SPEC® CFP2006 Result

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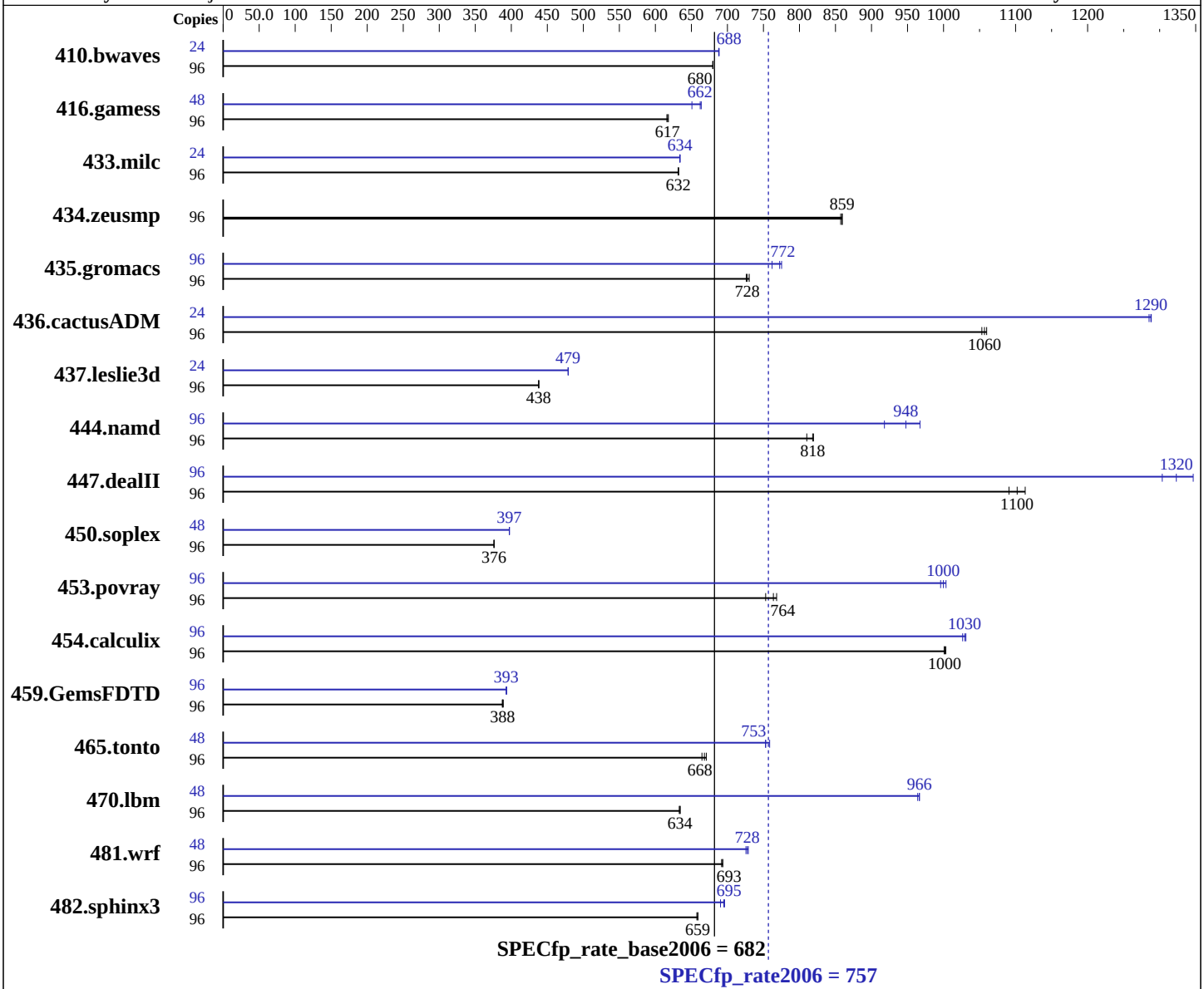
Fujitsu
Fujitsu SPARC M12-2S

SPECfp®_rate2006 = 757

SPECfp_rate_base2006 = 682

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

Test date: Mar-2017
Hardware Availability: Apr-2017
Software Availability: Jul-2017



Hardware

CPU Name:	SPARC64 XII
CPU Characteristics:	High Speed Mode up to 4.35 GHz
CPU MHz:	4250
FPU:	Integrated
CPU(s) enabled:	12 cores, 1 chip, 12 cores/chip, 8 threads/core
CPU(s) orderable:	1 to 16 BBs; each BB contains 1 or 2 CPU chips; the number of orderable total cores is 2, 3, 4, .. 384
Primary Cache:	64 KB I + 64 KB D on chip per core

