SPEC® CINT2006 Result

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Supermicro

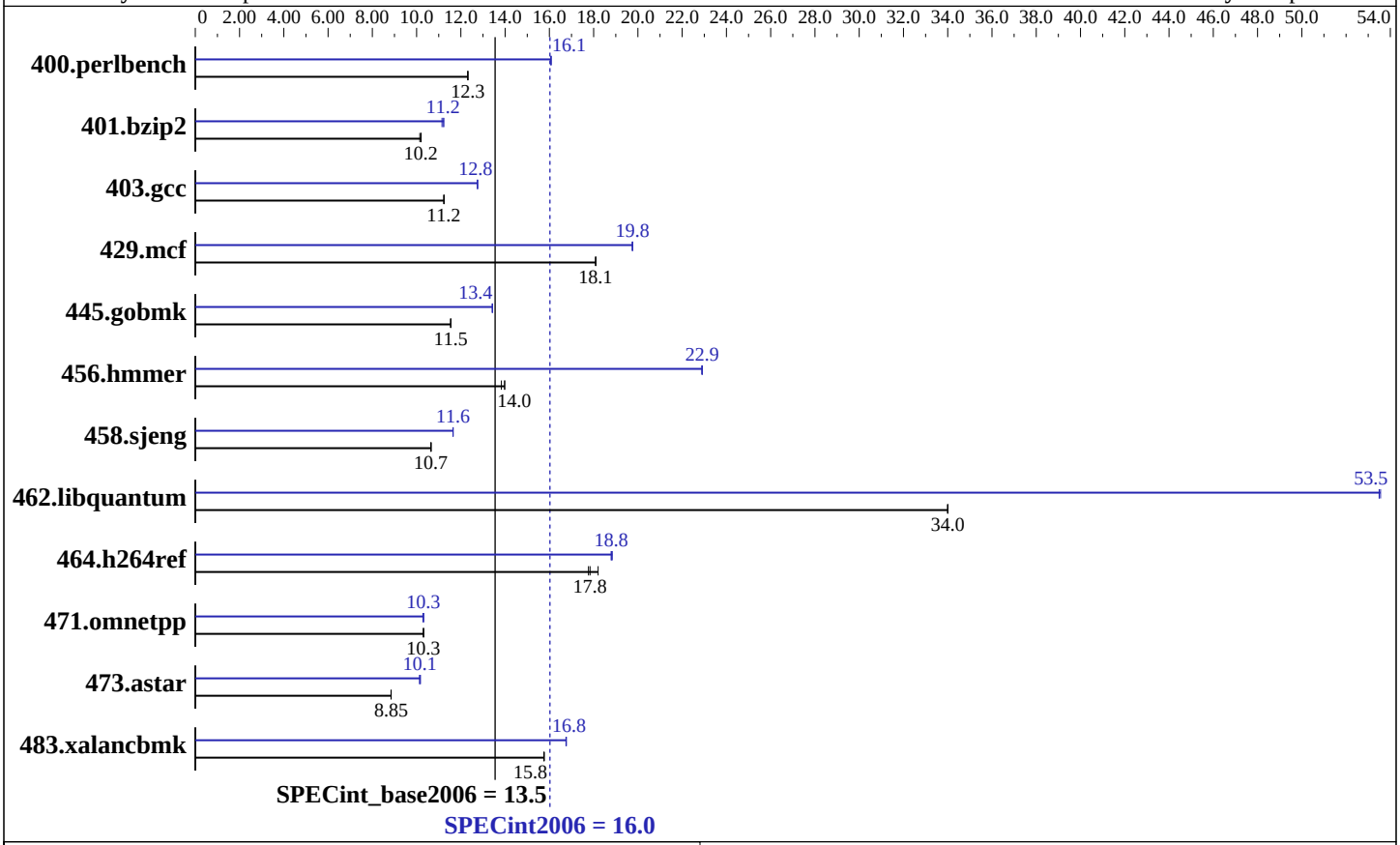
Motherboard H8DA3-2, AMD Opteron 2423 HE

SPECint®2006 = 16.0

SPECint_base2006 = 13.5

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

Test date: Jul-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009



Hardware

CPU Name:	AMD Opteron 2423 HE
CPU Characteristics:	
CPU MHz:	2000
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 500 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 2 (Local multiuser without remote 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	794	12.3	793	12.3	**793**	**12.3**	608	16.1	**608**	**16.1**	608	16.1
401.bzip2	946	10.2	951	10.1	**946**	**10.2**	**862**	**11.2**	859	11.2	866	11.1
403.gcc	**717**	**11.2**	717	11.2	716	11.2	**631**	**12.8**	631	12.8	631	12.8
429.mcf	504	18.1	**504**	**18.1**	504	18.1	461	19.8	**462**	**19.8**	462	19.7
445.gobmk	909	11.5	909	11.5	**909**	**11.5**	781	13.4	**781**	**13.4**	782	13.4
456.hmmer	667	14.0	**667**	**14.0**	675	13.8	**407**	**22.9**	407	22.9	408	22.9
458.sjeng	1137	10.6	**1136**	**10.7**	1135	10.7	**1039**	**11.6**	1039	11.6	1039	11.6
462.libquantum	609	34.0	**609**	**34.0**	609	34.0	387	53.5	387	53.6	**387**	**53.5**
464.h264ref	1246	17.8	**1241**	**17.8**	1216	18.2	1174	18.8	**1177**	**18.8**	1177	18.8
471.omnetpp	**606**	**10.3**	606	10.3	606	10.3	**606**	**10.3**	606	10.3	608	10.3
473.astar	**793**	**8.85**	793	8.85	794	8.84	690	10.2	693	10.1	**692**	**10.1**
483.xalancbmk	437	15.8	**438**	**15.8**	438	15.7	412	16.8	**412**	**16.8**	412	16.7

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 = "/spec/amd0905is-libs/64:/spec/amd0905is-libs/32"
PGI_HUGE_PAGES = "450"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
<a href="http://developer.amd.com/cpu/open64">http://developer.amd.com/cpu/open64</a>.

 System was tested in an open environment.
 To ensure system stability, a 550W (minimum) ATX power
 [ 4-pin (+12V), 8-pin (+12V) and 24-pin are required ]

 Product description can be obtained at:
```

Continued on next page

General Notes (Continued)

http://www.supermicro.com/Aplus/motherboard/Opteron2000/MCP55/H8DA3-2.cfm

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

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:unroll_size=0 -OPT:Ofast -OPT:goto=off
-INLINE:aggressive=on -CG:local_sched_alg=1 -m3dnow
-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

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: -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

Continued on next page

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 -lsmartheap`

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 -lsmartheap`

Peak Other Flags

C benchmarks:

456.hmmer: `-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/amd-platform.20090728.html
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.html
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revB.html

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

```
http://www.spec.org/cpu2006/flags/amd-platform.20090728.xml
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revB.xml
```


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