



SPEC[®] CFP2006 Result

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Sun Microsystems

SPECfp[®]_rate2006 = 1230

Sun SPARC Enterprise M9000

SPECfp_rate_base2006 = 1160

CPU2006 license: 6

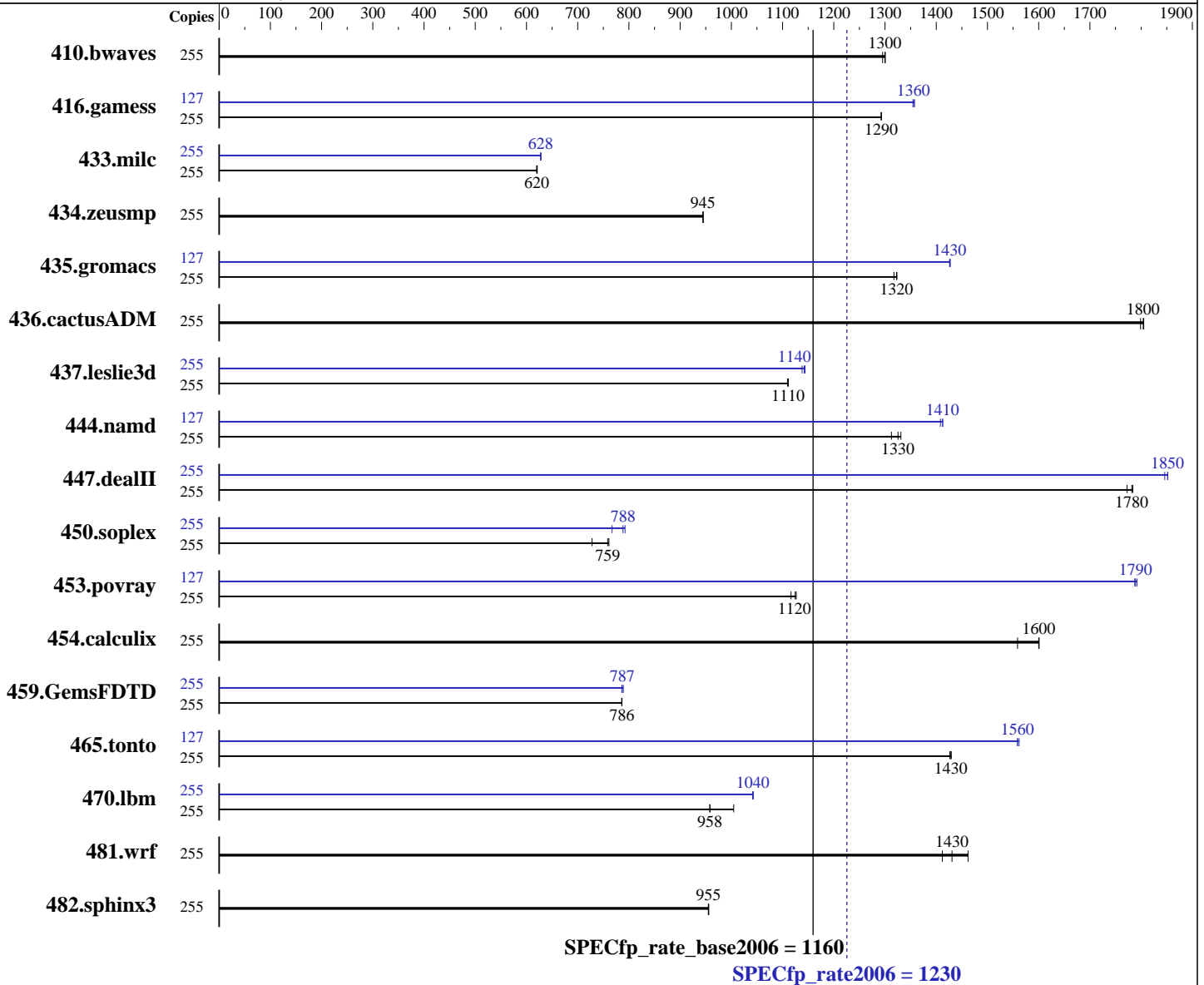
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Apr-2007

Hardware Availability: Apr-2007

Software Availability: Jul-2007



Hardware

CPU Name: SPARC64 VI
 CPU Characteristics:
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 128 cores, 64 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 1 to 16 CMUs; each CMU contains 2 or 4 chips
 Primary Cache: 128 KB I + 128 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 7/07 (build s10s_u4wos_03)
 Compiler: Sun Studio 12 (build 44.0)
 Auto Parallel: No
 File System: ufs
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32-bit
 Other Software: None



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L3 Cache: None
Other Cache: None
Memory: 1 TB (512 x 2 GB)
Disk Subsystem: 792 GB RAID 1+0 created by Solaris Volume Manager with 24 x 73 GB 10,000 RPM Fujitsu MAY2073RC SAS
Other Hardware: None

