



SPEC® CINT2006 Result

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Supermicro

Supermicro A+ Server 1012G-MTF
(H8SGL-F, AMD Opteron 6284 SE)

SPECint®_rate2006 = 286

SPECint_rate_base2006 = 249

CPU2006 license: 001176

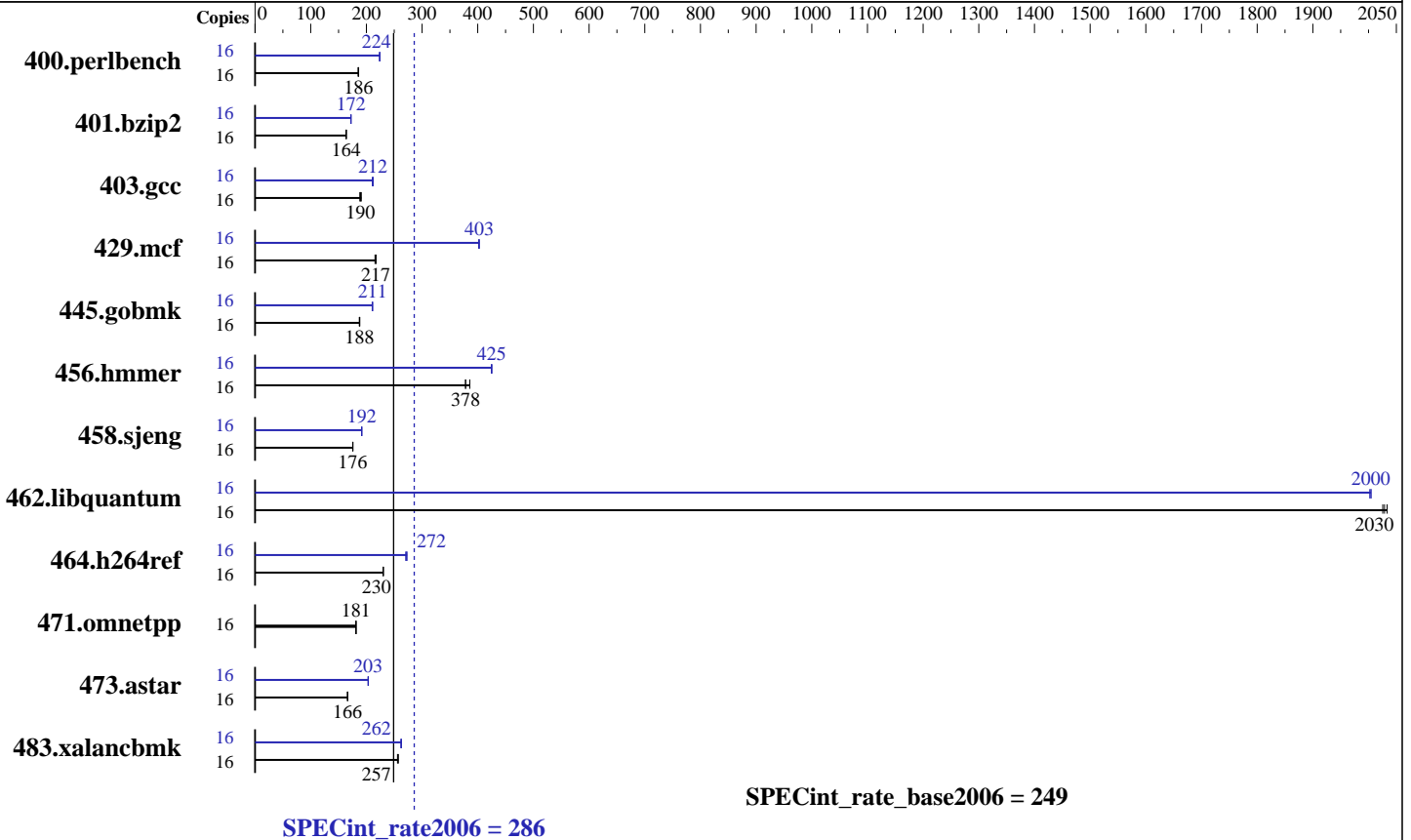
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jun-2012

