SPEC® CFP2006 Result

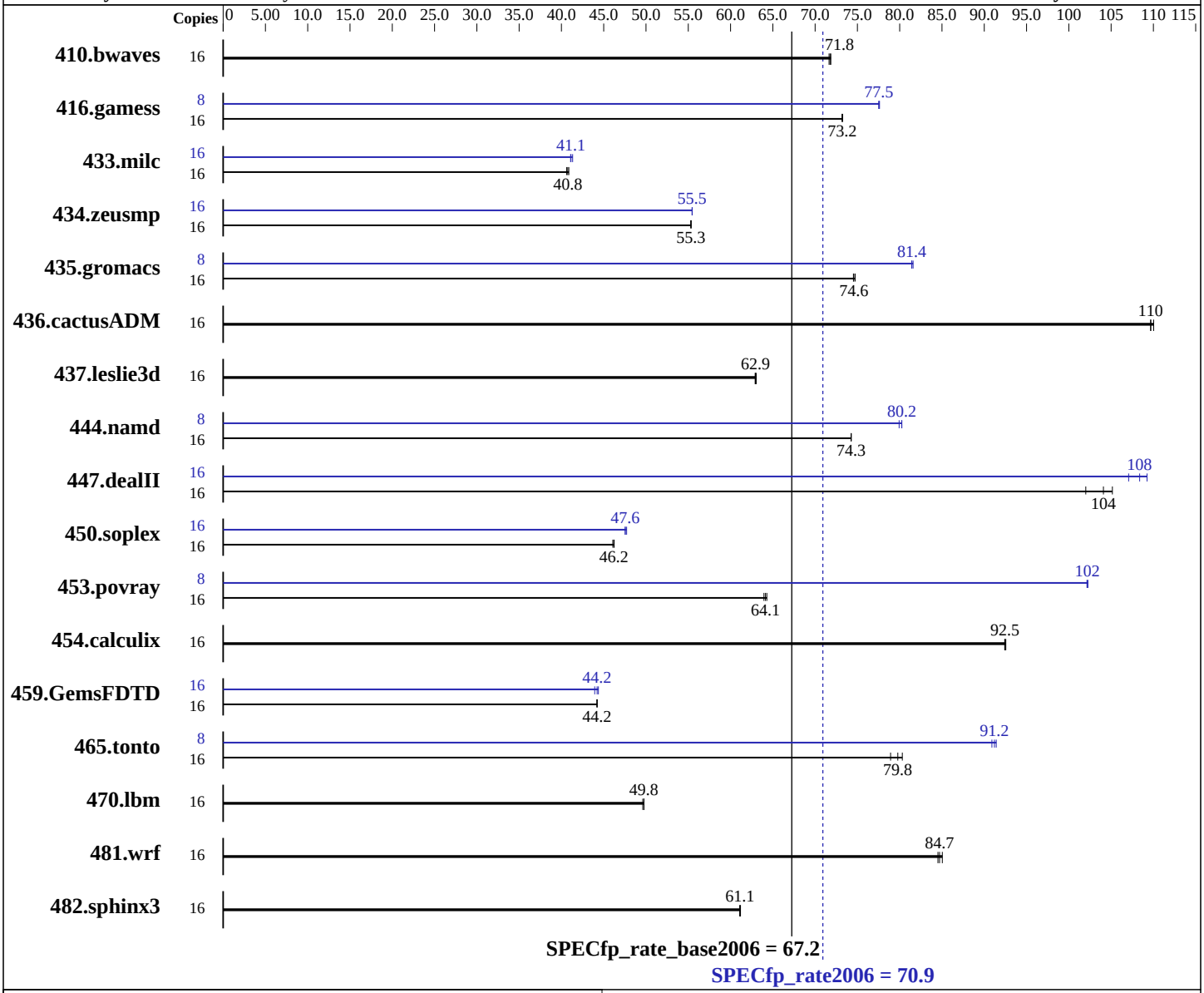
Sun Microsystems
Sun SPARC Enterprise M4000

