SPEC® CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

$SPECfp^{®}\_rate2006 =$ 344

$SPECfp\_rate\_base2006 =$ 319

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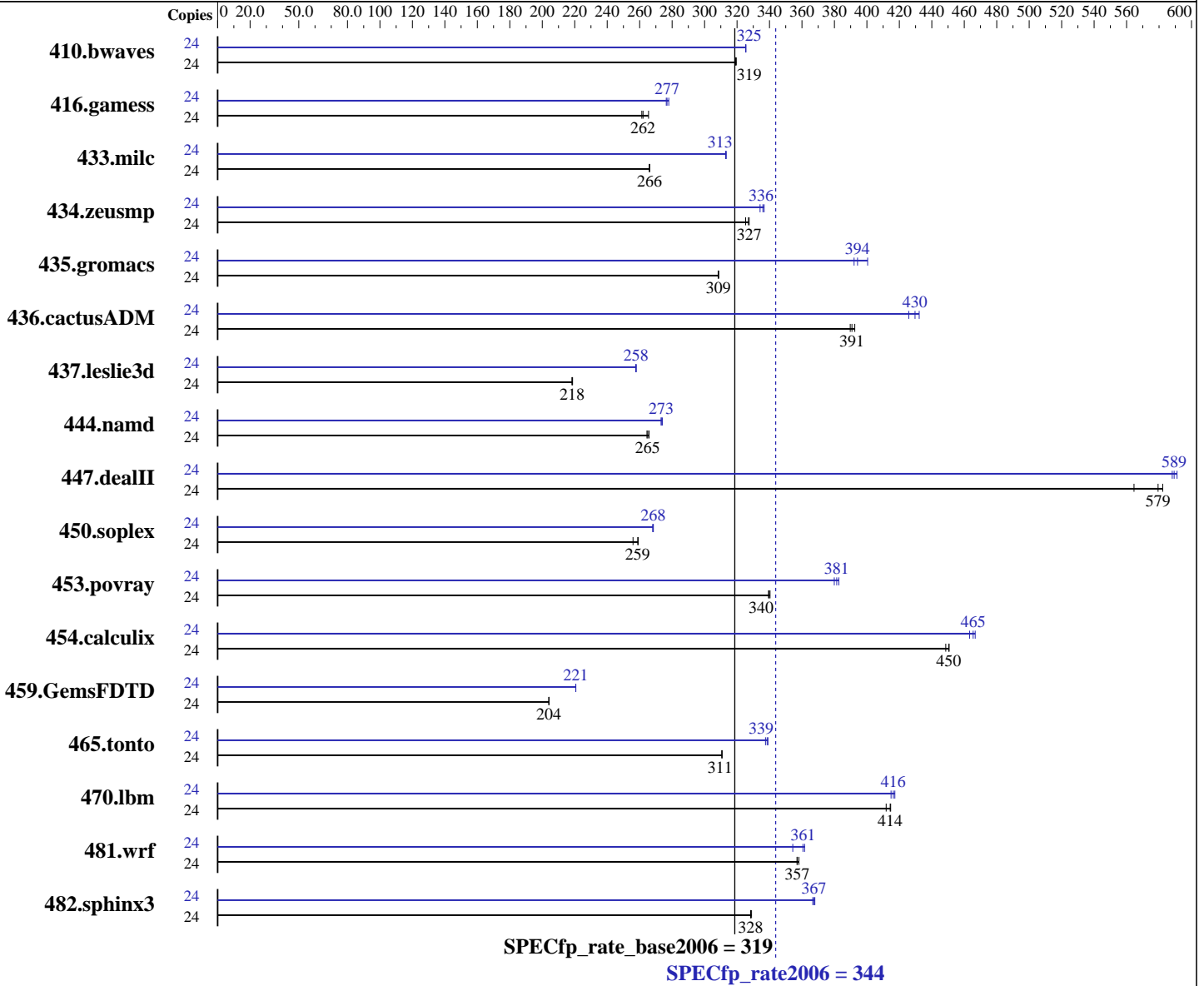**Test sponsor:** Supermicro
Tested by: Supermicro

