SPEC® CFP2006 Result
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Supermicro
(Test Sponsor: Advanced Micro Devices)

Supermicro H8DMU+, AMD Opteron 2356

SPECfp®_rate2006 = NC
SPECfp_rate_base2006 = NC

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

Test date: Sep-2007
Hardware Availability: Dec-2007
Software Availability: Oct-2007

SPEC has determined that this result was not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the submitter reported that the result would not meet the 3 month availability requirement in the SPEC CPU2006 run rules due to a change in the availability date of the processor.

Hardware

<table>
<thead>
<tr>
<th>CPU Name: AMD Opteron 2356</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
</tr>
<tr>
<td>CPU MHz: 2300</td>
</tr>
<tr>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable: 1,2 chips</td>
</tr>
<tr>
<td>Primary Cache: 64 KB I + 64 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 512 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache: 2 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache: None</td>
</tr>
<tr>
<td>Memory: 16 GB (8x2GB, DDR2-667 CL5 Reg Dual Rank)</td>
</tr>
<tr>
<td>Disk Subsystem: 1x400GB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware: None</td>
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</tbody>
</table>

Software

<table>
<thead>
<tr>
<th>Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
</tr>
<tr>
<td>The Portland Group (PGI)</td>
</tr>
<tr>
<td>PGI pgf90 7.1-0 Fortran Compiler</td>
</tr>
<tr>
<td>PGI pgcc 7.1-0 C Compiler</td>
</tr>
<tr>
<td>PGI pgCC 7.1-0 C++ Compiler</td>
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<tr>
<td>The PathScale Compiler v3.0</td>
</tr>
<tr>
<td>PathScale pathf95 3.0 Fortran Compiler</td>
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<tr>
<td>PathScale pathcc 3.0 C Compiler</td>
</tr>
<tr>
<td>PathScale pathCC 3.0 C++ Compiler</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>File System: ReiserFS</td>
</tr>
<tr>
<td>System State: Multi-user, run level 3</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other Software: None</td>
</tr>
</tbody>
</table>
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Results Table

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<th>Ratio</th>
<th>Seconds</th>
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</tr>
</tbody>
</table>

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

Operating System Notes

'ulimit -s unlimited' used to set environment stack size
'ulimit -l 2457600' was used to set environment lock pages 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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General Notes
The test system can be assembled by using two Ablecom PWS-702A-1R 700W 12V redundant power supplies.

Base Compiler Invocation
C benchmarks:
pgcc
C++ benchmarks:
pgcpp
Fortran benchmarks:
pgf95
Benchmarks using both Fortran and C:
pgcc pgf95

Base Portability Flags
416.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
447.tinyrec: -DSPEC_CPU_LP64
447.tinyrec: -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
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64

Continued on next page
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Base Other Flags (Continued)
Benchmarks using both Fortran and C:
-w

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):
  gcc pgf95
  436.cactusADM: pathcc pathf95

Peak Portability Flags
410.bwaves: -DSPEC_CPU_LP64

Non-Compliant
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### Peak Portability Flags (Continued)

- `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 -no-second-underscore`
- `437.leslie3d`: `-DSPEC_CPU_LP64`
- `444.namd`: `-DSPEC_CPU_LP64`
- `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`: `-Mpfipass1 -Mipa=fast(pass 2) -Mipa=inline(pass 2) -Mipa=mparg(pass 2) -Mfpo(pass 2) -fast -O4 -Mdse -Mfprelaxed -Msmartalloc=huge:448 -tp barcelona-64 -Bstatic_pgi`
- `470.lbm`: `-Ofast`
- `482.sphinx3`: `-fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3 -OPT:Ofast -WOPT:aggstr=0 -m32`

#### C++ benchmarks:


Continued on next page
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<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
<th>= NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006</td>
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</table>

**CPU2006 license:** 49  
**Test date:** Sep-2007  
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**Hardware Availability:** Dec-2007  
**Software Availability:** Oct-2007

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**Peak Optimization Flags (Continued)**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>dealII</td>
<td>-Ofast -INLINE:aggressive=on -OPT:malloc_alg=1 -m32 -fno-exceptions</td>
</tr>
<tr>
<td>soplex</td>
<td>-fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32 -O3 -OPT:IEEE_arith=3 -CG:movnti=1 -LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions</td>
</tr>
<tr>
<td>povray</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>bwaves</td>
<td>-fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3 -OPT:Ofast -OPT:IEEE_arith=3 -LNO:blocking=off -LNO:ignore_feedback=off</td>
</tr>
<tr>
<td>gamess</td>
<td>-fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O2 -OPT:fast -OPT:ro=3 -OPT:unroll_size=256</td>
</tr>
<tr>
<td>zeusmp</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>gromacs</td>
<td>-fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mvect=noaltcode -tp barcelona-64 -Bstatic_pgi</td>
</tr>
<tr>
<td>cactusADM</td>
<td>-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</td>
</tr>
</tbody>
</table>

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Benchmarks using both Fortran and C:

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>gromacs</td>
<td>-fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mvect=noaltcode -tp barcelona-64 -Bstatic_pgi</td>
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<tr>
<td>cactusADM</td>
<td>-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</td>
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<tr>
<th>SPECfp_rate2006</th>
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<td>SPECfp_rate_base2006</td>
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### Peak Optimization Flags (Continued)

- 454.calculix: basepeak = yes
- 481.wrf: -fast -Mfprelaxed -Msmartalloc -huge:448 -Mvect=noaltcode -tp barcelona-64 -Bstatic_pgi

### Peak Other Flags

**C benchmarks:**
- 433.milc: -w

**C++ benchmarks (except as noted below):**
- 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):**
- 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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