SPEC® CPU2017 Integer Rate Result

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Fujitsu

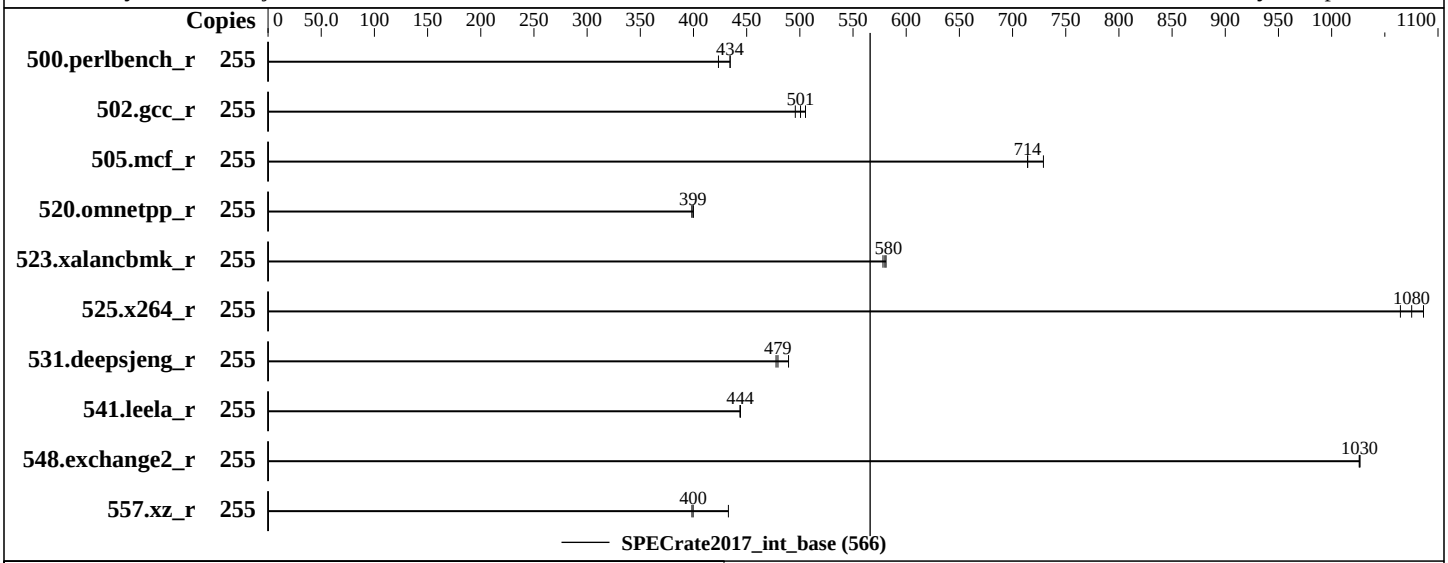
PRIMEQUEST 3800B, Intel Xeon Platinum 8153, 2.00GHz

SPECrate2017_int_base = 566

SPECrate2017_int_peak = Not Run

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

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



Hardware

CPU Name:	Intel Xeon Platinum 8153
Max MHz.:	2800
Nominal:	2000
Enabled:	128 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:	22 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	255	959	423	**935**	**434**	934	434							
502.gcc_r	255	728	496	**721**	**501**	715	505							
505.mcf_r	255	565	729	**577**	**714**	577	714							
520.omnetpp_r	255	840	398	837	400	**837**	**399**							
523.xalancbmk_r	255	466	578	**464**	**580**	463	581							
525.x264_r	255	**415**	**1080**	411	1090	419	1060							
531.deepsjeng_r	255	597	489	**610**	**479**	612	478							
541.leela_r	255	951	444	**951**	**444**	951	444							
548.exchange2_r	255	651	1030	651	1030	**651**	**1030**							
557.xz_r	255	636	433	**689**	**400**	691	399							

SPECrate2017_int_base = 566

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=1-255 isolcpus=1-255
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 Fri Nov 10 07:29:40 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 8153 CPU @ 2.00GHz
      8  "physical id"s (chips)
      256 "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 : 16
      siblings  : 32
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
     Architecture:          x86_64
     CPU op-mode(s):        32-bit, 64-bit
     Byte Order:            Little Endian
     CPU(s):                256
     On-line CPU(s) list:   0-255
```

(Continued on next page)

Platform Notes (Continued)

