IBM Corporation

IBM System x3455 (AMD Opteron 2347)

SPECfp®2006 = NC
SPECfp_base2006 = NC

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: Advanced Micro Devices

Test date: Aug-2007
Hardware Availability: Nov-2007
Software Availability: Oct-2007

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Hardware

CPU Name: AMD Opteron 2347
CPU Characteristics:
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1, 2 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: 2 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (8 x 2GB, DDR2-667 MHz ECC Reg Dual Rank)
Disk Subsystem: 1 x 160 GB Serial ATA, 7200 RPM
Other Hardware: None

Software

Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel
Compiler: The Portland Group (PGI)
PGI pgf90 7.1-0 Fortran Compiler
PGI pgcc 7.1-0 C Compiler
PGI pgCC 7.1-0 C++ Compiler
PathScale Compiler Suite, Release 3.0
Auto Parallel: No
File System: ReiserFS
System State: Multi-user, run level 3
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

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Results Table

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Environment variable PGI_HUGE_PAGES set to 150

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Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Fortran benchmarks:
pgf95

Benchmarks using both Fortran and C:
pgcc pgf95

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
437.f10le3d: -DSPEC_CPU_LP64
444.f90md: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64 -Mnomain
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
464.watchdox: -DSPEC_CPU_LP64
471.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

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SPEC CFP2006 Result

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Base Optimization Flags

C benchmarks:
- -fast -Mipa=fast -Mipa=inline -Mfrelaxed -Mfprelaxed -Msmartalloc=huge:448
  -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
- -fast -Mipa=fast -Mipa=inline -Mfrelaxed -Msmartalloc=huge:448
  --zc_eh -tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:
- -fast -Mipa=fast -Mipa=inline -Mfrelaxed -Msmartalloc=huge:448
  -tp barcelona-64 -Bstatic_pgi

Benchmarks using both Fortran and C:
- -fast -Mipa=fast -Mipa=inline -Mfrelaxed -Msmartalloc=huge:448
  -tp barcelona-64 -Bstatic_pgi

Base Other Flags

C benchmarks:
- w

C++ benchmarks:
- w

Fortran benchmarks:
- w

Benchmarks using both Fortran and C:
- w

Non-Compliant
SPEC CFP2006 Result

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Peak Compiler Invocation

C benchmarks (except as noted below):
pathcc
433.milc: pgcc

C++ benchmarks (except as noted below)
pathCC
444.namd: pgcpp
453.povray: pgcpp

Fortran benchmarks (except as noted below):
pathf95
434.zeusmp: pgf95
465.tonto: pgf95

Benchmarks using both Fortran and C (except as noted below):
pgcc pgf 5
436.cactusADM: pathcc pathf95

Peak Portability Flags

419.bwaves: -DSPEC_CPU_LP64
416.ess: -DSPEC_CPU_LP64
43.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64

Continued on next page
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Peak Portability Flags (Continued)

453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: -Mfpi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2) -Mfpo(pass 2) -fast -O4 -Mdse -Mfp relaxed -Msmartalloc=huge:448 -tp barcelona-64 -Bstatic_pgi

470.lbm: -Ofast

483.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3

C++ benchmarks:


447.dealII: -Ofast -INLINE:aggressive=on -OPT:malloc_alg=1 -m32 -fno-exceptions

450.soplex: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32 -O3 -OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1 -LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

Continued on next page
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Peak Optimization Flags (Continued)

453.povray: basepeak = yes

Fortran benchmarks:

410.bwaves: -fb_create fbdata(pass 1) - fb_opt fbdata(pass 2) -O3
-OPT:Oofast -OPT:IEEE_arith=3 -LNO:blocking=off
-LNO:ignore_feedback=off

416.games: -fb_create fbdata(pass 1) - fb_opt fbdata(pass 2) -O2
-OPT:Oofast -OPT:ro=3 -OPT:unroll_size=256

434.zeusmp: basepeak = yes

437.leslie3d: -Ofast -OPT:malloc_alg=1

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -fast -Mfprelaxed -Msmartalloc=huge:448 -Mipa=fast
-Mipa=inline -Mvect=noaltcode -tp barcelona-64 -Bstatic_pgi

Benchmarks using both Fortran and C:

435.gromacs: -fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mfprelaxed
-Msmartalloc=huge:448 -tp barcelona-64 -Bstatic_pgi

-fb_create fbdata(pass 1) - fb_opt fbdata(pass 2) -O3
-LNO:prefetch=3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10
-LNO:full_unroll=5 -ipa

454.calculix: basepeak = yes

481.wrf: -fast -Mfprelaxed -Msmartalloc=huge:448 -Mvect=noaltcode
-tp barcelona-64 -Bstatic_pgi
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Peak Other Flags:

C benchmarks:
   433.milc: -w

C++ benchmarks (except as noted below):
   -w
   447.dealII: -static
   450.soplex: No flags used

Fortran benchmarks:
   434.zeusmp: -w
   465.tonto: -w

Benchmarks using both Fortran and C (except as noted below):
   -w
   436.cactusADM: No flags used

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/amd814GH-flags.20090714.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/amd814GH-flags.20090714.xml

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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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