SPEC® CINT2006 Result

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Supermicro

(Test Sponsor: Advanced Micro Devices)

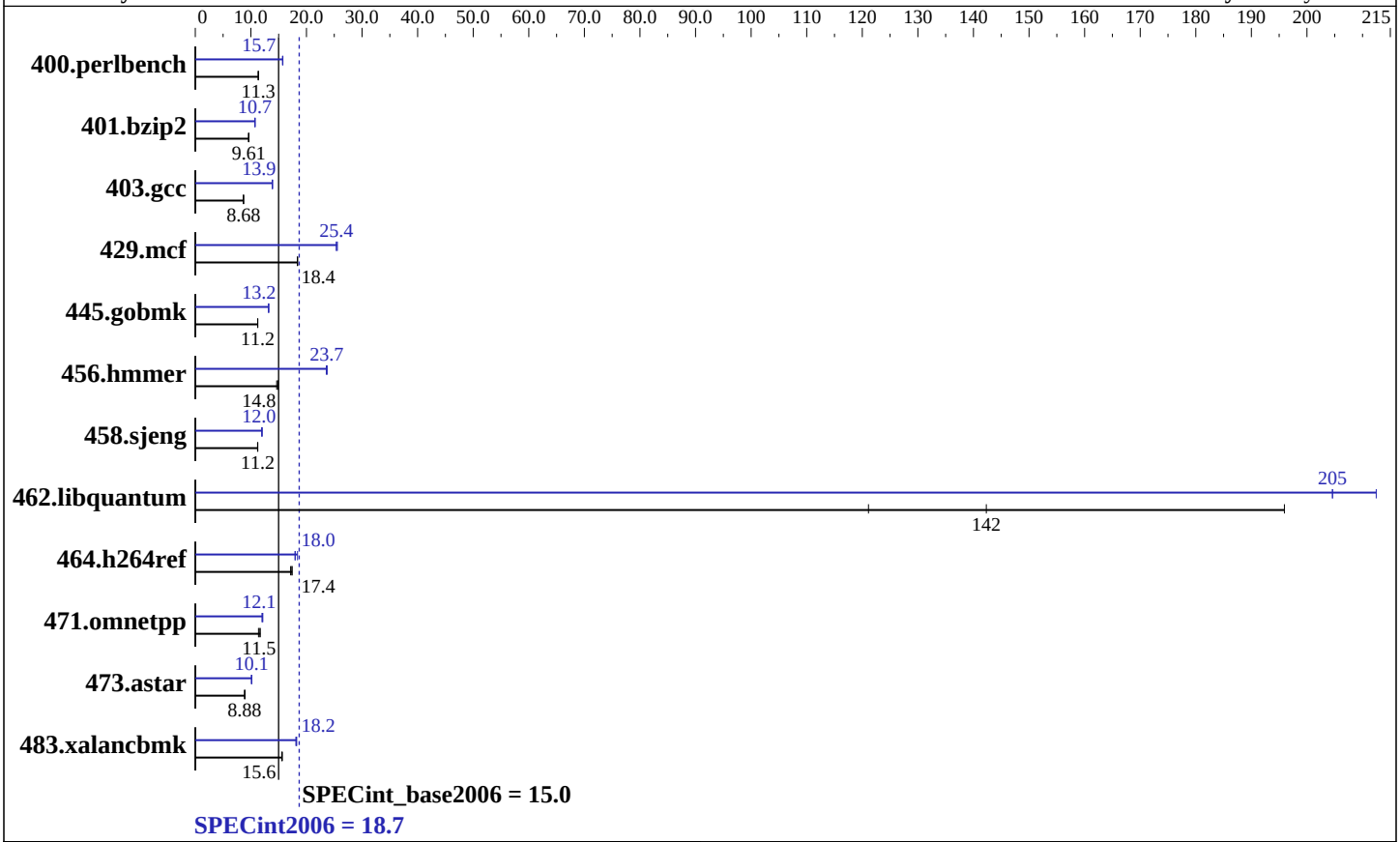
Supermicro A+ Server 2042G-6RF,
AMD Opteron 6168

SPECint®2006 = 18.7

SPECint_base2006 = 15.0

CPU2006 license: 49
Test sponsor: Advanced Micro Devices
Tested by: Advanced Micro Devices

Test date: Oct-2010
Hardware Availability: Mar-2010
Software Availability: May-2010



Hardware

CPU Name:	AMD Opteron 6168
CPU Characteristics:	
CPU MHz:	1900
FPU:	Integrated
CPU(s) enabled:	48 cores, 4 chips, 12 cores/chip
CPU(s) orderable:	2,4 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:	12 MB I+D on chip per chip, 6 MB shared / 6 cores
Other Cache:	None
Memory:	128 GB (32 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 5.5, Advanced Platform, Kernel 2.6.18-194.el5
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:	binutils 2.18 SmartHeap 8.1 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	863	11.3	**861**	**11.3**	861	11.4	623	15.7	**621**	**15.7**	620	15.8
401.bzip2	1000	9.65	**1004**	**9.61**	1009	9.57	**899**	**10.7**	900	10.7	897	10.8
403.gcc	929	8.67	928	8.68	**928**	**8.68**	579	13.9	**580**	**13.9**	581	13.9
429.mcf	496	18.4	**496**	**18.4**	496	18.4	**359**	**25.4**	357	25.6	359	25.4
445.gobmk	935	11.2	**934**	**11.2**	934	11.2	796	13.2	**795**	**13.2**	794	13.2
456.hmmer	**629**	**14.8**	637	14.6	628	14.9	**394**	**23.7**	396	23.6	394	23.7
458.sjeng	1080	11.2	**1078**	**11.2**	1076	11.2	1006	12.0	**1010**	**12.0**	1012	12.0
462.libquantum	106	196	171	121	**146**	**142**	101	205	**101**	**205**	97.5	212
464.h264ref	**1274**	**17.4**	1291	17.1	1270	17.4	1233	17.9	**1231**	**18.0**	1203	18.4
471.omnetpp	550	11.4	534	11.7	**543**	**11.5**	520	12.0	**519**	**12.1**	514	12.1
473.astar	791	8.88	787	8.91	**790**	**8.88**	**693**	**10.1**	692	10.1	694	10.1
483.xalancbmk	**442**	**15.6**	441	15.6	443	15.6	381	18.1	379	18.2	**379**	**18.2**

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=8000 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

cpuspeed stop was used to set the CPU frequency to its maximum.
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/work/cpu2006/amd1002mc-speed-libs-revA/64:/root/work/cpu2006/amd1002mc-speed-libs-revA/32"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,
24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47"
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
```

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.20101207.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
http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.20101207.xml

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 14:10:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 December 2010.