



SPEC® CINT2006 Result

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Supermicro

SPECint®_rate2006 = 56.8

Supermicro A+ Server 1012A-MTF
(H8SML-iF, AMD Opteron 3320 EE)

SPECint_rate_base2006 = 50.6

CPU2006 license: 001176

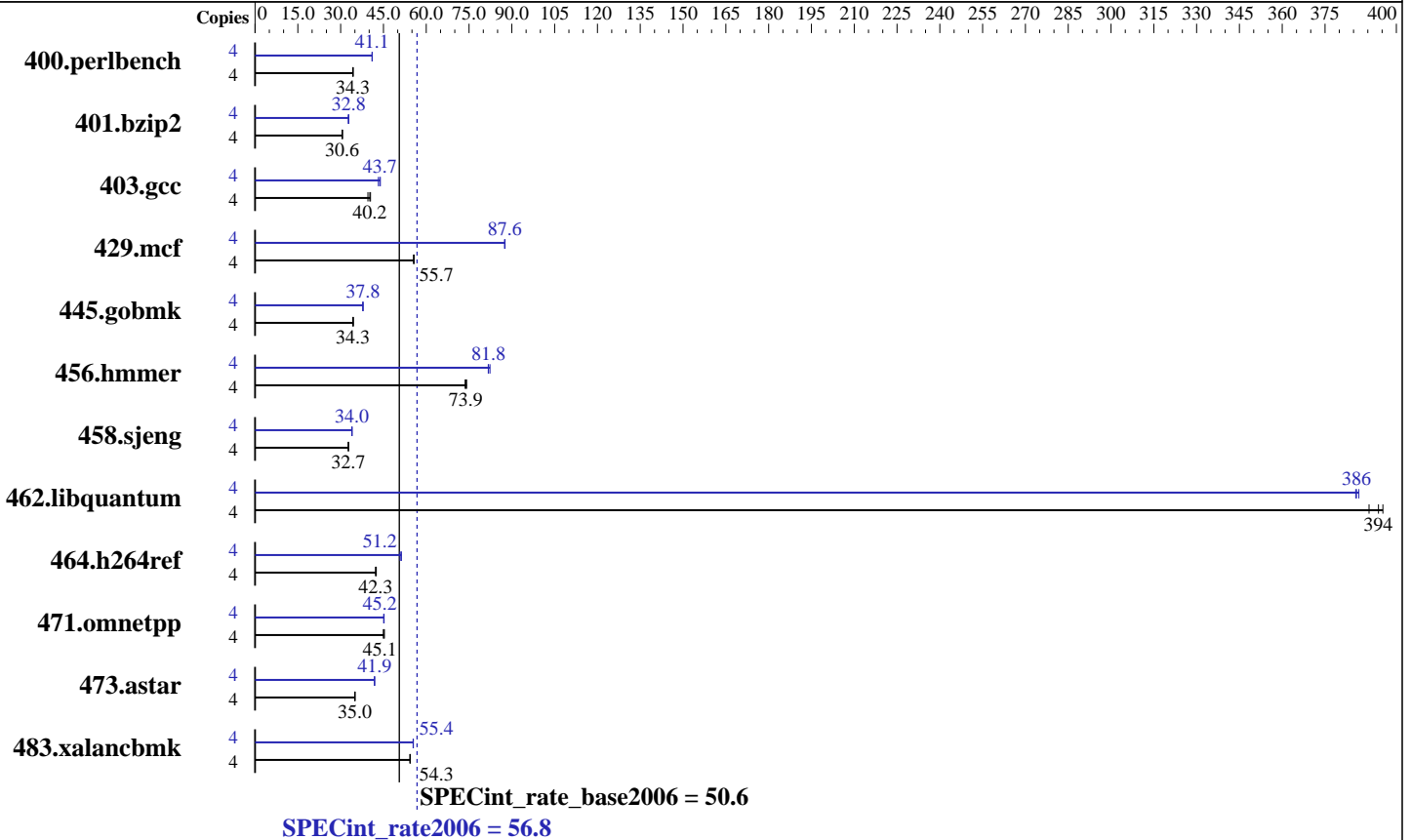
Test date: Jan-2013

Test sponsor: Supermicro

Hardware Availability: Dec-2012

Tested by: Supermicro

Software Availability: Aug-2012



Hardware

CPU Name: AMD Opteron 3320 EE
 CPU Characteristics: AMD Turbo CORE technology up to 2.50 GHz
 CPU MHz: 1900
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 CPU(s) orderable: 1 chip
 Primary Cache: 128 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per chip, 2 MB shared / 2 cores
 L3 Cache: 8 MB I+D on chip per chip
 Other Cache: None
 Memory: 32 GB (4 x 8 GB 2Rx8 PC3-12800E-11, ECC, running
at 1333 MHz and CL9)
 Disk Subsystem: 1 x 2048 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.3,
Kernel 2.6.32-279.el6.x86_64
 Compiler: C/C++: Version 4.5.2 of x86 Open64 Compiler Suite
(from AMD)
 Auto Parallel: No
 File System: ext4
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: SmartHeap 10.0 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	4	<u>1138</u>	<u>34.3</u>	1137	34.4	1141	34.3	4	951	41.1	<u>952</u>	<u>41.1</u>	953	41.0
401.bzip2	4	1261	30.6	1262	30.6	<u>1262</u>	<u>30.6</u>	4	<u>1177</u>	<u>32.8</u>	1174	32.9	1182	32.7
403.gcc	4	814	39.6	796	40.5	<u>801</u>	<u>40.2</u>	4	<u>737</u>	<u>43.7</u>	733	43.9	745	43.2
429.mcf	4	<u>655</u>	<u>55.7</u>	655	55.7	657	55.6	4	416	87.6	417	87.4	<u>417</u>	<u>87.6</u>
445.gobmk	4	<u>1223</u>	<u>34.3</u>	1217	34.5	1223	34.3	4	1111	37.8	<u>1109</u>	<u>37.8</u>	1109	37.8
