-fma4 -mno-xop -mno-tbm
-L/root/work/libraries/SmartHeap-10/lib -lsmartheap



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Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:prefetch=2 -LNO:opt=0 -IPA:plimit=20000
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
-WOPT:sib=on -CG:local_sched_alg=1 -CG:unroll_fb_req=on
-CG:movext_icmp=off -HP:bd=2m:heap=2m -march=bdver1
-mno-fma4 -GRA:aggr_loop_splitting=off
-GRA:loop_splitting=off

401.bzip2: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:prefetch=2 -LNO:pf2=0 -OPT:alias=disjoint
-OPT:goto=off -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m
-march=bdver2 -WB, -mno-fma4 -mno-tbm -mno-xop

403.gcc: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:trip_count=256 -CG:cmp_peep=on -CG:pre_minreg_level=2
-m32 -HP:bdt=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200
-WOPT:sib=on -march=bdver2 -mno-fma4 -WB, -mno-tbm
-mno-xop

429.mcf: -O3 -OPT:unroll_times_max=5 -ipa -INLINE:aggressive=on
-CG:gcm=off -CG:dsched=on -GRA:prioritize_by_density=on
-m32 -HP:bdt=2m:heap=2m -mso -march=bdver1 -mno-fma4

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Peak Optimization Flags (Continued)

445.gobmk: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -OPT:unroll_size=256 -OPT:unroll_times_max=8
 -OPT:keep_ext=on -IPA:plimit=750 -IPA:min_hotness=300
 -IPA:pu_reorder=1 -LNO:ignore_feedback=off -WOPT:if_conv=2
 -HP:bd=2m:heap=2m -march=bdver1 -mno-fma4

456.hmmcr: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -LNO:prefetch=2 -OPT:alias=disjoint
 -OPT:unroll_times_max=16 -OPT:unroll_size=512
 -OPT:unroll_level=2 -OPT:keep_ext=on -CG:cflow=0
 -CG:cmp_peep=on -CG:pre_local_sched=off -HP:bd=2m:heap=2m
 -CG:p2align=0 -CG:load_exe=3 -CG:dsched=on -march=bdver1
 -mno-fma4

458.sjeng: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -CG:ptr_load_use=0 -CG:divrem_opt=on -CG:movext_icmp=off
 -CG:locs_best=on -LNO:full_unroll=10 -IPA:pu_reorder=2
 -HP:heap=2m:bd=2m -WOPT:sib=on -march=bdver1 -mno-fma4

462.libquantum: -Ofast -mso -OPT:unroll_size=512 -OPT:unroll_times_max=16
 -LNO:prefetch=2 -LNO:prefetch_ahead=4 -LNO:pf2=0
 -CG:local_sched_alg=1 -CG:p2align=0 -INLINE:aggressive=ON
 -IPA:plimit=15000 -IPA:small_pu=100
 -HP:bd=2m:heap=2m,limit=300 -march=bdver2 -mno-fma4

464.h264ref: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
 -OPT:unroll_size=256 -OPT:unroll_times_max=2
 -IPA:plimit=20000 -OPT:alias=disjoint -CG:ptr_load_use=0
 -CG:local_sched_alg=1 -HP:bd=2m:heap=2m -march=bdver1
 -mno-fma4

C++ benchmarks:

471.omnetpp: -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on
 -WOPT:sib=on -D__OPEN64_FAST_SET -march=bdver2 -mno-fma4
 -L/root/work/libraries/SmartHeap-10/lib -lsmarheap

473.astar: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -WOPT:if_conv=0 -WOPT:sib=on -CG:divrem_opt=on
 -CG:p2align=1 -CG:dsched=on -GRA:optimize_boundary=on
 -OPT:alias=disjoint -INLINE:aggressive=on
 -IPA:small_pu=3000 -IPA:plimit=3000 -HP:bd=2m:heap=2m
 -march=bdver1 -mno-fma4

483.xalancbmk: -Ofast -LNO:prefetch=2 -OPT:unroll_size=512
 -OPT:unroll_times_max=8 -D__OPEN64_FAST_SET
 -INLINE:aggressive=on -m32 -CG:cmp_peep=on
 -CG:local_sched=off -CG:p2align=1 -GRA:unspill=on
 -TENV:frame_pointer=off -fno-emit-exceptions -march=bdver2
 -mno-fma4
 -L/root/work/libraries/SmartHeap-10/lib -lsmarheap



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

<http://www.spec.org/cpu2006/flags/x86-openflags-rate-revA-I.html>

<http://www.spec.org/cpu2006/flags/Sugon-Naples-Platform-Settings-revC-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-openflags-rate-revA-I.xml>

<http://www.spec.org/cpu2006/flags/Sugon-Naples-Platform-Settings-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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