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

Tyan YR190B8228, AMD Opteron 4184

$SPECint®\_rate2006 =$ 235

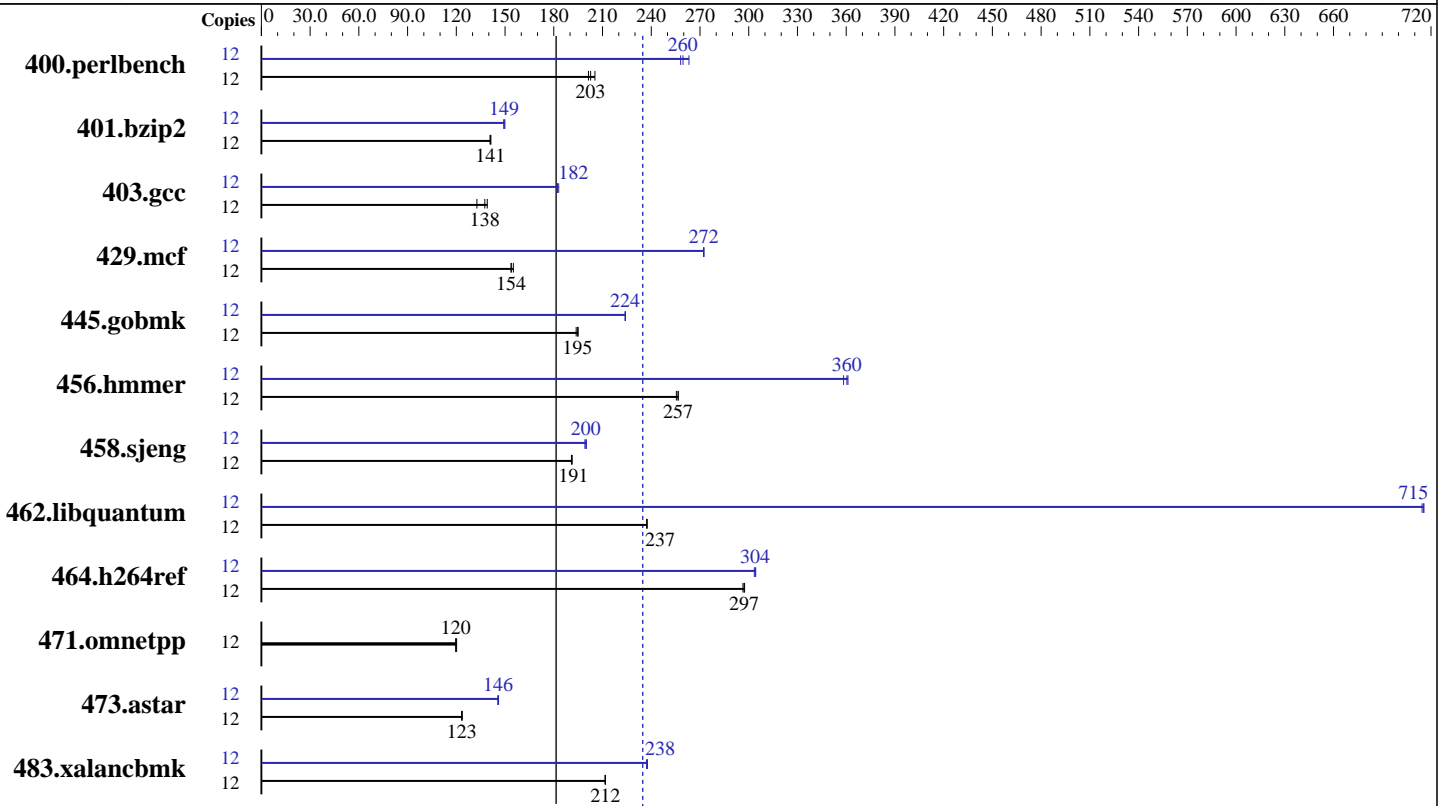$SPECint\_rate\_base2006 =$ 181

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jun-2010

Hardware Availability: Aug-2010

Software Availability: Feb-2010

	Copies	
400.perlbench	12	260
	12	203
401.bzip2	12	149
	12	141
403.gcc	12	182
	12	138
429.mcf	12	272
	12	154
445.gobmk	12	224
	12	195
456.hmmer	12	360
	12	257
458.sjeng	12	200
	12	191
462.libquantum	12	715
	12	237
464.h264ref	12	304
	12	297
471.omnetpp	12	120
473.astar	12	146
	12	123
483.xalancbmk	12	238
	12	212

