SPEC CPU®2017 Integer Rate Result

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Fujitsu

PRIMEQUEST 3800E2, Intel Xeon Gold 6262V, 1.90GHz

$SPECrate^{®}2017\_int\_base =$ 472

$SPECrate^{®}2017\_int\_peak =$ Not Run

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Jun-2019

Hardware Availability: Apr-2019

Software Availability: Feb-2019

Copies — scale 0 to 1050

Benchmark	Copies	Result
500.perlbench_r	192	381
502.gcc_r	192	356
505.mcf_r	192	558
520.omnetpp_r	192	331
523.xalancbmk_r	192	495
525.x264_r	192	1020
531.deepsjeng_r	192	405
541.leela_r	192	373
548.exchange2_r	192	851
557.xz_r	192	333

—— SPECrate®2017_int_base (472)

Hardware

CPU Name: Intel Xeon Gold 6262V

 Max MHz: 3600

 Nominal: 1900

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: 33 MB I+D on chip per chip

 Other: None

Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)

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: --

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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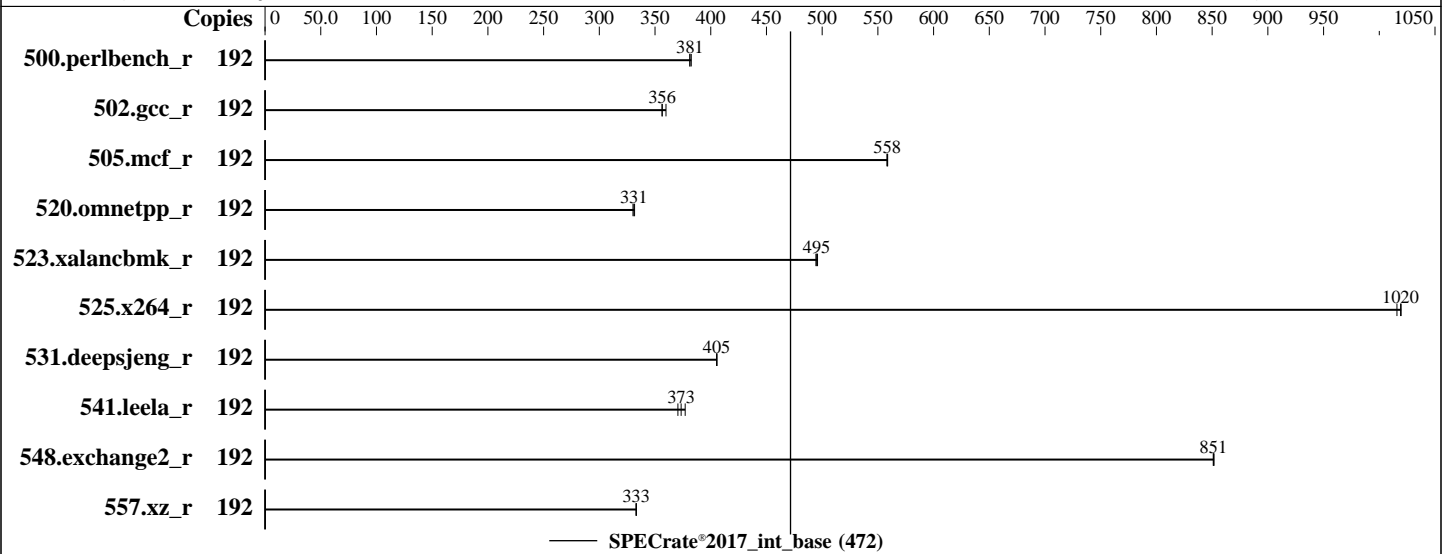
SPECrate®2017_int_peak = Not Run

