



SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp®_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

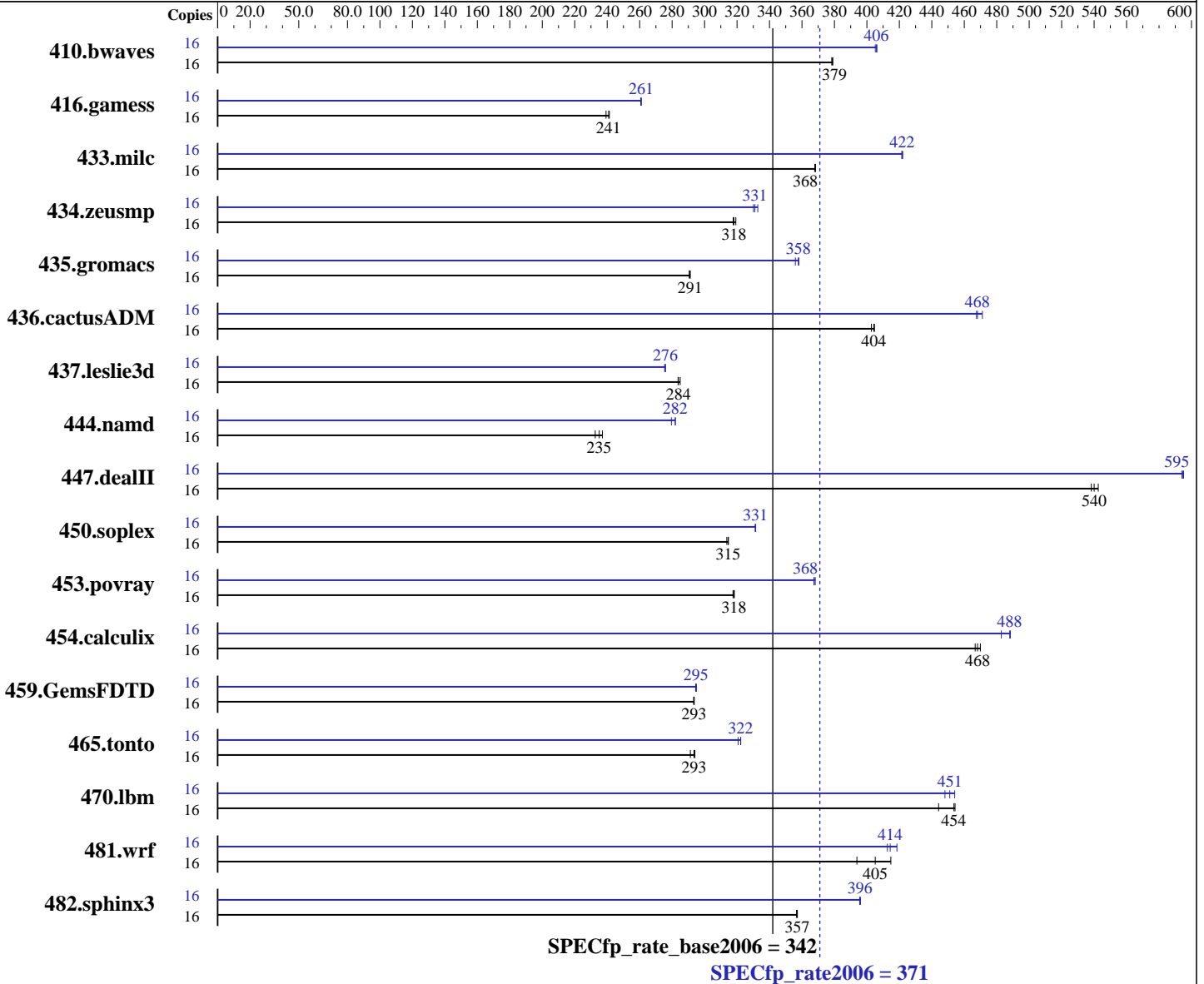
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012



Hardware

CPU Name: AMD Opteron 6308
 CPU Characteristics:
 CPU MHz: 3500
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
 CPU(s) orderable: 2,4 chips

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 6.2, Kernel 2.6.32-220.el6.x86_64
 Compiler: C/C++/Fortran: Version 4.5.2 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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012

Primary Cache: 128 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core
Secondary Cache: 4 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 / 2 cores
Other Cache: None
Memory: 256 GB (32 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	16	575	378	<u>574</u>	<u>379</u>	574	379	16	<u>536</u>	<u>406</u>	535	406	537	405
416.gamess	16	<u>1300</u>	<u>241</u>	1309	239	1298	241	16	1200	261	1202	261	<u>1201</u>	<u>261</u>
433.milc	16	<u>399</u>	<u>368</u>	399	368	399	368	16	<u>348</u>	<u>422</u>	348	422	348	421
434.zeusmp	16	456	319	<u>458</u>	<u>318</u>	458	318	16	441	330	438	333	<u>440</u>	<u>331</u>
435.gromacs	16	392	291	<u>392</u>	<u>291</u>	393	291	16	<u>319</u>	<u>358</u>	321	356	319	358
436.cactusADM	16	472	405	<u>473</u>	<u>404</u>	475	403	16	409	468	406	471	<u>408</u>	<u>468</u>
437.leslie3d	16	<u>530</u>	<u>284</u>	530	284	528	285	16	546	275	545	276	<u>545</u>	<u>276</u>
444.namd	16	541	237	552	233	<u>546</u>	<u>235</u>	16	<u>455</u>	<u>282</u>	455	282	459	280
447.dealII	16	337	543	340	538	<u>339</u>	<u>540</u>	16	<u>308</u>	<u>595</u>	308	594	308	595
450.soplex	16	<u>424</u>	<u>315</u>	424	315	425	314	16	<u>403</u>	<u>331</u>	403	331	403	332
453.povray	16	267	318	<u>268</u>	<u>318</u>	268	318	16	232	367	<u>232</u>	<u>368</u>	231	368
454.calculix	16	<u>282</u>	<u>468</u>	281	470	283	467	16	<u>270</u>	<u>488</u>	273	483	270	488
459.GemsFDTD	16	578	294	579	293	<u>578</u>	<u>293</u>	16	576	294	575	295	<u>576</u>	<u>295</u>
465.tonto	16	541	291	<u>536</u>	<u>293</u>	535	294	16	488	322	<u>489</u>	<u>322</u>	491	321
470.lbm	16	<u>485</u>	<u>454</u>	495	444	484	454	16	491	448	484	454	<u>487</u>	<u>451</u>
481.wrf	16	431	415	454	394	<u>441</u>	<u>405</u>	16	<u>431</u>	<u>414</u>	427	419	433	413
482.sphinx3	16	874	357	873	357	<u>873</u>	<u>357</u>	16	<u>788</u>	<u>396</u>	787	396	788	396

