SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

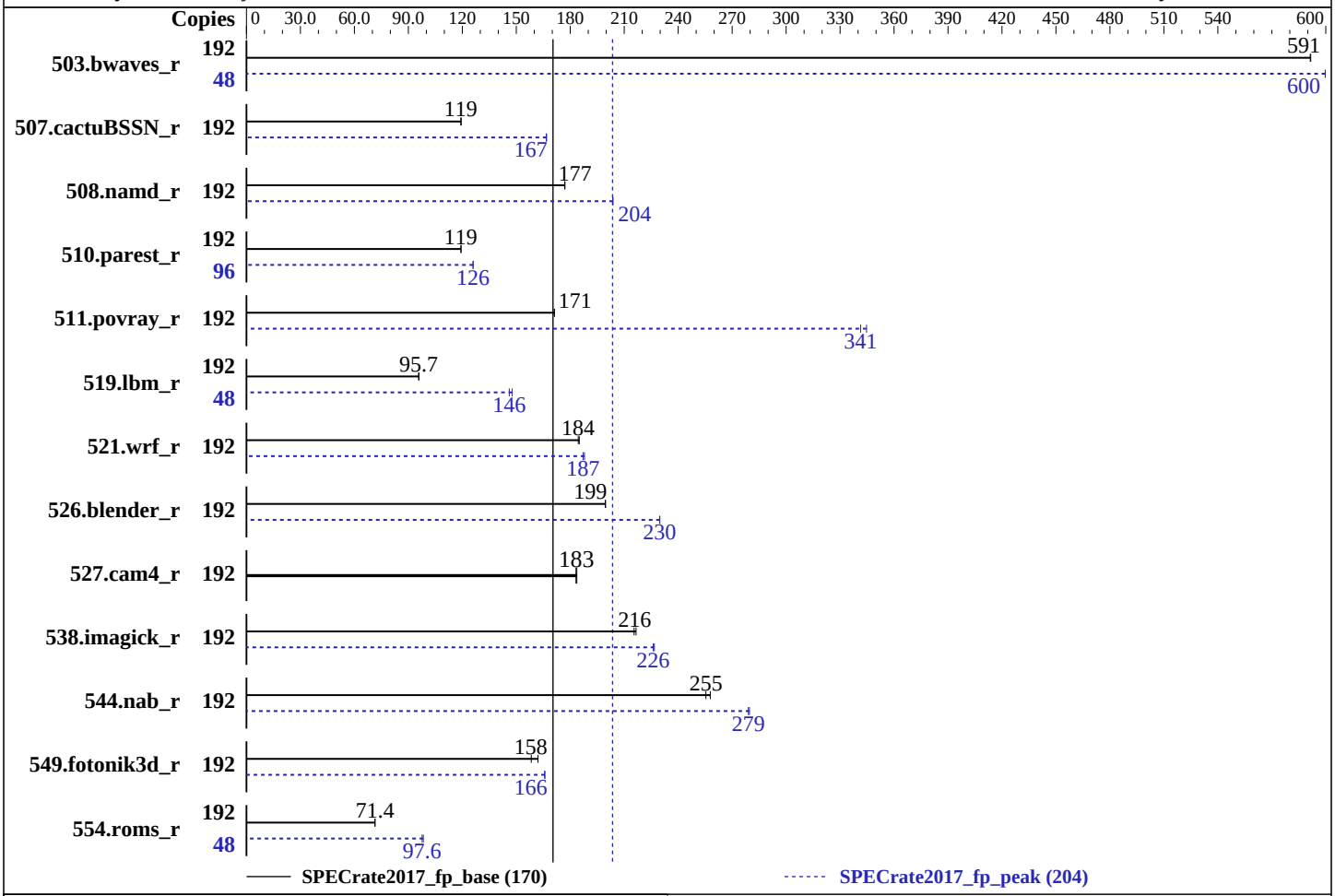
Fujitsu
Fujitsu SPARC M12-2S

SPECrate2017_fp_base = 170

SPECrate2017_fp_peak = 204

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Nov-2017
Hardware Availability: Apr-2017
Software Availability: Jul-2017



