SPEC® CFP2006 Result

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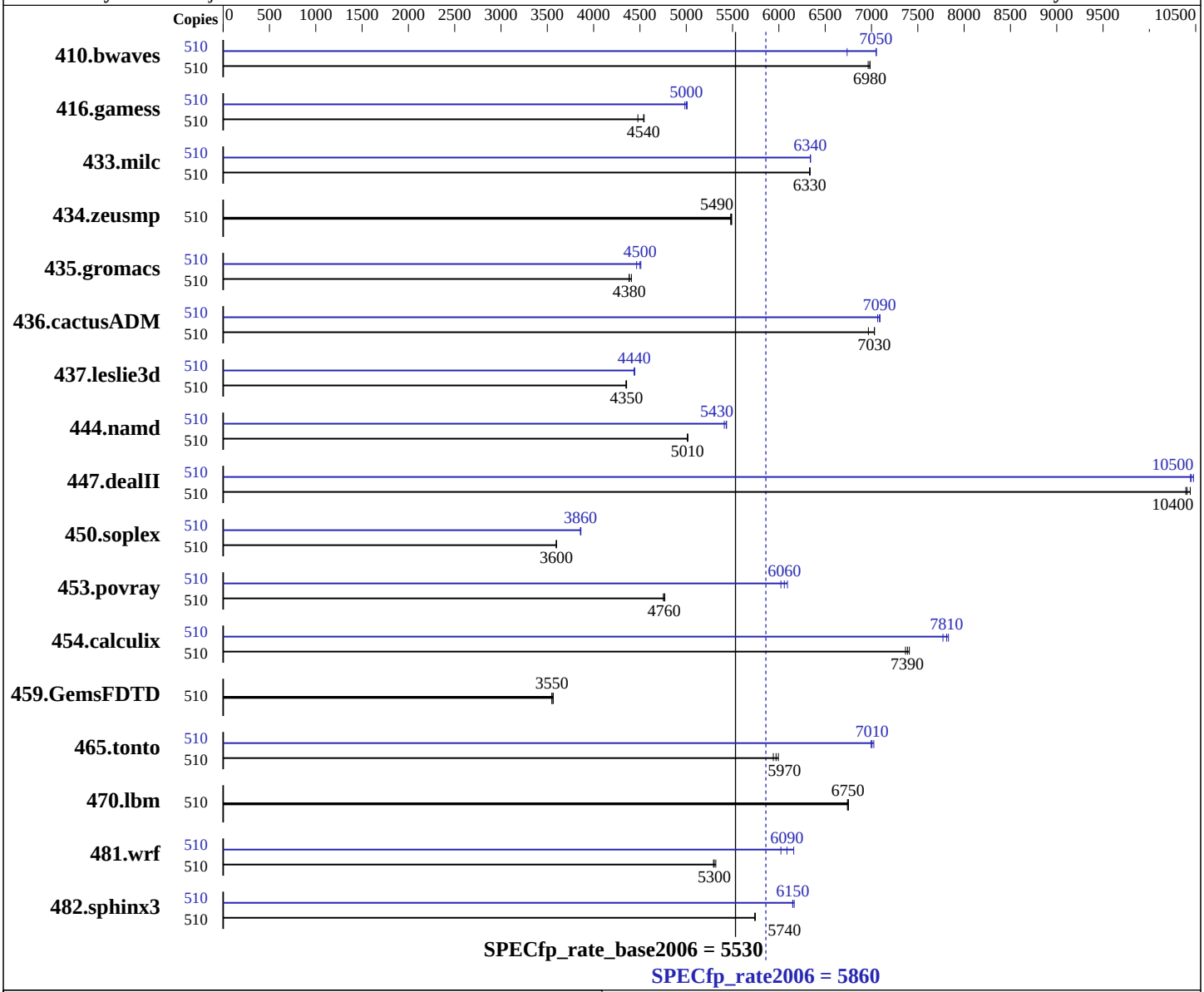
Fujitsu
Fujitsu SPARC M10-4S

SPECfp®_rate2006 = 5860

SPECfp_rate_base2006 = 5530

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

Test date: Dec-2012
Hardware Availability: Mar-2013
Software Availability: Mar-2013



Hardware

CPU Name:	SPARC64 X
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	256 cores, 16 chips, 16 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 16 BBs; each BB contains 2 or 4 CPU chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	24 MB I+D on chip per chip

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Software

Operating System:	Oracle Solaris 11.1
Compiler:	C/C++/Fortran: Version 12.3 of Oracle Solaris Studio, 1/13 Platform Specific Enhancement
Auto Parallel:	No
File System:	zfs and tmpfs
System State:	Default
Base Pointers:	32-bit
Peak Pointers:	32-bit

