SPEC® CFP2006 Result

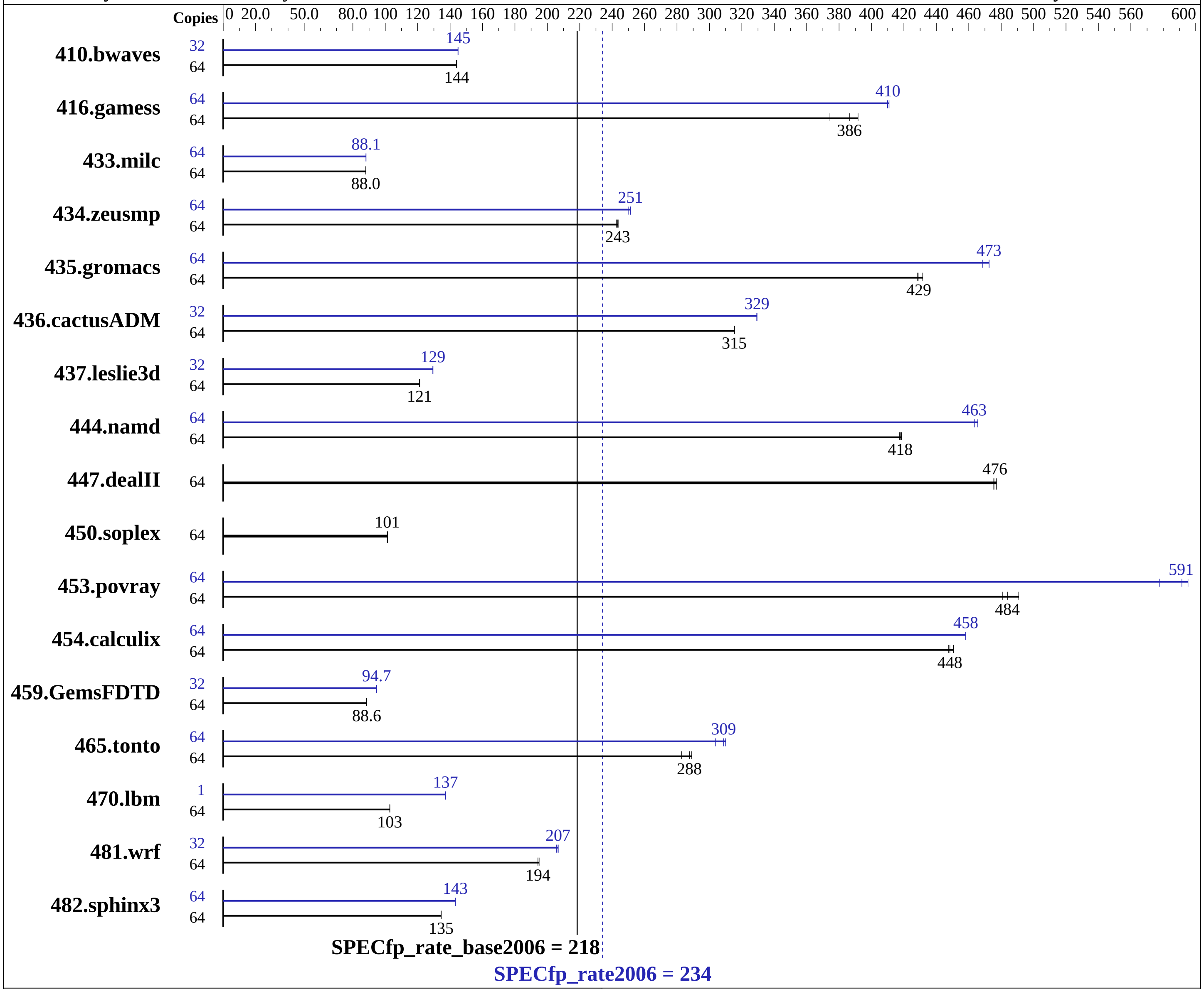
Sun Microsystems
Sun SPARC Enterprise M5000

SPECfp®_rate2006 = 234

SPECfp_rate_base2006 = 218

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Sep-2009
Hardware Availability: Nov-2009
Software Availability: Oct-2009



Hardware

CPU Name:	SPARC64 VII
CPU Characteristics:	
CPU MHz:	2530
FPU:	Integrated
CPU(s) enabled:	32 cores, 8 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 4 CPUMs; each CPUM contains 2 CPU chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	5632 KB I+D on chip per chip