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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	802	381	**802**	**381**	799	383							
502.gcc_r	192	763	356	**763**	**356**	756	360							
505.mcf_r	192	556	558	555	559	**556**	**558**							
520.omnetpp_r	192	763	330	**761**	**331**	760	332							
523.xalancbmk_r	192	410	494	**410**	**495**	409	496							
525.x264_r	192	330	1020	331	1020	**330**	**1020**							
531.deepsjeng_r	192	543	405	**543**	**405**	543	406							
541.leela_r	192	858	371	**851**	**373**	843	377							
548.exchange2_r	192	591	851	591	852	**591**	**851**							
557.xz_r	192	**623**	**333**	623	333	622	333							
SPECrate®2017_int_base =		**472**												
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.
```

(Continued on next page)

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$SPECrate^{®}2017\_int\_peak =$ Not Run

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

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 Sun Jun  9 23:18:40 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 6262V CPU @ 1.90GHz
      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 24 25 26 27 28 29
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
      physical 2: cores 0 1 2 3 4 5 8 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 8 9 10 11 12 13 16 17 18 19 20 21 24 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
```

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Platform Notes (Continued)

```
        CPU family:          6
        Model:               85
        Model name:          Intel(R) Xeon(R) Gold 6262V CPU @ 1.90GHz
        Stepping:            7
        CPU MHz:             1900.000
        CPU max MHz:         3600.0000
        CPU min MHz:         800.0000
        BogoMIPS:            3800.00
        Virtualization:      VT-x
        L1d cache:           32K
        L1i cache:           32K
        L2 cache:            1024K
        L3 cache:            33792K
        NUMA node0 CPU(s):   0-2,6-8,12-14,18-20,96-98,102-104,108-110,114-116
        NUMA node1 CPU(s):   3-5,9-11,15-17,21-23,99-101,105-107,111-113,117-119
        NUMA node2 CPU(s):   24-26,30-32,36-38,42-44,120-122,126-128,132-134,138-140
        NUMA node3 CPU(s):   27-29,33-35,39-41,45-47,123-125,129-131,135-137,141-143
        NUMA node4 CPU(s):   48-50,54-56,60-62,66-68,144-146,150-152,156-158,162-164
        NUMA node5 CPU(s):   51-53,57-59,63-65,69-71,147-149,153-155,159-161,165-167
        NUMA node6 CPU(s):   72-74,78-80,84-86,90-92,168-170,174-176,180-182,186-188
        NUMA node7 CPU(s):   75-77,81-83,87-89,93-95,171-173,177-179,183-185,189-191
        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 : 33792 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 6 7 8 12 13 14 18 19 20 96 97 98 102 103 104 108 109 110 114 115 116
    node 0 size: 192263 MB
    node 0 free: 191783 MB
    node 1 cpus: 3 4 5 9 10 11 15 16 17 21 22 23 99 100 101 105 106 107 111 112 113 117 118
    119
    node 1 size: 193494 MB
    node 1 free: 192731 MB
```

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Platform Notes (Continued)

```
    node 2 cpus: 24 25 26 30 31 32 36 37 38 42 43 44 120 121 122 126 127 128 132 133 134
    138 139 140
    node 2 size: 193523 MB
    node 2 free: 193254 MB
    node 3 cpus: 27 28 29 33 34 35 39 40 41 45 46 47 123 124 125 129 130 131 135 136 137
    141 142 143
    node 3 size: 193523 MB
    node 3 free: 193232 MB
    node 4 cpus: 48 49 50 54 55 56 60 61 62 66 67 68 144 145 146 150 151 152 156 157 158
    162 163 164
    node 4 size: 193523 MB
    node 4 free: 193246 MB
    node 5 cpus: 51 52 53 57 58 59 63 64 65 69 70 71 147 148 149 153 154 155 159 160 161
    165 166 167
    node 5 size: 193523 MB
    node 5 free: 193230 MB
    node 6 cpus: 72 73 74 78 79 80 84 85 86 90 91 92 168 169 170 174 175 176 180 181 182
    186 187 188
    node 6 size: 193523 MB
    node 6 free: 193290 MB
    node 7 cpus: 75 76 77 81 82 83 87 88 89 93 94 95 171 172 173 177 178 179 183 184 185
    189 190 191
    node 7 size: 193320 MB
    node 7 free: 193080 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:       1583818816 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"
```

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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 9 23:17

  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, configured at 2400
     13x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2400

  (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)

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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`

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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

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

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