SPEC® CPU2017 Integer Rate Result

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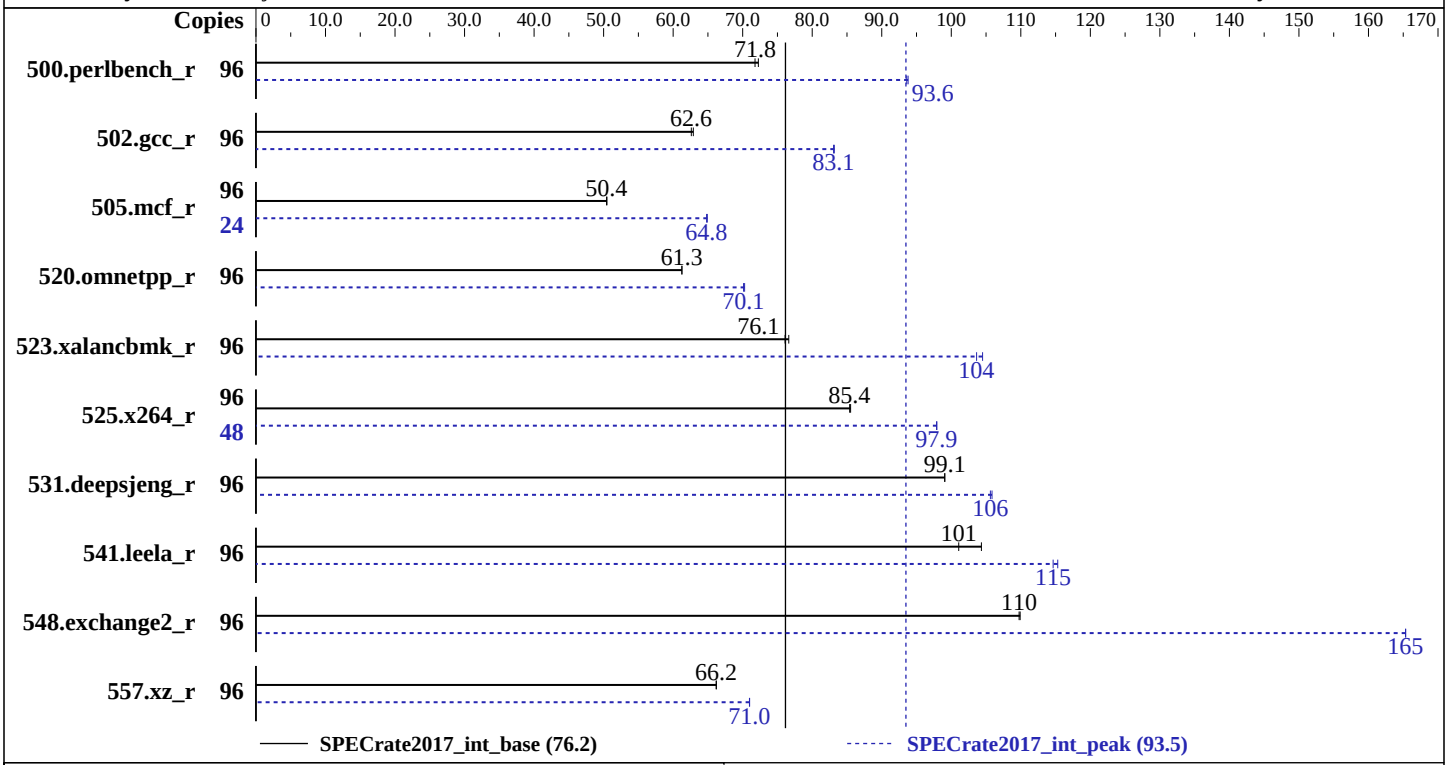
Fujitsu
Fujitsu SPARC M12-2S

SPECrate2017_int_base = 76.2

SPECrate2017_int_peak = 93.5

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

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



Hardware

CPU Name:	SPARC64 XII
Max MHz.:	4350
Nominal:	4250
Enabled:	12 cores, 1 chip, 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:	512 GB (16 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-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	96	2115	72.3	**2129**	**71.8**			96	1629	93.8	**1633**	**93.6**		
502.gcc_r	96	**2171**	**62.6**	2161	62.9			96	**1636**	**83.1**	1634	83.2		
505.mcf_r	96	3073	50.5	**3077**	**50.4**			24	597	64.9	**598**	**64.8**		
520.omnetpp_r	96	2056	61.3	**2056**	**61.3**			96	**1796**	**70.1**	1792	70.3		
523.xalancbmk_r	96	1323	76.6	**1332**	**76.1**			96	970	105	**978**	**104**		
525.x264_r	96	1966	85.5	**1969**	**85.4**			48	**859**	**97.9**	858	97.9		
531.deepsjeng_r	96	**1111**	**99.1**	1110	99.1			96	1039	106	**1042**	**106**		
541.leela_r	96	1524	104	**1573**	**101**			96	**1387**	**115**	1379	115		
548.exchange2_r	96	**2292**	**110**	2289	110			96	**1521**	**165**	1521	165		
557.xz_r	96	1566	66.2	**1566**	**66.2**			96	1460	71.0	**1461**	**71.0**		

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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-235-D0 Sat Oct 28 13:36:52 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)
   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-235-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       263G     4%    /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
------------------------------------------------------------------------------

==============================================================================
 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

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Base Compiler Invocation (Continued)

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
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

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Base Other Flags (Continued)

Fortran benchmarks:
-xjobs=8

Peak Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

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

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Peak Optimization Flags (Continued)

502.gcc_r (continued):
-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

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

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Peak Optimization Flags (Continued)

Fortran benchmarks (continued):
-xthroughput -xtarget=sparc64xplus -xprefetch=no%auto
-Qoption iropt -Afully_unroll:always=on

Peak Other Flags

C benchmarks:
-xjobs=8

C++ benchmarks:
-xjobs=8

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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