



SPEC[®] CFP2006 Result

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Sun Microsystems

SPECfp[®]_rate2006 = 582

Sun SPARC Enterprise M8000

SPECfp_rate_base2006 = 538

CPU2006 license: 6

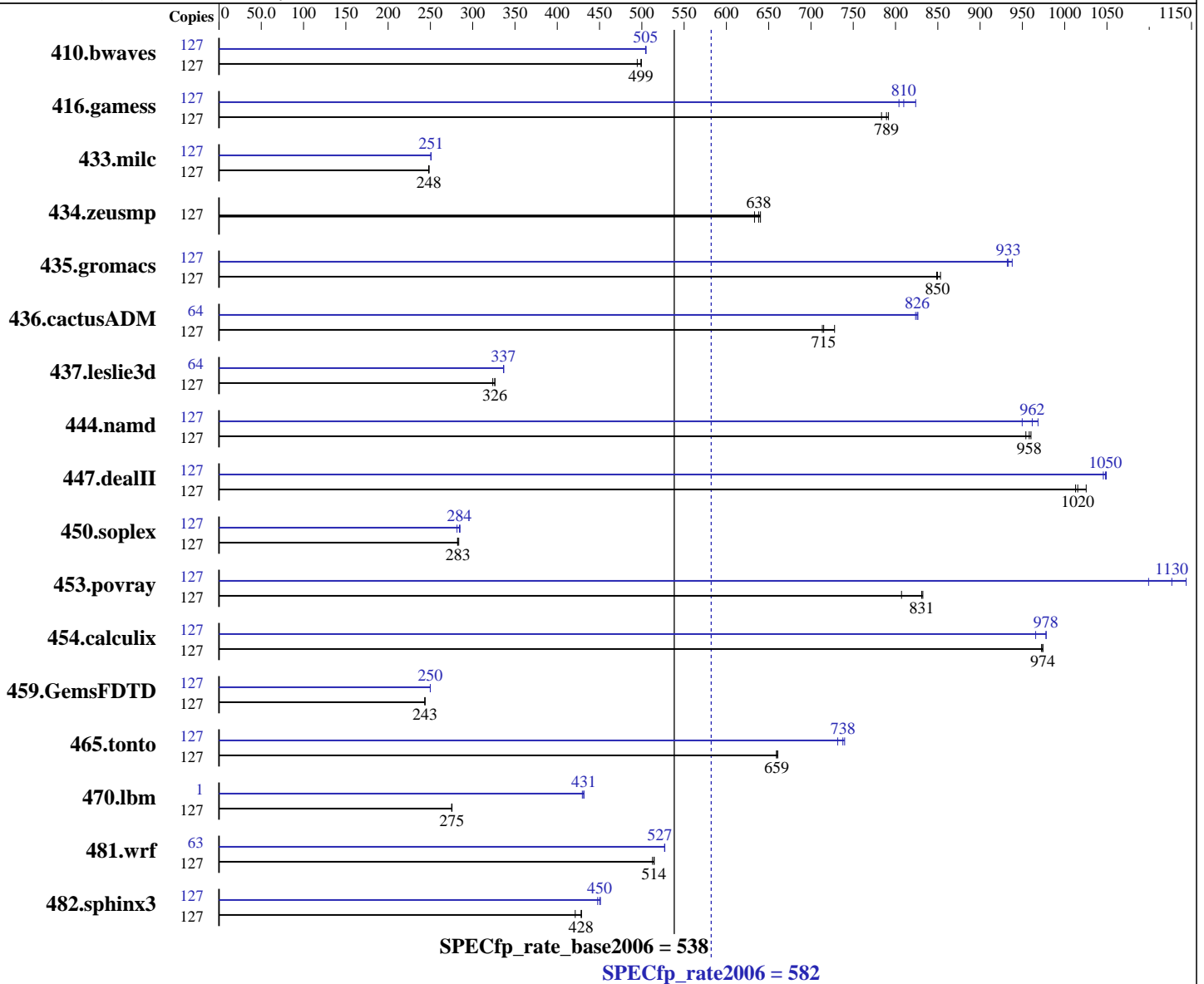
Test date: Jun-2008

Test sponsor: Sun Microsystems

Hardware Availability: Jul-2008

Tested by: Sun Microsystems

Software Availability: Jul-2008



Hardware

CPU Name: SPARC64 VII
 CPU Characteristics:
 CPU MHz: 2520
 FPU: Integrated
 CPU(s) enabled: 64 cores, 16 chips, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 1 to 4 CMUs; each CMU contains 2 or 4 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 6 MB I+D on chip per chip

