



SPEC CPU®2017 Integer Rate Result

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Fujitsu

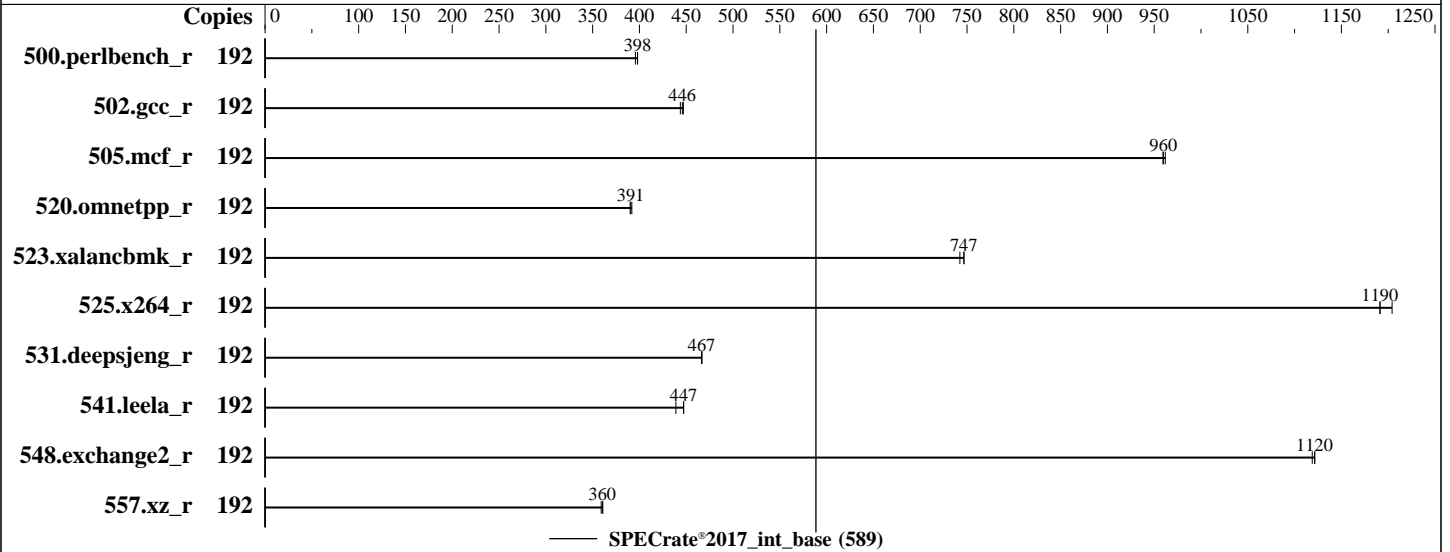
PRIMERGY RX4770 M5, Intel Xeon Platinum 8260, 2.40 GHz

SPECrate®2017_int_base = 589

SPECrate®2017_int_peak = Not Run

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

Test Date: Jan-2021
Hardware Availability: Apr-2019
Software Availability: Jul-2020



Hardware

CPU Name: Intel Xeon Platinum 8260
Max MHz: 3900
Nominal: 2400
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 SATA M.2 SSD, 480 GB
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
Compiler: C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
Parallel: No
Firmware: Fujitsu BIOS Version V5.0.0.14 R1.26.0 for D3753-C1x released Dec-2020
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: binutils-gold 2.32-7.11.4
Power Management: BIOS set to prefer performance at the cost of additional power usage



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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	768	398	768	398	773	396							
502.gcc_r	192	608	447	610	446	613	444							
505.mcf_r	192	323	959	323	960	323	962							
520.omnetpp_r	192	645	391	646	390	643	392							
523.xalancbmk_r	192	271	747	272	747	273	742							
525.x264_r	192	282	1190	279	1200	282	1190							
531.deepsjeng_r	192	472	467	471	467	472	467							
541.leela_r	192	711	447	724	439	711	447							
548.exchange2_r	192	450	1120	449	1120	449	1120							
557.xz_r	192	577	359	575	361	575	360							

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

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

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

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/home/benchmark/speccpu_intrate/icc19-lib/intel64:/home/benchmark/speccpu_intrate/icc19-lib/ia32:/home/benchmark/speccpu_intrate/je5.0.1-32"
MALLOC_CONF = "retain:true"



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General Notes

Binaries compiled on a system with 4x Intel Xeon Platinum 8360H CPU + 1536GB RAM memory using SUSE Linux Enterprise Server 15 SP2

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.

