



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

### SPECfp®\_rate2006 = 312

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

### SPECfp\_rate\_base2006 = 289

CPU2006 license: 9016

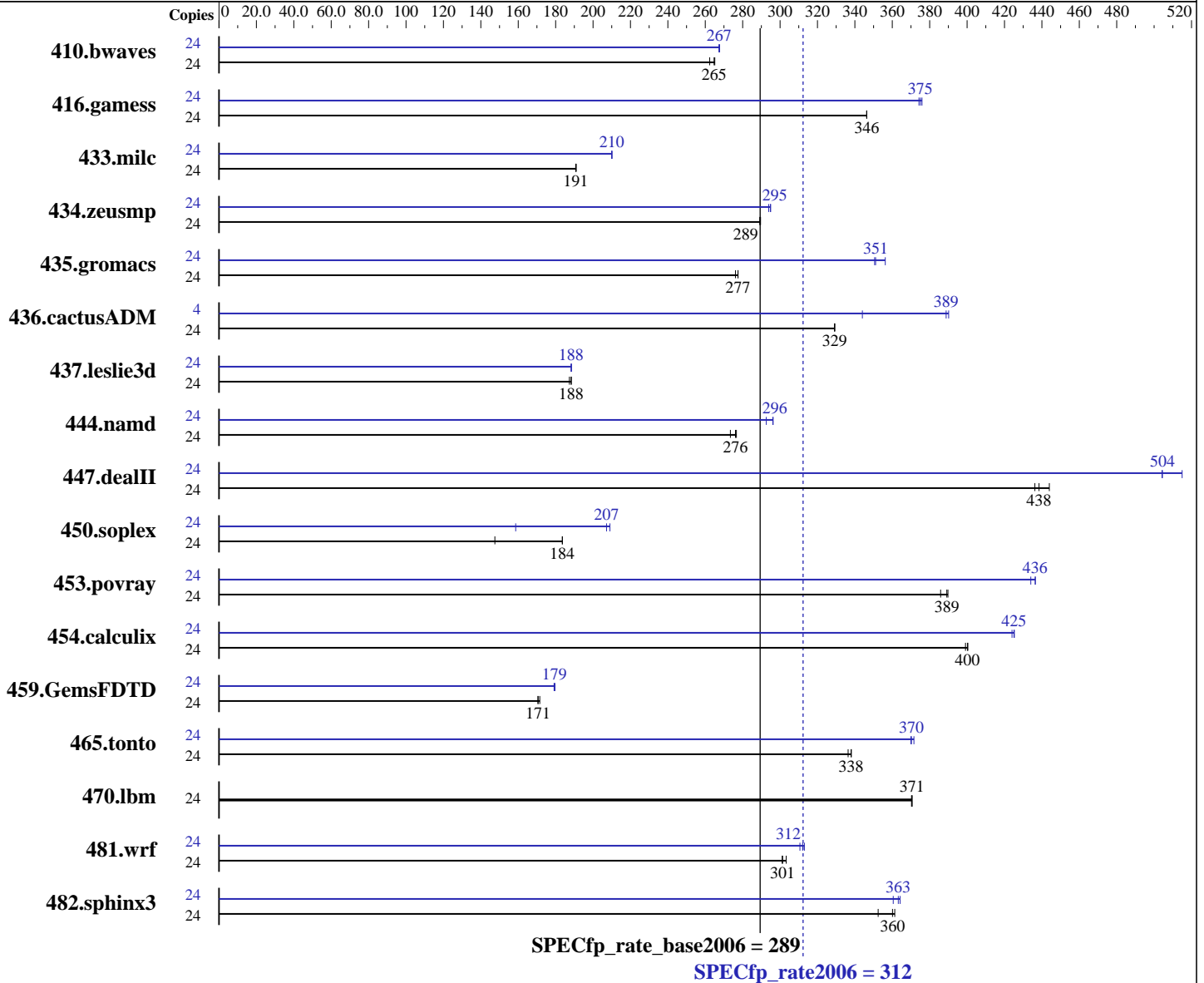
Test date: Nov-2010

Test sponsor: ASUSTeK Computer Inc.

Hardware Availability: Aug-2010

Tested by: ASUSTeK Computer Inc.

Software Availability: Oct-2010



**Hardware**

CPU Name: AMD Opteron 6174  
 CPU Characteristics:  
 CPU MHz: 2200  
 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: SUSE Linux Enterprise Server 11 (x86\_64), Kernel 2.6.27.19-5-default  
 Compiler: x86 Open64 4.2.4 Compiler Suite (from AMD)  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multiuser)  
 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

## ASUSTeK Computer Inc.

SPECfp\_rate2006 = 312

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

SPECfp\_rate\_base2006 = 289

CPU2006 license: 9016

Test date: Nov-2010

Test sponsor: ASUSTeK Computer Inc.

Hardware Availability: Aug-2010

Tested by: ASUSTeK Computer Inc.