Hardware

CPU Name:	SPARC64 XII
Max MHz.:	4350
Nominal:	4250
Enabled:	24 cores, 2 chips, 8 threads/core
Orderable:	1 to 16 BBs; each BB contains 1 or 2 CPU chips; 2, 3, 4, .. 384 cores
Cache L1:	64 KB I + 64 KB D on chip per core
L2:	512 KB I+D on chip per core
L3:	32 MB I+D on chip per chip
Other:	None
Memory:	1 TB (32 x 32 GB 2Rx4 PC4-2400T-R)
Storage:	1 x 600 GB 10K RPM SAS (for system disk)
Other:	None

Software

OS:	Oracle Solaris 11.3 SRU 24.4
Compiler:	C/C++/Fortran: Version 12.6 of Oracle Developer Studio
Parallel:	No
Firmware:	Fujitsu HCP Version 3040 released Oct-2017
File System:	tmpfs
System State:	Default
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other:	None

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Fujitsu
Fujitsu SPARC M12-2S

SPECrate2017_fp_base = 170

SPECrate2017_fp_peak = 204

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Nov-2017
Hardware Availability: Apr-2017
Software Availability: Jul-2017

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	192	3254	592	**3256**	**591**			48	**803**	**600**	803	600		
507.cactuBSSN_r	192	**2040**	**119**	2036	119			192	1457	167	**1459**	**167**		
508.namd_r	192	**1031**	**177**	1030	177			192	**896**	**204**	895	204		
510.parest_r	192	**4212**	**119**	4211	119			96	**1994**	**126**	1992	126		
511.povray_r	192	2619	171	**2619**	**171**			192	1301	345	**1313**	**341**		
519.lbm_r	192	2110	95.9	**2115**	**95.7**			48	342	148	**346**	**146**		
521.wrf_r	192	**2332**	**184**	2325	185			192	2289	188	**2299**	**187**		
526.blender_r	192	**1466**	**199**	1465	200			192	1272	230	**1273**	**230**		
527.cam4_r	192	**1833**	**183**	1828	184			192	**1833**	**183**	1828	184		
538.imagick_r	192	**2216**	**216**	2205	217			192	2106	227	**2112**	**226**		
544.nab_r	192	1253	258	**1265**	**255**			192	**1158**	**279**	1156	280		
549.fotonik3d_r	192	**4726**	**158**	4617	162			192	**4514**	**166**	4510	166		
554.roms_r	192	4268	71.5	**4272**	**71.4**			48	**781**	**97.6**	776	98.3		

SPECrate2017_fp_base = 170

SPECrate2017_fp_peak = 204

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".

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).
```

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/cpu2017
 zfs: operating system

Binaries were compiled on a system with 2x SPARC64 XII CPU + 1TB Memory using Oracle Solaris 11.3 SRU 24.4
```

Platform Notes

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

Sysinfo program /export/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on H2S-232-D0 Thu Nov 30 20:08:52 2017

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
   https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /usr/sbin/psrinfo
   SPARC64-XII (chipid 0, clock 4250 MHz)
   SPARC64-XII (chipid 1, clock 4250 MHz)
   2 chips
   192 threads
   4250 MHz

From kstat:       24 cores

From prtconf: 1046016 Megabytes

/etc/release:
     Oracle Solaris 11.3 SPARC
uname -a:
   SunOS H2S-232-D0 5.11 11.3 sun4v sparc sun4v

disk: df -h /export/cpu2017
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G   8.7G       107G     8%    /export

(End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CXXC 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
CXXC 508.namd_r(peak) 510.parest_r(peak)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 CC  511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
CC   511.povray_r(peak) 526.blender_r(peak)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 FC  507.cactuBSSN_r(base)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
FC   507.cactuBSSN_r(peak)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------
```

(Continued on next page)

Compiler Version Notes (Continued)

