SPEC® CFP2006 Result
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ASUSTeK Computer Inc.

ASUS RS500A-X6 (KCNR-D12) server system
(AMD Opteron 4184, 2.80GHz)

$SPECfp^®\_rate2006 =$ 183

SPECfp_rate_base2006 = 167

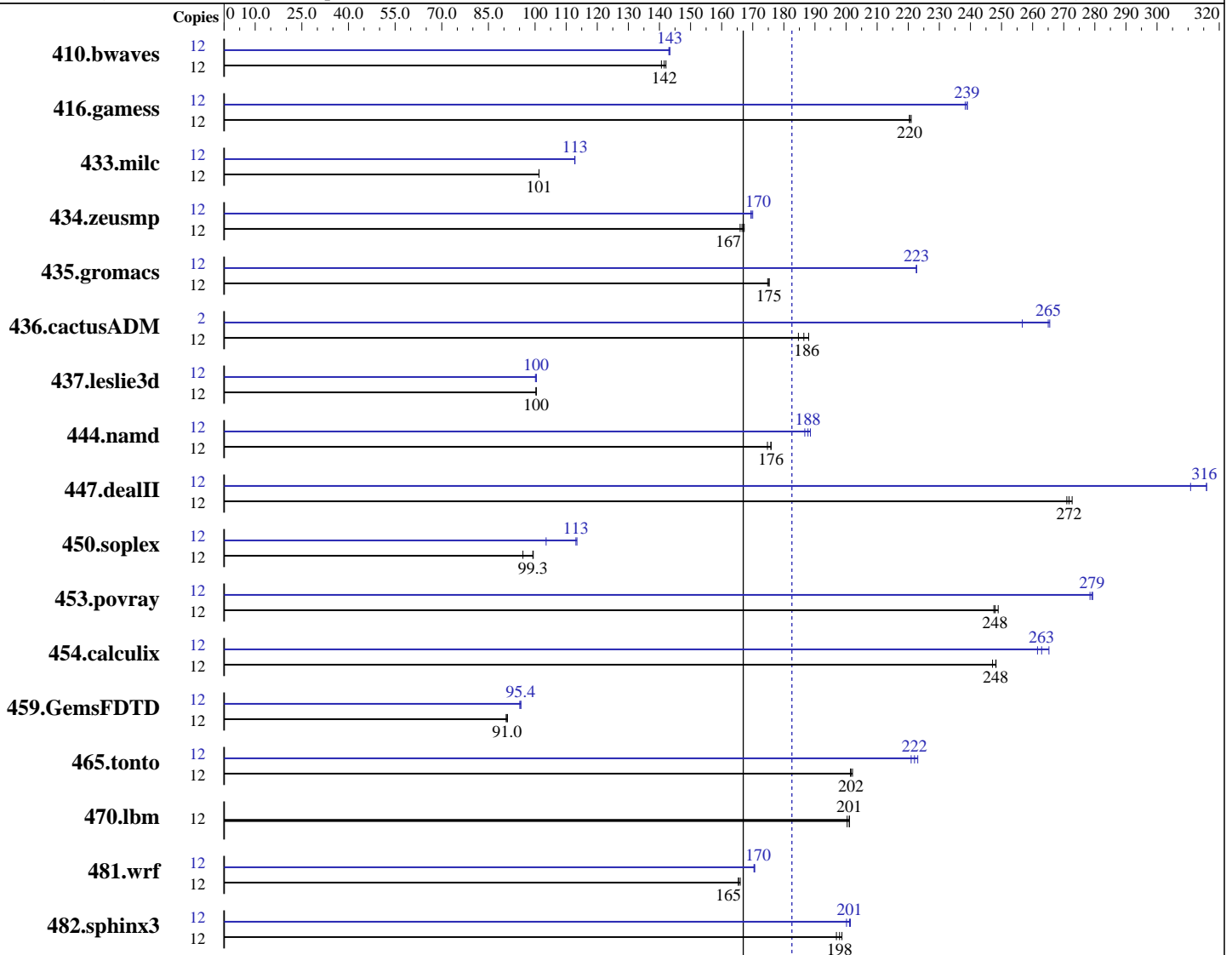|	
CPU2006 license: 9016	**Test date:** Dec-2010
Test sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Dec-2010
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Jul-2010

SPECfp_rate_base2006 = 167

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Hardware

CPU Name:	AMD Opteron 4184
CPU Characteristics:	
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	binutils 2.18

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L3 Cache:	6 MB I+D on chip per chip
Other Cache:	None
Memory:	32 GB (4 x 8 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	12	1160	141	1148	142	**1152**	**142**	12	1140	143	**1138**	**143**	1138	143
416.gamess	12	1063	221	**1066**	**220**	1066	220	12	983	239	**984**	**239**	986	238
433.milc	12	1088	101	**1088**	**101**	1088	101	12	977	113	**977**	**113**	977	113
434.zeusmp	12	658	166	653	167	**656**	**167**	12	644	169	**644**	**170**	642	170
435.gromacs	12	490	175	**489**	**175**	489	175	12	385	223	385	223	**385**	**223**
436.cactusADM	12	776	185	763	188	**769**	**186**	2	90.0	266	93.1	257	**90.2**	**265**
437.leslie3d	12	1124	100	1124	100	**1124**	**100**	12	1123	100	1127	100	**1124**	**100**
444.namd	12	551	175	547	176	**547**	**176**	12	515	187	510	189	**513**	**188**
447.dealII	12	503	273	**505**	**272**	507	271	12	435	316	442	311	**435**	**316**
450.soplex	12	1041	96.1	**1008**	**99.3**	1007	99.4	12	967	104	**885**	**113**	882	113
453.povray	12	**257**	**248**	256	249	258	248	12	229	278	**229**	**279**	229	279
454.calculix	12	399	248	401	247	**399**	**248**	12	**377**	**263**	378	262	373	265
459.GemsFDTD	12	1404	90.7	1397	91.1	**1400**	**91.0**	12	1334	95.4	1339	95.1	**1335**	**95.4**
465.tonto	12	**586**	**202**	584	202	586	201	12	529	223	534	221	**532**	**222**
470.lbm	12	820	201	823	200	**820**	**201**	12	820	201	823	200	**820**	**201**
481.wrf	12	808	166	**810**	**165**	810	165	12	**786**	**170**	787	170	785	171
482.sphinx3	12	**1182**	**198**	1188	197	1177	199	12	1169	200	1161	201	**1163**	**201**

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=5400 in /etc/sysctl.conf
    mount -t hugetlbfs nodev /mnt/hugepages

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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
   482.sphinx3: -DSPEC_CPU_LP64
```

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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
    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
```

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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
               -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
```

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Peak Optimization Flags (Continued)

```
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

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

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