



SPEC® CINT2006 Result

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Supermicro

(Test Sponsor: Advanced Micro Devices)

SPECint®_rate2006 = 158

A+ Server 1021M-UR+B, AMD Opteron 2419 EE

SPECint_rate_base2006 = 125

CPU2006 license: 49

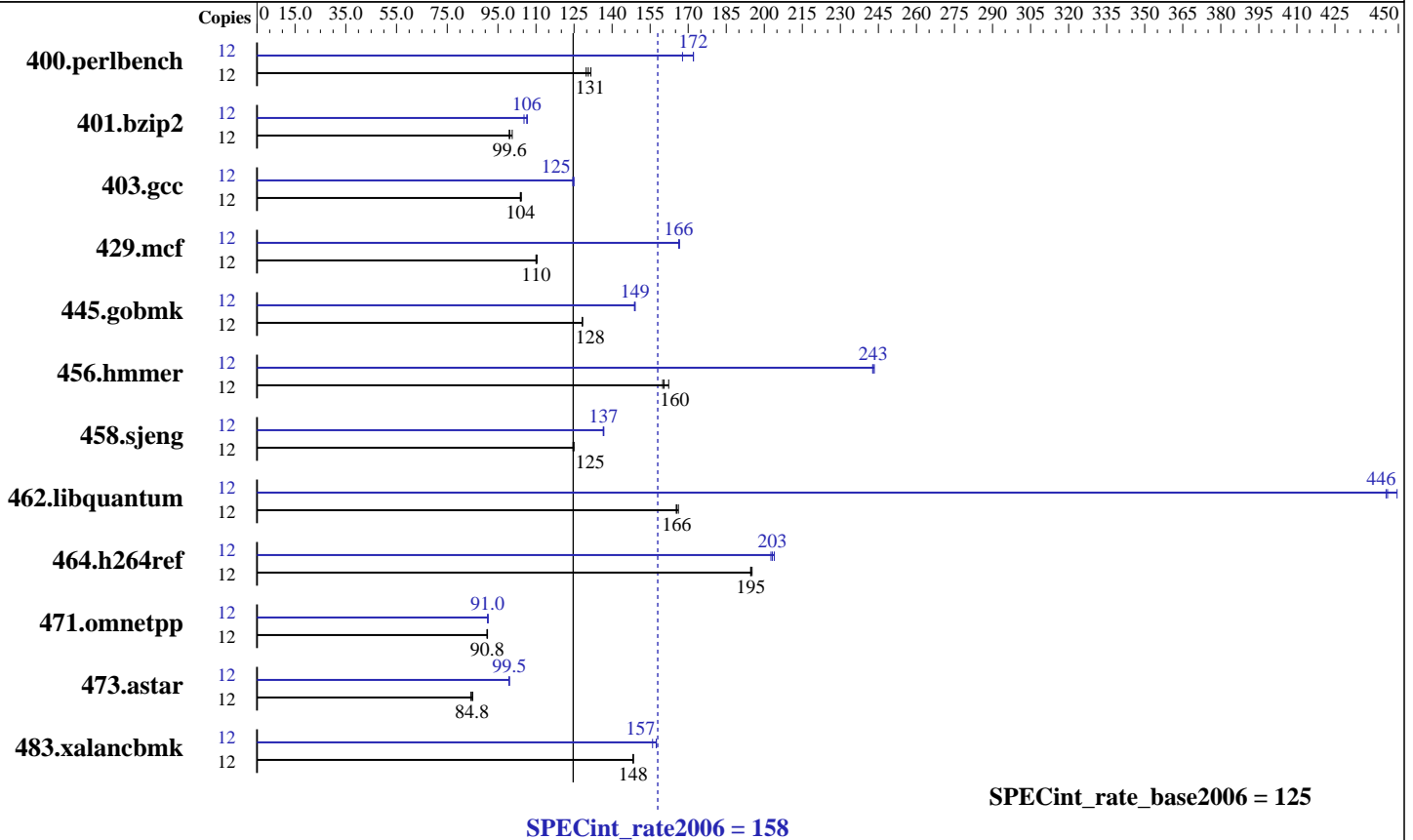
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jul-2009

