SPEC® CFP2006 Result
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Sun Microsystems
Sun SPARC Enterprise T5440

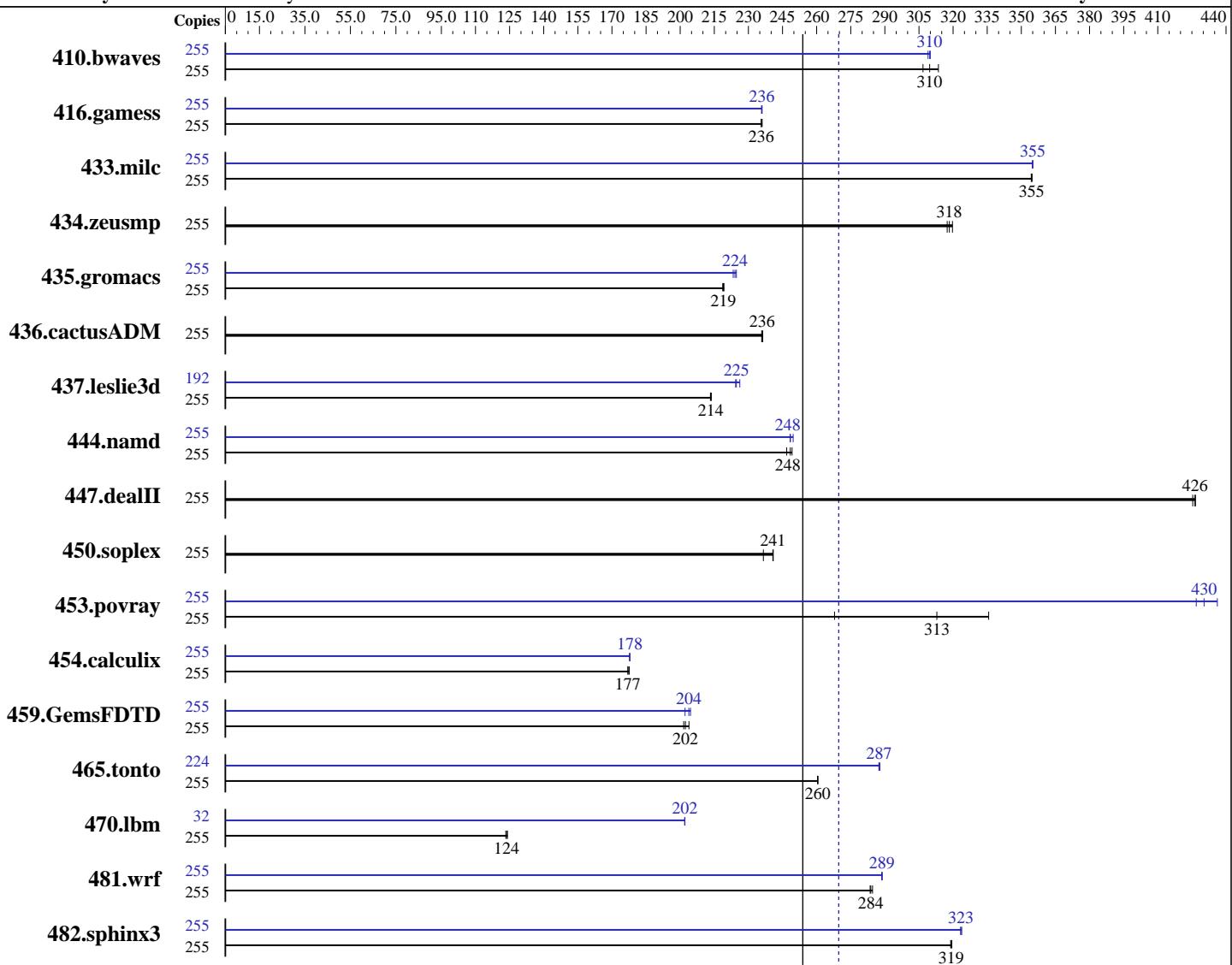$SPECfp^®\_rate2006 =$ 270

SPECfp_rate_base2006 = 254

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

Test date: May-2009
Hardware Availability: Jul-2009
Software Availability: Jun-2009

