SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

$SPECfp^®\_rate2006 = 324$
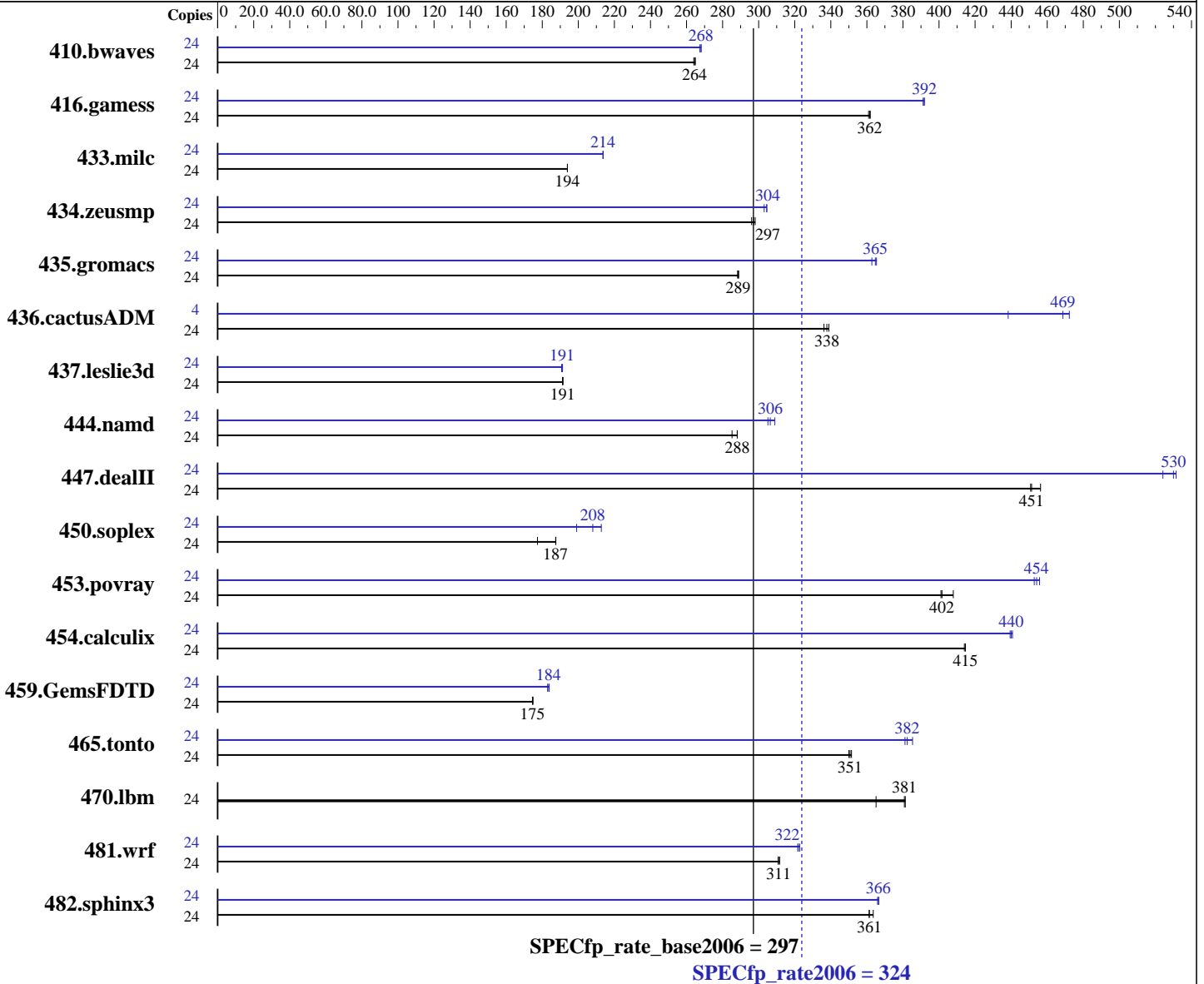
$SPECfp\_rate\_base2006 = 297$

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Mar-2010

Software Availability: Jul-2010

Benchmark	Copies	Result
410.bwaves	24 / 24	268 / 264
416.gamess	24 / 24	392 / 362
433.milc	24 / 24	214 / 194
434.zeusmp	24 / 24	304 / 297
435.gromacs	24 / 24	365 / 289
436.cactusADM	4 / 24	469 / 338
437.leslie3d	24 / 24	191 / 191
444.namd	24 / 24	306 / 288
447.dealII	24 / 24	530 / 451
450.soplex	24 / 24	208 / 187
453.povray	24 / 24	454 / 402
454.calculix	24 / 24	440 / 415
459.GemsFDTD	24 / 24	184 / 175
465.tonto	24 / 24	382 / 351
470.lbm	24	381
481.wrf	24 / 24	322 / 311
482.sphinx3	24 / 24	366 / 361