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Software

Operating System: Solaris 10 5/08 with Patch 137111-03
 Compiler: Sun Studio 12 with patches
 124867-06, 124861-07, 124863-05, 127000-05
 (see patch information below)
 Auto Parallel: Yes
 File System: ufs
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit

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L3 Cache: None
 Other Cache: None
 Memory: 256 GB (128 x 2 GB)
 Disk Subsystem: 805 GB RAID 0 Solaris Volume
 12 x Fujitsu 73 GB 10000 RPM SAS
 Stripe interlace size 512 Kbytes
 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	127	3490	495	<u>3459</u>	<u>499</u>	3455	499	127	3417	505	<u>3420</u>	<u>505</u>	3422	504
416.gamess	127	3174	783	3141	792	<u>3150</u>	<u>789</u>	127	<u>3071</u>	<u>810</u>	3093	804	3018	824
433.milc	127	<u>4700</u>	<u>248</u>	4703	248	4692	248	127	4655	250	<u>4651</u>	<u>251</u>	4646	251
434.zeusmp	127	1825	633	<u>1811</u>	<u>638</u>	1805	640	127	1825	633	<u>1811</u>	<u>638</u>	1805	640
435.gromacs	127	<u>1067</u>	<u>850</u>	1063	853	1068	849	127	<u>971</u>	<u>933</u>	967	938	973	932
436.cactusADM	127	<u>2122</u>	<u>715</u>	2085	728	2127	713	64	925	826	928	824	<u>926</u>	<u>826</u>
437.leslie3d	127	<u>3660</u>	<u>326</u>	3659	326	3688	324	64	1788	336	1787	337	<u>1788</u>	<u>337</u>
444.namd	127	1068	954	<u>1063</u>	<u>958</u>	1061	960	127	1072	950	<u>1059</u>	<u>962</u>	1052	969
447.dealII	127	<u>1431</u>	<u>1020</u>	1417	1030	1434	1010	127	<u>1386</u>	<u>1050</u>	1389	1050	1385	1050
450.soplex	127	<u>3749</u>	<u>283</u>	3755	282	3736	284	127	3763	281	<u>3725</u>	<u>284</u>	3716	285
453.povray	127	812	832	<u>813</u>	<u>831</u>	837	807	127	<u>600</u>	<u>1130</u>	591	1140	615	1100
454.calculix	127	<u>1076</u>	<u>974</u>	1076	974	1077	973	127	1071	978	1085	966	<u>1071</u>	<u>978</u>
459.GemsFDTD	127	5530	244	5536	243	<u>5534</u>	<u>243</u>	127	<u>5393</u>	<u>250</u>	5394	250	5392	250
465.tonto	127	1891	661	<u>1895</u>	<u>659</u>	1895	659	127	<u>1694</u>	<u>738</u>	1708	732	1689	740
470.lbm	127	6334	276	6344	275	<u>6334</u>	<u>275</u>	1	32.0	430	<u>31.9</u>	<u>431</u>	31.8	432
481.wrf	127	2768	513	<u>2758</u>	<u>514</u>	2757	515	63	1335	527	1335	527	<u>1335</u>	<u>527</u>
482.sphinx3	127	5774	429	5876	421	<u>5781</u>	<u>428</u>	127	5528	448	<u>5498</u>	<u>450</u>	5487	451

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

Compiler Invocation Notes

Sun Studio compiler patches are available at
http://developers.sun.com/sunstudio/downloads/patches/ss12_patches.jsp

Submit Notes

Processes were assigned to specific processors using 'pbind' commands. The config file option 'submit' was used, along with a list of processors in the 'BIND' variable, to generate the pbind commands. (For details, please see the config file.)



