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

Supermicro A+ Server 2042G-6RF,
AMD Opteron 6272

$SPECfp®_rate2006 = $ 682

$SPECfp_rate_base2006 = $ 639

CPU2006 license: 49		**Test date:**	Dec-2011
Test sponsor:	Advanced Micro Devices	**Hardware Availability:**	Nov-2011
Tested by:	Advanced Micro Devices	**Software Availability:**	Jul-2011

Copies

- 410.bwaves — 64: 622 / 64: 616
- 416.gamess — 64: 579 / 64: 551
- 433.milc — 64: 616 / 64: 519
- 434.zeusmp — 64: 660
- 435.gromacs — 64: 662 / 64: 657
- 436.cactusADM — 64: 818 / 64: 754
- 437.leslie3d — 64: 530 / 64: 432
- 444.namd — 64: 591 / 64: 569
- 447.dealII — 64: 1230 / 64: 1180
- 450.soplex — 64: 538 / 64: 466
- 453.povray — 64: 677 / 64: 644
- 454.calculix — 64: 976 / 64: 941
- 459.GemsFDTD — 64: 427 / 64: 397
- 465.tonto — 64: 728 / 64: 660
- 470.lbm — 64: 868 / 64: 863
- 481.wrf — 64: 738 / 64: 735
- 482.sphinx3 — 64: 700 / 64: 624

SPECfp_rate_base2006 = 639

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Hardware

CPU Name:	AMD Opteron 6272
CPU Characteristics:	AMD Turbo CORE technology up to 3.00 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 cores/chip
CPU(s) orderable:	2,4 chips

Software

Operating System:	Red Hat Enterprise Linux Server release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64
Compiler:	C/C++/Fortran: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD)
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

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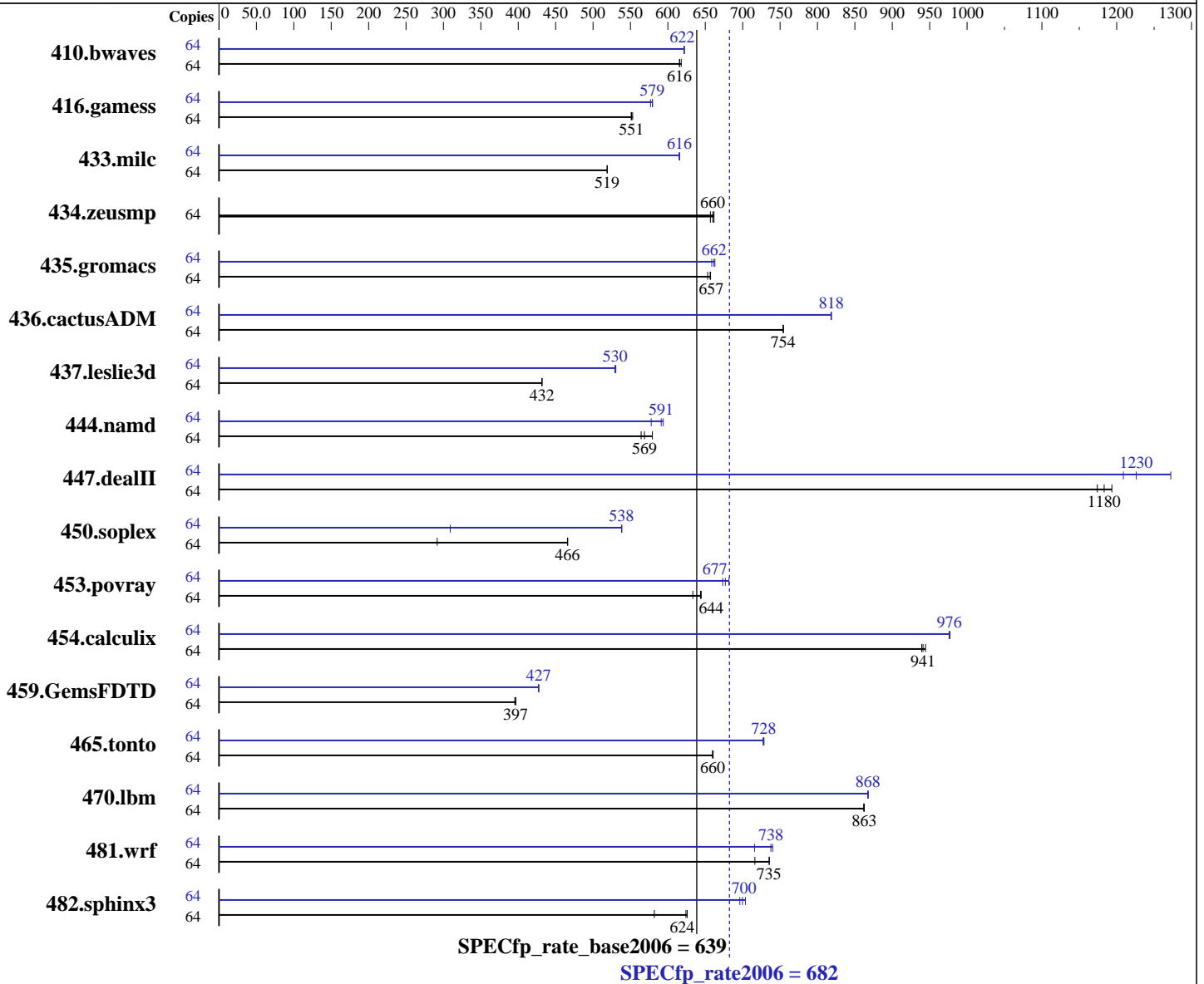$SPECfp\_rate\_base2006 =$ 639