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Software

Operating System:	Solaris 10 10/09 (s10s_u8wos_06)
Compiler:	Sun Studio 12 Update 1 plus patches (see notes)
Auto Parallel:	Yes
File System:	zfs
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:	128 GB (64 x 2 GB), 8-way interleaved
Disk Subsystem:	536 GB (zfs 8 x 3-way mirrors) on 24 x 73GB 15000RPM FC-AL disks in 2 x SE3510 enclosures
Other Hardware:	None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	6043	144	6034	144	**6035**	**144**	32	**3001**	**145**	3002	145	3001	145
416.gamess	64	3199	392	3347	374	**3243**	**386**	64	3058	410	3050	411	**3056**	**410**
433.milc	64	**6674**	**88.0**	6676	88.0	6672	88.1	64	6665	88.2	6667	88.1	**6665**	**88.1**
434.zeusmp	64	**2393**	**243**	2401	243	2390	244	64	**2318**	**251**	2317	251	2331	250
435.gromacs	64	**1065**	**429**	1067	428	1059	432	64	967	473	**967**	**473**	976	468
436.cactusADM	64	2423	316	**2425**	**315**	2426	315	32	1163	329	1161	329	**1161**	**329**
437.leslie3d	64	4968	121	**4966**	**121**	4961	121	32	**2324**	**129**	2323	129	2325	129
444.namd	64	1230	417	1227	418	**1229**	**418**	64	**1108**	**463**	1103	466	1108	463
447.dealII	64	**1538**	**476**	1541	475	1534	477	64	**1538**	**476**	1541	475	1534	477
450.soplex	64	5262	101	5273	101	**5270**	**101**	64	5262	101	5273	101	**5270**	**101**
453.povray	64	694	491	**704**	**484**	708	481	64	589	578	572	595	**576**	**591**
454.calculix	64	1172	451	1180	448	**1178**	**448**	64	1152	458	**1152**	**458**	1153	458
459.GemsFDTD	64	7677	88.5	**7667**	**88.6**	7666	88.6	32	3584	94.7	3587	94.7	**3587**	**94.7**
465.tonto	64	2226	283	2179	289	**2189**	**288**	64	**2040**	**309**	2032	310	2074	304
470.lbm	64	8553	103	8555	103	**8553**	**103**	1	100	137	**100**	**137**	100	137
481.wrf	64	3667	195	3681	194	**3679**	**194**	32	1738	206	**1730**	**207**	1729	207
482.sphinx3	64	**9272**	**135**	9269	135	9279	134	64	8712	143	**8710**	**143**	8698	143

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

Compiler Invocation Notes

```
Sun Studio 12 Update 1 was used, plus patch 119963-17

Sun Studio compiler patches are available at
  http://developers.sun.com/sunstudio/downloads/patches/ss12u1_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.)
```

Operating System Notes

```
ulimit -s 131072 was used to allow the stack to grow
up to 131072 KB (aka 128 MB).  Note that saying "131072"
is preferable to "unlimited", because there is a tradeoff
between space for the stack vs. space 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.
zfs:zfs_arc_max = 0x10000000
    Control the amount of memory used by ZFS for caching
lpg_alloc_prefer=1
    Prefer local pages, even if not easily available

Other System Settings:

The webconsole service was turned off using
    svcadm disable webconsole

The system had 50 GB of swap space
```

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 M5000
Server.  The Sun SPARC Enterprise M5000 and the Fujitsu
SPARC Enterprise M5000 are electrically equivalent.
```

General Notes

```
Environment variables set by runspec before the start of the run:
   OMP_NUM_THREADS = "64"
   SUNW_MP_PROCBIND = "true"
   SUNW_MP_THR_IDLE = "SPIN"

   447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.

   447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.
```

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 -xalias_level=std
-xprefetch_auto_type=indirect_array_access -xprefetch_level=3
```

C++ benchmarks:
```
-xdepend -fast -fma=fused -xipo=2 -xpagesize=4M
-xalias_level=compatible -xprefetch=latx:0.5 -library=no%Cstd
-I/export/home/apache/stdcxx-4.2.1/include
-I/export/home/apache/stdcxx-4.2.1/build/include
-L/export/home/apache/stdcxx-4.2.1/build/lib
-R/export/home/apache/stdcxx-4.2.1/build/lib -lstd8d
```

Fortran benchmarks:
```
-fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xalias_level=std -xprefetch_auto_type=indirect_array_access
-xprefetch_level=3 -xprefetch_level=2
```

Base Other Flags

C benchmarks:
```
-xjobs=32 -V -#
```

C++ benchmarks:
```
-xjobs=32 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=32 -V -v
```

Continued on next page

Base Other Flags (Continued)

Benchmarks using both Fortran and C:
`-xjobs=32 -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 -xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=2 -fsimple=1 -xprefetch_auto_type=indirect_array_access -W2,-Ainline:rs=400 -xalias_level=std

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 -fma=fused -xipo=2 -xinline= -xprefetch=no%auto -xalias_level=strong -lfast -ll2amm

C++ benchmarks:

444.namd: -xdepend -xprofile=collect:./feedback(pass 1) -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M -xalias_level=compatible -library=stlport4 -fma=fused -xipo=2 -xprefetch=no%auto -xlinkopt=2

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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

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Peak Optimization Flags (Continued)

453.povray (continued):
-xlinkopt=2

Fortran benchmarks:

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

416.gamess: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-fma=fused -xipo=2 -xprefetch=no%auto

434.zeusmp: -fast -xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=1
-ll2amm

437.leslie3d: -fast -xpagesize=4M -xprefetch=no

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

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xipo=2 -xprefetch=no -lfast -ll2amm

Benchmarks using both Fortran and C:

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

436.cactusADM: -fast(cc) -fast(f90) -xpagesize=4M -fma=fused -xipo=2
-xprefetch=latx:0.7 -fsimple=1

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

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=32 -V -#

C++ benchmarks:
-xjobs=32 -verbose=diags,version

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Peak Other Flags (Continued)

Fortran benchmarks:
`-xjobs=32 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=32 -V -# -v`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-12u1-and-gccfss4.2.r4.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-12u1-and-gccfss4.2.r4.xml

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

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