```
      Thread(s) per core:    2
      Core(s) per socket:    16
      Socket(s):             8
      NUMA node(s):          16
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
      Stepping:              4
      CPU MHz:               2591.274
      CPU max MHz:           2800.0000
      CPU min MHz:           1000.0000
      BogoMIPS:              4000.21
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              22528K
      NUMA node0 CPU(s):     0-3,8-11,128-131,136-139
      NUMA node1 CPU(s):     4-7,12-15,132-135,140-143
      NUMA node2 CPU(s):     16-19,24-27,144-147,152-155
      NUMA node3 CPU(s):     20-23,28-31,148-151,156-159
      NUMA node4 CPU(s):     32-35,40-43,160-163,168-171
      NUMA node5 CPU(s):     36-39,44-47,164-167,172-175
      NUMA node6 CPU(s):     48-51,56-59,176-179,184-187
      NUMA node7 CPU(s):     52-55,60-63,180-183,188-191
      NUMA node8 CPU(s):     64-67,72-75,192-195,200-203
      NUMA node9 CPU(s):     68-71,76-79,196-199,204-207
      NUMA node10 CPU(s):    80-83,88-91,208-211,216-219
      NUMA node11 CPU(s):    84-87,92-95,212-215,220-223
      NUMA node12 CPU(s):    96-99,104-107,224-227,232-235
      NUMA node13 CPU(s):    100-103,108-111,228-231,236-239
      NUMA node14 CPU(s):    112-115,120-123,240-243,248-251
      NUMA node15 CPU(s):    116-119,124-127,244-247,252-255
      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 : 22528 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 1 2 3 8 9 10 11 128 129 130 131 136 137 138 139
  node 0 size: 95380 MB
  node 0 free: 85704 MB
  node 1 cpus: 4 5 6 7 12 13 14 15 132 133 134 135 140 141 142 143
  node 1 size: 96765 MB
  node 1 free: 96484 MB
  node 2 cpus: 16 17 18 19 24 25 26 27 144 145 146 147 152 153 154 155
  node 2 size: 96765 MB
  node 2 free: 96486 MB
  node 3 cpus: 20 21 22 23 28 29 30 31 148 149 150 151 156 157 158 159
  node 3 size: 96765 MB
  node 3 free: 96487 MB
  node 4 cpus: 32 33 34 35 40 41 42 43 160 161 162 163 168 169 170 171
  node 4 size: 96765 MB
  node 4 free: 96482 MB
  node 5 cpus: 36 37 38 39 44 45 46 47 164 165 166 167 172 173 174 175
  node 5 size: 96765 MB
  node 5 free: 96473 MB
  node 6 cpus: 48 49 50 51 56 57 58 59 176 177 178 179 184 185 186 187
  node 6 size: 96765 MB
  node 6 free: 96487 MB
  node 7 cpus: 52 53 54 55 60 61 62 63 180 181 182 183 188 189 190 191
  node 7 size: 96765 MB
  node 7 free: 96499 MB
  node 8 cpus: 64 65 66 67 72 73 74 75 192 193 194 195 200 201 202 203
  node 8 size: 96765 MB
  node 8 free: 96487 MB
  node 9 cpus: 68 69 70 71 76 77 78 79 196 197 198 199 204 205 206 207
  node 9 size: 96765 MB
  node 9 free: 96489 MB
  node 10 cpus: 80 81 82 83 88 89 90 91 208 209 210 211 216 217 218 219
  node 10 size: 96765 MB
  node 10 free: 96474 MB
  node 11 cpus: 84 85 86 87 92 93 94 95 212 213 214 215 220 221 222 223
  node 11 size: 96765 MB
  node 11 free: 96477 MB
  node 12 cpus: 96 97 98 99 104 105 106 107 224 225 226 227 232 233 234 235
  node 12 size: 96765 MB
  node 12 free: 96480 MB
  node 13 cpus: 100 101 102 103 108 109 110 111 228 229 230 231 236 237 238 239
  node 13 size: 96765 MB
  node 13 free: 96486 MB
  node 14 cpus: 112 113 114 115 120 121 122 123 240 241 242 243 248 249 250 251
```

(Continued on next page)

Platform Notes (Continued)

```
   node 14 size: 96765 MB
   node 14 free: 96465 MB
   node 15 cpus: 116 117 118 119 124 125 126 127 244 245 246 247 252 253 254 255
   node 15 size: 96617 MB
   node 15 free: 96334 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 Nov 9 19:55

 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:
    45x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666
    51x 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/Fujitsu-Platform-Settings-V1.2-SKL-RevC.html`
`http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.html`

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