

SPEC® CFP2006 Result

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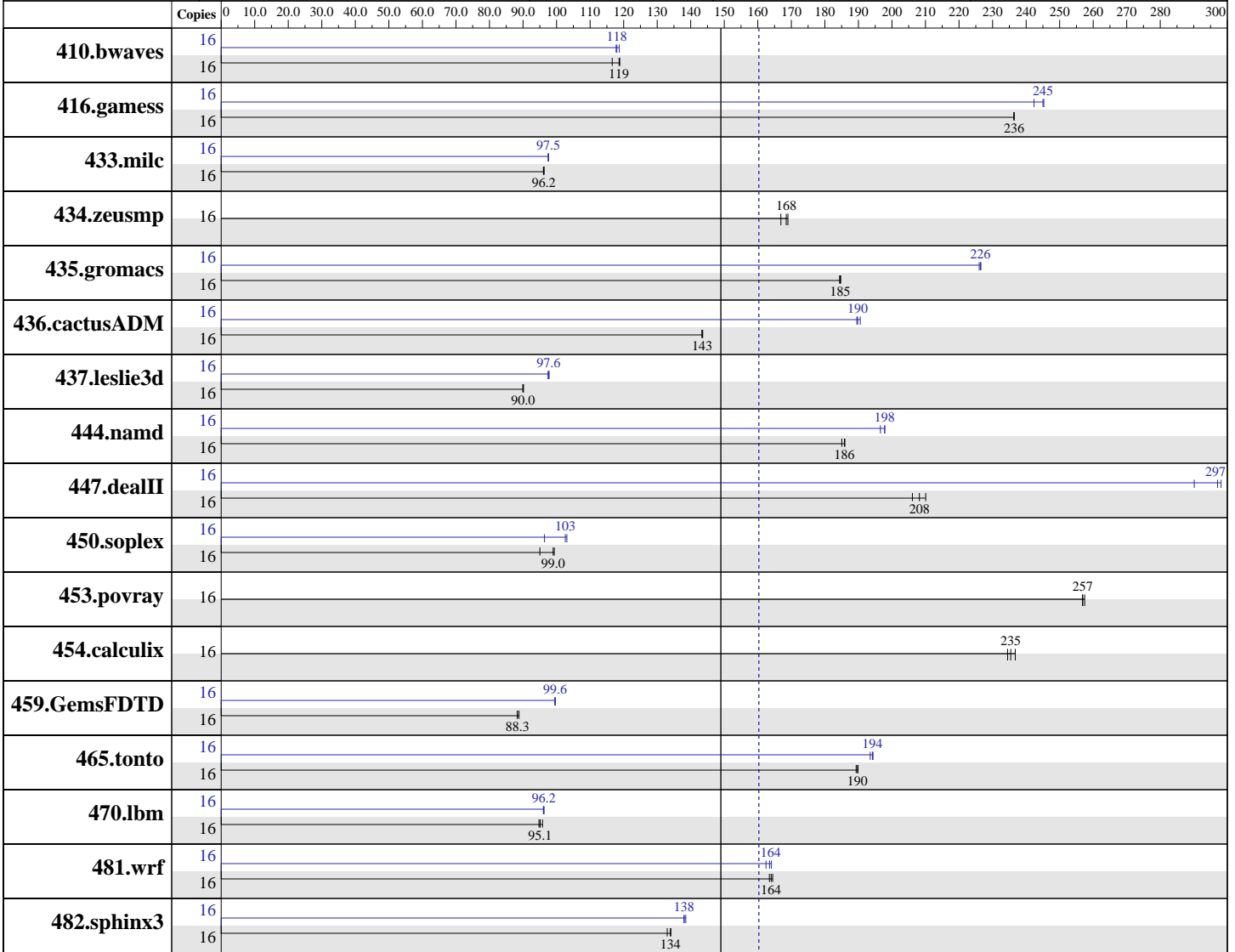
Tyan

SPECfp®_rate2006 = 160

Tyan Thunder n425QE (S4985E), AMD Opteron 8360SE

SPECfp_rate_base2006 = 149

CPU2006 license #: 49 | Test sponsor: Advanced Micro Devices | Test date: Sep-2007 | Hardware Availability: Dec-2007 | Software Availability: Oct-2007