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L3 Cache: None
Other Cache: None
Memory: 2 TB (128 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1600 MHz)
Disk Subsystem: 1 x 600 GB SAS, 10025 RPM Toshiba MBF2600RC
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	510	995	6960	**993**	**6980**	992	6980	510	1029	6740	983	7050	**983**	**7050**
416.gamess	510	**2200**	**4540**	2230	4480	2197	4550	510	1993	5010	**1996**	**5000**	2003	4990
433.milc	510	**739**	**6330**	739	6340	739	6330	510	738	6340	738	6340	**738**	**6340**
434.zeusmp	510	**846**	**5490**	845	5490	847	5480	510	**846**	**5490**	845	5490	847	5480
435.gromacs	510	831	4380	**831**	**4380**	826	4410	510	816	4460	**809**	**4500**	807	4510
436.cactusADM	510	867	7030	**867**	**7030**	875	6970	510	859	7090	862	7070	**860**	**7090**
437.leslie3d	510	1103	4350	**1101**	**4350**	1101	4360	510	1079	4440	1080	4440	**1080**	**4440**
444.namd	510	815	5020	**816**	**5010**	816	5010	510	756	5410	**753**	**5430**	752	5440
447.dealII	510	561	10400	**561**	**10400**	559	10400	510	**558**	**10500**	559	10400	557	10500
450.soplex	510	**1182**	**3600**	1182	3600	1182	3600	510	1102	3860	1101	3860	**1102**	**3860**
453.povray	510	**570**	**4760**	569	4770	571	4750	510	451	6020	**448**	**6060**	445	6090
454.calculix	510	**570**	**7390**	571	7370	568	7410	510	541	7770	**539**	**7810**	537	7830
459.GemsFDTD	510	1518	3560	1524	3550	**1524**	**3550**	510	1518	3560	1524	3550	**1524**	**3550**
465.tonto	510	845	5940	837	5990	**841**	**5970**	510	714	7030	**716**	**7010**	717	7000
470.lbm	510	**1039**	**6750**	1040	6740	1038	6750	510	**1039**	**6750**	1040	6740	1038	6750
481.wrf	510	1076	5290	**1074**	**5300**	1071	5320	510	**936**	**6090**	925	6160	946	6020
482.sphinx3	510	1732	5740	**1731**	**5740**	1730	5750	510	1616	6150	**1616**	**6150**	1612	6170

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

Compiler Invocation Notes

```
The Apache C++ Standard Library V4.2.1 was installed from
   http://stdcxx.apache.org/download.html using:
     alias gmake=specmake
     gmake BUILDTYPE=8d CONFIG=sunpro.config
```

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

```
Shell Environments:
   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.

System Tunables:
(/etc/system parameters)
   lpg_alloc_prefer=1
     Indicates that extra effort should be taken to ensure that pages are
     created in the nearby lgroup (NUMA location).
```

Platform Notes

```
Sysinfo program /export/cpu2006-v1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on 4S-710-D0 Sun Dec 23 06:23:44 2012

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /usr/sbin/psrinfo
   SPARC64-X (chipid 0, clock 3000 MHz)
   SPARC64-X (chipid 1, clock 3000 MHz)
   SPARC64-X (chipid 10, clock 3000 MHz)
   SPARC64-X (chipid 11, clock 3000 MHz)
   SPARC64-X (chipid 12, clock 3000 MHz)
   SPARC64-X (chipid 13, clock 3000 MHz)
   SPARC64-X (chipid 14, clock 3000 MHz)
   SPARC64-X (chipid 15, clock 3000 MHz)
   SPARC64-X (chipid 2, clock 3000 MHz)
   SPARC64-X (chipid 3, clock 3000 MHz)
   SPARC64-X (chipid 4, clock 3000 MHz)
   SPARC64-X (chipid 5, clock 3000 MHz)
   SPARC64-X (chipid 6, clock 3000 MHz)
   SPARC64-X (chipid 7, clock 3000 MHz)
   SPARC64-X (chipid 8, clock 3000 MHz)
   SPARC64-X (chipid 9, clock 3000 MHz)
   16 chips
   512 threads
   3000 MHz

From kstat:      256 cores

From prtconf: 2091520 Megabytes

/etc/release:
     Oracle Solaris 11.1 SPARC
uname -a:
   SunOS 4S-710-D0 5.11 11.1 sun4v sparc sun4v
```

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Platform Notes (Continued)

```
disk: df -h  $SPEC
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G   4.9G       466G     2%    /export

(End of data from sysinfo program)
```

General Notes

```
output_root was used to put run directories in /tmp/cpu2006 (tmpfs).
```

