SPEC® CINT2006 Result

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Supermicro

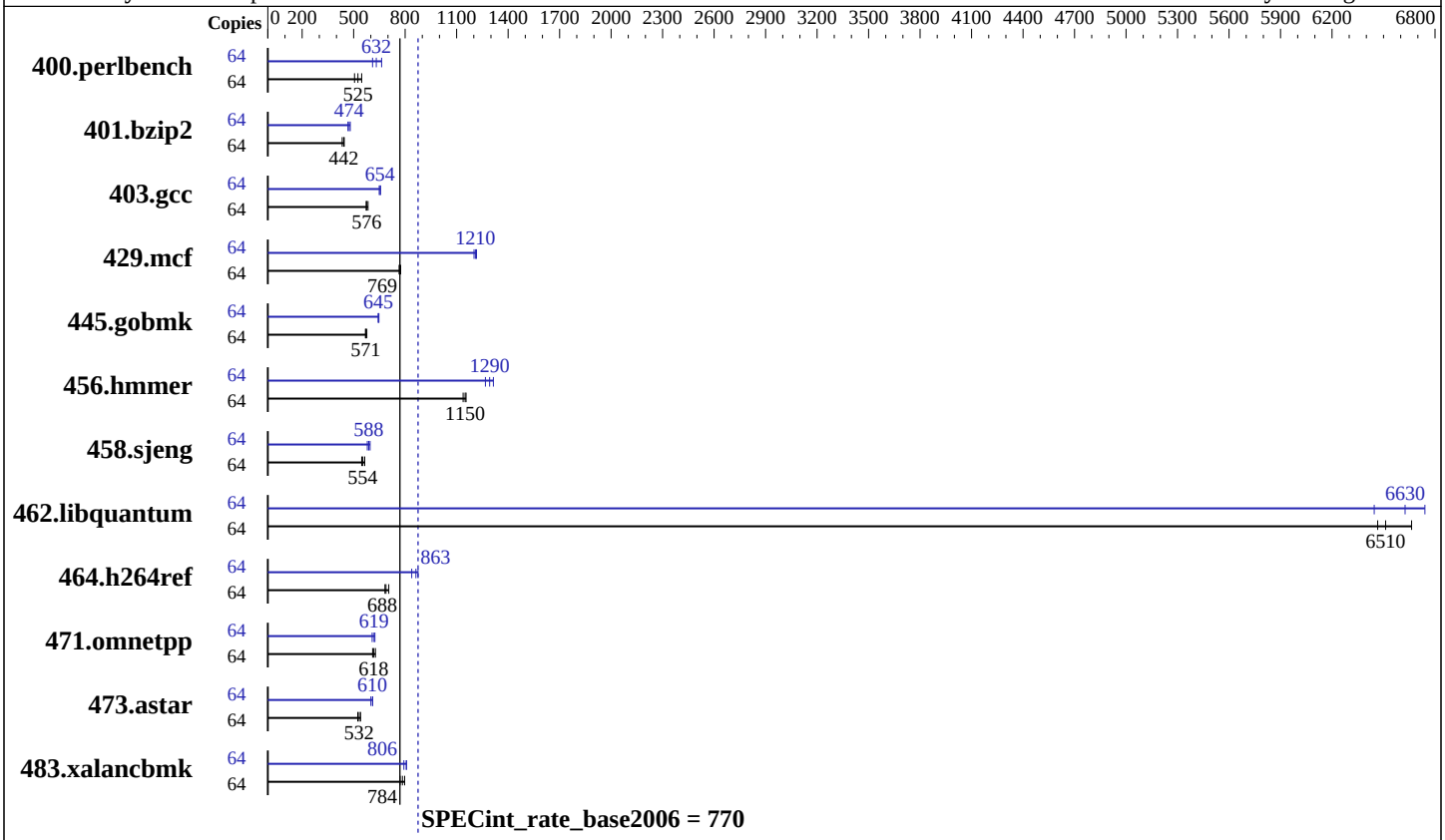
Supermicro Processor Blade SBA-7142G-T4 (BHQGE, Opteron 6378)
AMD Opteron 6378

SPECint®_rate2006 = 875

SPECint_rate_base2006 = 770

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

Test date: Oct-2012
Hardware Availability: Nov-2012
Software Availability: Aug-2012



Hardware

CPU Name:	AMD Opteron 6378
CPU Characteristics:	AMD Turbo CORE technology up to 3.30 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 cores/chip
CPU(s) orderable:	2,4 chips
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:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	1 x 500 GB SATA, 7200 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 4.5.2 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	64	**1191**	**525**	1144	547	1238	505	64	1025	610	943	663	**989**	**632**
401.bzip2	64	**1398**	**442**	1387	445	1426	433	64	**1304**	**474**	1286	480	1323	467
403.gcc	64	882	584	899	573	**895**	**576**	64	**788**	**654**	784	657	794	649
429.mcf	64	754	774	763	765	**759**	**769**	64	480	1220	**482**	**1210**	486	1200
445.gobmk	64	1164	577	**1176**	**571**	1181	569	64	1037	647	1044	643	**1042**	**645**
456.hmmer	64	517	1150	**520**	**1150**	525	1140	64	**462**	**1290**	454	1310	471	1270
458.sjeng	64	1372	565	1416	547	**1399**	**554**	64	**1317**	**588**	1300	596	1336	580
462.libquantum	64	199	6660	205	6470	**204**	**6510**	64	**200**	**6630**	197	6740	206	6450
464.h264ref	64	2010	705	2076	682	**2057**	**688**	64	**1642**	**863**	1618	875	1689	838
471.omnetpp	64	638	627	655	611	**648**	**618**	64	641	624	**646**	**619**	658	608
473.astar	64	831	540	858	524	**844**	**532**	64	736	611	**736**	**610**	748	600
483.xalancbmk	64	554	797	573	770	**563**	**784**	64	**548**	**806**	547	808	557	793

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

Transparent huge pages were enabled for this run (OS default)

Huge pages were not configured for this run.
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/spec/amd1206-rate-libs-revA/32:/home/spec/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
```

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:bdt=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:bdt=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:bdt=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:bdt=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 -lsmartheap`

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 -lsmartheap`

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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