```
==============================================================================
CC   519.lbm_r(peak) 538.imagick_r(peak) 544.nab_r(peak)
------------------------------------------------------------------------------
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
FC   503.bwaves_r(peak) 549.fotonik3d_r(peak) 554.roms_r(peak)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 CC  521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
CC   521.wrf_r(peak) 527.cam4_r(peak)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
f90 cc

(Continued on next page)

Base Compiler Invocation (Continued)

Benchmarks using both C and C++:
CC cc

Benchmarks using Fortran, C, and C++:
CC cc f90

Base Portability Flags

503.bwaves_r: -D_FILE_OFFSET_BITS=64
507.cactuBSSN_r: -DSPEC_NO_C99_MATH_IN_CXX -D_FILE_OFFSET_BITS=64
508.namd_r: -D_FILE_OFFSET_BITS=64
510.parest_r: -D_FILE_OFFSET_BITS=64
511.povray_r: -D_FILE_OFFSET_BITS=64
519.lbm_r: -D_FILE_OFFSET_BITS=64
521.wrf_r: -D_FILE_OFFSET_BITS=64
526.blender_r: -DSPEC_NO_ISFINITE -xchar=u -D_FILE_OFFSET_BITS=64
527.cam4_r: -D_FILE_OFFSET_BITS=64
538.imagick_r: -D_FILE_OFFSET_BITS=64
544.nab_r: -D_FILE_OFFSET_BITS=64
549.fotonik3d_r: -D_FILE_OFFSET_BITS=64
554.roms_r: -D_FILE_OFFSET_BITS=64

Base Optimization Flags

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

C++ benchmarks:
-m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput -xalias_level=compatible -std=c++03
-lfast

Fortran benchmarks:
-m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput

Benchmarks using both Fortran and C:
-m32 -fast(cc) -fast(f95) -xtarget=sparc64xii -xipo=2 -xpagesize=4M
-xsegment_align=4M -xthroughput -xalias_level=std

(Continued on next page)

Base Optimization Flags (Continued)

Benchmarks using both C and C++:
`-m32 -fast`(CC) `-fast`(cc) `-xtarget=sparc64xii -xipo=2 -xpagesize=4M -xsegment_align=4M -xthroughput -xalias_level=std -xalias_level=compatible -std=c++03 -lfast`

Benchmarks using Fortran, C, and C++:
`-m32 -fast`(CC) `-fast`(cc) `-fast`(f95) `-xtarget=sparc64xii -xipo=2 -xpagesize=4M -xsegment_align=4M -xthroughput -xalias_level=std -xalias_level=compatible -std=c++03 -lfast`

Base Other Flags

C benchmarks:
`-xjobs=8`

C++ benchmarks:
`-xjobs=8`

Fortran benchmarks:
`-xjobs=8`

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

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

Benchmarks using Fortran, C, and C++:
`-xjobs=8`

Peak Compiler Invocation

C benchmarks:
`cc`

C++ benchmarks:
`CC`

Fortran benchmarks:
`f90`

(Continued on next page)

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
f90 cc

Benchmarks using both C and C++:
CC cc

Benchmarks using Fortran, C, and C++:
CC cc f90

Peak Portability Flags

503.bwaves_r: -D_FILE_OFFSET_BITS=64
507.cactuBSSN_r: -DSPEC_NO_C99_MATH_IN_CXX -DSPEC_LP64
508.namd_r: -D_FILE_OFFSET_BITS=64
510.parest_r: -D_FILE_OFFSET_BITS=64
511.povray_r: -D_FILE_OFFSET_BITS=64
519.lbm_r: -D_FILE_OFFSET_BITS=64
521.wrf_r: -D_FILE_OFFSET_BITS=64
526.blender_r: -DSPEC_NO_ISFINITE -xchar=u -D_FILE_OFFSET_BITS=64
527.cam4_r: -D_FILE_OFFSET_BITS=64
538.imagick_r: -DSPEC_LP64
544.nab_r: -D_FILE_OFFSET_BITS=64
549.fotonik3d_r: -D_FILE_OFFSET_BITS=64
554.roms_r: -D_FILE_OFFSET_BITS=64

