



SPEC[®] CFP2006 Result

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Fujitsu Limited

SPECfp[®]_rate2006 = 112

Fujitsu SPARC Enterprise M4000

SPECfp_rate_base2006 = 107

CPU2006 license: 19

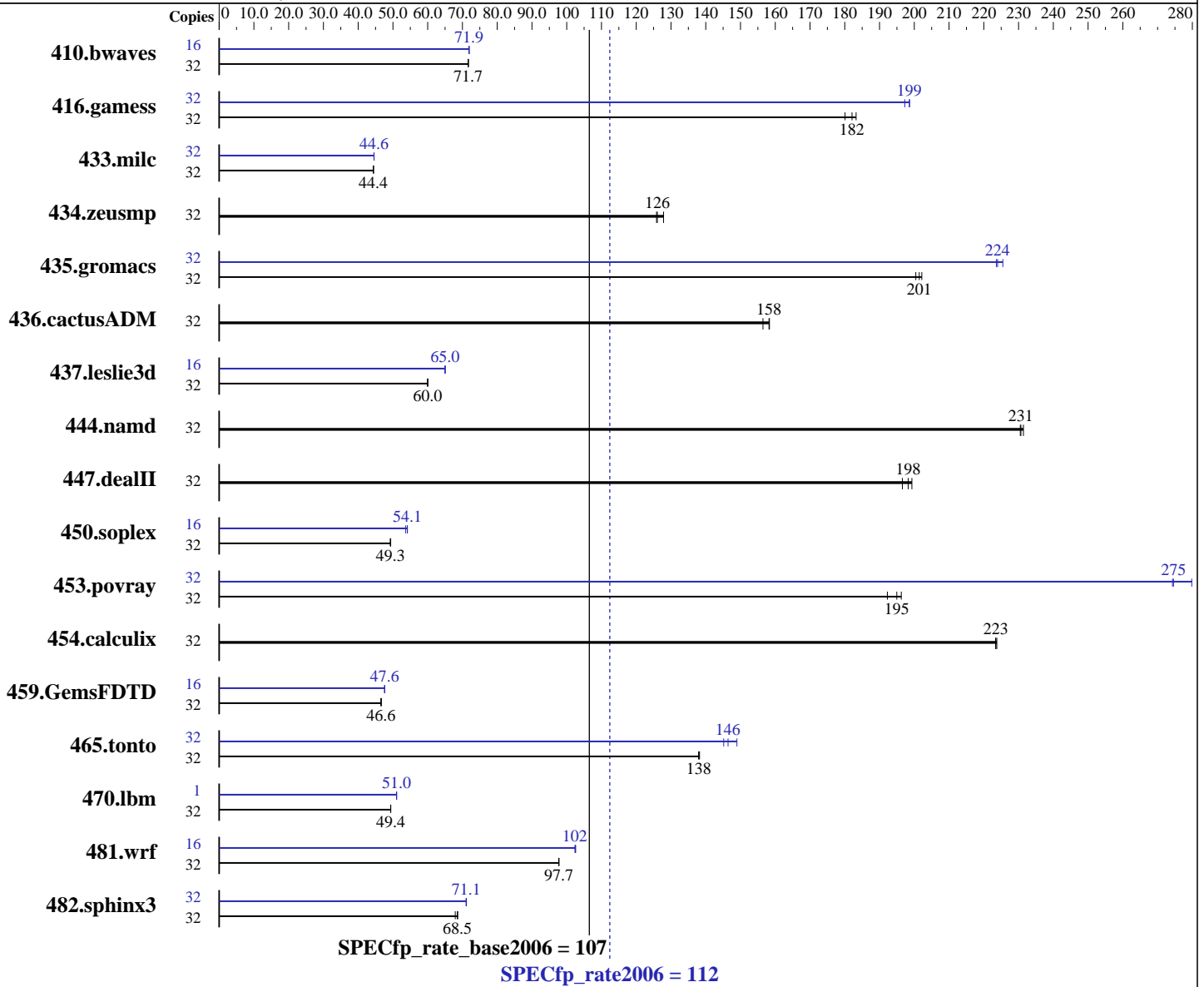
Test date: Jul-2008

Test sponsor: Fujitsu Limited

Hardware Availability: Jul-2008

Tested by: Sun Microsystems

Software Availability: Jul-2008



Hardware

CPU Name: SPARC64 VII
 CPU Characteristics:
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 1 to 2 CPUM; each CPUM contains 2 CPU chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 5 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-bit

