SPEC® CFP2006 Result

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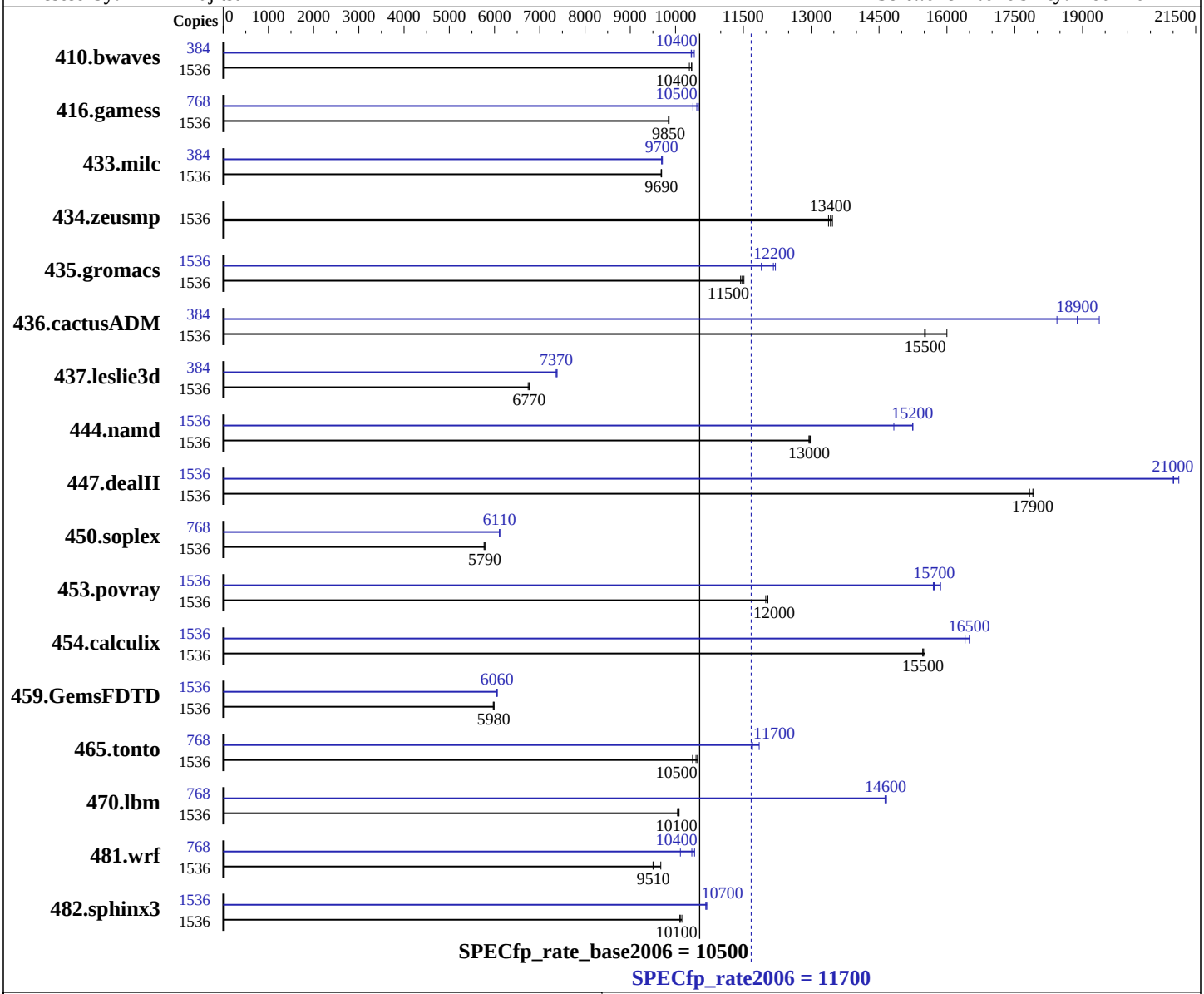
Fujitsu
Fujitsu SPARC M12-2S