SPECfp®_rate2006 = 70.9

SPECfp_rate_base2006 = 67.2

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:	2150
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	1 or 2 CPUM; each CPUM contains 2 CPU chips
Primary Cache:	128 KB I + 128 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 7/07 (build s10s_u4wos_04)
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: 64 GB (32 x 2 GB)
Disk Subsystem: 73 GB SEAGATE ST973401L 10K RPM Ultra320 SCSI
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	**3030**	**71.8**	3035	71.6	3026	71.9	16	**3030**	**71.8**	3035	71.6	3026	71.9
416.gamess	16	**4280**	**73.2**	4280	73.2	4277	73.3	8	**2020**	**77.5**	2018	77.6	2020	77.5
433.milc	16	3616	40.6	3594	40.9	**3604**	**40.8**	16	**3571**	**41.1**	3554	41.3	3575	41.1
434.zeusmp	16	**2632**	**55.3**	2633	55.3	2631	55.3	16	**2625**	**55.5**	2625	55.5	2626	55.4
435.gromacs	16	1533	74.5	**1532**	**74.6**	1529	74.7	8	700	81.6	701	81.4	**701**	**81.4**
436.cactusADM	16	**1743**	**110**	1743	110	1738	110	16	**1743**	**110**	1743	110	1738	110
437.leslie3d	16	**2389**	**62.9**	2391	62.9	2386	63.0	16	**2389**	**62.9**	2391	62.9	2386	63.0
444.namd	16	1728	74.3	1728	74.3	**1728**	**74.3**	8	799	80.3	**800**	**80.2**	803	79.9
447.dealII	16	**1758**	**104**	1794	102	1741	105	16	**1689**	**108**	1710	107	1675	109
450.soplex	16	2886	46.2	2896	46.1	**2889**	**46.2**	16	**2806**	**47.6**	2807	47.5	2797	47.7
453.povray	16	**1327**	**64.1**	1324	64.3	1331	63.9	8	416	102	417	102	**416**	**102**
454.calculix	16	1428	92.4	1426	92.5	**1428**	**92.5**	16	1428	92.4	1426	92.5	**1428**	**92.5**
459.GemsFDTD	16	3839	44.2	**3839**	**44.2**	3841	44.2	16	**3839**	**44.2**	3864	43.9	3826	44.4
465.tonto	16	**1974**	**79.8**	1995	78.9	1960	80.3	8	866	90.9	861	91.4	**863**	**91.2**
470.lbm	16	4431	49.6	4418	49.8	**4418**	**49.8**	16	4431	49.6	4418	49.8	**4418**	**49.8**
481.wrf	16	2102	85.0	**2110**	**84.7**	2114	84.5	16	2102	85.0	**2110**	**84.7**	2114	84.5
482.sphinx3	16	**5101**	**61.1**	5098	61.2	5105	61.1	16	**5101**	**61.1**	5098	61.2	5105	61.1

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".

These shell commands request use of 4MB pages:
      export LD_PRELOAD=mpss.so.1
      export MPSSHEAP=4MB
      export MPSSSTACK=4MB

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

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

Platform Notes

```
"CPUM" = CPU Module; each module holds two 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
M4000 Server.  Note that the Fujitsu SPARC Enterprise
M4000 and Sun SPARC Enterprise M4000 are electrically
equivalent.
```

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 -xcache=128/64/2:5120/256/10 -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=128/64/2:5120/256/10 -xipo=2 -xpagesize=4M -xprefetch_level=2
-xprefetch=latx:2 -xalias_level=compatible
```

Fortran benchmarks:
```
-fast -fma=fused -xcache=128/64/2:5120/256/10 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xcache=128/64/2:5120/256/10 -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=8 -V -#
```

C++ benchmarks:
```
-xjobs=8 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=8 -V -v
```

Benchmarks using both Fortran and C:
```
-xjobs=8 -V -# -v
```

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 -xcache=128/64/2:5120/256/10 -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:
```
basepeak = yes
```

482.sphinx3:
```
basepeak = yes
```

C++ benchmarks:

444.namd:
```
-xdepend -library=stlport4 -fast
-xcache=128/64/2:5120/256/10 -xpagesize=4M
-xalias_level=compatible -xprefetch_level=1 -fma=fused
-xprefetch=latx:3
```

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Peak Optimization Flags (Continued)

447.dealII: -xdepend -library=stlport4
-xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast
-xcache=128/64/2:5120/256/10 -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=128/64/2:5120/256/10 -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=128/64/2:5120/256/10 -xpagesize=4M
-xalias_level=compatible -xipo=2 -xrestrict -fma=fused

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2
-xprefetch_level=2 -fma=fused

434.zeusmp: -fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2
-fma=fused -lmopt

437.leslie3d: basepeak = yes

459.GemsFDTD: -fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -fsimple=1
-xprefetch_level=2 -fma=fused -xprefetch=latx:2

465.tonto: -fast -xcache=128/64/2:5120/256/10 -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=128/64/2:5120/256/10 -xpagesize=4M -xipo=2
-xinline= -xarch=generic -xchip=generic -fsimple=0
-fma=fused

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Peak Optimization Flags (Continued)

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-xjobs=8 -V -#`

C++ benchmarks:
`-xjobs=8 -verbose=diags,version`

Fortran benchmarks:
`-xjobs=8 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=8 -V -# -v`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.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`

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

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