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	255	2675	1300	2665	1300	2666	1300	255	2675	1300	2665	1300	2666	1300		
416.gamess	255	3862	1290	3861	1290	3863	1290	127	1836	1350	1834	1360	1832	1360		
433.milc	255	3769	621	3775	620	3774	620	255	3726	628	3731	627	3729	628		
434.zeusmp	255	2457	945	2456	945	2456	945	255	2457	945	2456	945	2456	945		
435.gromacs	255	1376	1320	1382	1320	1376	1320	127	635	1430	636	1430	636	1430		
436.cactusADM	255	1689	1800	1694	1800	1688	1810	255	1689	1800	1694	1800	1688	1810		
437.leslie3d	255	2157	1110	2160	1110	2158	1110	255	2099	1140	2095	1140	2106	1140		
444.namd	255	1558	1310	1543	1330	1536	1330	127	723	1410	721	1410	721	1410		
447.dealII	255	1635	1780	1637	1780	1646	1770	255	1580	1850	1575	1850	1575	1850		
450.soplex	255	2921	728	2804	759	2794	761	255	2772	767	2697	788	2684	792		
453.povray	255	1206	1120	1204	1130	1215	1120	127	378	1790	378	1790	377	1790		
454.calculix	255	1350	1560	1315	1600	1314	1600	255	1350	1560	1315	1600	1314	1600		
459.GemsFDTD	255	3443	786	3440	787	3440	786	255	3438	787	3428	789	3442	786		
465.tonto	255	1756	1430	1759	1430	1756	1430	127	802	1560	802	1560	800	1560		
470.lbm	255	3488	1000	3656	958	3658	958	255	3359	1040	3363	1040	3363	1040		
481.wrf	255	2017	1410	1948	1460	1991	1430	255	2017	1410	1948	1460	1991	1430		
482.sphinx3	255	5199	956	5204	955	5202	955	255	5199	956	5204	955	5202	955		

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

Operating System Notes

Processes were bound to cores using "submit" and "pbind".
The SPEC toolset was bound to processor 0.

These shell commands request use of local 4MB pages:

```
export LD_PRELOAD=madv.so.1:mpss.so.1
export MPSSHEAP=4MB
export MPSSSTACK=4MB
export MADV=access_lwp
```

'access_lwp' means that the next light weight process to touch the specified address range will access it the most heavily.

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Operating System Notes (Continued)

ulimit -s 131072 was used to limit the space consumed by the stack (and therefore make more space available to the heap).

/etc/system parameters

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=1

Set maximum percent memory for file system cache

tune_t_fsflushr=3

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

The "webconsole" service was turned off using
svcadm disable webconsole

Platform Notes

"CMU" = CPU/Memory Unit; each holds 2 or 4 CPU chips.

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

This result was measured using a Sun SPARC Enterprise M9000 Server. Note that the Fujitsu SPARC Enterprise M9000 and Sun SPARC Enterprise M9000 are electrically equivalent.

Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90



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Base Optimization Flags

C benchmarks:

-fast -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access

C++ benchmarks:

-xdepend -library=stlport4 -fast -fma=fused
-xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M -xprefetch_level=2
-xprefetch=latx:2 -xalias_level=compatible

Fortran benchmarks:

-fast -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2

Benchmarks using both Fortran and C:

-fast(cc) -fast(f90) -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2
-xpagesize=4M -xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access

Base Other Flags

C benchmarks:

-xjobs=24 -V -#

C++ benchmarks:

-xjobs=24 -verbose=diags,version

Fortran benchmarks:

-xjobs=24 -V -v

Benchmarks using both Fortran and C:

-xjobs=24 -V -# -v

Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90



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Peak Optimization Flags

C benchmarks:

```
433.milc: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2
-xprefetch_level=2 -fsimple=1
-xprefetch_auto_type=indirect_array_access
-W2,-Ainline:rs=400 -xalias_level=std -fma=fused
-xprefetch=latx:3
```

```
470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast
-xcache=128/64/2:6144/256/12 -xpagesize=4M
-xprefetch_level=3 -xipo=2 -xrestrict -fma=fused
-Wc,-Qlp=1 -Wc,-Qlp-av=512 -Wc,-Qlp-t=1 -Wc,-Qlp-fa=1
-Wc,-Qms_pipe-prefolim=64 -xprefetch=latx:5
```

482.sphinx3: basepeak = yes

C++ benchmarks:

```
444.namd: -xdepend -library=stlport4 -fast
-xcache=128/64/2:6144/256/12 -xpagesize=4M
-xalias_level=compatible -xprefetch_level=1 -fma=fused
-xprefetch=latx:3
```

```
447.dealIII: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast
-xcache=128/64/2:6144/256/12 -xpagesize=4M
-xalias_level=compatible -xipo=2 -xrestrict -fma=fused
-xprefetch=latx:4.5
```

```
450.soplex: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast
-xcache=128/64/2:6144/256/12 -xpagesize=4M
-xalias_level=compatible -xipo=2 -xprefetch_level=2
-fsimple=0 -xrestrict
-xprefetch_auto_type=indirect_array_access
-Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3
-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3
```

```
453.povray: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast
-xcache=128/64/2:6144/256/12 -xpagesize=4M
-xalias_level=compatible -xipo=2 -xrestrict -fma=fused
```

Fortran benchmarks:

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Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2
-xprefetch_level=2 -fma=fused

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M
-xprefetch_level=3 -qoption cg -Qlp=1 -qoption cg -Qlp-fa=0
-qoption cg -Qlp-fl=1 -qoption cg -Qlp-av=448
-qoption cg -Qlp-t=4 -xprefetch=latx:3.5

459.GemsFDTD: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -fsimple=1
-xprefetch_level=2 -fma=fused -xprefetch=latx:2

465.tonto: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2
-xprefetch=latx:12 -lfast

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2
-xinline= -xarch=generic -xchip=generic -fsimple=0
-fma=fused

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

-xjobs=24 -V -#

C++ benchmarks:

-xjobs=24 -verbose=diags,version

Fortran benchmarks:

-xjobs=24 -V -v

Benchmarks using both Fortran and C:

-xjobs=24 -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-Studio12.20090714.02.html>

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.xml>

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