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Operating System Notes

Environment Variable Settings:

The maximum number of threads a program can create was set with:
OMP_NUM_THREADS=127

Program threads were bound to processors with:
SUNW_MP_PROCBIND="1-127"

Behavior of parallel threads was set with:
SUNW_MP_THR_IDLE=SPIN

SPIN specifies that an idle thread should spin while waiting at barrier or waiting for new parallel regions to work on.

System Tunables (/etc/system parameters):

tune_t_fsflushr=10

Controls how many seconds elapse between runs of the page flush daemon, fsflush.

autoup=300

Causes pages older than the listed number of seconds to be written by fsflush.

bufhwm=3000

Memory byte limit for caching I/O buffers

segmap_percent=3

Set maximum percent memory for file system cache

lpg_alloc_prefer=1

Set lgroup page allocation to strongly prefer local pages

Other System Settings:

The webconsole service was turned off using
svcadm disable webconsole

Platform Notes

Memory is 8-way interleaved by filling all slots with the same capacity DIMMs.

This result is measured on a Sun SPARC Enterprise M8000 Server.

Note that the Sun SPARC Enterprise M8000 and Fujitsu SPARC Enterprise M8000 are electrically equivalent.



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Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Base Optimization Flags

C benchmarks:

-fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=1
-xalias_level=std -xprefetch_auto_type=indirect_array_access

C++ benchmarks:

-xdepend -library=stlport4 -fast -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=1 -xalias_level=compatible

Fortran benchmarks:

-fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=1

Benchmarks using both Fortran and C:

-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=1 -xalias_level=std
-xprefetch_auto_type=indirect_array_access

Base Other Flags

C benchmarks:

-xjobs=16 -V -#

C++ benchmarks:

-xjobs=16 -verbose=diags,version

Fortran benchmarks:

-xjobs=16 -V -v

Benchmarks using both Fortran and C:

-xjobs=16 -V -# -v



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Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Peak Optimization Flags

C benchmarks:

433.milc: -fast -xpagesize=4M -xipo=2 -xprefetch_level=2 -fsimple=1
-xprefetch_auto_type=indirect_array_access
-W2,-Ainline:rs=400 -xalias_level=std -fma=fused

470.lbm: -fast -xipo=2 -xprefetch=latx:0.1 -m64 -xvector
-xalias_level=strong -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access -xarch=generic
-xautopar -xreduction

482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xinline= -xprefetch=no -xalias_level=strong -fma=fused
-lfast

C++ benchmarks:

444.namd: -xdepend -library=stlport4 -fast -xpagesize=4M
-xalias_level=compatible -fma=fused -xprefetch=latx:7

447.dealII: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xalias_level=compatible -xipo=2 -xrestrict -fma=fused

450.soplex: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xalias_level=compatible -xipo=2 -xprefetch=no -fsimple=0
-xrestrict

453.povray: Same as 447.dealII

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Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: -fast -xpagesize=4M -xipo=2 -xprefetch_level=2 -fma=fused

416.gamess: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xipo=2 -xprefetch_level=2 -fma=fused

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xpagesize=4M -fma=fused -xipo=2 -xprefetch=latx:4
-xprefetch_level=2

459.GemsFDTD: -fast -xpagesize=4M -fsimple=1 -xprefetch=no -fma=fused

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xipo=2 -xprefetch=no -xarch=generic -lfast

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xpagesize=4M -xipo=2 -xarch=generic -xchip=generic
-fsimple=0 -xunroll=5 -xprefetch=latx:0.5

436.cactusADM: -fast(cc) -fast(f90) -xpagesize=4M -xipo=2 -fma=fused

454.calculix: -fast(cc) -fast(f90) -xpagesize=4M -xipo=2
-xprefetch_level=3 -fma=fused -xprefetch=latx:3.0
-xalias_level=std

481.wrf: -fast(cc) -fast(f90) -xpagesize=4M -xipo=2
-xprefetch_level=3 -fma=fused -xunroll=8

Peak Other Flags

C benchmarks:

-xjobs=16 -V -#

C++ benchmarks:

-xjobs=16 -verbose=diags,version

Fortran benchmarks:

-xjobs=16 -V -v

Benchmarks using both Fortran and C:

-xjobs=16 -V -# -v



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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-and-gccfss4.2.20090713.html>

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-and-gccfss4.2.20090713.xml>

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