SPEC® CINT2006 Result
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Tyan
(Test Sponsor: Advanced Micro Devices)

Tyan YR190B8228,
AMD Opteron 4170 HE

$SPECint^{®}2006 =$ 19.9

$SPECint\_base2006 =$ 16.4

CPU2006 license: 49		**Test date:** Nov-2010
Test sponsor: Advanced Micro Devices		**Hardware Availability:** Aug-2010
Tested by: Advanced Micro Devices		**Software Availability:** May-2010

SPECint_base2006 = 16.4

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Benchmark	base	peak
400.perlbench	12.8	17.8
401.bzip2	11.0	12.1
403.gcc	12.7	16.0
429.mcf	21.8	29.8
445.gobmk	12.6	14.8
456.hmmer	16.1	26.5
458.sjeng	12.4	13.2
462.libquantum	89.2	106
464.h264ref	19.3	20.6
471.omnetpp	13.0	13.8
473.astar	10.0	11.3
483.xalancbmk	17.5	20.8

Hardware

CPU Name:	AMD Opteron 4170 HE
CPU Characteristics:	
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	6 cores, 1 chip, 6 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	6 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (2 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 128 GB SATA SSD Crucial RealSSD C300 CTFDDAC128MAG-1G1
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-default
Compiler:	x86 Open64 4.2.3.2 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 8.1 32-bit Library for Linux

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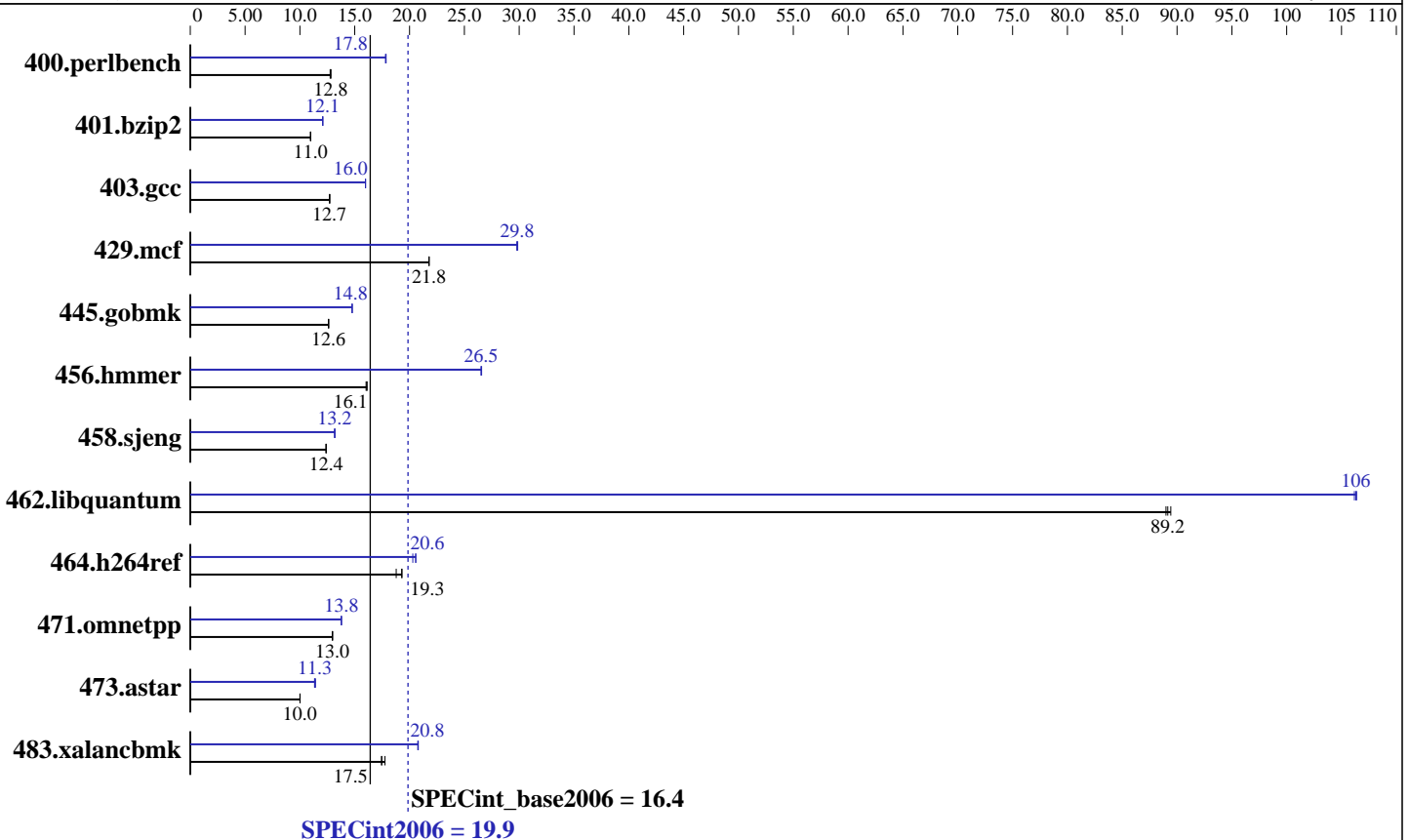
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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	766	12.8	761	12.8	**763**	**12.8**	**547**	**17.8**	547	17.9	549	17.8
401.bzip2	878	11.0	881	11.0	**878**	**11.0**	**799**	**12.1**	799	12.1	798	12.1
403.gcc	633	12.7	**633**	**12.7**	633	12.7	504	16.0	504	16.0	**504**	**16.0**
429.mcf	419	21.8	**419**	**21.8**	419	21.8	**306**	**29.8**	306	29.8	305	29.9
445.gobmk	831	12.6	832	12.6	**831**	**12.6**	**711**	**14.8**	711	14.8	710	14.8
456.hmmer	579	16.1	582	16.0	**580**	**16.1**	**352**	**26.5**	351	26.6	352	26.5
458.sjeng	977	12.4	976	12.4	**977**	**12.4**	917	13.2	919	13.2	**919**	**13.2**
462.libquantum	232	89.4	233	89.0	**232**	**89.2**	195	106	**195**	**106**	195	106
464.h264ref	1146	19.3	**1148**	**19.3**	1178	18.8	**1077**	**20.6**	1090	20.3	1076	20.6
471.omnetpp	481	13.0	**482**	**13.0**	483	12.9	453	13.8	**453**	**13.8**	454	13.8
473.astar	702	10.0	701	10.0	**701**	**10.0**	614	11.4	619	11.3	**619**	**11.3**
483.xalancbmk	**395**	**17.5**	389	17.8	396	17.4	332	20.8	**332**	**20.8**	332	20.8