Software Availability: Oct-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: Seagate ST3500320AS 1 x 500 GB SATA, 7200 RPM  
Other Hardware: None

## Results Table

| Benchmark     | Base   |            |            |             |            |             |            | Peak   |             |            |             |            |             |            |
|---------------|--------|------------|------------|-------------|------------|-------------|------------|--------|-------------|------------|-------------|------------|-------------|------------|
|               | Copies | Seconds    | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      | Copies | Seconds     | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      |
| 410.bwaves    | 24     | 1243       | 262        | 1230        | 265        | <u>1232</u> | <u>265</u> | 24     | <u>1220</u> | <u>267</u> | 1220        | 267        | 1218        | 268        |
| 416.gamess    | 24     | 1357       | 346        | <u>1357</u> | <u>346</u> | 1357        | 346        | 24     | 1250        | 376        | <u>1253</u> | <u>375</u> | 1256        | 374        |
| 433.milc      | 24     | 1153       | 191        | <u>1155</u> | <u>191</u> | 1155        | 191        | 24     | 1049        | 210        | 1049        | 210        | <u>1049</u> | <u>210</u> |
| 434.zeusmp    | 24     | <u>755</u> | <u>289</u> | 754         | 290        | 755         | 289        | 24     | <u>741</u>  | <u>295</u> | 743         | 294        | 740         | 295        |
| 435.gromacs   | 24     | 621        | 276        | <u>618</u>  | <u>277</u> | 617         | 278        | 24     | <u>488</u>  | <u>351</u> | 481         | 356        | 489         | 351        |
| 436.cactusADM | 24     | <u>871</u> | <u>329</u> | 871         | 329        | 871         | 329        | 4      | <u>123</u>  | <u>389</u> | 139         | 344        | 123         | 390        |
| 437.leslie3d  | 24     | 1198       | 188        | 1204        | 187        | <u>1198</u> | <u>188</u> | 24     | 1198        | 188        | 1197        | 188        | <u>1198</u> | <u>188</u> |
| 444.namd      | 24     | 704        | 273        | 696         | 277        | <u>697</u>  | <u>276</u> | 24     | 658         | 293        | <u>650</u>  | <u>296</u> | 650         | 296        |
| 447.dealII    | 24     | 618        | 444        | 629         | 436        | <u>626</u>  | <u>438</u> | 24     | 533         | 515        | <u>544</u>  | <u>504</u> | 545         | 504        |
| 450.soplex    | 24     | 1357       | 148        | <u>1090</u> | <u>184</u> | 1090        | 184        | 24     | 1262        | 159        | <u>966</u>  | <u>207</u> | 958         | 209        |
| 453.povray    | 24     | 331        | 386        | <u>328</u>  | <u>389</u> | 328         | 390        | 24     | 294         | 434        | <u>293</u>  | <u>436</u> | 293         | 437        |
| 454.calculix  | 24     | 495        | 400        | <u>495</u>  | <u>400</u> | 496         | 399        | 24     | <u>466</u>  | <u>425</u> | 466         | 425        | 467         | 424        |
| 459.GemsFDTD  | 24     | 1485       | 172        | 1493        | 171        | <u>1493</u> | <u>171</u> | 24     | 1421        | 179        | 1417        | 180        | <u>1420</u> | <u>179</u> |
| 465.tonto     | 24     | 699        | 338        | 702         | 336        | <u>699</u>  | <u>338</u> | 24     | 636         | 372        | 638         | 370        | <u>638</u>  | <u>370</u> |
| 470.lbm       | 24     | 890        | 371        | 891         | 370        | <u>890</u>  | <u>371</u> | 24     | 890         | 371        | 891         | 370        | <u>890</u>  | <u>371</u> |
| 481.wrf       | 24     | 890        | 301        | 884         | 303        | <u>890</u>  | <u>301</u> | 24     | 863         | 311        | <u>859</u>  | <u>312</u> | 856         | 313        |
| 482.sphinx3   | 24     | 1327       | 352        | <u>1299</u> | <u>360</u> | 1295        | 361        | 24     | 1298        | 361        | 1284        | 364        | <u>1288</u> | <u>363</u> |

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

**ASUSTeK Computer Inc.**

**SPECfp\_rate2006 = 312**

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

**SPECfp\_rate\_base2006 = 289**

**CPU2006 license:** 9016

**Test date:** Nov-2010

**Test sponsor:** ASUSTeK Computer Inc.

**Hardware Availability:** Aug-2010

**Tested by:** ASUSTeK Computer Inc.

**Software Availability:** Oct-2010

## Platform Notes

SSI Server Power Supply 600W or higher  
System was configured with ASPEED AST2050 VGA (on board VGA)

## General Notes

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

HUGETLB\_LIMIT = "450"

LD\_LIBRARY\_PATH = "/cpu2006/amd1002-rate-libs-revC/64:/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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

**SPECfp\_rate2006 = 312**

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

**SPECfp\_rate\_base2006 = 289**

**CPU2006 license:** 9016

**Test date:** Nov-2010

**Test sponsor:** ASUSTeK Computer Inc.

**Hardware Availability:** Aug-2010

**Tested by:** ASUSTeK Computer Inc.

**Software Availability:** Oct-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:

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

**SPECfp\_rate2006 = 312**

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

**SPECfp\_rate\_base2006 = 289**

**CPU2006 license:** 9016

**Test date:** Nov-2010

**Test sponsor:** ASUSTeK Computer Inc.

**Hardware Availability:** Aug-2010

**Tested by:** ASUSTeK Computer Inc.

**Software Availability:** Oct-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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

**SPECfp\_rate2006 = 312**

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

**SPECfp\_rate\_base2006 = 289**

**CPU2006 license:** 9016

**Test date:** Nov-2010

**Test sponsor:** ASUSTeK Computer Inc.

**Hardware Availability:** Aug-2010

**Tested by:** ASUSTeK Computer Inc.

**Software Availability:** Oct-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.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.xml>



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS500A-S6 (KGPX-D24) server system  
(2.2 GHz AMD Opteron 6174)

**SPECfp\_rate2006 = 312**

**SPECfp\_rate\_base2006 = 289**

**CPU2006 license:** 9016

**Test sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test date:** Nov-2010

**Hardware Availability:** Aug-2010

**Software Availability:** Oct-2010

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 14:11:24 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 7 December 2010.