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 -xtarget=sparc64x -fma=fused -xpagesize=4M -xlinkopt -xvector
-xipo=2 -xalias_level=std -xprefetch_level=3 -xunroll=4 -lbsdmalloc
-M /usr/lib/ld/map.bssalign
```

C++ benchmarks:
```
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xlinkopt -xvector
-xipo=2 -xalias_level=compatible -xprefetch_level=2
-library=no%Cstd,no%stlport4 -I/export/cpu2006-v1.2/stdcxx-4.2.1/include
-I/export/cpu2006-v1.2/stdcxx-4.2.1/build/include
-L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib
-R/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib -lstd8d
-M /usr/lib/ld/map.bssalign
```

Fortran benchmarks:
```
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xlinkopt -xvector
-xipo=2 -xprefetch_auto_type=indirect_array_access -xprefetch_level=3
-M /usr/lib/ld/map.bssalign
```

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
`-fast`(cc) `-fast`(f90) `-xtarget=sparc64x -fma=fused -xpagesize=4M -xlinkopt -xvector -xipo=2 -xalias_level=std -xprefetch_level=3 -xunroll=4 -xprefetch_auto_type=indirect_array_access -M /usr/lib/ld/map.bssalign`

Base Other Flags

C benchmarks:
`-xjobs=16`

C++ benchmarks:
`-xjobs=16`

Fortran benchmarks:
`-xjobs=16`

Benchmarks using both Fortran and C:
`-xjobs=16`

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 -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2 -xalias_level=std -fsimple=1 -W2,-Ainline:rs=400 -xprefetch=no%auto -M /usr/lib/ld/map.bssalign`

470.lbm: `basepeak = yes`

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Peak Optimization Flags (Continued)

482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii -xipo=2
-xlinkopt -xvector -xalias_level=std -xunroll=4
-xprefetch=no%auto -Qoption iropt -Ainline:rs=1000
-Qoption iropt -Ainline:cs=500 -Qoption iropt -Ainline:inc=60
-lbsdmalloc

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xalias_level=any
-xprefetch=no%auto -xunroll=2 -Qoption cg -Qms_pipe+alldoall
-xchip=generic -library=stlport4

447.dealII: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii -xipo=1
-xalias_level=compatible -xrestrict -xprefetch=no%auto
-library=no%Cstd,no%stlport4
-I/export/cpu2006-v1.2/stdcxx-4.2.1/include
-I/export/cpu2006-v1.2/stdcxx-4.2.1/build/include
-L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib
-R/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib -lstd8d

450.soplex: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii
-library=stlport4 -xalias_level=simple -xO3 -xunroll=10
-xrestrict -xprefetch=no%auto -lbsdmalloc

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=2 -xalias_level=compatible
-xunroll=3 -xprefetch=no%auto
-Qoption iropt -Ainline:rs=1024
-Qoption iropt -Ainline:cs=1024
-Qoption iropt -Ainline:inc=900 -xchip=generic
-library=stlport4 -lfast

Fortran benchmarks:

410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=2 -xlinkopt -xunroll=4
-xprefetch=no%auto

416.gamess: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M
-xtarget=sparc64vii -xlinkopt -xprefetch=no%auto -xunroll=6
-M /usr/lib/ld/map.bssalign

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Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M
-xtarget=sparc64vii -xprefetch=latx:1.2
-Qoption cg -Qms_pipe+alldoall -M /usr/lib/ld/map.bssalign

459.GemsFDTD: basepeak = yes

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=1 -xO4 -xunroll=3
-xprefetch=no%auto -lbsdmalloc

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=sparc64x -fma=fused -xpagesize=4M
-xtarget=sparc64vii -fsimple=0 -xunroll=4
-xprefetch_auto_type=indirect_array_access

436.cactusADM: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xlinkopt -xvector -xalias_level=std
-xprefetch_level=3 -xunroll=4 -xprefetch=latx:2.0
-xprefetch_auto_type=indirect_array_access
-M /usr/lib/ld/map.bssalign

454.calculix: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=1
-xalias_level=std -xprefetch_level=3 -xprefetch=latx:2.0

481.wrf: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xalias_level=std -xunroll=5
-Qoption iropt -Rujam -xchip=generic -xprefetch=no%auto
-M /usr/lib/ld/map.bssalign

Peak Other Flags

C benchmarks:
-xjobs=16

C++ benchmarks:
-xjobs=16

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Peak Other Flags (Continued)

Fortran benchmarks:
`-xjobs=16`

Benchmarks using both Fortran and C:
`-xjobs=16`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20130409.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20130409.xml`

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