SPEC® CPU2017 Integer Rate Result

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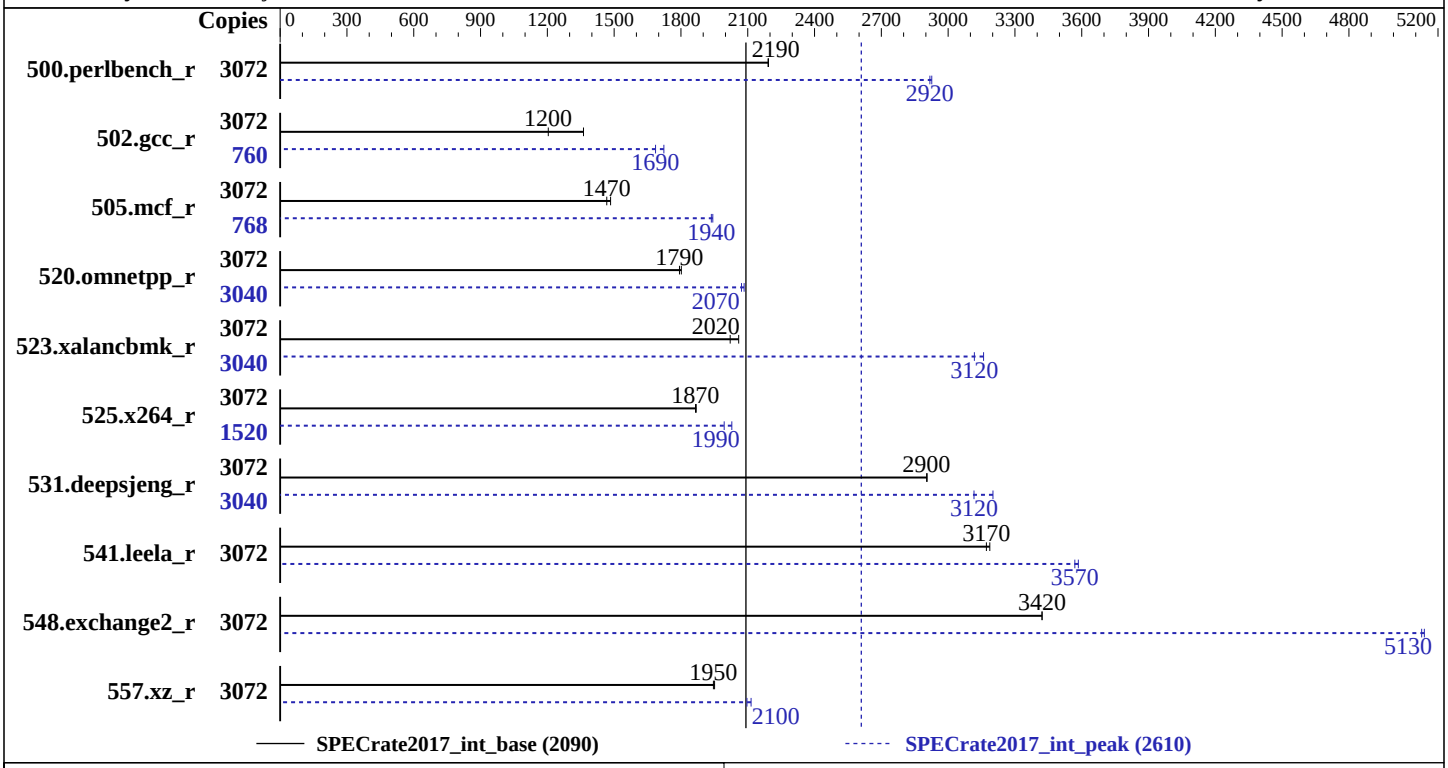
Fujitsu
Fujitsu SPARC M12-2S

SPECrate2017_int_base = 2090

SPECrate2017_int_peak = 2610

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

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



Hardware

CPU Name:	SPARC64 XII
Max MHz.:	4350
Nominal:	4250
Enabled:	384 cores, 32 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:	16896 GB (256 x 32 GB 2Rx4 PC4-2400T-R, 136 x 64 GB 4Rx4 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-bit
Other:	None

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	3072	**2232**	**2190**	2230	2190			3072	1671	2930	**1676**	**2920**		
502.gcc_r	3072	3193	1360	**3612**	**1200**			760	624	1720	**638**	**1690**		
505.mcf_r	3072	3345	1480	**3384**	**1470**			768	**641**	**1940**	639	1940		
520.omnetpp_r	3072	**2247**	**1790**	2237	1800			3040	**1925**	**2070**	1914	2080		
523.xalancbmk_r	3072	1575	2060	**1605**	**2020**			3040	1016	3160	**1030**	**3120**		
525.x264_r	3072	2879	1870	**2884**	**1870**			1520	**1335**	**1990**	1312	2030		
531.deepsjeng_r	3072	**1213**	**2900**	1212	2910			3040	1088	3200	**1118**	**3120**		
541.leela_r	3072	**1604**	**3170**	1596	3190			3072	**1425**	**3570**	1419	3580		
548.exchange2_r	3072	2352	3420	**2352**	**3420**			3072	**1570**	**5130**	1566	5140		
557.xz_r	3072	1700	1950	**1705**	**1950**			3072	1569	2120	**1583**	**2100**		

