



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp®2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

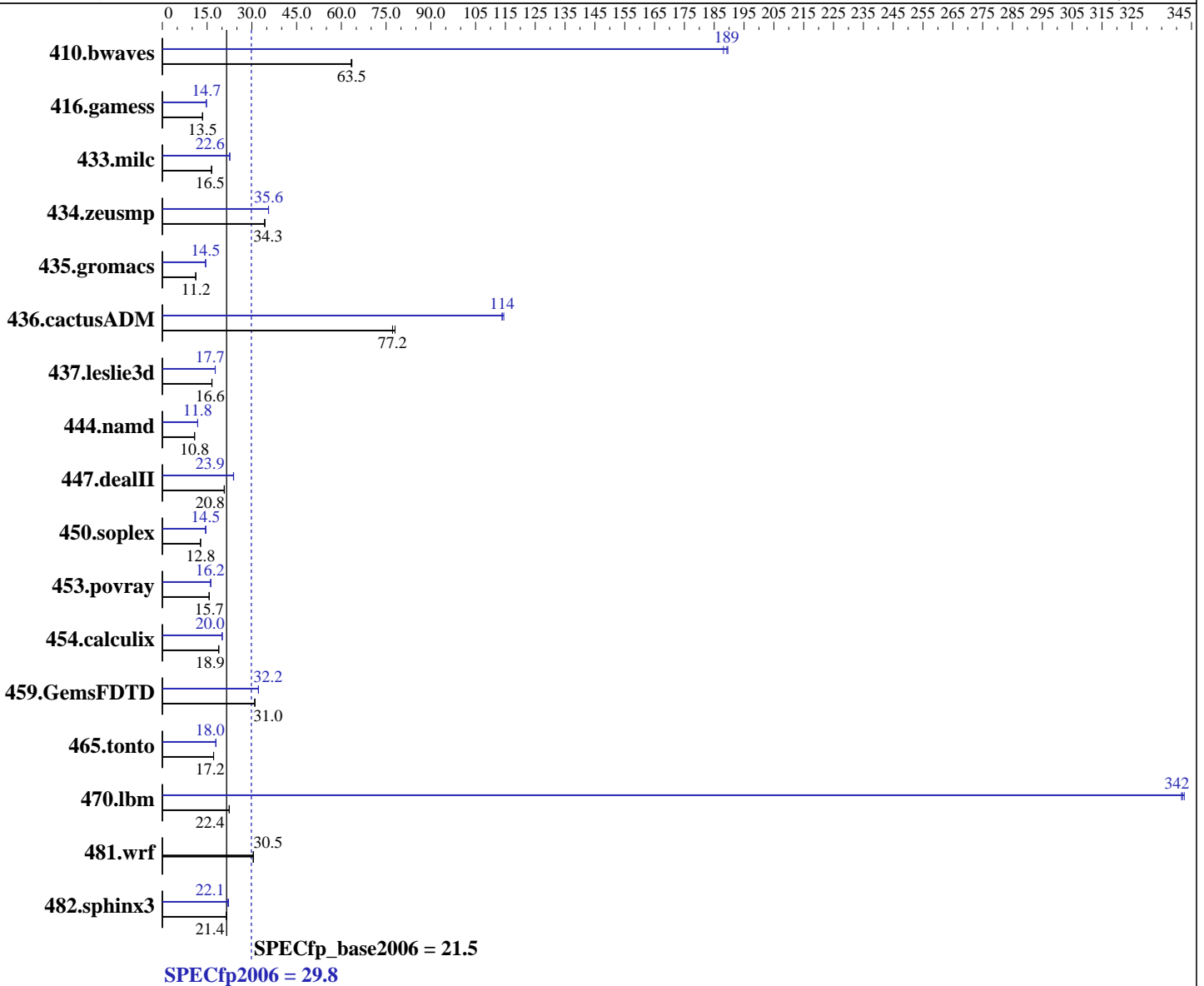
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-2010



### Hardware

CPU Name: AMD Opteron 6172  
 CPU Characteristics:  
 CPU MHz: 2100  
 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

