SPEC® CPU2017 Integer Rate Result

Fujitsu

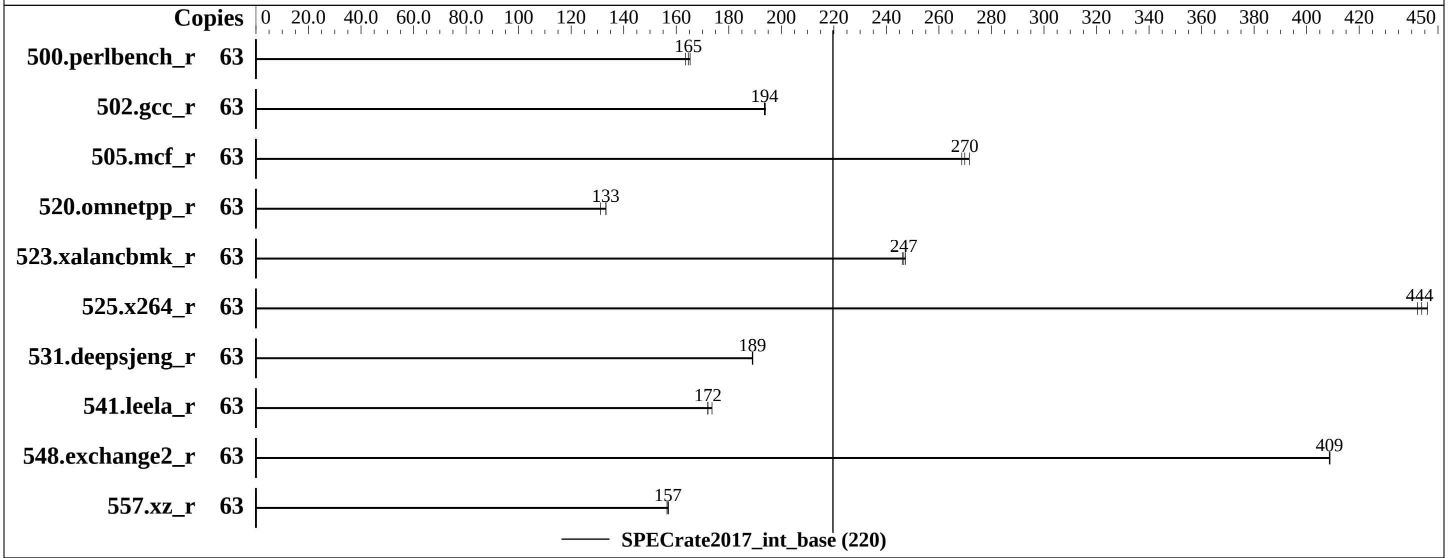
PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz

SPECrate2017_int_base = 220

SPECrate2017_int_peak = Not Run

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

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



Hardware

CPU Name:	Intel Xeon Platinum 8156
Max MHz.:	3700
Nominal:	3600
Enabled:	32 cores, 8 chips, 2 threads/core
Orderable:	2,4,6,8 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	16.5 MB I+D on chip per chip
Other:	None
Memory:	1536 GB (96 x 16 GB 2Rx4 PC4-2666V-R)
Storage:	768 GB tmpfs
Other:	1 x SAS HDD, 600 GB, 10.5K RPM, used for swap

Software

OS:	SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default
Compiler:	C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	Fujitsu BIOS Version V1.0.0.0 R1.21.0 for D3858-A1x. Released Dec-2017
File System:	tmpfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc: jemalloc memory allocator library V5.0.1; jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets; jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5; jemalloc: sources available from jemalloc.net or releases

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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	63	**609**	**165**	613	164	607	165							
502.gcc_r	63	460	194	461	194	**461**	**194**							
505.mcf_r	63	**377**	**270**	379	269	375	272							
520.omnetpp_r	63	620	133	**621**	**133**	630	131							
523.xalancbmk_r	63	269	247	**270**	**247**	270	246							
525.x264_r	63	247	446	249	442	**249**	**444**							
531.deepsjeng_r	63	382	189	**382**	**189**	382	189							
541.leela_r	63	601	174	607	172	**606**	**172**							
548.exchange2_r	63	404	409	404	409	**404**	**409**							
557.xz_r	63	**434**	**157**	433	157	435	156							