Copies	Benchmark	Peak	Base
	410.bwaves	255 — 310	255 — 310
	416.gamess	255 — 236	255 — 236
	433.milc	255 — 355	255 — 355
	434.zeusmp		255 — 318
	435.gromacs	255 — 224	255 — 219
	436.cactusADM		255 — 236
	437.leslie3d	192 — 225	255 — 214
	444.namd	255 — 248	255 — 248
	447.dealII		255 — 426
	450.soplex		255 — 241
	453.povray	255 — 430	255 — 313
	454.calculix	255 — 178	255 — 177
	459.GemsFDTD	255 — 204	255 — 202
	465.tonto	224 — 287	255 — 260
	470.lbm	32 — 202	255 — 124
	481.wrf	255 — 289	255 — 284
	482.sphinx3	255 — 323	255 — 319

SPECfp_rate_base2006 = 254

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Hardware
CPU Name: UltraSPARC T2 Plus
CPU Characteristics:
CPU MHz: 1596
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 8 threads/core
CPU(s) orderable: 1 to 4 chips
Primary Cache: 16 KB I + 8 KB D on chip per core
Secondary Cache: 4 MB I+D on chip per chip
Continued on next page

Software
Operating System: Solaris 10 5/09
Compiler: Sun Studio 12 Update 1
Auto Parallel: No
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:	256 GB (64 x 4 GB)
Disk Subsystem:	536 GB using ZFS 3-way mirroring on 24x 15K SUN72G FC (on 2x SE3510)
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	11053	314	11297	307	**11190**	**310**	255	**11189**	**310**	11180	310	11215	309
416.gamess	255	**21186**	**236**	21187	236	21151	236	255	21153	236	**21163**	**236**	21177	236
433.milc	255	6600	355	6606	354	**6602**	**355**	255	6597	355	**6594**	**355**	6593	355
434.zeusmp	255	7258	320	7311	317	**7289**	**318**	255	7258	320	7311	317	**7289**	**318**
435.gromacs	255	8326	219	8304	219	**8314**	**219**	255	8153	223	8102	225	**8125**	**224**
436.cactusADM	255	**12910**	**236**	12921	236	12895	236	255	**12910**	**236**	12921	236	12895	236
437.leslie3d	255	11238	213	**11227**	**214**	11218	214	192	**8032**	**225**	7978	226	8043	224
444.namd	255	**8233**	**248**	8207	249	8285	247	255	8191	250	8236	248	**8231**	**248**
447.dealII	255	6839	427	**6842**	**426**	6858	425	255	6839	427	**6842**	**426**	6858	425
450.soplex	255	8989	237	**8834**	**241**	8827	241	255	8989	237	**8834**	**241**	8827	241
453.povray	255	**4336**	**313**	4042	336	5064	268	255	3178	427	3110	436	**3152**	**430**
454.calculix	255	11846	178	11885	177	**11883**	**177**	255	11837	178	11826	178	**11831**	**178**
459.GemsFDTD	255	**13373**	**202**	13272	204	13423	202	255	**13276**	**204**	13227	205	13385	202
465.tonto	255	9630	261	9634	260	**9634**	**260**	224	7670	287	**7668**	**287**	7659	288
470.lbm	255	**28328**	**124**	28242	124	28409	123	32	2176	202	**2177**	**202**	2177	202
481.wrf	255	**10036**	**284**	10046	284	10009	285	255	9869	289	9860	289	**9867**	**289**
482.sphinx3	255	15558	319	**15571**	**319**	15583	319	255	15349	324	15371	323	**15368**	**323**

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 pre-release build 41.1 was used.
```

Submit Notes