SPECfp_rate_base2006 = 297

SPECfp_rate2006 = 324

Hardware

CPU Name:	AMD Opteron 6176 SE
CPU Characteristics:	
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 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

Software

Operating System:	Red Hat Enterprise Linux Server release 5.5, Kernel 2.6.18-194.el5
Compiler:	x86 Open64 4.2.4 Compiler Suite (from AMD)
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	binutils 2.18

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

$SPECfp\_rate2006 =$ 324

$SPECfp\_rate\_base2006 =$ 297

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

Test date: Dec-2010
Hardware Availability: Mar-2010
Software Availability: Jul-2010

L3 Cache: 12 MB I+D on chip per chip, 6 MB shared / 6 cores
Other Cache: None
Memory: 64 GB (16 x 4 GB 2Rx8 PC3-10600R-9, 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	1235	264	1231	265	**1233**	**264**	24	1220	267	1217	268	**1217**	**268**
416.gamess	24	**1299**	**362**	1299	362	1302	361	24	1199	392	1201	391	**1199**	**392**
433.milc	24	**1136**	**194**	1136	194	1136	194	24	1031	214	**1031**	**214**	1031	214
434.zeusmp	24	738	296	**735**	**297**	733	298	24	**717**	**304**	717	304	721	303
435.gromacs	24	593	289	**594**	**289**	594	288	24	469	365	472	363	**470**	**365**
436.cactusADM	24	**849**	**338**	853	336	846	339	4	**102**	**469**	109	438	101	472
437.leslie3d	24	**1179**	**191**	1178	192	1180	191	24	**1181**	**191**	1183	191	1180	191
444.namd	24	675	285	668	288	**668**	**288**	24	631	305	**628**	**306**	623	309
447.dealII	24	609	451	602	456	**608**	**451**	24	524	524	**518**	**530**	517	531
450.soplex	24	1129	177	1067	188	**1068**	**187**	24	1005	199	**962**	**208**	941	213
453.povray	24	**318**	**402**	313	408	318	401	24	280	456	**281**	**454**	282	453
454.calculix	24	478	414	**478**	**415**	477	415	24	449	441	**450**	**440**	451	439
459.GemsFDTD	24	1459	175	1456	175	**1458**	**175**	24	1392	183	**1387**	**184**	1385	184
465.tonto	24	**673**	**351**	675	350	672	351	24	**618**	**382**	620	381	613	385
470.lbm	24	865	381	**866**	**381**	903	365	24	865	381	**866**	**381**	903	365
481.wrf	24	863	311	860	312	**862**	**311**	24	831	323	**833**	**322**	833	322
482.sphinx3	24	**1295**	**361**	1287	364	1295	361	24	1278	366	1276	367	**1277**	**366**

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 vm/nr_hugepages=10800 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

$SPECfp_rate2006 = $ 324

$SPECfp_rate_base2006 = $ 297

Platform Notes

```
  Fan speed set to Full Speed in BIOS Setup.
  The system uses a Supermicro H8DGU-F motherboard.
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/usr/cpu2006/amd1002-rate-libs-revC/64:/usr/cpu2006/amd1002-rate-libs-revC/32"
OMP_NUM_THREADS = "6"

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

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_LP64 -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG
                   -fno-second-underscore
```

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

SPECfp_rate2006 = 324

SPECfp_rate_base2006 = 297

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Mar-2010

Software Availability: Jul-2010

Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
    -march=barcelona -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m

C++ benchmarks:
    -march=barcelona -mso -Ofast -static -INLINE:aggressive=on
    -OPT:malloc_alg=1 -HP:bdt=2m

Fortran benchmarks:
    -march=barcelona -mso -Ofast -HP

Benchmarks using both Fortran and C:
    -march=barcelona -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m -HP

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
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

$SPECfp_rate2006 = $ 324

$SPECfp_rate_base2006 = $ 297

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

Test date: Dec-2010
Hardware Availability: Mar-2010
Software Availability: Jul-2010

Peak Portability Flags (Continued)

```
459.GemsFDTD: -DSPEC_CPU_LP64
   465.tonto: -DSPEC_CPU_LP64
    470.lbm: -DSPEC_CPU_LP64
    481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG
             -fno-second-underscore
 482.sphinx3: -DSPEC_CPU_LP64
```