Peak Optimization Flags

C benchmarks:

519.lbm_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xO4
-xtarget=sparc64xplus -xprefetch=latx:0.9
-xprefetch_auto_type=indirect_array_access -xunroll=2
-W2,-Afully_unroll:always=on -Wc,-Qiselect-funcalign=64

538.imagick_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xO4 -m64
-xtarget=sparc64xplus -xinline_param=level:3

(Continued on next page)

Peak Optimization Flags (Continued)

538.imagick_r (continued):
-xprefetch=latx:0.7
-xprefetch_auto_type=indirect_array_access -xunroll=4
-Wc,-Qiselect-funcalign=4

544.nab_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xO4 -xunroll=3

C++ benchmarks:

508.namd_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xtarget=sparc64xplus
-xalias_level=compatible -Wc,-Qms_pipe+alldoall -std=c++03

510.parest_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xtarget=sparc64xplus
-xalias_level=compatible -xthroughput=no
-xprefetch=no%auto -std=c++03

Fortran benchmarks:

503.bwaves_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xinline_param=level:1
-xprefetch=latx:0.5

549.fotonik3d_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xthroughput=no
-xprefetch=latx:0.8
-xprefetch_auto_type=indirect_array_access -W2,-Rujam

554.roms_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xtarget=sparc64xplus
-xthroughput=no -xprefetch_auto_type=indirect_array_access
-xunroll=3 -W2,-Rujam -Wc,-Qiselect-rcpa=2
-Wc,-Qiselect-rsqrta=2 -Wc,-Qiselect-rsqrta1x=2

Benchmarks using both Fortran and C:

521.wrf_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast(cc) -fast(f95) -xtarget=sparc64xii -xipo=2

(Continued on next page)

Peak Optimization Flags (Continued)

521.wrf_r (continued):
-xpagesize=256M -xsegment_align=256M -xthroughput
-xtarget=sparc64xplus

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast(CC) -fast(cc) -xtarget=sparc64xii -xipo=2
-xpagesize=256M -xsegment_align=256M -xthroughput
-xtarget=sparc64xplus -xipo=1 -xalias_level=std
-xthroughput=no -xinline_param=level:3
-Wc,-Qiselect-rcpa=2 -W2,-Afully_unroll:always=on
-xalias_level=compatible -features=no%except
-features=no%rtti -Qoption iropt -Afully_unroll:always=on
-library=stlport4 -lfast

526.blender_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast(CC) -fast(cc) -xtarget=sparc64xii -xipo=2
-xpagesize=256M -xsegment_align=256M -xthroughput
-library=stlport4

Benchmarks using Fortran, C, and C++:
-xprofile=collect:./feedback -xprofile=use:./feedback -m32 -fast(CC)
-fast(cc) -fast(f95) -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -m64 -Wc,-Qiselect-funcalign=4
-Qoption cg -Qiselect-funcalign=4 -library=stlport4

Peak Other Flags

C benchmarks:
-xjobs=8

C++ benchmarks:
-xjobs=8

Fortran benchmarks:
-xjobs=8

Benchmarks using both Fortran and C:
-xjobs=8

(Continued on next page)

Peak Other Flags (Continued)

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

Benchmarks using Fortran, C, and C++:
`-xjobs=8`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Oracle-Developer-Studio12.6.html`
`http://www.spec.org/cpu2017/flags/Fujitsu-M12-2S.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Oracle-Developer-Studio12.6.xml`
`http://www.spec.org/cpu2017/flags/Fujitsu-M12-2S.xml`

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.2 on 2017-11-30 06:08:50-0500.
Report generated on 2018-10-31 13:11:56 by CPU2017 PS formatter v6067.
Originally published on 2017-12-26.