Test date: Jun-2012
Hardware Availability: Nov-2011
Software Availability: Dec-2011

Benchmark	Copies	Result
410.bwaves	24 / 24	325 / 319
416.gamess	24 / 24	277 / 262
433.milc	24 / 24	313 / 266
434.zeusmp	24 / 24	336 / 327
435.gromacs	24 / 24	394 / 309
436.cactusADM	24 / 24	430 / 391
437.leslie3d	24 / 24	258 / 218
444.namd	24 / 24	273 / 265
447.dealII	24 / 24	589 / 579
450.soplex	24 / 24	268 / 259
453.povray	24 / 24	381 / 340
454.calculix	24 / 24	465 / 450
459.GemsFDTD	24 / 24	221 / 204
465.tonto	24 / 24	339 / 311
470.lbm	24 / 24	416 / 414
481.wrf	24 / 24	361 / 357
482.sphinx3	24 / 24	367 / 328

SPECfp_rate_base2006 = 319

SPECfp_rate2006 = 344

Hardware

CPU Name: AMD Opteron 6238
CPU Characteristics: AMD Turbo CORE technology up to 3.20 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip
CPU(s) orderable: 1,2 chips

Software

Operating System: Red Hat Enterprise Linux Server release 6.2, Kernel 2.6.32-220.el6.x86_64
Compiler: C/C++/Fortran: Version 4.5.1 of x86 Open64 Compiler Suite (from AMD)
Auto Parallel: No
File System: ext4
System State: Run level 3 (Full multiuser with network)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit

Continued on next page

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

$SPECfp\_rate2006 = \quad 344$

$SPECfp\_rate\_base2006 = \quad 319$

CPU2006 license: 001176	**Test date:** Jun-2012
Test sponsor: Supermicro	**Hardware Availability:** Nov-2011
Tested by: Supermicro	**Software Availability:** Dec-2011

Primary Cache:	384 KB I on chip per chip, 64 KB I shared / 2 cores; 16 KB D on chip per core	Other Software:	None
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 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	**1022**	**319**	1022	319	1021	320	24	1002	325	1003	325	**1002**	**325**
416.gamess	24	**1793**	**262**	1798	261	1770	265	24	**1697**	**277**	1691	278	1700	276
433.milc	24	828	266	828	266	**828**	**266**	24	**703**	**313**	704	313	703	313
434.zeusmp	24	667	327	671	325	**668**	**327**	24	**650**	**336**	649	337	654	334
435.gromacs	24	**555**	**309**	556	308	555	309	24	437	392	428	400	**435**	**394**
436.cactusADM	24	736	390	731	393	**734**	**391**	24	664	432	673	426	**668**	**430**
437.leslie3d	24	1032	219	**1033**	**218**	1033	218	24	875	258	876	258	**875**	**258**
444.namd	24	728	264	**726**	**265**	724	266	24	**704**	**273**	704	273	702	274
447.dealII	24	**474**	**579**	472	582	486	565	24	465	591	467	588	**466**	**589**
450.soplex	24	782	256	772	259	**773**	**259**	24	747	268	746	268	**746**	**268**
453.povray	24	375	340	376	339	**376**	**340**	24	336	380	**335**	**381**	334	383
454.calculix	24	**440**	**450**	441	449	439	451	24	424	467	427	463	**425**	**465**
459.GemsFDTD	24	1247	204	1248	204	**1248**	**204**	24	1154	221	**1154**	**221**	1154	221
465.tonto	24	760	311	760	311	**760**	**311**	24	**698**	**339**	700	338	697	339
470.lbm	24	**796**	**414**	795	415	801	412	24	795	415	790	417	**792**	**416**
481.wrf	24	751	357	**751**	**357**	749	358	24	741	362	**743**	**361**	757	354
482.sphinx3	24	**1424**	**328**	1425	328	1422	329	24	1276	367	1271	368	**1273**	**367**