456.hammer	4	<u>505</u>	<u>73.9</u>	507	73.6	503	74.2	4	<u>456</u>	<u>81.8</u>	453	82.3	457	81.7
458.sjeng	4	<u>1480</u>	<u>32.7</u>	1477	32.8	1481	32.7	4	1426	33.9	<u>1425</u>	<u>34.0</u>	1424	34.0
462.libquantum	4	<u>211</u>	<u>394</u>	210	395	212	390	4	214	387	<u>215</u>	<u>386</u>	215	386
464.h264ref	4	2083	42.5	<u>2091</u>	<u>42.3</u>	2096	42.2	4	1741	50.8	1727	51.3	<u>1728</u>	<u>51.2</u>
471.omnetpp	4	551	45.3	556	45.0	<u>555</u>	<u>45.1</u>	4	555	45.1	<u>553</u>	<u>45.2</u>	553	45.2
473.astar	4	802	35.0	802	35.0	<u>802</u>	<u>35.0</u>	4	671	41.9	<u>670</u>	<u>41.9</u>	670	41.9
483.xalancbmk	4	508	54.3	507	54.4	<u>508</u>	<u>54.3</u>	4	498	55.4	497	55.5	<u>498</u>	<u>55.4</u>

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 transparent_hugepage=never as a boot parameter in /boot/grub/menu.lst

Set vm/nr_hugepages=3584 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 = "896"

LD_LIBRARY_PATH = "/usr/cpu2006/amd1206-rate-libs-revA/32:/usr/cpu2006/amd1206-rate-libs-revA/64"

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

Binaries were compiled on a system with 2x AMD Opteron 6386SE chips + 128GB Memory using RHEL 6.3



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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:
-Ofast -CG:local_sched_alg=1 -INLINE:aggressive=ON -IPA:plimit=8000
-IPA:small_pu=100 -HP:bd=2m:heap=2m -mso -LNO:prefetch=2
-march=bdver1

C++ benchmarks:
-Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on -D__OPEN64_FAST_SET
-march=bdver1 -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

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Peak Portability Flags (Continued)