Hardware Availability: Jun-2012

Software Availability: Dec-2011



Hardware

CPU Name: AMD Opteron 6284 SE
 CPU Characteristics: AMD Turbo CORE technology up to 3.40 GHz
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 16 cores, 1 chip, 16 cores/chip
 CPU(s) orderable: 1 chip
 Primary Cache: 512 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core
 Secondary Cache: 16 MB I+D on chip per chip, 2 MB shared / 2 cores
 L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores
 Other Cache: None
 Memory: 64 GB (8 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 1 x 300 GB SATA, 10000 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.2,
Kernel 2.6.32-220.el6.x86_64
 Compiler: C/C++: Version 4.5.1 of x86 Open64 Compiler Suite
(from AMD)
 Auto Parallel: No
 File System: ext3
 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	16	845	185	840	186	<u>841</u>	<u>186</u>	16	697	224	700	223	<u>698</u>	<u>224</u>
401.bzip2	16	946	163	942	164	<u>942</u>	<u>164</u>	16	896	172	897	172	<u>896</u>	<u>172</u>
403.gcc	16	685	188	675	191	<u>680</u>	<u>190</u>	16	612	211	607	212	<u>609</u>	<u>212</u>
429.mcf	16	<u>673</u>	<u>217</u>	677	215	672	217	16	363	401	<u>362</u>	<u>403</u>	362	403
445.gobmk	16	893	188	896	187	<u>893</u>	<u>188</u>	16	795	211	798	210	<u>795</u>	<u>211</u>
456.hammer	16	395	378	387	386	<u>395</u>	<u>378</u>	16	352	424	<u>351</u>	<u>425</u>	351	425
458.sjeng	16	1102	176	1104	175	<u>1102</u>	<u>176</u>	16	1011	192	1010	192	<u>1010</u>	<u>192</u>
462.libquantum	16	<u>163</u>	<u>2030</u>	163	2030	164	2030	16	166	2000	<u>165</u>	<u>2000</u>	165	2000
464.h264ref	16	<u>1539</u>	<u>230</u>	1539	230	1536	231	16	<u>1302</u>	<u>272</u>	1297	273	1309	271
471.omnetpp	16	551	182	<u>552</u>	<u>181</u>	552	181	16	551	182	<u>552</u>	<u>181</u>	552	181
473.astar	16	<u>676</u>	<u>166</u>	675	166	676	166	16	553	203	<u>553</u>	<u>203</u>	552	203
483.xalancbmk	16	<u>430</u>	<u>257</u>	431	256	429	257	16	<u>421</u>	<u>262</u>	421	262	420	263

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=14336 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/amd1104-rate-libs-revC/32:/usr/cpu2006/amd1104-rate-libs-revC/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 6274 chips + 64GB Memory using RHEL 6.1



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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:
-march=bdver1 -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

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

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
483.xalancbmk: -DSPEC_CPU_LINUX

```

Peak Optimization Flags

C benchmarks:

```

400.perlbench: -march=bdver1 -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

401.bzip2: -march=bdver1 -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

403.gcc: -march=bdver1 -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

429.mcf: -march=bdver1 -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

445.gobmk: -march=bdver1 -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

456.hmmer: -march=bdver1 -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

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Peak Optimization Flags (Continued)

458.sjeng: -march=bdver1 -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

462.libquantum: -march=bdver1 -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:bd=2m:heap=2m,limit=300

464.h264ref: -march=bdver1 -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:bd=2m:heap=2m

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off
-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 -m32
-HP:bd=2m:heap=2m

483.xalancbmk: -march=bdver1 -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
-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-open64-451-flags-rate-revC-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-451-flags-rate-revC-I.xml>



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

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