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Software

Operating System:	Oracle Solaris 11.3 (with June 2017 SRU)
Compiler:	C/C++/Fortran: Version 12.6 of Oracle Developer Studio
Auto Parallel:	No
File System:	tmpfs
System State:	Default
Base Pointers:	32-bit
Peak Pointers:	32-bit
Other Software:	None

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Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 32 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 600 GB 10K RPM SAS (for system disk)
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	96	**1919**	**680**	1919	680	1919	680	24	474	688	474	688	**474**	**688**
416.gamess	96	3041	618	3052	616	**3046**	**617**	48	1444	651	**1419**	**662**	1416	664
433.milc	96	**1395**	**632**	1394	632	1395	632	24	347	634	348	634	**347**	**634**
434.zeusmp	96	1017	859	1019	857	**1017**	**859**	96	1017	859	1019	857	**1017**	**859**
435.gromacs	96	944	726	**942**	**728**	939	730	96	884	775	900	762	**887**	**772**
436.cactusADM	96	**1085**	**1060**	1082	1060	1089	1050	24	223	1290	**223**	**1290**	223	1290
437.leslie3d	96	**2060**	**438**	2060	438	2060	438	24	471	479	**471**	**479**	471	479
444.namd	96	950	810	940	819	**941**	**818**	96	**812**	**948**	839	918	796	967
447.dealII	96	1007	1090	**996**	**1100**	986	1110	96	816	1350	**830**	**1320**	842	1300
450.soplex	96	**2129**	**376**	2129	376	2130	376	48	1008	397	**1008**	**397**	1007	397
453.povray	96	665	768	678	753	**669**	**764**	96	**511**	**1000**	513	996	509	1000
454.calculix	96	**791**	**1000**	791	1000	789	1000	96	**769**	**1030**	772	1030	768	1030
459.GemsFDTD	96	**2626**	**388**	2629	387	2619	389	96	**2591**	**393**	2588	394	2593	393
465.tonto	96	**1414**	**668**	1421	665	1408	671	48	623	759	627	753	**627**	**753**
470.lbm	96	2083	633	2079	634	**2080**	**634**	48	684	964	**682**	**966**	682	966
481.wrf	96	1550	692	1546	693	**1546**	**693**	48	735	729	739	726	**737**	**728**
482.sphinx3	96	**2840**	**659**	2839	659	2846	658	96	2710	690	**2692**	**695**	2688	696

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

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 "Logical Domains Manager" service was turned off using the command "svcadm disable ldmd".
```

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Operating System Notes (Continued)

```
System Tunables:
(/etc/system parameters)
   autoup = 86400
      Causes pages older than the listed number of seconds to be written by fsflush.
   doiflush = 0
     Controls whether file system metadata syncs will be executed during fsflush invocations.
   dopageflush = 0
      Controls whether memory is examined for modified pages during fsflush invocations.
   zfs:zfs_arc_max=1073741824
      Determines the maximum size of the ZFS Adaptive Replacement Cache (ARC).
```

Platform Notes

```
Firmware Settings:
(XSCF operations)
   Set High Speed Mode via XSCF command "sethsmode -s on".

 Sysinfo program /export/cpu2006/config/sysinfo
 Revision 6993 of 2015-11-06 (c9426fd40261140bb4c02f7d35768596)
 running on H2S-253-D0 Wed Mar  1 13:22:00 2017

 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-XII (chipid 0, clock 4250 MHz)
    1 chips
    96 threads
    4250 MHz

 From kstat:       12 cores

 From prtconf: 521728 Megabytes

 /etc/release:
      Oracle Solaris 11.3 SPARC
 uname -a:
    SunOS H2S-253-D0 5.11 11.3 sun4v sparc sun4v

 SPEC is set to: /export/cpu2006

 disk: df -h  /export/cpu2006
 Filesystem             Size   Used  Available Capacity  Mounted on
 rpool/export           547G   9.1G       265G     4%    /export

 (End of data from sysinfo program)
```

General Notes

```
The Building Block (BB) is just a Fujitsu SPARC M12-2S that is the basic
unit to be expanded as if stacking up children's blocks.

File System:
 tmpfs: output_root was used to put run directories in /tmp/cpu2006
 zfs: operating system

SPEC CPU2006 benchmark:
 Updated with runspec --update
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Base Portability Flags

447.dealII: -DBOOST_NO_COMPILER_CONFIG

Base Optimization Flags

C benchmarks:
-std=c99 -m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput -xalias_level=std -xprefetch_level=2

C++ benchmarks:
-m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput -xalias_level=compatible
-library=stlport4

Fortran benchmarks:
-m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput -xvector=no%lib

Benchmarks using both Fortran and C:
-std=c99 -m32 -fast(cc) -fast(f95) -xtarget=sparc64xii -xipo=2
-xpagesize=4M -xsegment_align=4M -xthroughput -xalias_level=std
-xprefetch_level=2 -xvector=no%lib