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
 473.astar: -DSPEC_CPU_LP64
 483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -LNO:prefetch=2 -LNO:opt=0 -IPA:plimit=20000
 -OPT:unroll_times_max=8 -OPT:unroll_size=256
 -OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
 -WOPT:sib=on -CG:local_sched_alg=1 -CG:unroll_fb_req=on
 -CG:movext_icmp=off -HP:bd=2m:heap=2m -march=bdver1
 -GRA:aggr_loop_splitting=off -GRA:loop_splitting=off

401.bzip2: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
 -LNO:prefetch=2 -LNO:pf2=0 -OPT:alias=disjoint
 -OPT:goto=off -CG:local_sched_alg=1 -HP:bd=2m:heap=2m
 -march=bdver2

403.gcc: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -LNO:trip_count=256 -CG:cmp_peep=on -CG:pre_minreg_level=2
 -m32 -HP:bd=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200
 -WOPT:sib=on -march=bdver2 -mno-fma4

429.mcf: -O3 -OPT:unroll_times_max=5 -ipa -INLINE:aggressive=on
 -CG:gcm=off -CG:dsched=on -GRA:prioritize_by_density=on
 -m32 -HP:bd=2m:heap=2m -mso -march=bdver1

445.gobmk: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -OPT:unroll_size=256 -OPT:unroll_times_max=8
 -OPT:keep_ext=on -IPA:plimit=750 -IPA:min_hotness=300
 -IPA:pu_reorder=1 -LNO:ignore_feedback=off -WOPT:if_conv=2
 -HP:bd=2m:heap=2m -march=bdver1

456.hmmer: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -LNO:prefetch=2 -OPT:alias=disjoint
 -OPT:unroll_times_max=16 -OPT:unroll_size=512
 -OPT:unroll_level=2 -OPT:keep_ext=on -CG:cflow=0
 -CG:cmp_peep=on -CG:pre_local_sched=off -HP:bd=2m:heap=2m
 -CG:p2align=0 -CG:load_exe=3 -CG:dsched=on -march=bdver1

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Peak Optimization Flags (Continued)

458.sjeng: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-CG:ptr_load_use=0 -CG:divrem_opt=on -CG:movext_icmp=off
-CG:locs_best=on -LNO:full_unroll=10 -IPA:pu_reorder=2
-HP:heap=2m:bd=2m -WOPT:sib=on -march=bdver1

462.libquantum: -Ofast -mso -OPT:unroll_size=512 -OPT:unroll_times_max=16
-LNO:prefetch=2 -LNO:prefetch_ahead=4 -LNO:pf2=0
-CG:local_sched_alg=1 -CG:p2align=0 -INLINE:aggressive=ON
-IPA:plimit=15000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m,limit=300 -march=bdver2

464.h264ref: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-OPT:unroll_size=256 -OPT:unroll_times_max=2
-IPA:plimit=20000 -OPT:alias=disjoint -CG:ptr_load_use=0
-CG:local_sched_alg=1 -HP:bdt=2m:heap=2m -march=bdver1

C++ benchmarks:

471.omnetpp: -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on
-WOPT:sib=on -D__OPEN64_FAST_SET -march=bdver2 -mno-fma4
-L/root/work/libraries/SmartHeap-10/lib -lsmarheap

473.astar: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-WOPT:if_conv=0 -WOPT:sib=on -CG:divrem_opt=on
-CG:p2align=1 -CG:dsched=on -GRA:optimize_boundary=on
-OPT:alias=disjoint -INLINE:aggressive=on
-IPA:small_pu=3000 -IPA:plimit=3000 -HP:bdt=2m:heap=2m
-march=bdver1

483.xalancbmk: -Ofast -LNO:prefetch=2 -OPT:unroll_size=512
-OPT:unroll_times_max=8 -D__OPEN64_FAST_SET
-INLINE:aggressive=on -m32 -CG:cmp_peep=on
-CG:local_sched=off -CG:p2align=1 -GRA:unspill=on
-TENV:frame_pointer=off -fno-emit-exceptions -march=bdver2
-mno-fma4
-L/root/work/libraries/SmartHeap-10/lib -lsmarheap

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.xml>



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

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