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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

Other Software: None

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	**1413**	**616**	1408	618	1413	616	64	**1399**	**622**	1398	622	1399	621
416.gamess	64	2266	553	2274	551	**2272**	**551**	64	2162	580	**2163**	**579**	2173	577
433.milc	64	**1132**	**519**	1132	519	1132	519	64	954	616	955	615	**955**	**616**
434.zeusmp	64	**882**	**660**	880	662	887	657	64	**882**	**660**	880	662	887	657
435.gromacs	64	700	653	695	657	**696**	**657**	64	694	659	689	663	**691**	**662**
436.cactusADM	64	1014	754	1014	754	**1014**	**754**	64	**934**	**818**	934	819	935	818
437.leslie3d	64	1394	432	**1394**	**432**	1393	432	64	1136	529	**1136**	**530**	1134	530
444.namd	64	910	564	**903**	**569**	886	579	64	888	578	**868**	**591**	864	594
447.dealII	64	624	1170	613	1190	**619**	**1180**	64	606	1210	**597**	**1230**	575	1270
450.soplex	64	1830	292	**1145**	**466**	1145	466	64	1727	309	**992**	**538**	991	539
453.povray	64	538	633	**529**	**644**	528	645	64	506	673	**503**	**677**	500	682
454.calculix	64	559	944	**561**	**941**	562	939	64	**541**	**976**	540	977	541	976
459.GemsFDTD	64	1717	395	**1712**	**397**	1711	397	64	1588	427	1590	427	**1589**	**427**
465.tonto	64	953	661	954	660	**954**	**660**	64	**865**	**728**	864	729	866	727
470.lbm	64	**1019**	**863**	1019	863	1020	862	64	**1014**	**868**	1013	868	1014	867
481.wrf	64	998	716	**972**	**735**	972	736	64	999	716	966	740	**969**	**738**
482.sphinx3	64	2143	582	**1999**	**624**	1993	626	64	1773	704	1792	696	**1782**	**700**

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 paramenter in /boot/grub/menu.lst

Continued on next page

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Operating System Notes (Continued)

```
Set kernel/randomize_va_space=0 in /etc/sysctl.conf

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

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/work/cpu2006v1.2/amd1104-rate-libs-revB/32:/root/work/cpu2006v1.2/amd1104-rate-libs-revB/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 6282SE chips + 64GB Memory using RHEL 6.1
```

Base Compiler Invocation

C benchmarks:
 opencc

C++ benchmarks:
 openCC

Fortran benchmarks:
 openf95

Benchmarks using both Fortran and C:
 opencc openf95

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
 436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
  437.leslie3d: -DSPEC_CPU_LP64
     444.namd: -DSPEC_CPU_LP64
    447.dealII: -DSPEC_CPU_LP64
   450.soplex: -DSPEC_CPU_LP64
   453.povray: -DSPEC_CPU_LP64
  454.calculix: -DSPEC_CPU_LP64
  459.GemsFDTD: -DSPEC_CPU_LP64
    465.tonto: -DSPEC_CPU_LP64
     470.lbm: -DSPEC_CPU_LP64
      481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
              -fno-second-underscore
```

Continued on next page

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Base Portability Flags (Continued)

    482.sphinx3: `-DSPEC_CPU_LP64`

Base Optimization Flags

C benchmarks:
```
-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso
```

C++ benchmarks:
```
-march=bdver1 -Ofast -static -CG:load_exe=0 -OPT:malloc_alg=1
-INLINE:aggressive=on -HP:bd=2m:heap=2m -D__OPEN64_FAST_SET
```

Fortran benchmarks:
```
-march=bdver1 -Ofast -LNO:blocking=off -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso
```

Benchmarks using both Fortran and C:
```
-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso -LNO:blocking=off
-OPT:rsqrt=2 -OPT:unroll_size=256
```

Peak Compiler Invocation

C benchmarks:
```
opencc
```

C++ benchmarks:
```
openCC
```

Fortran benchmarks:
```
openf95
```

Benchmarks using both Fortran and C:
```
opencc openf95
```

Peak 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`
   436.cactusADM: `-DSPEC_CPU_LP64 -fno-second-underscore`

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Peak Portability Flags (Continued)

