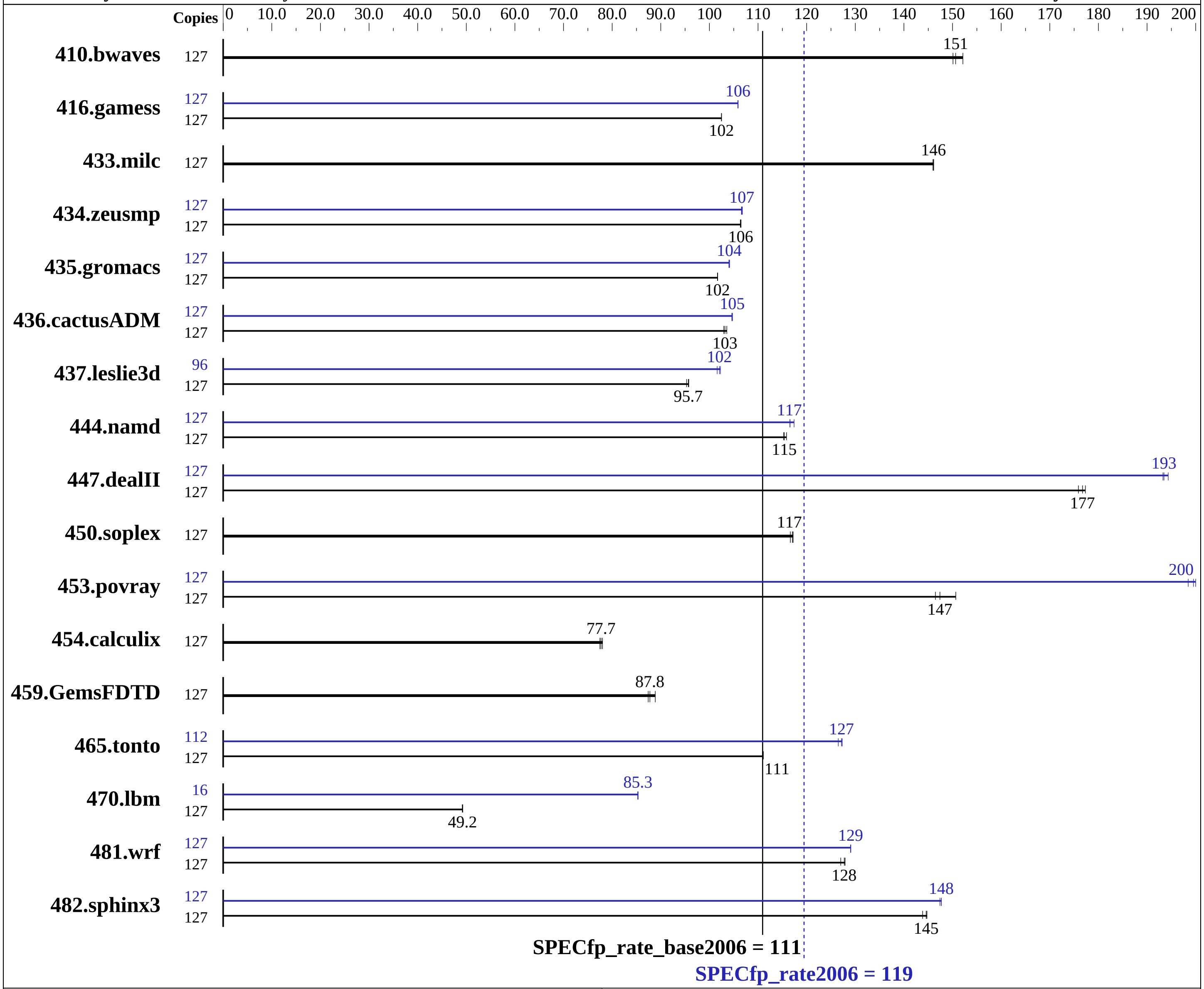
SPEC® CFP2006 Result

Sun Microsystems
Sun SPARC Enterprise T5240

SPECfp®_rate2006 = 119

SPECfp_rate_base2006 = 111

CPU2006 license:	6	**Test date:**	Mar-2008
Test sponsor:	Sun Microsystems	**Hardware Availability:**	May-2008
Tested by:	Sun Microsystems	**Software Availability:**	Feb-2008



Hardware

CPU Name:	UltraSPARC T2 Plus
CPU Characteristics:	
CPU MHz:	1415
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 8 threads/core
CPU(s) orderable:	2 chips
Primary Cache:	16 KB I + 8 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per chip

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Software

Operating System:	Solaris 10 8/07 + patch 127111-08
Compiler:	Sun Studio 12 and gccfss V4.2.0 (see additional detail below)
Auto Parallel:	No
File System:	ufs
System State:	Default
Base Pointers:	32-bit
Peak Pointers:	32-bit

