# SPEC® CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Sugon

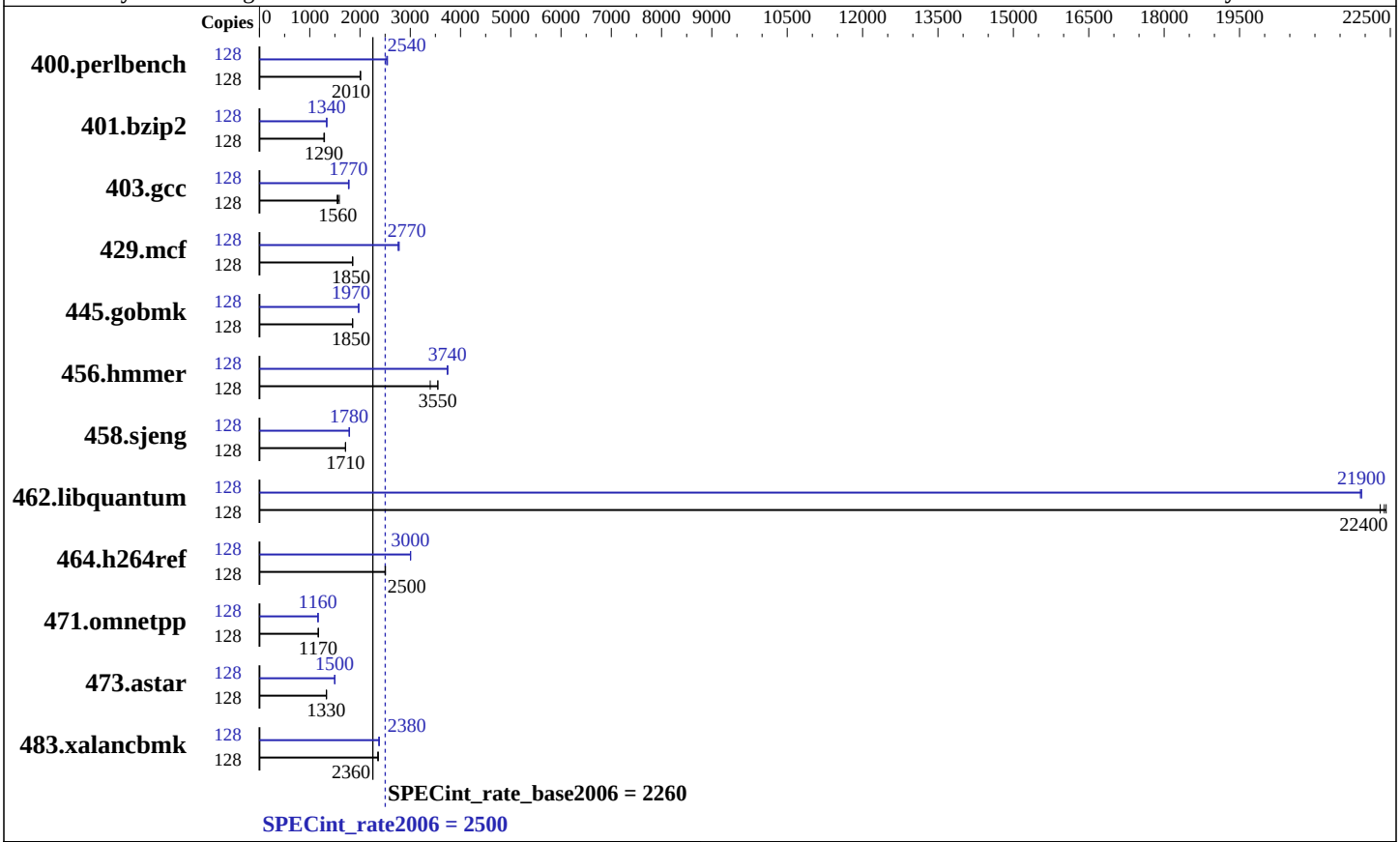
## Sugon A620-G30 (AMD EPYC 7601)

SPECint®_rate2006 = 2500

SPECint_rate_base2006 = 2260

**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 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<br>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 |

# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Sugon

## Sugon A620-G30 (AMD EPYC 7601)

SPECint_rate2006 = 2500

SPECint_rate_base2006 = 2260

**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 | 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.hmmer | 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"
```

Continued on next page

## 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:
```
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
```

## Peak Compiler Invocation

C benchmarks:
```
opencc
```

Continued on next page

## 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

Continued on next page

## Peak Optimization Flags (Continued)

445.gobmk (continued):
-HP:bd=2m:heap=2m -march=bdver1 -mno-fma4

456.hmmer: -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 -lsmartheap

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 -lsmartheap

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 12:06:03 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 December 2017.