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
Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

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

Test date: Oct-2012
Hardware Availability: Nov-2012
Software Availability: Aug-2012

Operating System Notes (Continued)

```
Set vm/nr_hugepages=14336 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/spec/amd1206-rate-libs-revA/32:/home/spec/amd1206-rate-libs-revA/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 6386SE chips + 128GB Memory using RHEL 6.3

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.deallI: -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
```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012

Base Portability Flags (Continued)

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:

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

C++ benchmarks:

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

Fortran benchmarks:

-Ofast -LNO:blocking=off -LNO:simd_peel_align=on -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso -march=bdver1

Benchmarks using both Fortran and C:

-Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000
-IPA:small_pu=100 -mso -march=bdver1 -LNO:blocking=off
-LNO:simd_peel_align=on -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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012

Peak Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

433.milc: -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
 -march=bdver1

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

482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
 -m32 -IPA:plimit=1000 -OPT:malloc_alg=2 -CG:cmp_peep=on
 -CG:p2align=0 -CG:load_exe=1 -CG:dsched=on
 -INLINE:aggressive=on -LNO:prefetch=2 -LNO:prefetch_ahead=4
 -mso -march=bdver2

C++ benchmarks:

444.namd: -Ofast -IPA:plimit=3000 -LNO:ignore_feedback=off
 -CG:local_sched_alg=0 -CG:load_exe=0 -OPT:unroll_size=256
 -fno-exceptions -HP:bdt=2m:heap=2m -LNO:if_select_conv=1
 -OPT:alias=disjoint -LNO:psimd_iso_unroll=ON -march=bdver1

447.dealIII: -Ofast -D__OPEN64_FAST_SET -static -INLINE:aggressive=on
 -LNO:opt=1 -LNO:simd=2 -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
 -march=bdver1

450.soplex: -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 -mno-fma4 -HP:bdt=2m:heap=2m -WOPT:sib=on

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012

Peak Optimization Flags (Continued)

450.soplex (continued):

-march=bdver1

453.povray: -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

-march=bdver2

Fortran benchmarks:

410.bwaves: -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:bd=2m:heap=2m -CG:cmp_peep=on -march=bdver1

416.gamess: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast

-LNO:fu=6 -LNO:blocking=0 -LNO:simd=2 -OPT:ro=3

-OPT:recip=on -CG:local_sched_alg=1 -HP:bd=2m:heap=2m

-WOPT:sib=on -march=bdver1

434.zeusmp: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast

-LNO:blocking=off -LNO:interchange=off -IPA:plimit=1500

-HP:bd=2m:heap=2m -march=bdver1

437.leslie3d: -Ofast -CG:pre_minreg_level=2 -LNO:simd=0 -LNO:fusion=2

-HP:bd=2m:heap=2m -mso -march=bdver1

459.GemsFDTD: -Ofast -IPA:plimit=1500 -OPT:unroll_size=1024

-OPT:unroll_times_max=16 -LNO:fission=2

-CG:local_sched_alg=2 -HP -march=bdver1

465.tonto: -Ofast -OPT:alias=no_f90_pointer_alias -LNO:blocking=off

-CG:load_exe=1 -CG:local_sched_alg=3 -IPA:plimit=525

-HP:bd=2m:heap=2m -march=bdver1

Benchmarks using both Fortran and C:

435.gromacs: -Ofast -OPT:rsqrt=2 -HP:bd=2m:heap=2m

-CG:local_sched_alg=2 -CG:load_exe=3 -GRA:unspill=on

-march=bdver1 -LNO:simd=3

436.cactusADM: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast

-LNO:blocking=off -LNO:prefetch=2 -LNO:pf2=0

-LNO:prefetch_ahead=4 -HP -CG:locs_shallow_depth=1

-CG:load_exe=0 -CG:dsched=on -WOPT:sib=on -march=bdver1

454.calculix: -Ofast -OPT:unroll_size=256 -OPT:alias=disjoint

-GRA:optimize_boundary=on -CG:dsched=on -HP:bd=2m:heap=2m

-march=bdver1

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 6



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Supermicro A+ Server 4042G-6RF (H8QG6-F, Opteron 6308)
AMD Opteron 6308

SPECfp_rate2006 = 371

SPECfp_rate_base2006 = 342

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2012

Hardware Availability: Nov-2012

Software Availability: Aug-2012

Peak Optimization Flags (Continued)

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

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 14:26:14 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 January 2013.