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 vm/nr_hugepages=1000 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

powersave -f was used to set the CPU frequency to its maximum.

Binaries were compiled on SLES10 SP2 with binutils 2.18
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/work/cpu2006/amd1002-speed-libs-revA/64:/root/work/cpu2006/amd1002-speed-libs-revA/32"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5"
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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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=barcelona -Ofast -apo -CG:local_sched_alg=1`
     `-HP:bdt=2m:heap=2m,limit=450 -LNO:parallel_overhead=10000`

C++ benchmarks:
     `-march=barcelona -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on`
     `-L/root/work/libraries/SmartHeap-8.1/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`

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Peak Portability Flags (Continued)

```
     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=barcelona -fb_create fbdata(pass 1)
                  -fb_opt fbdata(pass 2) -Ofast -IPA:plimit=20000 -LNO:opt=0
                  -OPT:unroll_times_max=8 -OPT:unroll_size=256
                  -OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
                  -CG:local_sched_alg=1 -CG:unroll_fb_req=on
                  -HP:bdt=2m:heap=2m

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

       403.gcc: -march=barcelona -fb_create fbdata(pass 1)
                  -fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
                  -LNO:prefetch_ahead=10 -CG:cmp_peep=on -m32
                  -HP:bdt=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200

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

     445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
                  -fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict
                  -OPT:unroll_times_max=8 -OPT:unroll_size=256
                  -OPT:unroll_level=2 -OPT:keep_ext=on -ipa -IPA:plimit=750
                  -IPA:min_hotness=300 -IPA:pu_reorder=1 -LNO:prefetch=1
                  -LNO:ignore_feedback=off -CG:p2align=on
                  -CG:unroll_fb_req=on -HP:bdt=2m:heap=2m

     456.hmmer: -march=barcelona -fb_create fbdata(pass 1)
                  -fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=0
                  -OPT:alias=disjoint -OPT:unroll_times_max=8
                  -OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
                  -CG:local_sched_alg=1 -CG:cflow=0
                  -CG:push_pop_int_saved_regs=off -CG:cmp_peep=on
                  -HP:bdt=2m:heap=2m
```

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Peak Optimization Flags (Continued)

458.sjeng: `-march=barcelona -fb_create fbdata(pass 1)`
`-fb_opt fbdata(pass 2) -O3 -ipa -LNO:ignore_feedback=off`
`-LNO:full_unroll=10 -LNO:fusion=0 -LNO:fission=2`
`-IPA:pu_reorder=2 -IPA:min_hotness=32 -CG:ptr_load_use=0`
`-OPT:unroll_times_max=8 -INLINE:aggressive=on`
`-HP:bdt=2m:heap=2m`

462.libquantum: `-march=barcelona -Ofast -apo -LNO:pf2=0 -CG:gcm=off`
`-CG:use_prefetchnta=on -CG:cmp_peep=on -WOPT:aggstr=0`
`-OPT:alias=disjoint -INLINE:aggressive=on -IPA:space=1000`
`-IPA:plimit=20000 -mso`

464.h264ref: `-march=barcelona -fb_create fbdata(pass 1)`
`-fb_opt fbdata(pass 2) -O3 -IPA:plimit=20000`
`-OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0`
`-CG:push_pop_int_saved_regs=off -HP:bdt=2m:heap=2m`

C++ benchmarks:

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

473.astar: `-march=barcelona -fb_create fbdata(pass 1)`
`-fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off`
`-WOPT:if_conv=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=barcelona -Ofast -INLINE:aggressive=on -m32`
`-CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off`
`-fno-emit-exceptions`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.html
http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.xml
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