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L3 Cache: None
 Other Cache: None
 Memory: 64 GB (32 x 2 GB)
 Disk Subsystem: 591 GB RAID 5 Sun StorageTek 2540
 10 x 73 GB 15K RPM Seagate SAS disks
 ufs fragment size 8192 bytes
 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	32	6065	71.7	6069	71.7	6067	71.7	16	3024	71.9	3024	71.9	3023	71.9		
416.gamess	32	3479	180	3419	183	3441	182	32	3155	199	3176	197	3154	199		
433.milc	32	6621	44.4	6617	44.4	6617	44.4	32	6594	44.5	6592	44.6	6590	44.6		
434.zeusmp	32	2310	126	2277	128	2314	126	32	2310	126	2277	128	2314	126		
435.gromacs	32	1140	200	1130	202	1134	201	32	1020	224	1022	224	1013	225		
436.cactusADM	32	2415	158	2417	158	2444	156	32	2415	158	2417	158	2444	156		
437.leslie3d	32	5012	60.0	5012	60.0	5017	60.0	16	2313	65.0	2313	65.0	2314	65.0		
444.namd	32	1113	231	1113	231	1109	231	32	1113	231	1113	231	1109	231		
447.dealII	32	1847	198	1837	199	1862	197	32	1847	198	1837	199	1862	197		
450.soplex	32	5421	49.2	5407	49.4	5411	49.3	16	2486	53.7	2464	54.1	2464	54.2		
453.povray	32	885	192	867	196	873	195	32	608	280	621	274	620	275		
454.calculix	32	1181	223	1180	224	1182	223	32	1181	223	1180	224	1182	223		
459.GemsFDTD	32	7278	46.6	7283	46.6	7296	46.5	16	3564	47.6	3567	47.6	3564	47.6		
465.tonto	32	2282	138	2278	138	2283	138	32	2151	146	2169	145	2114	149		
470.lbm	32	8906	49.4	8908	49.4	8909	49.4	1	269	51.0	269	51.1	269	51.0		
481.wrf	32	3656	97.8	3657	97.7	3658	97.7	16	1745	102	1745	102	1742	103		
482.sphinx3	32	9101	68.5	9086	68.6	9181	67.9	32	8765	71.2	8779	71.0	8769	71.1		

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=32

Program threads were bound to processors with:
SUNW_MP_PROCBIND="0-31"

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.

ulimit -s 131072 was used to limit the space consumed
by the stack (making more space available for the heap)

System Tunables (/etc/system parameters):

tune_t_fsflushr=10

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

autoup=600

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=1

Set maximum percent memory for file system cache

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 M4000 Server.

Note that the Sun SPARC Enterprise M4000 and Fujitsu SPARC Enterprise
M4000 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 -xpagesize=4M -xprefetch_level=3 -xipo=2 -fma=fused
-xvector -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
-xarch=sparcfmaf -lfast -l12amm

C++ benchmarks:

444.namd: basepeak = yes

447.dealIII: basepeak = yes

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

Fortran benchmarks:

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Peak Optimization Flags (Continued)

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 -xprefetch=no

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

465.tonto: -fast -xpagesize=4M -xipo=2 -xarch=sparcfmaf -lfast
-l12amm

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 -xinline= -xchip=generic -fsimple=0
-fma=fused

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xpagesize=4M -xipo=2 -xprefetch_level=2

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

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>



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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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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 18:45:25 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 5 August 2008.