SPEC CPU®2017 Integer Rate Result

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Fujitsu

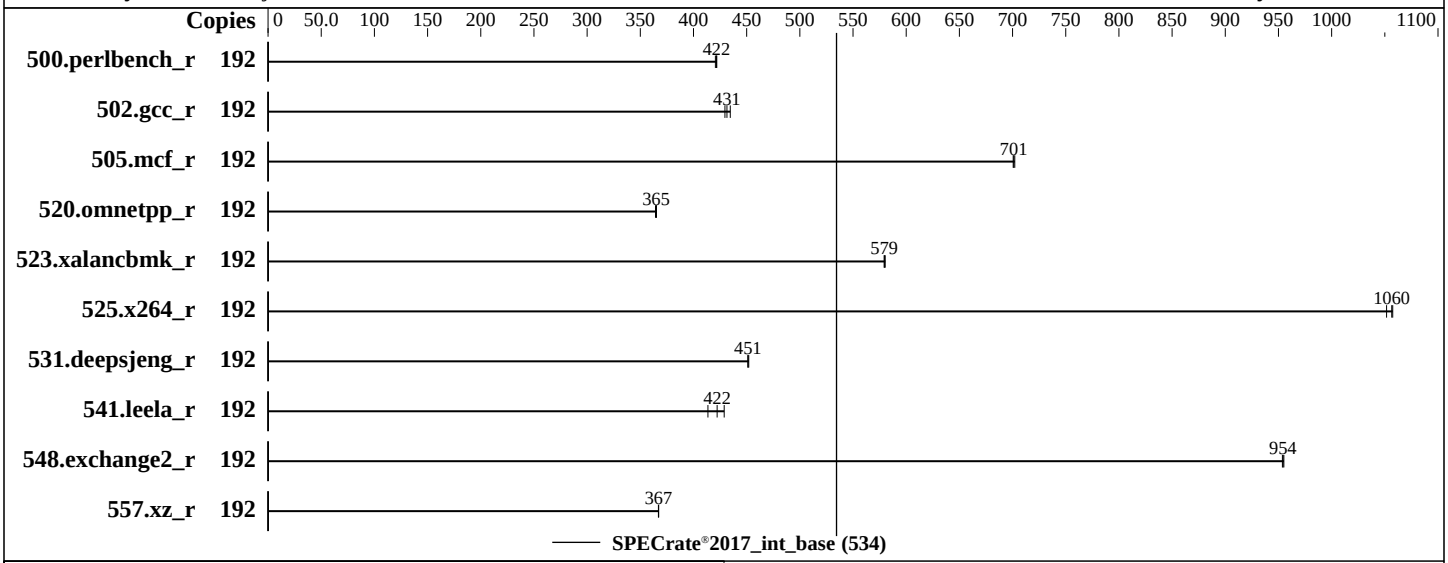
PRIMEQUEST 3800E2, Intel Xeon Gold 6252, 2.10GHz

SPECrate®2017_int_base = 534

SPECrate®2017_int_peak = Not Run

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

Test Date: Jun-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019



Hardware

CPU Name:	Intel Xeon Gold 6252
Max MHz:	3700
Nominal:	2100
Enabled:	96 cores, 4 chips, 2 threads/core
Orderable:	2,4 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	35.75 MB I+D on chip per chip
Other:	None
Memory:	1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R)
Storage:	1 x SAS HDD, 600GB, 10.5K RPM, SAS HDD
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 4.12.14-25.28-default
Compiler:	C/C++: Version 19.0.1.144 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	PRIMEQUEST 3800E2 Unified Firmware Version PB19043, Released Jun-2019
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	None
Power Management:	--

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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	192	**725**	**422**	725	422	727	421							
502.gcc_r	192	**630**	**431**	633	430	626	435							
505.mcf_r	192	**443**	**701**	443	701	442	702							
520.omnetpp_r	192	**690**	**365**	690	365	692	364							
523.xalancbmk_r	192	**350**	**579**	349	580	350	579							
525.x264_r	192	320	1050	318	1060	**318**	**1060**							
531.deepsjeng_r	192	488	451	**488**	**451**	487	452							
541.leela_r	192	769	414	**753**	**422**	741	429							
548.exchange2_r	192	527	954	**527**	**954**	527	955							
557.xz_r	192	565	367	**565**	**367**	565	367							

SPECrate®2017_int_base = 534

SPECrate®2017_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"
Kernel Boot Parameter set with : nohz_full=1-191
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-int/lib/intel64"

 Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.5
 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>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
```

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General Notes (Continued)

```
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
 DCU Streamer Prefetcher = Disabled
 DDR4 Write Data CRC Protection = Disabled
 HWPM Support = Native Mode with no legacy
 Stale AtoS = Enabled
 Sub Numa Clustering = Enabled
 Uncore Frequency Scaling = Disabled
 UPI Link L0p = Disabled
 XPT Prefetch = Enabled
 Fan Control = Full
 Sysinfo program /home/Benchmark/speccpu2017-int/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on linux-8r5c Sat Jun 29 10:33:10 2019

 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) Gold 6252 CPU @ 2.10GHz
       4  "physical id"s (chips)
       192 "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 : 24
       siblings  : 48
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 22 25 26 27 28 29
       physical 1: cores 0 1 2 3 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 25 26 27 28 29
       physical 2: cores 0 1 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