SPECrate2017_int_base = **220**

SPECrate2017_int_peak = **Not Run**

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
Set Kernel Boot Parameter:  nohz_full=1-63 isolcpus=1-63
Set tmpfs filesystem with:
mkdir /home/memory
mount -t tmpfs -o size=768g,rw tmpfs /home/memory
Process tuning setting:
echo 0 > /proc/sys/kernel/numa_balancing
cpu idle state set with:
cpupower idle-set -d 1
cpupower idle-set -d 2
Set affinity of rcu threads to the cpu0:
for i in `pgrep rcu` ; do taskset -pc 0 $i ; done
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/memory/speccpu/lib/ia32:/home/memory/speccpu/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/memory/speccpu/je5.0.1-32:/home/memory/speccpu/je5.0.1-64"
 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
```

(Continued on next page)

General Notes (Continued)

```
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>       /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
```

Platform Notes

```
BIOS configuration:
DCU Streamer Prefetcher = Disabled
Sub NUMA Clustering = Enabled
Stale AtoS = Enabled
LLC Dead Line Alloc = Disabled
Fan Control = Full
Sysinfo program /home/memory/speccpu/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-k55j Tue Oct 24 10:15:05 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 /proc/cpuinfo
   model name : Intel(R) Xeon(R) Platinum 8156 CPU @ 3.60GHz
      8  "physical id"s (chips)
      64 "processors"
   cores, siblings (Caution: counting these is hw and system dependent. The following
   excerpts from /proc/cpuinfo might not be reliable.  Use with caution.)
      cpu cores : 4
      siblings  : 8
      physical 0: cores 1 5 9 13
      physical 1: cores 1 5 9 13
      physical 2: cores 1 5 9 13
      physical 3: cores 1 2 5 11
      physical 4: cores 5 8 10 11
      physical 5: cores 0 8 11 12
      physical 6: cores 1 5 9 13
      physical 7: cores 1 5 9 13

From lscpu:
     Architecture:          x86_64
     CPU op-mode(s):        32-bit, 64-bit
     Byte Order:            Little Endian
     CPU(s):                64
     On-line CPU(s) list:   0-63
```

(Continued on next page)

Platform Notes (Continued)

```
      Thread(s) per core:    2
      Core(s) per socket:    4
      Socket(s):             8
      NUMA node(s):          16
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Platinum 8156 CPU @ 3.60GHz
      Stepping:              4
      CPU MHz:               3664.860
      CPU max MHz:           3700.0000
      CPU min MHz:           1200.0000
      BogoMIPS:              7200.32
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              16896K
      NUMA node0 CPU(s):     0,2,32,34
      NUMA node1 CPU(s):     1,3,33,35
      NUMA node2 CPU(s):     4,6,36,38
      NUMA node3 CPU(s):     5,7,37,39
      NUMA node4 CPU(s):     8,10,40,42
      NUMA node5 CPU(s):     9,11,41,43
      NUMA node6 CPU(s):     12,13,44,45
      NUMA node7 CPU(s):     14,15,46,47
      NUMA node8 CPU(s):     16,19,48,51
      NUMA node9 CPU(s):     17,18,49,50
      NUMA node10 CPU(s):    20,21,52,53
      NUMA node11 CPU(s):    22,23,54,55
      NUMA node12 CPU(s):    24,26,56,58
      NUMA node13 CPU(s):    25,27,57,59
      NUMA node14 CPU(s):    28,30,60,62
      NUMA node15 CPU(s):    29,31,61,63
      Flags:                fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
      pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
      lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
      aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
      fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
      xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pln pts dtherm hwp
      hwp_act_window hwp_epp hwp_pkg_req intel_pt tpr_shadow vnmi flexpriority ept vpid
      fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f
      avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec
      xgetbv1 cqm_llc cqm_occup_llc

 /proc/cpuinfo cache data
    cache size : 16896 KB
```

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Platform Notes (Continued)

