



SPEC® CINT2006 Result

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Supermicro

SPECint®2006 = 21.3

Motherboard H8QI6-F, AMD Opteron 8435

SPECint_base2006 = 17.9

CPU2006 license: 001176

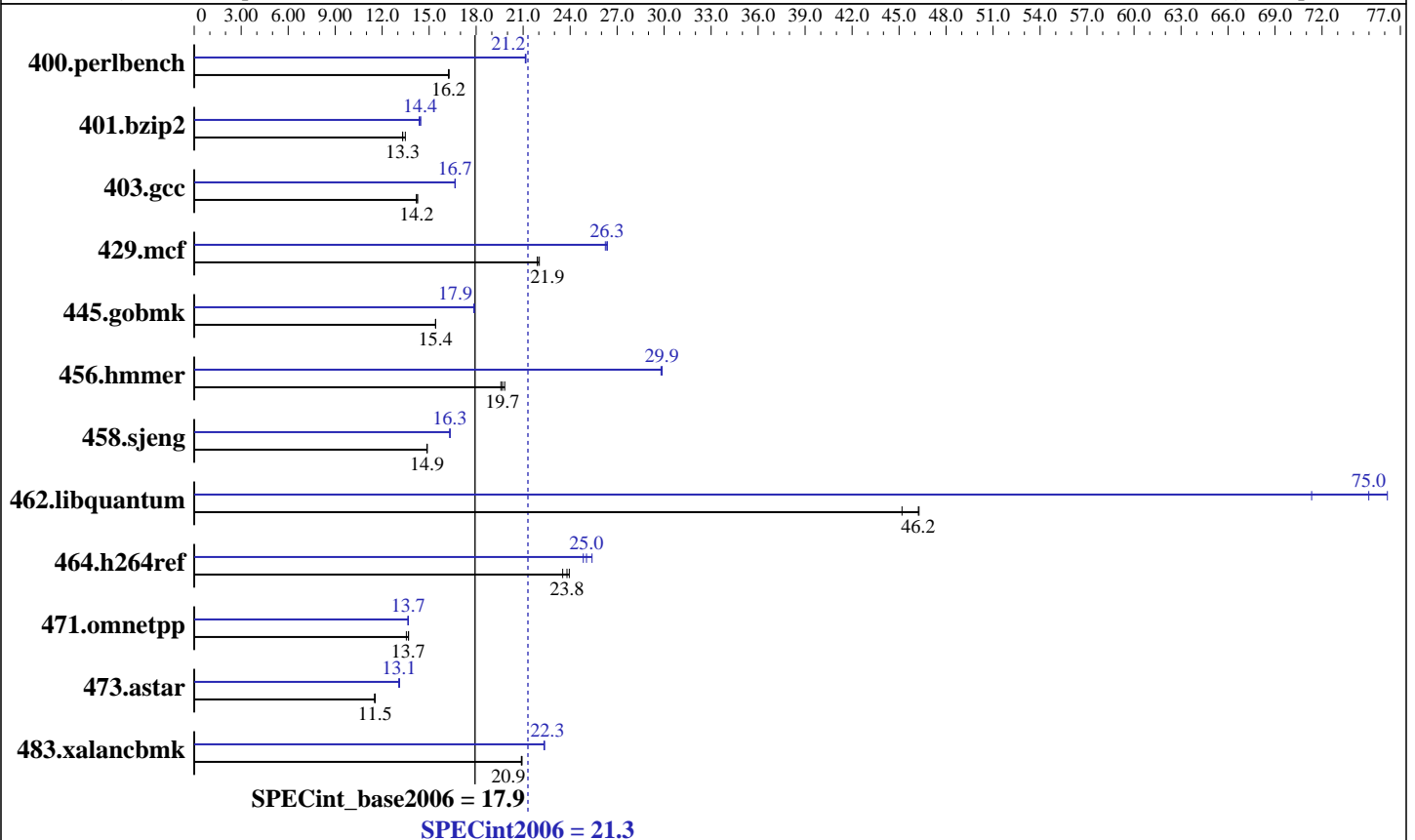
Test date: Nov-2009

Test sponsor: Supermicro

Hardware Availability: Jun-2009

Tested by: Supermicro

Software Availability: Apr-2009



Hardware

CPU Name: AMD Opteron 8435
 CPU Characteristics:
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 24 cores, 4 chips, 6 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: 6 MB I+D on chip per chip
 Other Cache: None
 Memory: 64 GB (16x4 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 5.4, Advanced Platform, Kernel 2.6.18-164.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	<u>601</u>	<u>16.2</u>	602	16.2	600	16.3	<u>462</u>	<u>21.2</u>	461	21.2	462	21.1
401.bzip2	725	13.3	<u>725</u>	<u>13.3</u>	716	13.5	667	14.5	<u>668</u>	<u>14.4</u>	672	14.4
403.gcc	564	14.3	568	14.2	<u>566</u>	<u>14.2</u>	483	16.7	<u>483</u>	<u>16.7</u>	484	16.6
429.mcf	416	21.9	414	22.0	<u>416</u>	<u>21.9</u>	346	26.4	<u>346</u>	<u>26.3</u>	347	26.2
445.gobmk	680	15.4	<u>681</u>	<u>15.4</u>	681	15.4	587	17.9	<u>587</u>	<u>17.9</u>	587	17.9
456.hmmer	<u>474</u>	<u>19.7</u>	477	19.6	471	19.8	312	29.9	313	29.8	<u>313</u>	<u>29.9</u>
458.sjeng	813	14.9	814	14.9	<u>814</u>	<u>14.9</u>	741	16.3	<u>741</u>	<u>16.3</u>	742	16.3
462.libquantum	448	46.3	459	45.2	<u>448</u>	<u>46.2</u>	272	76.2	<u>276</u>	<u>75.0</u>	290	71.3
464.h264ref	924	23.9	<u>930</u>	<u>23.8</u>	941	23.5	<u>884</u>	<u>25.0</u>	891	24.8	871	25.4
471.omnetpp	461	13.5	<u>457</u>	<u>13.7</u>	457	13.7	<u>458</u>	<u>13.7</u>	457	13.7	458	13.6
473.astar	610	11.5	607	11.6	<u>608</u>	<u>11.5</u>	537	13.1	<u>537</u>	<u>13.1</u>	535	13.1
483.xalancbmk	330	20.9	330	20.9	<u>330</u>	<u>20.9</u>	<u>309</u>	<u>22.3</u>	309	22.3	308	22.4

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=10800 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
<http://developer.amd.com/cpu/open64>

System was tested in an open environment.
To ensure system stability, a 1000W (minimum) ATX power supply
[8-pin & 8-pin (+12V) and 24-pin are required]

Product description can be obtained at:

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General Notes (Continued)

<http://www.supermicro.com/Aplus/motherboard/Opteron8000/SR56x0/H8QI6-F.cfm>

Base Compiler Invocation

C benchmarks:

openc

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 -lsmarheap

Peak Compiler Invocation

C benchmarks (except as noted below):

openc

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.xalanbmk: -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 -m3dnw
            -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

```

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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 -Mfp relaxed --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/amd-platform.20090710.html>

http://www.spec.org/cpu2006/flags/pgi80_linux_flags-revA.html

<http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.html>



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

- <http://www.spec.org/cpu2006/flags/amd-platform.20090710.xml>
- http://www.spec.org/cpu2006/flags/pg180_linux_flags-revA.xml
- <http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.xml>

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