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Hardware

CPU Name: AMD Opteron 8360SE
 CPU Characteristics:
 CPU MHz: 2500
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
 CPU(s) orderable: 2,4 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 2 MB I+D on chip per chip
 Other Cache: None
 Memory: 32 GB (16x2GB, DDR2-667 CL5 Reg Dual Rank)

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Software

Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel
 Compiler: The Portland Group (PGI)
 PGI pgf90 7.1-0 Fortran Compiler
 PGI pgcc 7.1-0 C Compiler
 PGI pgCC 7.1-0 C++ Compiler
 The PathScale Compiler v3.0
 PathScale pathf95 3.0 Fortran Compiler
 PathScale pathcc 3.0 C Compiler
 PathScale pathCC 3.0 C++ Compiler

Auto Parallel: No

File System: Linux/reiserfs

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Hardware (Continued)

Disk Subsystem: 1x250GB SATA, 7200 RPM
Other Hardware: None

Software (Continued)

System State: Multi-user, run level 3
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
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	1870	117	<u>1830</u>	<u>119</u>	1830	119	16	1850	118	1830	119	<u>1840</u>	<u>118</u>		
416.gamess	16	<u>1330</u>	<u>236</u>	1330	236	1330	236	16	1290	242	1280	245	<u>1280</u>	<u>245</u>		
433.milc	16	<u>1530</u>	<u>96.2</u>	1530	96.1	1530	96.3	16	1510	97.6	1510	97.5	<u>1510</u>	<u>97.5</u>		
434.zeusmp	16	872	167	<u>864</u>	<u>168</u>	862	169	16	872	167	<u>864</u>	<u>168</u>	862	169		
435.gromacs	16	620	184	<u>619</u>	<u>185</u>	618	185	16	505	226	504	227	<u>505</u>	<u>226</u>		
436.cactusADM	16	<u>1330</u>	<u>143</u>	1330	144	1330	143	16	<u>1010</u>	<u>190</u>	1000	191	1010	190		
437.leslie3d	16	<u>1670</u>	<u>90.0</u>	1670	90.1	1670	89.9	16	1540	97.5	<u>1540</u>	<u>97.6</u>	1540	97.8		
444.namd	16	693	185	690	186	<u>691</u>	<u>186</u>	16	653	197	<u>649</u>	<u>198</u>	649	198		
447.dealII	16	871	210	888	206	<u>879</u>	<u>208</u>	16	<u>616</u>	<u>297</u>	631	290	614	298		
450.soplex	16	1400	95.0	<u>1350</u>	<u>99.0</u>	1340	99.3	16	1380	96.4	<u>1300</u>	<u>103</u>	1290	103		
453.povray	16	331	257	<u>331</u>	<u>257</u>	331	257	16	331	257	<u>331</u>	<u>257</u>	331	257		
454.calculix	16	558	237	<u>561</u>	<u>235</u>	563	234	16	558	237	<u>561</u>	<u>235</u>	563	234		
459.GemsFDTD	16	1920	88.3	1910	88.8	<u>1920</u>	<u>88.3</u>	16	1700	99.6	1710	99.5	<u>1700</u>	<u>99.6</u>		
465.tonto	16	829	190	<u>830</u>	<u>190</u>	832	189	16	810	194	<u>811</u>	<u>194</u>	814	194		
470.lbm	16	2320	94.8	<u>2310</u>	<u>95.1</u>	2290	95.8	16	2280	96.2	2290	96.1	<u>2280</u>	<u>96.2</u>		
481.wrf	16	1090	163	<u>1090</u>	<u>164</u>	1090	164	16	1100	162	<u>1090</u>	<u>164</u>	1090	164		
482.sphinx3	16	2340	133	<u>2330</u>	<u>134</u>	2330	134	16	2250	139	<u>2260</u>	<u>138</u>	2260	138		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'ulimit -s unlimited' used to set environment stack size
'ulimit -l 4915200' was used to set environment lock pages quantity
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=2400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Environment variable PGI_HUGE_PAGES set to 150
```

General Notes

The tested system can be assembled using a Zippy PSL-6701P 700W 12V power supply.

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Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

Fortran benchmarks:

pgf95

Benchmarks using both Fortran and C:

pgcc pgf95

Peak Compiler Invocation

C benchmarks (except as noted below):

pathcc

433.milc: pgcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pathf95

465.tonto: pgf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95

436.cactusADM: pathcc pathf95

Base Portability Flags

C benchmarks:

