SPEC® CINT2006 Result

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Supermicro

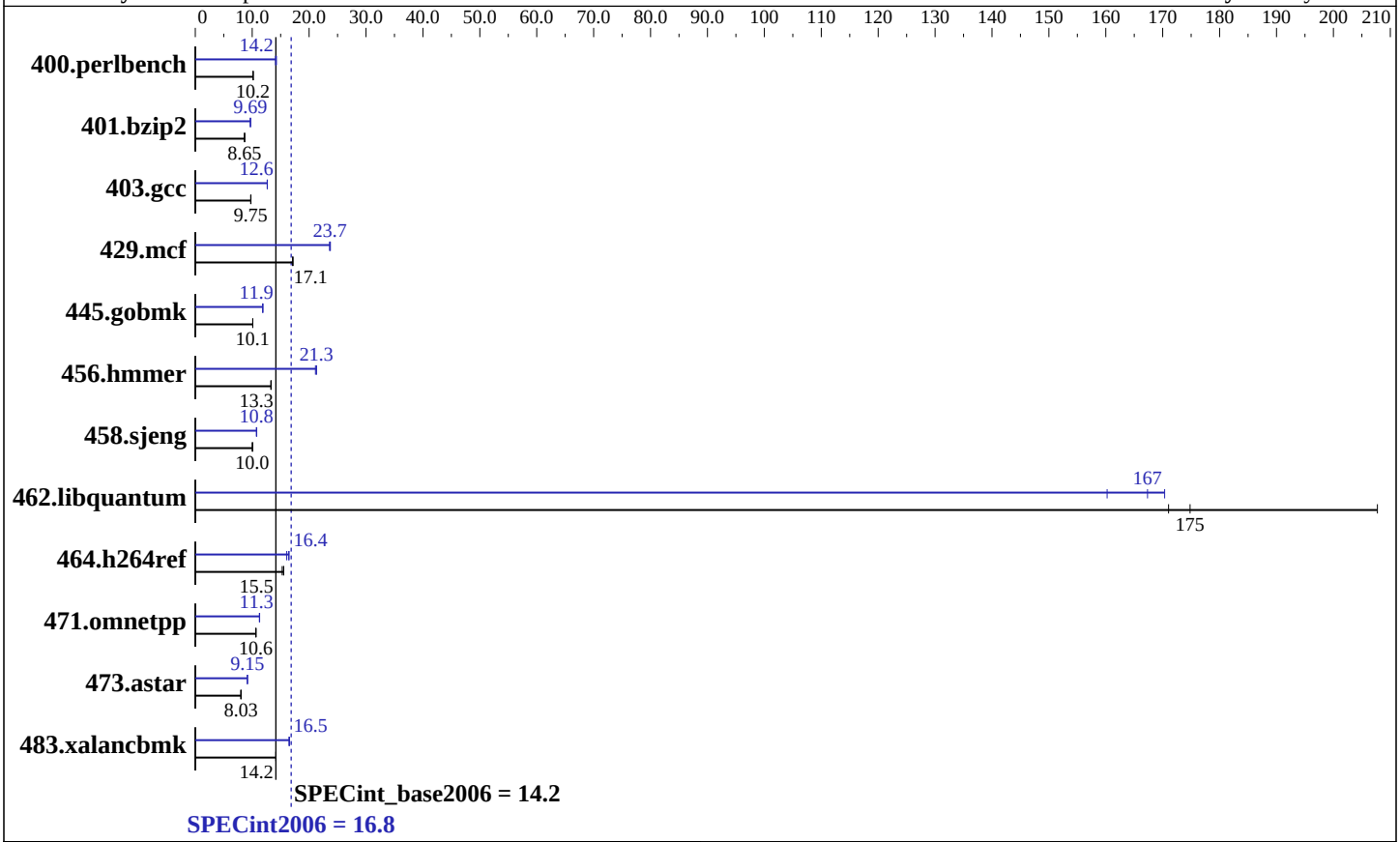
Supermicro A+ Server AS-1012G-MTF,
AMD Opteron 6164 HE

SPECint®2006 = 16.8

SPECint_base2006 = 14.2

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

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



Hardware

CPU Name:	AMD Opteron 6164 HE
CPU Characteristics:	
CPU MHz:	1700
FPU:	Integrated
CPU(s) enabled:	12 cores, 1 chip, 12 cores/chip
CPU(s) orderable:	1 chip
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:	32 GB (8 x 4 GB 2Rx8 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 5.5, 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	962	10.2	961	10.2	**961**	**10.2**	686	14.2	**687**	**14.2**	693	14.1
401.bzip2	1117	8.64	**1116**	**8.65**	1111	8.69	**996**	**9.69**	994	9.71	999	9.66
403.gcc	826	9.75	**826**	**9.75**	823	9.78	637	12.6	636	12.7	**637**	**12.6**
429.mcf	**532**	**17.1**	533	17.1	532	17.2	387	23.6	384	23.7	**385**	**23.7**
445.gobmk	1039	10.1	**1039**	**10.1**	1038	10.1	884	11.9	885	11.9	**885**	**11.9**
456.hmmer	**701**	**13.3**	700	13.3	702	13.3	**439**	**21.3**	442	21.1	438	21.3
458.sjeng	**1205**	**10.0**	1206	10.0	1202	10.1	1121	10.8	1128	10.7	**1122**	**10.8**
462.libquantum	99.7	208	**119**	**175**	121	171	**124**	**167**	129	160	122	170
464.h264ref	1424	15.5	**1427**	**15.5**	1450	15.3	1379	16.0	1342	16.5	**1351**	**16.4**
471.omnetpp	585	10.7	**588**	**10.6**	588	10.6	555	11.3	**554**	**11.3**	553	11.3
473.astar	**875**	**8.03**	875	8.02	874	8.03	765	9.17	768	9.14	**767**	**9.15**
483.xalancbmk	**487**	**14.2**	486	14.2	487	14.2	**418**	**16.5**	419	16.5	417	16.6

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=2000 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

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

Platform Notes

```
 Fan speed set to Full Speed in BIOS Setup.
 The system uses a Supermicro H8SGL-F motherboard.
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/usr/cpu2006/amd1002-speed-libs-revA/64:/usr/cpu2006/amd1002-speed-libs-revA/32"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11"
O64_OMP_SPIN_USER_LOCK = "true"
```

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General Notes (Continued)

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
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.

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