SPEC® CINT2006 Result

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Tyan
(Test Sponsor: Advanced Micro Devices)

Tyan YR190B8228, AMD Opteron 4130

$SPECint^®\_rate2006 =$ 158

$SPECint\_rate\_base2006 =$ 136

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Aug-2010

Hardware Availability: Aug-2010

Software Availability: Jul-2010

Copies scale: 0 20.0 40.0 60.0 80.0 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 490

Benchmark	Copies	Peak	Base
400.perlbench	8	164	132
401.bzip2	8	101	94.9
403.gcc	8	120	106
429.mcf	8	197	102
445.gobmk	8	143	127
456.hmmer	8	242	195
458.sjeng	8	124	122
462.libquantum	8	476	481
464.h264ref	8	195	175
471.omnetpp	8		88.4
473.astar	8	106	84.9
483.xalancbmk	8	160	152

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Hardware

CPU Name: AMD Opteron 4130

CPU Characteristics:

CPU MHz: 2600

FPU: Integrated

CPU(s) enabled: 8 cores, 2 chips, 4 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 4.2.4 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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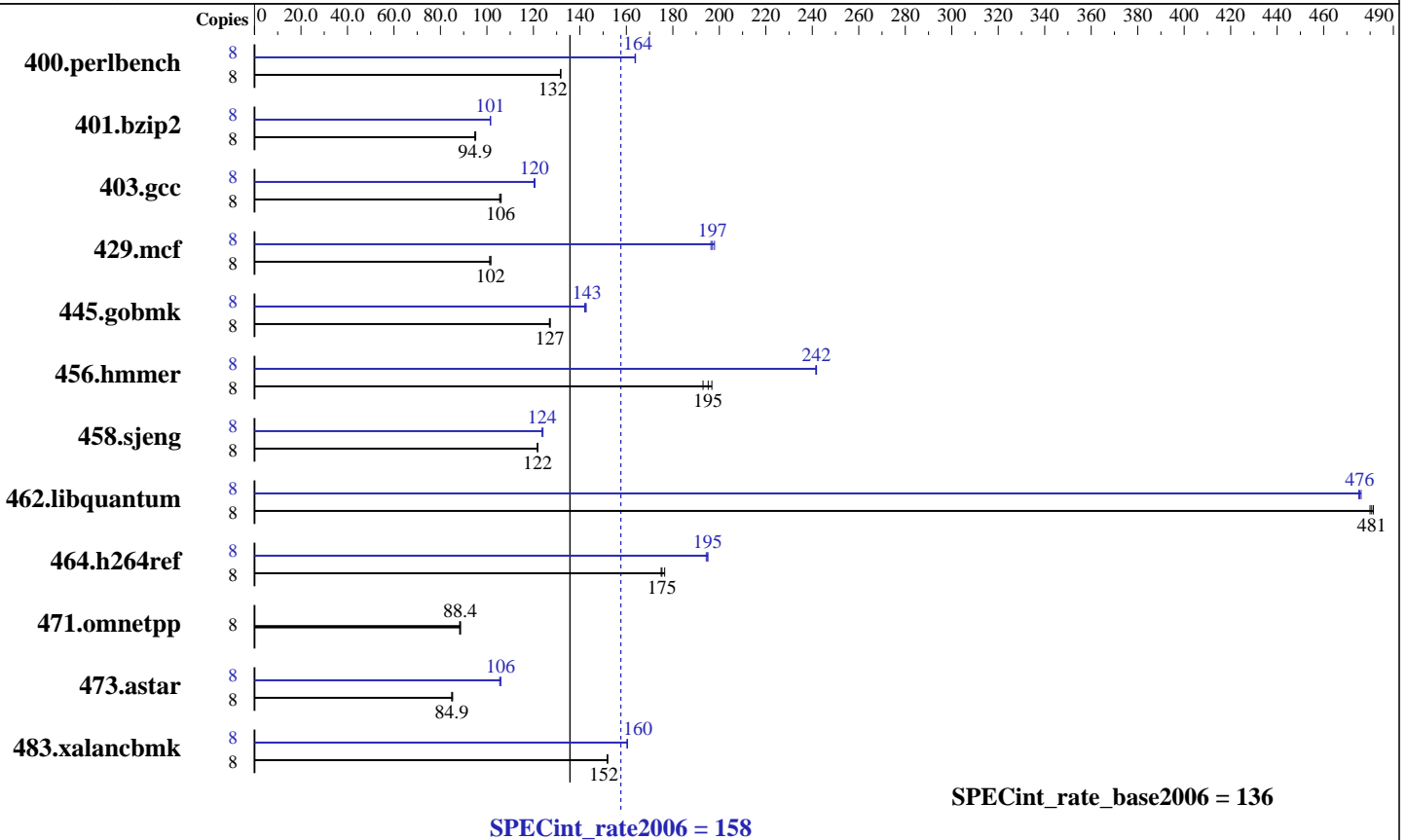**CPU2006 license:** 49
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Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	**593**	**132**	594	132	593	132	8	477	164	**477**	**164**	477	164
401.bzip2	8	811	95.2	814	94.8	**813**	**94.9**	8	**761**	**101**	761	101	760	102
403.gcc	8	611	105	607	106	**608**	**106**	8	535	120	534	121	**535**	**120**
429.mcf	8	718	102	**718**	**102**	721	101	8	371	196	**370**	**197**	369	198
445.gobmk	8	661	127	**660**	**127**	660	127	8	591	142	588	143	**588**	**143**
456.hmmer	8	379	197	387	193	**382**	**195**	8	309	242	309	242	**309**	**242**
458.sjeng	8	794	122	795	122	**795**	**122**	8	**782**	**124**	782	124	780	124
462.libquantum	8	345	480	344	481	**345**	**481**	8	349	475	348	476	**349**	**476**
464.h264ref	8	1003	176	1012	175	**1010**	**175**	8	908	195	**908**	**195**	911	194
471.omnetpp	8	566	88.3	564	88.7	**565**	**88.4**	8	566	88.3	564	88.7	**565**	**88.4**
473.astar	8	**661**	**84.9**	659	85.3	662	84.9	8	532	105	**530**	**106**	530	106
483.xalancbmk	8	**363**	**152**	364	152	363	152	8	344	160	344	160	**344**	**160**

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=7168 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 = "/root/work/cpu2006/amd1002li-rate-libs-revC/64:/root/work/cpu2006/amd1002li-rate-libs-revC/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
    -INLINE:aggressive=ON -IPA:plimit=8000 -IPA:small_pu=100
    -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
```

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Peak Portability Flags (Continued)

```
   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=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
```

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Peak Optimization Flags (Continued)

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`
`-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-open64-424-flags-rate-revC.html
http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.xml
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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