



SPEC® CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint®_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046

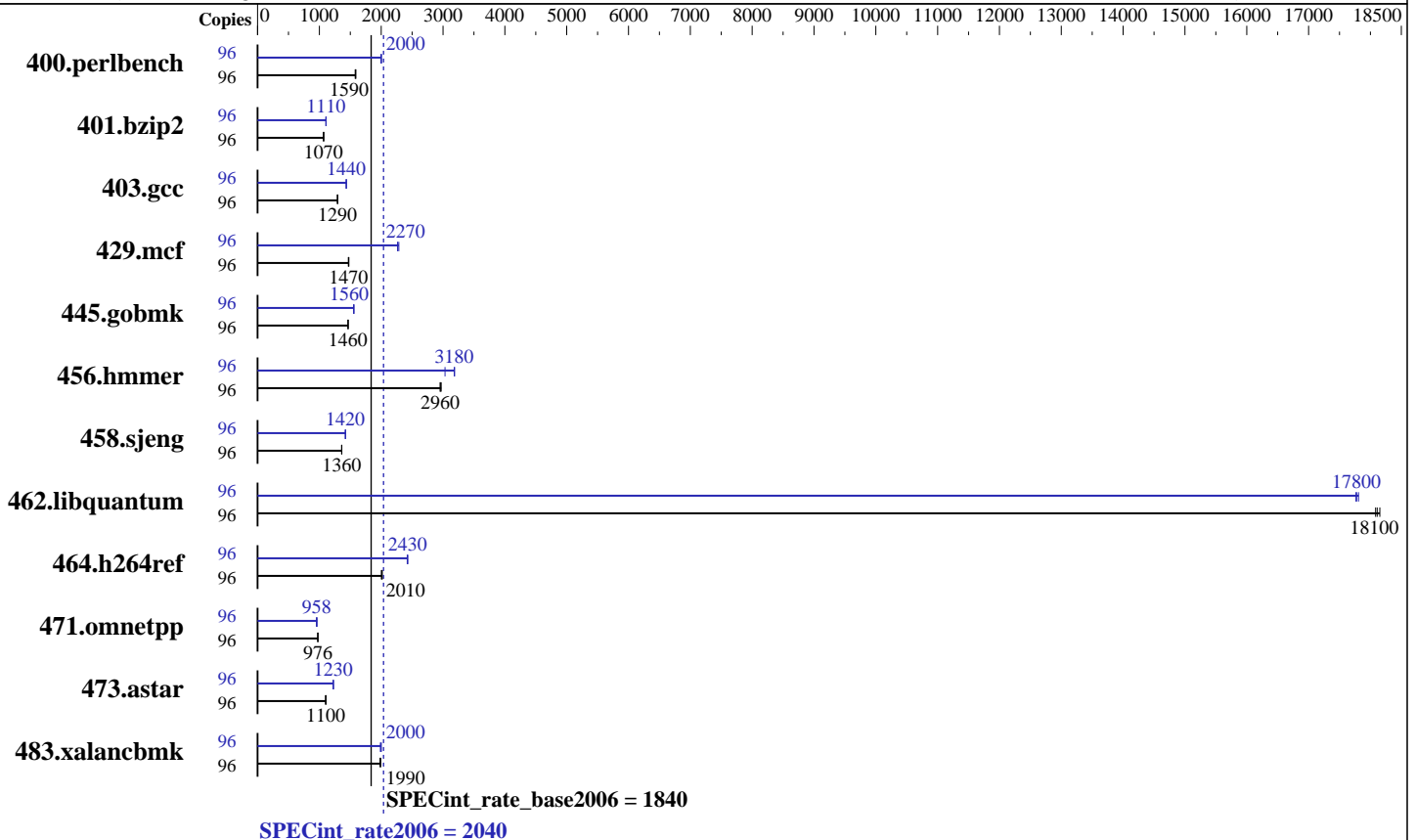
Test sponsor: Sugon

Tested by: Sugon

Test date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Oct-2017



Hardware

CPU Name: AMD EPYC 7451
 CPU Characteristics: AMD Turbo CORE technology up to 3.20 GHz
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 48 cores, 2 chips, 24 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 / 3 cores
 Other Cache: None
 Memory: 1 TB (16 x 64 GB 2S2Rx4 PC4-2667V-R, running at 2400)
 Disk Subsystem: 1 x 2000 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: 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



SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046
Test sponsor: Sugon
Tested by: Sugon

Test date: Dec-2017
Hardware Availability: Dec-2017
Software Availability: Oct-2017

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	96	591	1590	594	1580	591	1590	96	469	2000	469	2000	468	2000
401.bzip2	96	864	1070	869	1070	868	1070	96	836	1110	838	1110	836	1110
403.gcc	96	596	1300	598	1290	598	1290	96	539	1430	538	1440	538	1440
429.mcf	96	596	1470	593	1480	595	1470	96	386	2270	383	2290	386	2270
445.gobmk	96	688	1460	688	1460	687	1470	96	647	1560	647	1560	646	1560
456.hammer	96	302	2970	303	2950	303	2960	96	295	3030	282	3180	281	3190
458.sjeng	96	854	1360	853	1360	852	1360	96	818	1420	816	1420	818	1420
462.libquantum	96	110	18200	110	18100	110	18100	96	112	17800	112	17800	112	17800
464.h264ref	96	1055	2010	1054	2020	1061	2000	96	877	2420	875	2430	875	2430
471.omnetpp	96	615	976	615	976	616	974	96	630	952	626	958	624	961
473.astar	96	609	1110	611	1100	612	1100	96	551	1220	550	1230	549	1230
483.xalancbmk	96	333	1990	333	1990	334	1980	96	333	1990	331	2000	332	2000

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=86016 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"

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046
Test sponsor: Sugon
Tested by: Sugon

Test date: Dec-2017
Hardware Availability: Dec-2017
Software Availability: Oct-2017

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

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046

Test sponsor: Sugon

Tested by: Sugon

Test date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Oct-2017

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:bd=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:bd=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:bd=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

```

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046

Test sponsor: Sugon

Tested by: Sugon

Test date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Oct-2017

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:bdt=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:bdt=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:bdt=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:bdt=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



SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Sugon

SPECint_rate2006 = 2040

Sugon A620-G30 (AMD EPYC 7451)

SPECint_rate_base2006 = 1840

CPU2006 license: 9046

Test sponsor: Sugon

Tested by: Sugon

Test date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Oct-2017

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>

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 12:06:00 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 December 2017.