-DSPEC_CPU_LP64

C++ benchmarks (except as noted below):

-DSPEC_CPU_LP64

453.povray: -DSPEC_CPU_LP64

Fortran benchmarks:

-DSPEC_CPU_LP64

Benchmarks using both Fortran and C (except as noted below):

-DSPEC_CPU_LP64 -Mnomain

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Base Portability Flags (Continued)

436.cactusADM: -DSPEC_CPU_LP64 -Mnomain

481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG

Peak Portability Flags

C benchmarks:

-DSPEC_CPU_LP64

C++ benchmarks (except as noted below):

No flags used

444.namd: -DSPEC_CPU_LP64

Fortran benchmarks (except as noted below):

-DSPEC_CPU_LP64

Benchmarks using both Fortran and C:

435.gromacs: -DSPEC_CPU_LP64 -Mnomain

436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore

481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG

Base Optimization Flags

C benchmarks:

-fast -Mfprelaxed -Mipa=fast -Mipa=inline -Msmartalloc=huge:448
-Bstatic_pgi -tp barcelona-64

C++ benchmarks:

-fast --zc_eh -Mfprelaxed -Mipa=fast -Mipa=inline
-Msmartalloc=huge:448 -Bstatic_pgi -tp barcelona-64

Fortran benchmarks:

-fast -Mfprelaxed -Mipa=fast -Mipa=inline -Msmartalloc=huge:448
-Bstatic_pgi -tp barcelona-64

Benchmarks using both Fortran and C:

-fast -Mfprelaxed -Mipa=fast -Mipa=inline -Msmartalloc=huge:448
-Bstatic_pgi -tp barcelona-64

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

433.milc: -fast -Mfprelaxed -Mpfi(pass 1) -Mpfo(pass 2)
-Mipa=noarg(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Msmartalloc=huge:448 -Mdse -Bstatic_pgi -O4
-tp barcelona-64

470.lbm: -Ofast

482.sphinx3: -O3 -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32
-OPT:Ofast -WOPT:aggstr=0

C++ benchmarks:

444.namd: -fast --zc_eh -Mfprelaxed -Mprefetch -Msmartalloc=huge:448
-Msafeptr=static -Munroll=n:4 -Mnodepchk -Msafe_lastval
-Mstride0 -Mvect=noidiom -Mvect=prefetch -Bstatic_pgi -O4
-tp barcelona-64

447.deall: -fno-exceptions -Ofast -INLINE:aggressive=on -m32
-OPT:malloc_alg=1

450.soplex: -O3 -fno-exceptions -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -CG:load_exe=0 -CG:movnti=1
-LNO:minvariant=off -LNO:prefetch=1 -m32 -OPT:IEEE_arith=3

453.povray: basepeak = yes

Fortran benchmarks:

410.bwaves: -O3 -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-LNO:blocking=off -LNO:ignore_feedback=off -OPT:IEEE_arith=3
-OPT:Ofast

416.gamess: -O2 -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

434.zeusmp: basepeak = yes

437.leslie3d: -Ofast -OPT:malloc_alg=1

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -fast -Mfprelaxed -Mipa=fast -Mipa=inline
-Msmartalloc=huge:448 -Mvect=noaltcode -Bstatic_pgi -O4
-tp barcelona-64

Benchmarks using both Fortran and C:

435.gromacs: -fast -Mfprelaxed -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline
-Msmartalloc=huge:448 -Bstatic_pgi -tp barcelona-64

436.cactusADM: -O3 -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -ipa
-LNO:full_unroll=5 -LNO:ou_prod_max=10 -LNO:prefetch_ahead=5
-LNO:prefetch=3

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Peak Optimization Flags (Continued)

454.calculix: basepeak = yes

481.wrf: -fast -Mfprelaxed -Msmartalloc=huge:448 -Mvect=noaltcode
-Bstatic_pgi -tp barcelona-64

Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w

Benchmarks using both Fortran and C:

-w

Peak Other Flags

C benchmarks (except as noted below):

No flags used

433.milc: -w

C++ benchmarks:

444.namd: -w

447.dealIII: -static

450.soplex: No flags used

Fortran benchmarks (except as noted below):

No flags used

465.tonto: -w

Benchmarks using both Fortran and C (except as noted below):

-w

436.cactusADM: No flags used

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