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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-230-D0 Mon Dec  4 18:04:15 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)
   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 16, clock 4250 MHz)
   SPARC64-XII (chipid 17, clock 4250 MHz)
   SPARC64-XII (chipid 18, clock 4250 MHz)
   SPARC64-XII (chipid 19, clock 4250 MHz)
   SPARC64-XII (chipid 2, clock 4250 MHz)
   SPARC64-XII (chipid 20, clock 4250 MHz)
   SPARC64-XII (chipid 21, clock 4250 MHz)
   SPARC64-XII (chipid 22, clock 4250 MHz)
   SPARC64-XII (chipid 23, clock 4250 MHz)
   SPARC64-XII (chipid 24, clock 4250 MHz)
   SPARC64-XII (chipid 25, clock 4250 MHz)
   SPARC64-XII (chipid 26, clock 4250 MHz)
   SPARC64-XII (chipid 27, clock 4250 MHz)
```

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Platform Notes (Continued)

```
    SPARC64-XII (chipid 28, clock 4250 MHz)
    SPARC64-XII (chipid 29, clock 4250 MHz)
    SPARC64-XII (chipid 3, clock 4250 MHz)
    SPARC64-XII (chipid 30, clock 4250 MHz)
    SPARC64-XII (chipid 31, 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)
    32 chips
    3072 threads
    4250 MHz

 From kstat:      384 cores

 From prtconf: 17275904 Megabytes

 /etc/release:
      Oracle Solaris 11.3 SPARC
 uname -a:
    SunOS H2S-230-D0 5.11 11.3 sun4v sparc sun4v

 disk: df -h /export/cpu2017
 Filesystem             Size   Used  Available Capacity  Mounted on
 rpool/export           547G   136G        87G    61%    /export

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base)
      541.leela_r(base)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
CXXC 520.omnetpp_r(peak) 531.deepsjeng_r(peak) 541.leela_r(peak)
------------------------------------------------------------------------------
CC: Studio 12.6 Sun C++ 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
```

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Compiler Version Notes (Continued)

```
 CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
      557.xz_r(base)
------------------------------------------------------------------------------
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
CC   500.perlbench_r(peak) 502.gcc_r(peak) 505.mcf_r(peak) 525.x264_r(peak)
     557.xz_r(peak)
------------------------------------------------------------------------------
cc: Studio 12.6 Sun C 5.15 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
 FC  548.exchange2_r(base)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------

==============================================================================
FC   548.exchange2_r(peak)
------------------------------------------------------------------------------
f90: Studio 12.6 Fortran 95 8.8 SunOS_sparc 2017/05/30
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Base Portability Flags

500.perlbench_r: -DSPEC_SOLARIS_SPARC
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -D_FILE_OFFSET_BITS=64
520.omnetpp_r: -DSPEC_GCC_MANGLE -D_FILE_OFFSET_BITS=64
523.xalancbmk_r: -DSPEC_SOLARIS -D_FILE_OFFSET_BITS=64

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Base Portability Flags (Continued)

525.x264_r: `-D_FILE_OFFSET_BITS=64`
531.deepsjeng_r: `-D_FILE_OFFSET_BITS=64`
541.leela_r: `-D_FILE_OFFSET_BITS=64`
548.exchange2_r: `-D_FILE_OFFSET_BITS=64`
557.xz_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=weak`

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

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

Base Other Flags

C benchmarks:
`-xjobs=8`

C++ benchmarks:
`-xjobs=8`

Fortran benchmarks:
`-xjobs=8`

Peak Compiler Invocation

C benchmarks:
`cc`

C++ benchmarks:
`CC`

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Peak Compiler Invocation (Continued)

Fortran benchmarks:
f90

Peak Portability Flags

500.perlbench_r: -DSPEC_SOLARIS_SPARC
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -D_FILE_OFFSET_BITS=64
520.omnetpp_r: -D_FILE_OFFSET_BITS=64
523.xalancbmk_r: -DSPEC_SOLARIS -D_FILE_OFFSET_BITS=64
525.x264_r: -D_FILE_OFFSET_BITS=64
531.deepsjeng_r: -D_FILE_OFFSET_BITS=64
541.leela_r: -D_FILE_OFFSET_BITS=64
548.exchange2_r: -D_FILE_OFFSET_BITS=64
557.xz_r: -D_FILE_OFFSET_BITS=64

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xO4
-xalias_level=layout -xinline_param=level:3 -lfast

502.gcc_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xtarget=sparc64xplus
-xipo=1 -xinline_param=level:3 -xprefetch=no%auto
-xthroughput=no -lfast

505.mcf_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xalias_level=strong
-xprefetch=no%auto -xthroughput=no

525.x264_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xunroll=3
-xprefetch=no%auto -W2,-Afully_unroll:always=on

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Peak Optimization Flags (Continued)

557.xz_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xalias_level=std
-xprefetch=latx:0.4

C++ benchmarks:

520.omnetpp_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xalias_level=compatible
-xprefetch=latx:0.4 -library=stdcxx4 -template=extdef
-lfast

523.xalancbmk_r: -m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xprefetch=no%auto
-library=stlport4 -lfast

531.deepsjeng_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput -xalias_level=compatible
-xinline_param=level:1 -xunroll=2 -xprefetch=no%auto
-std=c++03

541.leela_r: -xprofile=collect:./feedback -xprofile=use:./feedback -m32
-fast -xtarget=sparc64xii -xipo=2 -xpagesize=256M
-xsegment_align=256M -xthroughput
-xinline_param=max_growth:500 -xprefetch=no%auto
-xthroughput=no -Wc,-Qiselect-funcalign=4
-Qoption iropt -Afully_unroll:always=on -std=c++03

Fortran benchmarks:
-xprofile=collect:./feedback -xprofile=use:./feedback -m32 -fast
-xtarget=sparc64xii -xipo=2 -xpagesize=256M -xsegment_align=256M
-xthroughput -xtarget=sparc64xplus -xprefetch=no%auto
-Qoption iropt -Afully_unroll:always=on

Peak Other Flags

C benchmarks:
-xjobs=8

C++ benchmarks:
-xjobs=8

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Peak Other Flags (Continued)

Fortran benchmarks:
`-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`

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

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