Base Other Flags

C benchmarks:
`-xjobs=8`

C++ benchmarks:
`-xjobs=8`

Fortran benchmarks:
`-xjobs=8`

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

Peak Compiler Invocation

C benchmarks:
`cc`

C++ benchmarks:
`CC`

Fortran benchmarks:
`f90`

Benchmarks using both Fortran and C:
`cc f90`

Peak Portability Flags

447.dealII: `-DBOOST_NO_COMPILER_CONFIG`

Peak Optimization Flags

C benchmarks:

433.milc: `-std=c99 -m32 -fast -xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M -xthroughput -xipo=2 -xalias_level=std -fsimple=1 -W2,-Ainline:rs=400 -Qoption cg -Qms_pipe+alldoall -W2,-Asac -xthroughput=no`

470.lbm: `-std=c99 -m32 -fast -xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M -xthroughput -xipo=2 -xalias_level=std -xprefetch_level=2 -xpagesize=256M -xsegment_align=256M -xthroughput=no -lbsdmalloc`

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Peak Optimization Flags (Continued)

482.sphinx3: -std=c99 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xO4 -xipo=2 -xprefetch=latx:0.6
-xinline_param=level:1 -xprefetch=no%auto -lbsdmalloc

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xalias_level=compatible -xprefetch=no%auto
-Wc,-Qms_pipe+alldoall

447.dealII: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xtarget=sparc64xplus -xipo=1
-xalias_level=compatible -xrestrict -xprefetch=no%auto
-Qoption cg -Qiselect-funcalign=64 -xthroughput=yes
-library=stdcxx4 -template=extdef

450.soplex: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xipo=2 -Wc,-Qlp=0

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xO4 -xtarget=sparc64xplus -xipo=2
-xalias_level=compatible -xlinkopt=2 -xprefetch=no%auto
-xunroll=7 -Qoption iropt -Ainline:rs=1024
-Qoption iropt -Ainline:cs=1024
-Qoption iropt -Ainline:inc=900 -lfast

Fortran benchmarks:

410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xipo=2 -xunroll=4 -xvector=%none
-xprefetch=no%auto

416.gamess: -m32 -fast -xtarget=sparc64xii -xpagesize=4M
-xsegment_align=4M -xthroughput -xvector=no%simd
-xprefetch=latx:0.1

434.zeusmp: basepeak = yes

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Peak Optimization Flags (Continued)

437.leslie3d: -m32 -fast -xtarget=sparc64xii -xpagesize=4M
-xsegment_align=4M -xthroughput -xunroll=2 -xvector=%none
-xprefetch=latx:0.8 -Qoption cg -Qms_pipe+alldoall
-xinline_param=level:1 -xthroughput=no

459.GemsFDTD: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xunroll=9 -xprefetch=latx:0.2
-xprefetch_level=3 -Qoption cg -Qlp-av=128
-Qoption iropt -Rujam

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xipo=1 -xO4 -xunroll=3 -xprefetch=no%auto
-xthroughput=no -lbsdmalloc

Benchmarks using both Fortran and C:

435.gromacs: -std=c99 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast(cc) -fast(f95)
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xalias_level=strong -Wc,-Qicache-chbab=1
-Wc,-Qiselect-rsqrta=2 -Wc,-Qiselect-rsqrta1x=2
-qoption cg -Qicache-chbab=1 -qoption cg -Qiselect-rsqrta=2
-qoption cg -Qiselect-rsqrta1x=2

436.cactusADM: -std=c99 -m32 -fast(cc) -fast(f95) -xtarget=sparc64xii
-xpagesize=4M -xsegment_align=4M -xthroughput
-xtarget=sparc64xplus -xunroll=10 -xprefetch=latx:2.0
-xpagesize=256M -xsegment_align=256M -xthroughput=no
-lbsdmalloc

454.calculix: -std=c99 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m32 -fast(cc) -fast(f95)
-xtarget=sparc64xii -xpagesize=4M -xsegment_align=4M
-xthroughput -xtarget=sparc64xplus -xipo=1
-Wc,-Qiselect-funcalign=64 -xinline_param=level:3
-Qoption cg -Qiselect-funcalign=64

481.wrf: -std=c99 -m32 -fast(cc) -fast(f95) -xtarget=sparc64xii
-xpagesize=4M -xsegment_align=4M -xthroughput -xunroll=9
-xprefetch=latx:0.4 -Qoption iropt -Rujam -xO4
-xthroughput=no

Peak Other Flags

C benchmarks:
`-xjobs=8`

C++ benchmarks:
`-xjobs=8`

Fortran benchmarks:
`-xjobs=8`

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

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Oracle-Developer-Studio12.6.html`
`http://www.spec.org/cpu2006/flags/Fujitsu-M12-2S.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Oracle-Developer-Studio12.6.xml`
`http://www.spec.org/cpu2006/flags/Fujitsu-M12-2S.xml`

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