# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

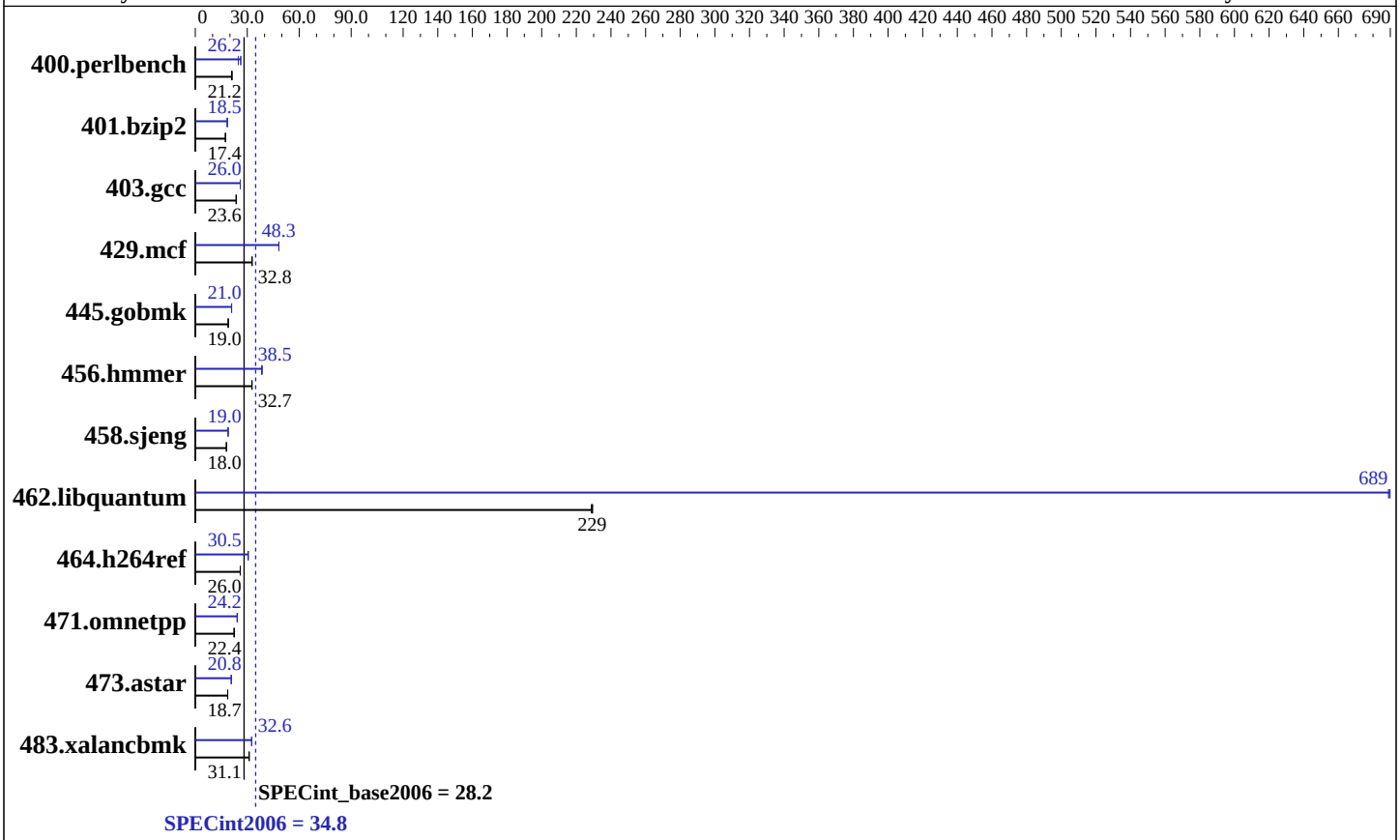
Supermicro A+ Server 2042G-6RF,
AMD Opteron 6386 SE

SPECint®2006 = 34.8

SPECint_base2006 = 28.2

**CPU2006 license:** 49
**Test sponsor:** Advanced Micro Devices
**Tested by:** Advanced Micro Devices

**Test date:** Oct-2012
**Hardware Availability:** Nov-2012
**Software Availability:** Jun-2012




## Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 6386 SE |
| CPU Characteristics: | AMD Turbo CORE technology up to 3.50 GHz |
| CPU MHz: | 2800 |
| FPU: | Integrated |
| CPU(s) enabled: | 64 cores, 4 chips, 16 cores/chip |
| CPU(s) orderable: | 2,4 chips |
| Primary Cache: | 512 KB I on chip per chip,<br>64 KB I shared / 2 cores;<br>16 KB D on chip per core |
| Secondary Cache: | 16 MB I+D on chip per chip, 2 MB shared / 2 cores |
| L3 Cache: | 16 MB I+D on chip per chip, 8 MB shared / 8 cores |
| Other Cache: | None |
| Memory: | 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC) |
| Disk Subsystem: | 1 x 256 GB SSD |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.3,<br>Kernel 2.6.32-279.el6.x86_64 |
| Compiler: | C/C++: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD) |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (Full multiuser with network) |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | SmartHeap 10.0 32-bit Library for Linux |

# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro
(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 2042G-6RF,
AMD Opteron 6386 SE