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 5.4,  
 Advanced Platform with patch RHSA-2009:1670,  
 Kernel 2.6.18-164.9.1.el5  
 Compiler: x86 Open64 4.2.3.2 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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-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 2Rx4 PC3-10600R-9, ECC)  
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM  
Other Hardware: None

Other Software: binutils 2.18

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	214	63.6	<b>214</b>	<b>63.5</b>	215	63.3	72.3	188	<b>71.8</b>	<b>189</b>	71.7	190
416.gamess	1455	13.5	1452	13.5	<b>1453</b>	<b>13.5</b>	1330	14.7	1327	14.8	<b>1328</b>	<b>14.7</b>
433.milc	555	16.6	558	16.4	<b>555</b>	<b>16.5</b>	<b>406</b>	<b>22.6</b>	406	22.6	408	22.5
434.zeusmp	266	34.3	<b>265</b>	<b>34.3</b>	265	34.4	<b>256</b>	<b>35.6</b>	256	35.6	256	35.6
435.gromacs	636	11.2	<b>637</b>	<b>11.2</b>	638	11.2	493	14.5	492	14.5	<b>492</b>	<b>14.5</b>
436.cactusADM	155	77.2	153	78.0	<b>155</b>	<b>77.2</b>	<b>105</b>	<b>114</b>	105	114	104	114
437.leslie3d	564	16.7	<b>566</b>	<b>16.6</b>	567	16.6	<b>530</b>	<b>17.7</b>	531	17.7	530	17.7
444.namd	743	10.8	744	10.8	<b>743</b>	<b>10.8</b>	<b>677</b>	<b>11.8</b>	677	11.8	676	11.9
447.dealII	551	20.8	551	20.7	<b>551</b>	<b>20.8</b>	479	23.9	<b>479</b>	<b>23.9</b>	480	23.8
450.soplex	653	12.8	<b>652</b>	<b>12.8</b>	651	12.8	<b>575</b>	<b>14.5</b>	575	14.5	573	14.6
453.povray	339	15.7	<b>339</b>	<b>15.7</b>	339	15.7	328	16.2	329	16.2	<b>328</b>	<b>16.2</b>
454.calculix	<b>436</b>	<b>18.9</b>	436	18.9	438	18.8	411	20.1	<b>411</b>	<b>20.0</b>	412	20.0
459.GemsFDTD	342	31.0	342	31.0	<b>342</b>	<b>31.0</b>	<b>329</b>	<b>32.2</b>	329	32.2	329	32.2
465.tonto	572	17.2	<b>573</b>	<b>17.2</b>	573	17.2	<b>547</b>	<b>18.0</b>	547	18.0	550	17.9
470.lbm	<b>613</b>	<b>22.4</b>	612	22.4	613	22.4	40.1	343	40.2	342	<b>40.2</b>	<b>342</b>
481.wrf	<b>366</b>	<b>30.5</b>	366	30.5	366	30.5	<b>366</b>	<b>30.5</b>	366	30.5	366	30.5
482.sphinx3	<b>911</b>	<b>21.4</b>	907	21.5	912	21.4	893	21.8	<b>880</b>	<b>22.1</b>	878	22.2

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=4000 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

cpuspeed stop was used to set the CPU frequency to its maximum.



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-2010

## General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/root/work/cpu2006/amd1002mc-speed-libs-revA/64:/root/work/cpu2006/amd1002mc-speed-libs-revA/32"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23"
O64_OMP_SPIN_USER_LOCK = "true"
```

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:  
openc

C++ benchmarks:  
openCC

Fortran benchmarks:  
openf95

Benchmarks using both Fortran and C:  
openc 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.lelie3d: -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
482.sphinx3: -DSPEC_CPU_LP64
```



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-2010

## Base Optimization Flags

### C benchmarks:

-march=barcelona -Ofast -HP:bdt=2m:heap=2m

### C++ benchmarks:

-march=barcelona -Ofast -static -INLINE:aggressive=on  
-HP:bdt=2m:heap=2m

### Fortran benchmarks:

-march=barcelona -Ofast -apo -LNO:parallel\_overhead=10000  
-LNO:fusion\_peeling\_limit=0 -HP:bdt=2m:heap=2m

