Supermicro A+ Server 1022G-NTF, AMD Opteron 6348

SPECint\textsuperscript{2006} = 34.1
SPECint\textsubscript{base2006} = 28.0

CPU2006 license: 49
Test sponsor: Advanced Micro Devices
Tested by: Advanced Micro Devices

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

Operating System: Red Hat Enterprise Linux Server release 6.3, Kernel 2.6.32-279.el6.x86_64
Compiler: C/C++: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD)
Auto Parallel: Yes
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

Hardware

CPU Name: AMD Opteron 6348
CPU Characteristics: AMD Turbo CORE technology up to 3.40 GHz
CPU MHz: 2800
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip
CPU(s) orderable: 1,2 chips
Primary Cache: 384 KB I on chip per chip, 64 KB I shared / 2 cores; 16 KB D on chip per core
Secondary Cache: 12 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 / 6 cores
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
Other Hardware: None

Software
**SPEC CINT2006 Result**

**Supermicro**  
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**Results Table**

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**Submit Notes**

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.  
See the configuration file for details.

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**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  
cpuspeed stop was used to set the CPU frequency to its maximum.

Set vm/nr_hugepages=4000 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 = "4000"  
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23"  
O64_OMP_SPIN_COUNT = "800000"  
O64_OMP_SPIN_USER_LOCK = "true"

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

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CPU2006 license: 49
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Test date: Oct-2012
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General Notes (Continued)
Binaries were compiled on a system with 2x AMD Opteron 6220 chips + 64GB Memory using RHEL 6.1

Base Compiler Invocation

C benchmarks:
- opencc

C++ benchmarks:
- openCC

Base Portability Flags

Base Optimization Flags

C benchmarks:
- m32
- O3
- -march=bdver1
- -march=bdver1
- -Ofast
- -march=bdver1
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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.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -march=bdver1 -fb_create fbdata(pass l)
  -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:load_exe=0 -CG:unroll_fb_req=on -CG:movext_icmp=off
  -HP:bdt=2m:heap=2m

401.bzip2: -march=bdver1 -fb_create fbdata(pass l)
  -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

403.gcc:
  -march=bdver1 -fb_create fbdata(pass l)
  -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

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

445.gobmk:
  -march=bdver1 -fb_create fbdata(pass l)
  -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:bdt=2m:heap=2m

456.hmmer:
  -march=bdver1 -fb_create fbdata(pass l)
  -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

Continued on next page
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:locx_best=on
   -CG:p2align=1 -LNO:full_unroll=10 -IPA:pu_reorder=2
   -HP:bdt=2m:heap=2m -WOPT:sib=on

462.libquantum: -march=bdver1 -OPT:unroll_size=512
   -OPT:unroll_times_max=8 -LNO:prefetch=2 -LNO:pf2=0
   -CG:local_sched_alg=1 -INLINE:aggressive=on
   -IPA:plimit=8000 -IPA:small_pu=100
   -HP:bdt=2m:heap=2m,limit=450 -apo

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:bdt=2m:heap=2m

C++ benchmarks:

471.omnetpp: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -CG:gcm=off
   -INLINE:aggressive=on -WOPT:if_conv=0 -WOPT:sib=on -m32
   -HP:bdt=2m:heap=2m

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=0 -GRA:optimize_boundary=on -OPT:alias=disjoint
   -INLINE:aggressive=on -IPA:small_pu=3000 -IPA:plimit=3000
   -m32 -HP:bdt=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=0 -GRA:unspill=on
   -TENV:frame_pointer=off -fno-emit-exceptions
   -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

The flags files that were used to format this result can be browsed at

You can also download the XML flags sources by saving the following links:
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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