```
 437.leslie3d: -DSPEC_CPU_LP64
    444.namd: -DSPEC_CPU_LP64
   453.povray: -DSPEC_CPU_LP64
  454.calculix: -DSPEC_CPU_LP64
 459.GemsFDTD: -DSPEC_CPU_LP64
    465.tonto: -DSPEC_CPU_LP64
     470.lbm: -DSPEC_CPU_LP64
      481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
               -fno-second-underscore
   482.sphinx3: -DSPEC_CPU_LP64
```

Peak Optimization Flags

C benchmarks:

```
     433.milc: -march=bdver1 -Ofast -CG:movnti=1 -CG:locs_best=on
               -HP:bdt=2m:heap=2m -IPA:plimit=7000 -IPA:callee_limit=1200
               -OPT:struct_array_copy=2 -OPT:alias=field_sensitive -mso

      470.lbm: -march=bdver1 -Ofast -CG:cmp_peep=on
               -OPT:unroll_times_max=8 -OPT:unroll_size=256
               -OPT:unroll_level=2 -OPT:keep_ext=on -HP:bdt=2m:heap=2m
               -IPA:plimit=8000 -IPA:small_pu=100 -mso

  482.sphinx3: -march=bdver1 -fb_create fbdata(pass 1)
               -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
               -CG:cmp_peep=on -CG:local_sched_alg=2 -INLINE:aggressive=on
               -LNO:prefetch=2 -LNO:prefetch_ahead=4 -mso
```

C++ benchmarks:

```
    444.namd: -march=bdver1 -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -Ofast -LNO:ignore_feedback=off
              -CG:local_sched_alg=2 -CG:load_exe=0 -OPT:unroll_size=256
              -fno-exceptions -HP:bdt=2m:heap=2m

   447.dealII: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -static
               -INLINE:aggressive=on -LNO:opt=0 -LNO:simd=0
               -fno-emit-exceptions -m32 -OPT:unroll_times_max=8
               -OPT:unroll_size=256 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m
               -GRA:unspill=on -CG:cmp_peep=on -CG:movext_icmp=off
               -TENV:frame_pointer=off

   450.soplex: -march=bdver1 -fb_create fbdata(pass 1)
               -fb_opt fbdata(pass 2) -O3 -INLINE:aggressive=on -OPT:RO=1
               -OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off
               -OPT:fold_unsigned_relops=on -fno-exceptions -m32
               -HP:bdt=2m:heap=2m -WOPT:sib=on
```

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Peak Optimization Flags (Continued)

453.povray: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -CG:pre_local_sched=off
-INLINE:aggressive=on -HP:bd=2m:heap=2m -OPT:transform=2
-OPT:alias=disjoint -WOPT:aggcm=0

Fortran benchmarks:

410.bwaves: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:Ofast -OPT:treeheight=on
-LNO:blocking=off -LNO:ignore_feedback=off -LNO:fu=4
-LNO:loop_model_simd=on -LNO:simd_rm_unity_remainder=on
-WOPT:aggstr=0 -HP:bdt=2m:heap=2m -CG:cmp_peep=on

416.gamess: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0
-LNO:simd=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256
-OPT:unroll_times_max=2 -CG:local_sched_alg=1
-HP:bdt=2m:heap=2m -WOPT:sib=on

434.zeusmp: basepeak = yes

437.leslie3d: -march=bdver1 -Ofast -CG:pre_minreg_level=2 -LNO:simd=0
-LNO:fusion=2 -HP:bdt=2m:heap=2m -mso

459.GemsFDTD: -march=bdver1 -Ofast -OPT:unroll_size=0 -LNO:fission=2
-CG:load_exe=0 -CG:local_sched_alg=2 -HP

465.tonto: -march=bdver1 -Ofast -OPT:alias=no_f90_pointer_alias
-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525
-HP:bdt=2m:heap=2m

Benchmarks using both Fortran and C:

435.gromacs: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:rsqrt=2
-HP:bdt=2m:heap=2m

436.cactusADM: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:blocking=off
-LNO:prefetch=2 -HP -CG:locs_shallow_depth=1 -CG:load_exe=0
-WOPT:sib=on

454.calculix: -march=bdver1 -Ofast -OPT:unroll_size=256
-GRA:optimize_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=bdver1 -Ofast -LNO:blocking=off -LANG:copyinout=off
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on
-CG:load_exe=1 -HP -WOPT:sib=on

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$SPECfp\_rate2006 =$ **682**

$SPECfp\_rate\_base2006 =$ **639**

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/amd-platform-rate-revB.20120103.html
http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/amd-platform-rate-revB.20120103.xml
http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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