### Benchmarks using both Fortran and C:

-march=barcelona -Ofast -HP:bdt=2m:heap=2m -apo  
-LNO:parallel\_overhead=10000 -LNO:fusion\_peeling\_limit=0

## Peak Compiler Invocation

### C benchmarks:

openc

### C++ benchmarks:

openCC

### Fortran benchmarks:

openf95

### Benchmarks using both Fortran and C:

openc 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  
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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-2010

## Peak Portability Flags (Continued)

482.sphinx3: -DSPEC\_CPU\_LP64

## Peak Optimization Flags

### C benchmarks:

433.milc: -march=barcelona -Ofast -apo -CG:movnti=1  
-CG:local\_sched\_alg=1 -CG:locs\_shallow\_depth=1  
-CG:compute\_to=on -HP:bdt=2m:heap=2m -LNO:prefetch=3

470.lbm: -march=barcelona -Ofast -mso -apo -CG:sse\_cse\_regs=0  
-LNO:prefetch\_ahead=4 -CG:locs\_shallow\_depth=1  
-CG:cmp\_peep=on -CG:compute\_to=on -OPT:unroll\_times\_max=8  
-OPT:unroll\_size=256 -OPT:unroll\_level=2 -OPT:keep\_ext=on  
-OPT:alias=restricted -m3dnow -IPA:inline=off

482.sphinx3: -march=barcelona -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 -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.dealIII: -march=barcelona -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 -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 -CG:load\_exe=0 -fno-exceptions  
-m32 -HP:bdt=2m:heap=2m

453.povray: -march=barcelona -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on  
-HP:bdt=2m:heap=2m

### Fortran benchmarks:

410.bwaves: -march=barcelona -Ofast -apo -OPT:malloc\_alg=2  
-CG:use\_prefetchnta=on -CG:cmp\_peep=on -LNO:blocking=off  
-LNO:prefetch=3 -LNO:prefetch\_ahead=5

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

SPECfp2006 = 29.8

SPECfp\_base2006 = 21.5

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2010

Hardware Availability: Mar-2010

Software Availability: May-2010

## Peak Optimization Flags (Continued)

410.bwaves (continued):

-LNO:ignore\_feedback=off -LNO:apo\_use\_feedback=on  
-WOPT:aggstr=0

416.gamess: -march=barcelona -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 -Ofast -apo -LNO:blocking=off

-LNO:interchange=off -LNO:fusion\_peeling\_limit=0  
-OPT:treeheight=on -OPT:unroll\_size=256 -CG:cmp\_peep=on  
-CG:compute\_to=on -GRA:prioritize\_by\_density=on  
-HP:bdt=2m:heap=2m

437.leslie3d: -march=barcelona -Ofast -apo -OPT:unroll\_size=256

-LNO:prefetch\_ahead=4 -LNO:parallel\_overhead=32768  
-GRA:prioritize\_by\_density=on -m3dnow -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=barcelona -Ofast -apo -LNO:fission=2

-LNO:prefetch\_ahead=1 -CG:load\_exe=0 -CG:local\_sched\_alg=1  
-HP

465.tonto: -march=barcelona -Ofast -apo

-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 -Ofast -apo -OPT:rsqrt=2

-HP:bdt=2m:heap=2m

436.cactusADM: -march=barcelona -fb\_create fbdata(pass 1)

-fb\_opt fbdata(pass 2) -Ofast -apo  
-LANG:heap\_allocation\_threshold=1000 -LNO:prefetch\_ahead=1  
-HP:bdt=2m:heap=2m

454.calculix: -march=barcelona -Ofast -LNO:prefetch\_ahead=30

-CG:load\_exe=0 -CG:ptr\_load\_use=0 -CG:local\_sched\_alg=2  
-CG:compute\_to=on -WOPT:unroll=2 -GRA:optimize\_boundary=on  
-HP:bdt=2m:heap=2m -apo

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.html>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.20101207.html>



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 1022G-NTF,  
AMD Opteron 6172

**SPECfp2006 = 29.8**

**SPECfp\_base2006 = 21.5**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Oct-2010

**Hardware Availability:** Mar-2010

**Software Availability:** May-2010

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.xml>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.20101207.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](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 14:07:35 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 7 December 2010.