SPECfp®_rate2006 = 11700

SPECfp_rate_base2006 = 10500

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:	192 cores, 16 chips, 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: 8 TB (256 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	1536	2025	10300	**2016**	**10400**	2015	10400	384	504	10300	501	10400	**504**	**10400**
416.gamess	1536	3055	9840	3051	9860	**3053**	**9850**	768	**1436**	**10500**	1431	10500	1448	10400
433.milc	1536	**1456**	**9690**	1455	9690	1456	9680	384	364	9690	**364**	**9700**	363	9710
434.zeusmp	1536	**1041**	**13400**	1038	13500	1044	13400	1536	**1041**	**13400**	1038	13500	1044	13400
435.gromacs	1536	**956**	**11500**	953	11500	959	11400	1536	922	11900	898	12200	**902**	**12200**
436.cactusADM	1536	**1182**	**15500**	1184	15500	1147	16000	384	237	19400	**243**	**18900**	249	18400
437.leslie3d	1536	2129	6780	**2134**	**6770**	2141	6740	384	490	7360	**490**	**7370**	489	7380
444.namd	1536	**951**	**13000**	951	13000	949	13000	1536	831	14800	808	15200	**808**	**15200**
447.dealII	1536	986	17800	**982**	**17900**	981	17900	1536	832	21100	837	21000	**836**	**21000**
450.soplex	1536	2221	5770	**2214**	**5790**	2214	5790	768	1048	6110	1048	6110	**1048**	**6110**
453.povray	1536	**679**	**12000**	681	12000	679	12000	1536	520	15700	515	15900	**520**	**15700**
454.calculix	1536	819	15500	**819**	**15500**	817	15500	1536	773	16400	768	16500	**768**	**16500**
459.GemsFDTD	1536	**2724**	**5980**	2720	5990	2729	5970	1536	**2691**	**6060**	2694	6050	2690	6060
465.tonto	1536	**1446**	**10500**	1457	10400	1442	10500	768	647	11700	**646**	**11700**	638	11900
470.lbm	1536	2101	10000	2094	10100	**2094**	**10100**	768	**720**	**14600**	721	14600	720	14700
481.wrf	1536	**1803**	**9510**	1773	9680	1805	9500	768	**828**	**10400**	849	10100	823	10400
482.sphinx3	1536	**2962**	**10100**	2965	10100	2952	10100	1536	**2804**	**10700**	2805	10700	2800	10700

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-230-D0 Sun Mar 19 19:28:40 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)
    SPARC64-XII (chipid 1, clock 4250 MHz)
    SPARC64-XII (chipid 10, clock 4250 MHz)
    SPARC64-XII (chipid 11, clock 4250 MHz)
    SPARC64-XII (chipid 12, clock 4250 MHz)
    SPARC64-XII (chipid 13, clock 4250 MHz)
    SPARC64-XII (chipid 14, clock 4250 MHz)
    SPARC64-XII (chipid 15, clock 4250 MHz)
    SPARC64-XII (chipid 2, clock 4250 MHz)
    SPARC64-XII (chipid 3, clock 4250 MHz)
    SPARC64-XII (chipid 4, clock 4250 MHz)
    SPARC64-XII (chipid 5, clock 4250 MHz)
    SPARC64-XII (chipid 6, clock 4250 MHz)
    SPARC64-XII (chipid 7, clock 4250 MHz)
    SPARC64-XII (chipid 8, clock 4250 MHz)
    SPARC64-XII (chipid 9, clock 4250 MHz)
    16 chips
    1536 threads
    4250 MHz

 From kstat:      192 cores

 From prtconf: 8375296 Megabytes

 /etc/release:
```

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Platform Notes (Continued)

```
     Oracle Solaris 11.3 SPARC
uname -a:
   SunOS H2S-230-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    15G       259G     6%    /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

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

Continued on next page

Peak Optimization Flags (Continued)

453.povray (continued):
-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

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

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Peak Optimization Flags (Continued)

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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