SPECint_rate_base2006 = 181

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Hardware

CPU Name: AMD Opteron 4184

CPU Characteristics:

CPU MHz: 2800

FPU: Integrated

CPU(s) enabled: 12 cores, 2 chips, 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: 32 GB (4 x 8 GB, DDR3-1333, CL9, Reg, Dual Rank)

Disk Subsystem: 1 x 128 GB SATA SSD,
Western Digital SiliconEdge Blue SSC-D0128SC-2100

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 Compiler Suite (from AMD)

Auto Parallel: No

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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Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	12	571	205	582	201	**578**	**203**	12	454	258	445	263	**452**	**260**
401.bzip2	12	822	141	820	141	**822**	**141**	12	776	149	772	150	**775**	**149**
403.gcc	12	695	139	**702**	**138**	728	133	12	528	183	**530**	**182**	530	182
429.mcf	12	706	155	712	154	**712**	**154**	12	402	272	**402**	**272**	402	272
445.gobmk	12	646	195	**647**	**195**	650	194	12	**562**	**224**	562	224	562	224
456.hmmer	12	**436**	**257**	436	257	438	255	12	**311**	**360**	310	361	312	358
458.sjeng	12	759	191	**760**	**191**	761	191	12	**727**	**200**	726	200	729	199
462.libquantum	12	**1048**	**237**	1047	237	1048	237	12	**348**	**715**	348	714	347	716
464.h264ref	12	893	297	**894**	**297**	896	296	12	875	303	873	304	**873**	**304**
471.omnetpp	12	**627**	**120**	624	120	627	120	12	**627**	**120**	624	120	627	120
473.astar	12	682	124	**682**	**123**	683	123	12	**578**	**146**	579	146	577	146
483.xalancbmk	12	391	212	391	212	**391**	**212**	12	348	238	349	237	**349**	**238**

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=5400 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 = "450"
LD_LIBRARY_PATH = "/root/work/cpu2006-power/amd1002li-rate-libs-revA/64:/root/work/cpu2006-power/amd1002li-rate-libs-revA/32"


The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
http://developer.amd.com/cpu/open64
Binaries were compiled on SLES10 SP2 with binutils 2.18
```

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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 -mso -Ofast -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m
```

C++ benchmarks:
```
    -march=barcelona -mso -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
       445.gobmk: -DSPEC_CPU_LP64
```

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Peak Portability Flags (Continued)

```
        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 -mso -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 -mso -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 -mso -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 -mso -O3 -ipa -INLINE:aggressive=on
                  -CG:gcm=off -GRA:prioritize_by_density=on -m32
                  -HP:bdt=2m:heap=2m

       445.gobmk: -march=barcelona -mso -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 -mso -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

       458.sjeng: -march=barcelona -mso -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
```

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Peak Optimization Flags (Continued)

458.sjeng (continued):
```
-IPA:pu_reorder=2 -CG:ptr_load_use=0
-OPT:unroll_times_max=8 -INLINE:aggressive=on
```

462.libquantum: `-march=barcelona -mso -Ofast -LNO:pf2=0 -CG:gcm=off`
```
-CG:use_prefetchnta=on -CG:cmp_peep=on -WOPT:aggstr=0
-HP:bdt=2m:heap=2m -OPT:alias=disjoint
-INLINE:aggressive=on -IPA:space=1000 -IPA:plimit=20000
```

464.h264ref: `-march=barcelona -mso -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
```

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: `-march=barcelona -mso -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 -mso -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-open64-4.2.3-flags-revA.html
http://www.spec.org/cpu2006/flags/amd-platform-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/x86-open64-4.2.3-flags-revA.xml
http://www.spec.org/cpu2006/flags/amd-platform-revA.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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