



SPEC® CINT2006 Result

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Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,
AMD Opteron 4228 HE

SPECint®2006 = 31.7

SPECint_base2006 = 26.8

CPU2006 license: 49

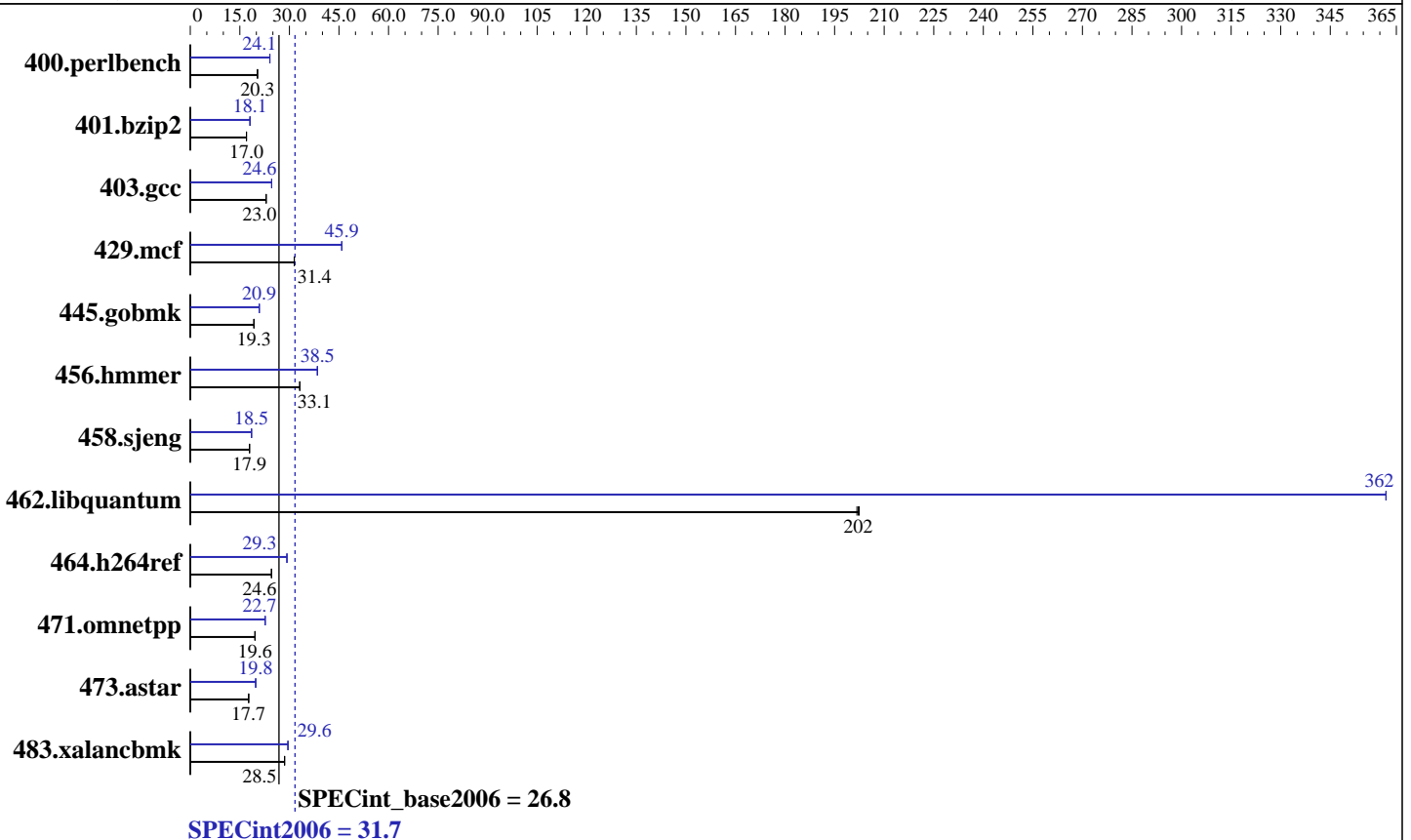
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

Software Availability: Jul-2011



Hardware

CPU Name: AMD Opteron 4228 HE
 CPU Characteristics: AMD Turbo CORE technology up to 3.60 GHz
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 192 KB I on chip per chip,
 64 KB I shared / 2 cores;
 16 KB D on chip per core
 Secondary Cache: 6 MB I+D on chip per chip, 2 MB shared / 2 cores
 L3 Cache: 8 MB I+D on chip per chip
 Other Cache: None
 Memory: 32 GB (4 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 1 x 128 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.1,
 Kernel 2.6.32-131.0.15.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



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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	480	20.3	481	20.3	480	20.3	406	24.1	405	24.1	405	24.1
401.bzip2	567	17.0	567	17.0	568	17.0	534	18.1	534	18.1	534	18.1
403.gcc	351	23.0	351	23.0	351	23.0	327	24.6	327	24.6	327	24.6
429.mcf	289	31.5	290	31.4	290	31.4	199	45.9	199	45.8	199	45.9
445.gobmk	544	19.3	545	19.3	545	19.3	502	20.9	502	20.9	502	20.9
456.hammer	281	33.2	281	33.1	282	33.1	243	38.5	243	38.5	242	38.5
458.sjeng	675	17.9	675	17.9	675	17.9	653	18.5	653	18.5	653	18.5
462.libquantum	102	202	102	202	103	202	57.3	362	57.3	362	57.3	362
464.h264ref	900	24.6	900	24.6	900	24.6	757	29.2	756	29.3	757	29.3
471.omnetpp	319	19.6	319	19.6	319	19.6	276	22.7	275	22.7	276	22.6
473.astar	397	17.7	397	17.7	397	17.7	355	19.8	354	19.8	355	19.8
483.xalancbmk	242	28.5	242	28.5	242	28.6	234	29.5	233	29.6	233	29.6

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
Set kernel/randomize_va_space=0 in /etc/sysctl.conf
cpuspeed stop was used to set the CPU frequency to its maximum.

Set vm/nr_hugepages=2000 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

General Notes

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

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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:

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.hmmmer: -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:bd=2m:heap=2m -LNO:prefetch=2

C++ benchmarks:

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

Peak Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC



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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

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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 file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA.xml>



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Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 02:02:11 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 February 2012.