Peak Optimization Flags

C benchmarks:

```
    433.milc: -march=barcelona -mso -Ofast -CG:movnti=1
              -CG:local_sched_alg=1 -CG:locs_shallow_depth=1
              -HP:bdt=2m:heap=2m -LNO:prefetch=3

     470.lbm: basepeak = yes

 482.sphinx3: -march=barcelona -mso -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
              -CG:sse_cse_regs=0 -CG:locs_shallow_depth=1 -CG:cmp_peep=on
              -CG:local_sched_alg=1 -INLINE:aggressive=on
```

C++ benchmarks:

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

   447.dealII: -march=barcelona -mso -Ofast -static -INLINE:aggressive=on
              -LNO:opt=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 -TENV:frame_pointer=off

   450.soplex: -march=barcelona -mso -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -O3 -INLINE:aggressive=on
              -OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off
              -OPT:fold_unsigned_relops=on -OPT:malloc_alg=1
              -CG:load_exe=0 -fno-exceptions -m32 -HP:bdt=2m

   453.povray: -march=barcelona -mso -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on
```

Fortran benchmarks:

```
  410.bwaves: -march=barcelona -mso -O3 -OPT:Ofast -OPT:treeheight=on
              -LNO:blocking=off -LNO:prefetch_ahead=5
              -LNO:ignore_feedback=off -WOPT:aggstr=0 -HP:bdt=2m:heap=2m
```

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

SPECfp_rate2006 =   324

SPECfp_rate_base2006 = 297

CPU2006 license: 001176		**Test date:**	Dec-2010
Test sponsor: Supermicro		**Hardware Availability:**	Mar-2010
Tested by: Supermicro		**Software Availability:**	Jul-2010

Peak Optimization Flags (Continued)

410.bwaves (continued):
      `-CG:cmp_peep=on`

416.gamess: `-march=barcelona -mso -fb_create fbdata(pass 1)`
      `-fb_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0`
      `-LNO:prefetch=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256`
      `-HP:bdt=2m:heap=2m`

434.zeusmp: `-march=barcelona -mso -Ofast -LNO:blocking=off`
      `-LNO:interchange=off -OPT:treeheight=on -OPT:unroll_size=256`
      `-CG:cmp_peep=on -GRA:prioritize_by_density=on -HP`

437.leslie3d: `-march=barcelona -mso -Ofast -HP:bdt=2m:heap=2m`

459.GemsFDTD: `-march=barcelona -mso -Ofast -LNO:fission=2`
      `-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:local_sched_alg=1`
      `-HP`

465.tonto: `-march=barcelona -mso -Ofast`
      `-OPT:alias=no_f90_pointer_alias -LNO:blocking=off`
      `-CG:load_exe=1 -IPA:plimit=525 -HP`

Benchmarks using both Fortran and C:

435.gromacs: `-march=barcelona -mso -Ofast -OPT:rsqrt=2`
      `-HP:bdt=2m:heap=2m`

436.cactusADM: `-march=barcelona -mso -fb_create fbdata(pass 1)`
      `-fb_opt fbdata(pass 2) -Ofast -apo -LNO:prefetch_ahead=1`
      `-HP:bdt=2m:heap=2m -LANG:heap_allocation_threshold=100`

454.calculix: `-march=barcelona -mso -Ofast -CG:load_exe=0`
      `-CG:ptr_load_use=0 -CG:local_sched_alg=2 -CG:compute_to=on`
      `-LNO:prefetch_ahead=30 -WOPT:unroll=2`
      `-GRA:optimize_boundary=on -HP:bdt=2m:heap=2m`

481.wrf: `-march=barcelona -mso -Ofast -LNO:blocking=off`
      `-LNO:prefetch_ahead=10 -LANG:copyinout=off`
      `-IPA:callee_limit=5000 -GRA:prioritize_by_density=on -m3dnow`
      `-HP`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.html
http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.html

---

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.xml
http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.xml

Supermicro

Supermicro A+ Server AS-2022G-URF,
AMD Opteron 6176 SE

$SPECfp\_rate2006 = \quad 324$

$SPECfp\_rate\_base2006 = \quad 297$

CPU2006 license: 001176	**Test date:** Dec-2010
Test sponsor: Supermicro	**Hardware Availability:** Mar-2010
Tested by: Supermicro	**Software Availability:** Jul-2010

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 16:52:41 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 18 January 2011.