Hardware Availability: Aug-2009

Software Availability: Apr-2009



Hardware

CPU Name: AMD Opteron 2419 EE
 CPU Characteristics:
 CPU MHz: 1800
 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 (8x4 GB, DDR2-800, CL5, Reg, Dual Rank)
 Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 5.3, Advanced Platform, Kernel 2.6.18-128.el5
 Compiler: PGI Server Complete Version 8.0 x86 Open64 4.2.2 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: binutils 2.18 SmartHeap 8.1 32-bit Library for Linux



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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	12	891	132	903	130	898	131	12	699	168	682	172	681	172
401.bzip2	12	1151	101	1165	99.4	1162	99.6	12	1100	105	1086	107	1089	106
403.gcc	12	927	104	930	104	929	104	12	776	125	773	125	775	125
429.mcf	12	991	110	995	110	994	110	12	658	166	657	167	658	166
445.gobmk	12	981	128	981	128	981	128	12	846	149	844	149	845	149
456.hammer	12	700	160	690	162	698	160	12	461	243	461	243	460	243
458.sjeng	12	1163	125	1162	125	1165	125	12	1063	137	1064	136	1062	137
462.libquantum	12	1497	166	1502	166	1504	165	12	559	445	558	446	553	449
464.h264ref	12	1364	195	1361	195	1365	195	12	1311	203	1307	203	1302	204
471.omnetpp	12	827	90.7	825	90.9	826	90.8	12	823	91.1	824	91.0	825	91.0
473.astar	12	1000	84.3	991	85.0	993	84.8	12	848	99.3	847	99.5	847	99.5
483.xalancbmk	12	558	148	558	148	559	148	12	531	156	526	157	526	157

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/cpu2006v1.1/amd0905is-libs/64:/root/work/cpu2006v1.1/amd0905is-libs/32"

PGI_HUGE_PAGES = "450"

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 -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

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

Peak Compiler Invocation

C benchmarks (except as noted below):
opencc

456.hmmer: pgcc

C++ benchmarks (except as noted below):
openCC

473.astar: pgcpp



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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=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:bd=2m:heap=2m

401.bzip2: -march=barcelona -fb_create fbdata(pass 1)
           -fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
           -OPT:unroll_size=0 -OPT:Ofast -OPT:goto=off
           -INLINE:aggressive=on -CG:local_sched_alg=1 -m3dnw
           -HP:bd=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:bd=2m:heap=2m -GRA:unspill=on

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

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge
           -Msafeptr -Mprefetch=t0 -Mfprelaxed -Mipa=const -Mipa=ptr
           -Mipa=arg -Mipa=inline -tp shanghai-64 -Bstatic_pgi

```

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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 -CG:ptr_load_use=0
          -OPT:unroll_times_max=8 -INLINE:aggressive=on
          -HP:bdt=2m:heap=2m
```

```
462.libquantum: -march=barcelona -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 -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
            -OPT:alias=disjoint -WOPT:if_conv=0 -m32
            -L/root/work/libraries/SmartHeap-8.1/lib -lsmarheap
```

```
473.astar: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
           -Mipa=inline:6(pass 2) -fastsse -O4 -Msmartalloc=huge
           -Msafeptr=global -Mfprelaxed --zc_eh -tp shanghai-32
           -Bstatic_pgi
```

```
483.xalancbmk: -march=barcelona -Ofast -INLINE:aggressive=on -m32
              -CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off
              -L/root/work/libraries/SmartHeap-8.1/lib -lsmarheap
```

Peak Other Flags

C benchmarks:

```
456.hmmmer: -Mipa=jobs:4
```

C++ benchmarks:

```
473.astar: -Mipa=jobs:4(pass 2)
```

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.html
<http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revC.html>
<http://www.spec.org/cpu2006/flags/amd-platform.20090710.html>



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You can also download the XML flags sources by saving the following links:

- http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.xml
- <http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revC.xml>
- <http://www.spec.org/cpu2006/flags/amd-platform.20090710.xml>

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For other inquiries, please contact webmaster@spec.org.

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