 From lscpu:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      CPU(s):              192
      On-line CPU(s) list: 0-191
      Thread(s) per core:  2
      Core(s) per socket:  24
      Socket(s):           4
      NUMA node(s):        8
      Vendor ID:           GenuineIntel
```

(Continued on next page)

Platform Notes (Continued)

```
      CPU family:          6
      Model:               85
      Model name:          Intel(R) Xeon(R) Gold 6252 CPU @ 2.10GHz
      Stepping:            6
      CPU MHz:             2100.000
      CPU max MHz:         3700.0000
      CPU min MHz:         1000.0000
      BogoMIPS:            4200.00
      Virtualization:      VT-x
      L1d cache:           32K
      L1i cache:           32K
      L2 cache:            1024K
      L3 cache:            36608K
      NUMA node0 CPU(s):   0-3,6-8,12-14,19,20,96-99,102-104,108-110,115,116
      NUMA node1 CPU(s):   4,5,9-11,15-18,21-23,100,101,105-107,111-114,117-119
      NUMA node2 CPU(s):   24-27,30-32,36-38,43,44,120-123,126-128,132-134,139,140
      NUMA node3 CPU(s):   28,29,33-35,39-42,45-47,124,125,129-131,135-138,141-143
      NUMA node4 CPU(s):   48-51,55,56,60-62,66-68,144-147,151,152,156-158,162-164
      NUMA node5 CPU(s):   52-54,57-59,63-65,69-71,148-150,153-155,159-161,165-167
      NUMA node6 CPU(s):   72-75,79-81,85-87,91,92,168-171,175-177,181-183,187,188
      NUMA node7 CPU(s):   76-78,82-84,88-90,93-95,172-174,178-180,184-186,189-191
      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 cpuid
      aperfmperf 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 cpuid_fault epb cat_l3 cdp_l3
      invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
      flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
      cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
      avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
      cqm_mbm_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku
      ospke avx512_vnni flush_l1d arch_capabilities

  /proc/cpuinfo cache data
     cache size : 36608 KB

  From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
  physical chip.
    available: 8 nodes (0-7)
    node 0 cpus: 0 1 2 3 6 7 8 12 13 14 19 20 96 97 98 99 102 103 104 108 109 110 115 116
    node 0 size: 192264 MB
    node 0 free: 191471 MB
    node 1 cpus: 4 5 9 10 11 15 16 17 18 21 22 23 100 101 105 106 107 111 112 113 114 117
    118 119
    node 1 size: 193523 MB
    node 1 free: 193175 MB
```

(Continued on next page)

Platform Notes (Continued)

```
   node 2 cpus: 24 25 26 27 30 31 32 36 37 38 43 44 120 121 122 123 126 127 128 132 133
   134 139 140
   node 2 size: 193523 MB
   node 2 free: 193199 MB
   node 3 cpus: 28 29 33 34 35 39 40 41 42 45 46 47 124 125 129 130 131 135 136 137 138
   141 142 143
   node 3 size: 193523 MB
   node 3 free: 193240 MB
   node 4 cpus: 48 49 50 51 55 56 60 61 62 66 67 68 144 145 146 147 151 152 156 157 158
   162 163 164
   node 4 size: 193494 MB
   node 4 free: 193237 MB
   node 5 cpus: 52 53 54 57 58 59 63 64 65 69 70 71 148 149 150 153 154 155 159 160 161
   165 166 167
   node 5 size: 193523 MB
   node 5 free: 193257 MB
   node 6 cpus: 72 73 74 75 79 80 81 85 86 87 91 92 168 169 170 171 175 176 177 181 182
   183 187 188
   node 6 size: 193523 MB
   node 6 free: 193163 MB
   node 7 cpus: 76 77 78 82 83 84 88 89 90 93 94 95 172 173 174 178 179 180 184 185 186
   189 190 191
   node 7 size: 193320 MB
   node 7 free: 193092 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  20  20  20  20  28  28
     1:  11  10  20  20  20  20  28  28
     2:  20  20  10  11  28  28  20  20
     3:  20  20  11  10  28  28  20  20
     4:  20  20  28  28  10  11  20  20
     5:  20  20  28  28  11  10  20  20
     6:  28  28  20  20  20  20  10  11
     7:  28  28  20  20  20  20  11  10

 From /proc/meminfo
    MemTotal:       1583819852 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

 From /etc/*release* /etc/*version*
    os-release:
       NAME="SLES"
       VERSION="15"
       VERSION_ID="15"
       PRETTY_NAME="SUSE Linux Enterprise Server 15"
       ID="sles"
```


(Continued on next page)

Platform Notes (Continued)

```
       ID_LIKE="suse"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:15"

 uname -a:
    Linux linux-8r5c 4.12.14-25.28-default #1 SMP Wed Jan 16 20:00:47 UTC 2019 (dd6077c)
    x86_64 x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2017-5754 (Meltdown):          Not affected
 CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB
 filling

 run-level 3 Jun 29 10:31

 SPEC is set to: /home/Benchmark/speccpu2017-int
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda3      xfs   142G   35G  107G  25% /home

 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 R1.16.0 for D3858-B1x            04/24/2019
   Memory:
    35x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933
    13x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
        | 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
        | 541.leela_r(base)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc -m64 -std=c11`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

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-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.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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