```
    A processor set was created using
      psrset -c 1-255
    and the runspec process was placed into the set using
      psrset -e 1
    The config file option 'submit' was used to select specific
    processors within the set, along with the pbind command.
```

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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.


/etc/system parameters
   autoup=600
       Causes pages older than the listed number of seconds to
       be written by fsflush.
   tune_t_fsflushr=10
       Controls how many seconds elapse between runs of the
       page flush daemon, fsflush.
   tsb_rss_factor=128
       Suggests that the the size of the TSB (Translation Storage Buffer)
       may be increased if it is more than 25% (128/512) full.  Doing so
       may reduce TSB traps, at the cost of additional kernel memory.
   zfs:zfs_arc_max = 0x10000000
       Limits the consumption of memory by the zfs file system

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

The system had 229 GB of swap space.
```

Platform Notes

```
This result was measured on a Sun SPARC Enterprise T5440.
The Sun SPARC Enterprise T5440 and the Fujitsu SPARC
Enterprise T5440 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:
```
-g -fast -xipo=2 -xpagesize=4M -xprefetch_level=2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
-M /usr/lib/ld/map.bssalign
```

C++ benchmarks:
```
-g0 -library=stlport4 -fast -xipo=2 -xpagesize=4M -xprefetch_level=2
-xdepend -xalias_level=compatible -M /usr/lib/ld/map.bssalign
```

Fortran benchmarks:
```
-g -fast -xipo=2 -xpagesize=4M -xprefetch_level=2
-M /usr/lib/ld/map.bssalign
```

Benchmarks using both Fortran and C:
```
-g -fast(cc) -fast(f90) -xipo=2 -xpagesize=4M -xprefetch_level=2
-xalias_level=std -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access -M /usr/lib/ld/map.bssalign
```

Base Other Flags

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

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

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

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
```

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Peak Optimization Flags

C benchmarks:

```
   433.milc: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -M /usr/lib/ld/map.bssalign -xipo=2 -xprefetch_level=2
             -xprefetch_auto_type=indirect_array_access -xalias_level=std
             -fsimple=1

    470.lbm: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -M /usr/lib/ld/map.bssalign -xprefetch_level=3 -xipo=2
             -xrestrict

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -M /usr/lib/ld/map.bssalign -xinline= -xprefetch_level=2
             -Wc,-Qlp-ol=1 -xrestrict -xalias_level=strong -fsimple=1
             -xlinkopt=2 -lfast
```

C++ benchmarks:

```
   444.namd: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -xdepend -xalias_level=compatible
             -M /usr/lib/ld/map.bssalign -xprefetch_level=1 -xlinkopt=2

  447.dealII: basepeak = yes

  450.soplex: basepeak = yes

  453.povray: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=64K
             -xdepend -xalias_level=compatible -xipo=2 -xrestrict
             -xlinkopt=2
```

Fortran benchmarks:

```
  410.bwaves: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -M /usr/lib/ld/map.bssalign -xipo=2 -xprefetch_level=2

  416.gamess: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
             -M /usr/lib/ld/map.bssalign -xlinkopt=2

  434.zeusmp: basepeak = yes

 437.leslie3d: -g -fast -xpagesize_heap=4M -xpagesize_stack=64K
             -M /usr/lib/ld/map.bssalign -xprefetch_level=3
             -xprefetch=latx:1.6 -qoption cg -Qlp=1 -qoption cg -Qlp-fa=0
             -qoption cg -Qlp-fl=1 -qoption cg -Qlp-av=448
```

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Peak Optimization Flags (Continued)

    437.leslie3d (continued):
                -qoption cg -Qlp-t=4

  459.GemsFDTD: -g -fast -xpagesize=4M -M /usr/lib/ld/map.bssalign
                -fsimple=1

     465.tonto: -g -fast -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
                -lfast

Benchmarks using both Fortran and C:

    435.gromacs: -g -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
                -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=1 -xinline=
                -xarch=generic -xchip=generic -fsimple=0

  436.cactusADM: basepeak = yes

   454.calculix: -g -fast(cc) -fast(f90) -xpagesize=4M
                -M /usr/lib/ld/map.bssalign -xipo=2 -xvector
                -xprefetch_level=1

       481.wrf: -g -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
                -xpagesize=4M -M /usr/lib/ld/map.bssalign -xlinkopt=2

Peak Other Flags

C benchmarks:
        -xjobs=32 -V -#

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

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.r3.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.r3.xml

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