```
From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 16 nodes (0-15)
  node 0 cpus: 0 2 32 34
  node 0 size: 95380 MB
  node 0 free: 85812 MB
  node 1 cpus: 1 3 33 35
  node 1 size: 96765 MB
  node 1 free: 96532 MB
  node 2 cpus: 4 6 36 38
  node 2 size: 96765 MB
  node 2 free: 96529 MB
  node 3 cpus: 5 7 37 39
  node 3 size: 96765 MB
  node 3 free: 96531 MB
  node 4 cpus: 8 10 40 42
  node 4 size: 96765 MB
  node 4 free: 96529 MB
  node 5 cpus: 9 11 41 43
  node 5 size: 96765 MB
  node 5 free: 96530 MB
  node 6 cpus: 12 13 44 45
  node 6 size: 96765 MB
  node 6 free: 96529 MB
  node 7 cpus: 14 15 46 47
  node 7 size: 96765 MB
  node 7 free: 96533 MB
  node 8 cpus: 16 19 48 51
  node 8 size: 96765 MB
  node 8 free: 96531 MB
  node 9 cpus: 17 18 49 50
  node 9 size: 96765 MB
  node 9 free: 96530 MB
  node 10 cpus: 20 21 52 53
  node 10 size: 96765 MB
  node 10 free: 96528 MB
  node 11 cpus: 22 23 54 55
  node 11 size: 96765 MB
  node 11 free: 96530 MB
  node 12 cpus: 24 26 56 58
  node 12 size: 96765 MB
  node 12 free: 96529 MB
  node 13 cpus: 25 27 57 59
  node 13 size: 96765 MB
  node 13 free: 96532 MB
  node 14 cpus: 28 30 60 62
```

(Continued on next page)

Platform Notes (Continued)

```
    node 14 size: 96765 MB
    node 14 free: 96524 MB
    node 15 cpus: 29 31 61 63
    node 15 size: 96617 MB
    node 15 free: 96384 MB
    node distances:
    node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
      0:  10  11  35  35  35  35  40  40  40  40  40  40  35  35  40  40
      1:  11  10  35  35  35  35  40  40  40  40  40  40  35  35  40  40
      2:  35  35  10  11  40  40  35  35  40  40  35  35  40  40  40  40
      3:  35  35  11  10  40  40  35  35  40  40  35  35  40  40  40  40
      4:  35  35  40  40  10  11  35  35  35  35  40  40  40  40  40  40
      5:  35  35  40  40  11  10  35  35  35  35  40  40  40  40  40  40
      6:  40  40  35  35  35  35  10  11  40  40  40  40  40  40  35  35
      7:  40  40  35  35  35  35  11  10  40  40  40  40  40  40  35  35
      8:  40  40  40  40  35  35  40  40  10  11  35  35  35  35  40  40
      9:  40  40  40  40  35  35  40  40  11  10  35  35  35  35  40  40
     10:  40  40  35  35  40  40  40  40  35  35  10  11  40  40  35  35
     11:  40  40  35  35  40  40  40  40  35  35  11  10  40  40  35  35
     12:  35  35  40  40  40  40  40  40  35  35  40  40  10  11  35  35
     13:  35  35  40  40  40  40  40  40  35  35  40  40  11  10  35  35
     14:  40  40  40  40  40  40  35  35  40  40  35  35  35  35  10  11
     15:  40  40  40  40  40  40  35  35  40  40  35  35  35  35  11  10

  From /proc/meminfo
     MemTotal:       1583837096 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  From /etc/*release* /etc/*version*
     SuSE-release:
        SUSE Linux Enterprise Server 12 (x86_64)
        VERSION = 12
        PATCHLEVEL = 2
        # This file is deprecated and will be removed in a future service pack or release.
        # Please check /etc/os-release for details about this release.
     os-release:
        NAME="SLES"
        VERSION="12-SP2"
        VERSION_ID="12.2"
        PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
        ID="sles"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:12:sp2"

  uname -a:
     Linux linux-k55j 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
```

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Platform Notes (Continued)

```
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Oct 24 04:10

 SPEC is set to: /home/memory/speccpu
    Filesystem     Type   Size  Used Avail Use% Mounted on
    tmpfs          tmpfs  768G  8.8G  760G   2% /home/memory

 Additional information from dmidecode follows.  WARNING: Use caution when you interpret
 this section. The 'dmidecode' program reads system data which is "intended to allow
 hardware to be accurately determined", but the intent may not be met, as there are
 frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
   BIOS FUJITSU V1.0.0.0 R1.21.0 for D3858-A1x            09/15/2017
   Memory:
    48x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666
    48x Samsung M393A2G40EB2-CTD 16 GB 2 rank 2666

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
      557.xz_r(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
      541.leela_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  548.exchange2_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevC.xml

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

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