Continued on next page

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L3 Cache:	None
Other Cache:	None
Memory:	128 GB (32 x 4 GB)
Disk Subsystem:	737 GB RAID 5 using Sun StoreEdge 6120 with 12x 73 GB 10K RPM disks (Seagate ST373307 2 Gbps Fibre Channel)
Other Hardware:	None

Other Software:	None

Results Table

	Base							Peak						
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	127	11499	150	11345	152	**11458**	**151**	127	11499	150	11345	152	**11458**	**151**
416.gamess	127	**24264**	**102**	24264	102	24261	102	127	23493	106	**23483**	**106**	23478	106
433.milc	127	**7980**	**146**	7979	146	7987	146	127	**7980**	**146**	7979	146	7987	146
434.zeusmp	127	10866	106	10851	107	**10856**	**106**	127	**10834**	**107**	10824	107	10843	107
435.gromacs	127	8920	102	8916	102	**8919**	**102**	127	8719	104	**8712**	**104**	8706	104
436.cactusADM	127	**14707**	**103**	14652	104	14742	103	127	14509	105	**14492**	**105**	14491	105
437.leslie3d	127	**12480**	**95.7**	12525	95.3	12468	95.8	96	8882	102	8825	102	**8842**	**102**
444.namd	127	**8827**	**115**	8836	115	8792	116	127	**8736**	**117**	8739	117	8675	117
447.dealII	127	8194	177	8261	176	**8221**	**177**	127	7476	194	**7509**	**193**	7517	193
450.soplex	127	9081	117	9037	117	**9049**	**117**	127	9081	117	9037	117	**9049**	**117**
453.povray	127	**4584**	**147**	4484	151	4613	146	127	3378	200	**3386**	**200**	3404	198
454.calculix	127	13523	77.5	**13482**	**77.7**	13430	78.0	127	13523	77.5	**13482**	**77.7**	13430	78.0
459.GemsFDTD	127	15163	88.9	**15354**	**87.8**	15416	87.4	127	15163	88.9	**15354**	**87.8**	15416	87.4
465.tonto	127	11250	111	11262	111	**11253**	**111**	112	8657	127	8712	127	**8667**	**127**
470.lbm	127	**35440**	**49.2**	35485	49.2	35417	49.3	16	2579	85.3	**2577**	**85.3**	2576	85.3
481.wrf	127	**11107**	**128**	11092	128	11169	127	127	10989	129	10994	129	**10993**	**129**
482.sphinx3	127	17207	144	17102	145	**17121**	**145**	127	16757	148	16792	147	**16759**	**148**

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
The tested configuration included patch 124867-02, 124861-04,
124863-01, 127000-01

Peak also uses "GCC for SPARC Systems", which combines gcc
with the Sun Code Generator for SPARC systems.  It is invoked
as "gcc", and accepts source code compatible with GCC 4.2.
For more information, including support, see
     http://cooltools.sunsource.net/gcc/
```

Operating System Notes

```
Processes were bound to cores using "submit" and "pbind".
A processor set was created using
  psrset -c 1-127
and the runspec process was placed into the set using
  psrset -e 1

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.

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.

The open file limit was set to 1300 with ulimit -n

/etc/system parameters
   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
   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.

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

The system had 144 GB of swap space.
```

Platform Notes

```
This result was measured on a Sun SPARC Enterprise T5240.
The Sun SPARC Enterprise T5240 and the Fujitsu SPARC
Enterprise T5240 are electrically equivalent.
```

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Hardware Availability: May-2008
Software Availability: Feb-2008

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:
-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 (except as noted below):
`CC`

447.dealII: `g++`

Fortran benchmarks:
`f90`

Benchmarks using both Fortran and C:
`cc f90`

Peak Optimization Flags

C benchmarks:

433.milc: `basepeak = yes`

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: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xpagesize=4M -xdepend -Wl,-M,/usr/lib/ld/map.bssalign -xipo=2 -xrestrict -xalias_level=std`

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`

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Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: `basepeak = yes`

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: `-g -fast -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=1 -qoption cg -Qeps:enabled=1 -qoption cg -Qeps:ws=8 -lmopt`

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 -qoption cg -Qlp-t=4`

459.GemsFDTD: `basepeak = yes`

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

454.calculix: `basepeak = yes`

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 -#`

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Peak Other Flags (Continued)

C++ benchmarks (except as noted below):
`-xjobs=32 -verbose=diags,version`

447.dealII: `-v`

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-and-gccfss4.2.html

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.xml

Tested with SPEC CPU2006 v1.0.1.
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