



SPEC® CINT2006 Result

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Sugon

SPECint®_rate2006 = 2500

Sugon A620-G30 (AMD EPYC 7601)

SPECint_rate_base2006 = 2260

CPU2006 license: 9046

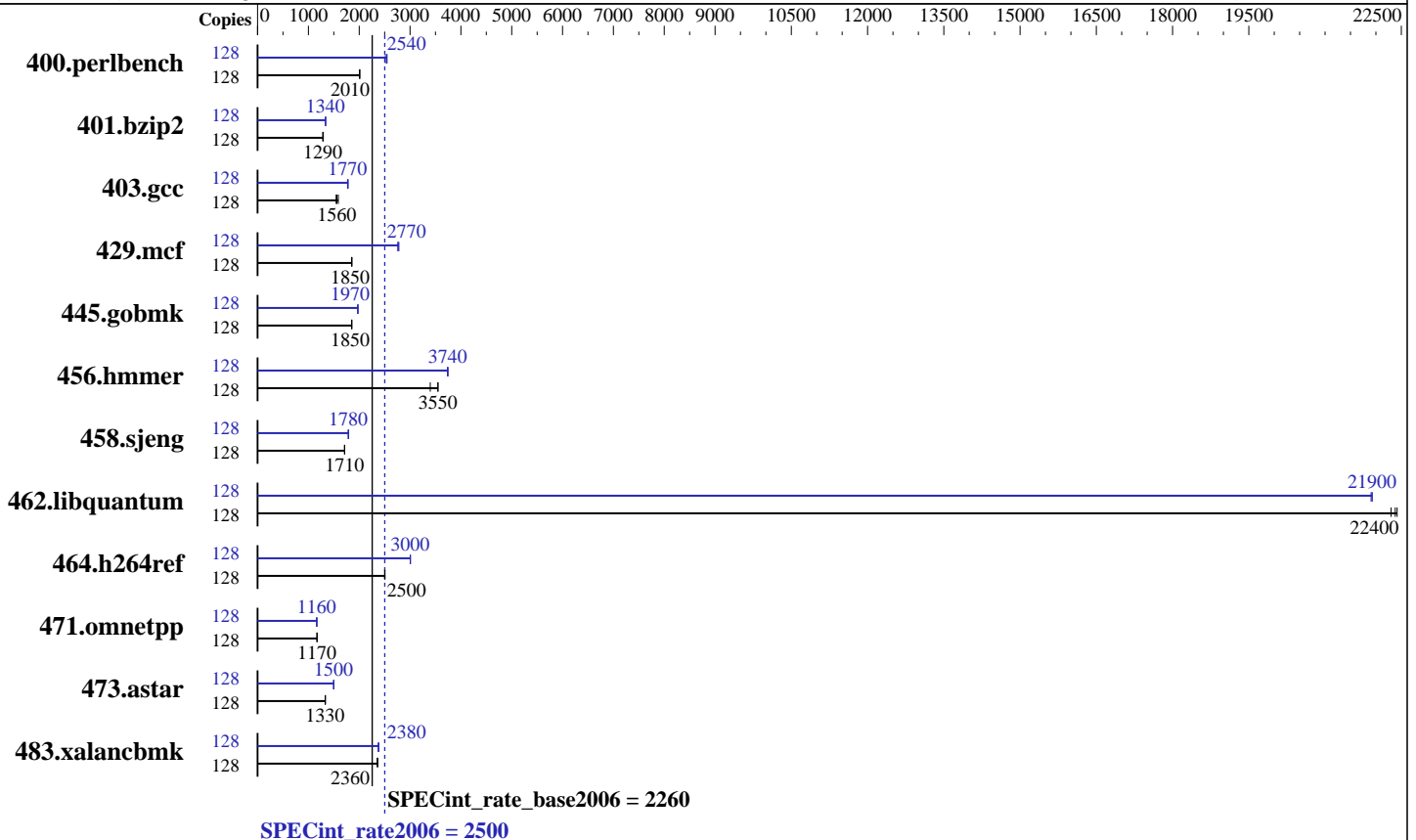
Test date: Dec-2017

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: 64 cores, 2 chips, 32 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 chips
 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: 1 TB (16 x 64 GB 4Rx4 PC4-2667V-L)
 Disk Subsystem: 1 x 800 GB SATA, SSD
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 SP3
 Kernel 4.4.73-5-default
 Compiler: C/C++: Version 4.5.2.1 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: ext4
 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	128	623	2010	623	2010	623	2010	128	492	2540	497	2510	491	2550
401.bzip2	128	955	1290	961	1290	961	1290	128	923	1340	922	1340	924	1340
403.gcc	128	660	1560	649	1590	667	1550	128	578	1780	582	1770	581	1770
429.mcf	128	631	1850	630	1850	630	1850	128	422	2770	420	2780	423	2760
445.gobmk	128	724	1850	724	1850	726	1850	128	680	1980	681	1970	680	1970
456.hammer	128	352	3400	337	3550	336	3550	128	319	3750	319	3740	320	3740
458.sjeng	128	905	1710	904	1710	905	1710	128	868	1780	864	1790	868	1780
462.libquantum	128	119	22300	119	22400	118	22400	128	121	21900	121	21900	121	21900
464.h264ref	128	1132	2500	1130	2510	1133	2500	128	943	3000	943	3000	941	3010
471.omnetpp	128	683	1170	683	1170	684	1170	128	688	1160	688	1160	685	1170
473.astar	128	675	1330	676	1330	673	1340	128	600	1500	599	1500	601	1500
483.xalancbmk	128	375	2350	374	2360	374	2360	128	371	2380	372	2370	371	2380

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=114688 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

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"

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General Notes (Continued)

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:
openc

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

Peak Compiler Invocation

C benchmarks:
openc

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Peak Compiler Invocation (Continued)

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

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

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Peak Optimization Flags (Continued)

445.gobmk (continued):

-HP:bd=2m:heap=2m -march=bdver1 -mno-fma4

456.hmmr: -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.

Tested with SPEC CPU2006 v1.2.
Report generated on Wed Dec 27 12:06:02 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 December 2017.