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 parameter in /boot/grub/menu.lst

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

$SPECfp_rate2006 = $ 344

$SPECfp_rate_base2006 = $ 319

CPU2006 license: 001176		**Test date:**	Jun-2012
Test sponsor:	Supermicro	**Hardware Availability:**	Nov-2011
Tested by:	Supermicro	**Software Availability:**	Dec-2011

Operating System Notes (Continued)

```
Set vm/nr_hugepages=21504 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 = "896"
LD_LIBRARY_PATH = "/home/test/cpu2006/amd1104-rate-libs-revC/32:/home/test/cpu2006/amd1104-rate-libs-revC/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 6274 chips + 64GB Memory using RHEL 6.1

Submitted_by: Jordan Villanueva <jordanv@supermicro.com>
Submitted: Fri Jun 15 19:16:24 EDT 2012
Submission: cpu2006-20120615-22900.sub
```

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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

SPECfp_rate2006 =   344

SPECfp_rate_base2006 =   319

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

Test date: Jun-2012
Hardware Availability: Nov-2011
Software Availability: Dec-2011

Base Portability Flags (Continued)

```
    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
```

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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

$SPECfp\_rate2006 = 344$

$SPECfp\_rate\_base2006 = 319$

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

Test date: Jun-2012
Hardware Availability: Nov-2011
Software Availability: Dec-2011

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
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 -IPA:plimit=1000
          -OPT:malloc_alg=2 -CG:cmp_peep=on -CG:local_sched_alg=2
          -CG:p2align=0 -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 -IPA:plimit=3000
          -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
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

SPECfp_rate2006 =   344

SPECfp_rate_base2006 =   319

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

Test date: Jun-2012
Hardware Availability: Nov-2011
Software Availability: Dec-2011

Peak Optimization Flags (Continued)

447.dealII (continued):
```
-TENV:frame_pointer=off
```

450.soplex: -march=bdver1 -fb_create fbdata(pass 1)
```
            -fb_opt fbdata(pass 2) -O3 -LNO:ignore_feedback=off
            -INLINE:aggressive=on -OPT:RO=1 -OPT:IEEE_arith=3
            -OPT:IEEE_NaN_Inf=off -OPT:fold_unsigned_relops=on
            -fno-exceptions -CG:p2align=0 -m32 -HP:bdt=2m:heap=2m
            -WOPT:sib=on
```

453.povray: -march=bdver1 -fb_create fbdata(pass 1)
```
            -fb_opt fbdata(pass 2) -Ofast -CG:pre_local_sched=off
            -CG:p2align=0 -CG:p2align_split=on -CG:dsched=on
            -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: -march=bdver1 -Ofast -LNO:blocking=off -LNO:interchange=off
```
            -IPA:plimit=1500 -HP:bdt=2m:heap=2m
```

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 -IPA:plimit=1500 -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 -CG:local_sched_alg=2 -GRA:unspill=ON
            -CG:load_exe=3 -LNO:simd=3
```

Supermicro

Supermicro A+ Server 4022G-6F
(H8DG6-F, AMD Opteron 6238)

$SPECfp\_rate2006 = \quad 344$

$SPECfp\_rate\_base2006 = \quad 319$

CPU2006 license: 001176		**Test date:**	Jun-2012
Test sponsor:	Supermicro	**Hardware Availability:**	Nov-2011
Tested by:	Supermicro	**Software Availability:**	Dec-2011

Peak Optimization Flags (Continued)

```
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
               -CG:dsched=on -WOPT:sib=on

  454.calculix: -march=bdver1 -Ofast -OPT:unroll_size=256
               -GRA:optimize_boundary=on -CG:dsched=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
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/x86-open64-451-flags-rate-revC-I.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/x86-open64-451-flags-rate-revC-I.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 09:41:39 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 July 2012.