SPECint2006 = 34.8

SPECint_base2006 = 28.2

**CPU2006 license:** 49
**Test sponsor:** Advanced Micro Devices
**Tested by:** Advanced Micro Devices

**Test date:** Oct-2012
**Hardware Availability:** Nov-2012
**Software Availability:** Jun-2012

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 460 | 21.2 | **461** | **21.2** | 467 | 20.9 | 394 | 24.8 | 372 | 26.3 | **373** | **26.2** |
| 401.bzip2 | **554** | **17.4** | 554 | 17.4 | 554 | 17.4 | 522 | 18.5 | 522 | 18.5 | **522** | **18.5** |
| 403.gcc | **341** | **23.6** | 341 | 23.6 | 341 | 23.6 | 310 | 26.0 | **310** | **26.0** | 310 | 26.0 |
| 429.mcf | 278 | 32.8 | 279 | 32.7 | **278** | **32.8** | 189 | 48.2 | 189 | 48.3 | **189** | **48.3** |
| 445.gobmk | 551 | 19.0 | **552** | **19.0** | 552 | 19.0 | 501 | 21.0 | **501** | **21.0** | 500 | 21.0 |
| 456.hmmer | 285 | 32.7 | 285 | 32.7 | **285** | **32.7** | 243 | 38.4 | **242** | **38.5** | 242 | 38.5 |
| 458.sjeng | **672** | **18.0** | 673 | 18.0 | 672 | 18.0 | **638** | **19.0** | 639 | 18.9 | 638 | 19.0 |
| 462.libquantum | 90.3 | 229 | **90.4** | **229** | 90.6 | 229 | 30.0 | 690 | 30.1 | 689 | **30.1** | **689** |
| 464.h264ref | **852** | **26.0** | 852 | 26.0 | 853 | 25.9 | 725 | 30.5 | 724 | 30.5 | **725** | **30.5** |
| 471.omnetpp | 278 | 22.4 | **279** | **22.4** | 279 | 22.4 | 258 | 24.2 | **258** | **24.2** | 258 | 24.2 |
| 473.astar | **375** | **18.7** | 376 | 18.7 | 375 | 18.7 | **337** | **20.8** | 337 | 20.8 | 338 | 20.8 |
| 483.xalancbmk | **222** | **31.1** | 222 | 31.0 | 222 | 31.1 | **212** | **32.6** | 212 | 32.5 | 212 | 32.6 |

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

Set transparent_hugepage=never as a boot parameter in /boot/grub/menu.lst
cpuspeed stop was used to set the CPU frequency to its maximum.

Set vm/nr_hugepages=8000 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 = "8000"
LD_LIBRARY_PATH = "/root/work/cpu2006v1.2/amd1104-speed-libs-revA/32:/root/work/cpu2006v1.2/amd1104-speed-libs-revA/64"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63"
O64_OMP_SPIN_COUNT = "800000"
O64_OMP_SPIN_USER_LOCK = "true"

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

Continued on next page

## General Notes (Continued)

Binaries were compiled on a system with 2x AMD Opteron 6220 chips + 64GB Memory using RHEL 6.1

## 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:
-march=bdver1 -Ofast -CG:local_sched_alg=1 -CG:p2align=0
-INLINE:aggressive=on -IPA:plimit=8000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m -LNO:prefetch=2

C++ benchmarks:
-march=bdver1 -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on
-D__OPEN64_FAST_SET -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

## 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
483.xalancbmk: -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -march=bdver1 -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:load_exe=0 -CG:unroll_fb_req=on -CG:movext_icmp=off
-HP:bdt=2m:heap=2m

401.bzip2: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -LNO:prefetch=2 -LNO:pf2=0
-OPT:alias=disjoint -OPT:goto=off -CG:local_sched_alg=1
-HP:bdt=2m:heap=2m

403.gcc: -march=bdver1 -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

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

445.gobmk: -march=bdver1 -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:bdt=2m:heap=2m

456.hmmer: -march=bdver1 -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

Continued on next page

## Peak Optimization Flags (Continued)

458.sjeng: -march=bdver1 -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
-CG:p2align=1 -LNO:full_unroll=10 -IPA:pu_reorder=2
-HP:bdt=2m:heap=2m -WOPT:sib=on

462.libquantum: -march=bdver1 -Ofast -OPT:unroll_size=512
-OPT:unroll_times_max=8 -LNO:prefetch=2 -LNO:pf2=0
-CG:local_sched_alg=1 -INLINE:aggressive=on
-IPA:plimit=8000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m,limit=450 -apo

464.h264ref: -march=bdver1 -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

C++ benchmarks:

471.omnetpp: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -CG:gcm=off
-INLINE:aggressive=on -WOPT:if_conv=0 -WOPT:sib=on -m32
-HP:bdt=2m:heap=2m

473.astar: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off
-WOPT:if_conv=0 -WOPT:sib=on -CG:divrem_opt=on
-CG:p2align=0 -GRA:optimize_boundary=on -OPT:alias=disjoint
-INLINE:aggressive=on -IPA:small_pu=3000 -IPA:plimit=3000
-m32 -HP:bdt=2m:heap=2m

483.xalancbmk: -march=bdver1 -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=0 -GRA:unspill=on
-TENV:frame_pointer=off -fno-emit-exceptions
-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-open64-425-flags-speed-revA-I.html
http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-I.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA-I.xml
http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-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 Thu Jul 24 14:56:55 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 January 2013.