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.

binutils-gold, an ELF linker

package available from <https://software.opensuse.org/package/binutils-gold> as follows:

- Click "Show binutils-gold for other distributions"

- Click "Show community packages" of SUSE SLE-15-SP2

- Click "Expert Download" selecting package corresponding to 2.32 release identified by "home:gabrielftg:ulp-preview"

- Click "Grab binary packages directly"

- Click "binutils-gold-xxxx.rpm"

package was installed with rpm command i.e.:

```
rpm -i --nodeps binutils-gold-xxxx.rpm
```

Platform Notes

BIOS configuration:

DCU Streamer Prefetcher = Disabled

Intel Virtualization Technology = Disabled

Utilization Profile = Unbalanced

Stale AtoS = Disabled

LLC Deadline Alloc = Disabled

XPT Prefetch = Enabled

Patrol Scrub = Enabled

SNC = Enabled

FAN Control = Full

Sysinfo program /home/benchmark/speccpu_intrrate/bin/sysinfo

Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011

running on install Thu Jan 28 23:07:08 2021

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

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Platform Notes (Continued)

```

model name : Intel(R) Xeon(R) Platinum 8260 CPU @ 2.40GHz
  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 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29
  physical 1: 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 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
Address sizes:          46 bits physical, 48 bits virtual
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
CPU family:             6
Model:                  85
Model name:             Intel(R) Xeon(R) Platinum 8260 CPU @ 2.40GHz
Stepping:               6
CPU MHz:                1000.006
CPU max MHz:            3900.0000
CPU min MHz:            1000.0000
BogoMIPS:               4800.00
Virtualization:        VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               1024K
L3 cache:               36608K
NUMA node0 CPU(s):     0-3,7-9,13-15,19,20,96-99,103-105,109-111,115,116
NUMA node1 CPU(s):     4-6,10-12,16-18,21-23,100-102,106-108,112-114,117-119
NUMA node2 CPU(s):     24-27,31,32,36-38,42-44,120-123,127,128,132-134,138-140
NUMA node3 CPU(s):     28-30,33-35,39-41,45-47,124-126,129-131,135-137,141-143
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

```

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Platform Notes (Continued)

```
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpperf 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 ept_ad 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 md_clear flush_lld 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 7 8 9 13 14 15 19 20 96 97 98 99 103 104 105 109 110 111 115 116
node 0 size: 191886 MB
node 0 free: 191586 MB
node 1 cpus: 4 5 6 10 11 12 16 17 18 21 22 23 100 101 102 106 107 108 112 113 114 117
118 119
node 1 size: 193530 MB
node 1 free: 193128 MB
node 2 cpus: 24 25 26 27 31 32 36 37 38 42 43 44 120 121 122 123 127 128 132 133 134
138 139 140
node 2 size: 193496 MB
node 2 free: 193296 MB
node 3 cpus: 28 29 30 33 34 35 39 40 41 45 46 47 124 125 126 129 130 131 135 136 137
141 142 143
node 3 size: 193530 MB
node 3 free: 193347 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: 193530 MB
node 4 free: 193267 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: 193530 MB
node 5 free: 193298 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: 193530 MB
node 6 free: 193298 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: 193277 MB
```

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Platform Notes (Continued)

```
node 7 free: 192247 MB
node distances:
node   0   1   2   3   4   5   6   7
  0:  10  11  21  21  21  21  21  21
  1:  11  10  21  21  21  21  21  21
  2:  21  21  10  11  21  21  21  21
  3:  21  21  11  10  21  21  21  21
  4:  21  21  21  21  10  11  21  21
  5:  21  21  21  21  11  10  21  21
  6:  21  21  21  21  21  21  10  11
  7:  21  21  21  21  21  21  11  10
```

```
From /proc/meminfo
MemTotal:      1583423584 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"
```

```
uname -a:
Linux install 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020
(720aeba/lp-1a956f1) x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
itlb_multihit:          KVM: Mitigation: Split huge pages
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled
via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps barriers and __user
pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional,
RSB filling
srbds:                  Not affected
tsx_async_abort:       Mitigation: Clear CPU buffers; SMT vulnerable
```

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Platform Notes (Continued)

run-level 3 Jan 28 23:05

SPEC is set to: /home/benchmark/speccpu_intrate
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 btrfs 445G 34G 411G 8% /home

From /sys/devices/virtual/dmi/id
BIOS: FUJITSU // American Megatrends Inc. V5.0.0.14 R1.26.0 for D3753-C1x
 12/03/2020
Vendor: FUJITSU
Product: PRIMERGY RX4770 M5
Product Family: SERVER
Serial: YMTJ000014

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.

Memory:
 24x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933
 24x 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 Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

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

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

=====
Fortran | 548.exchange2_r(base)

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Compiler Version Notes (Continued)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 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:

-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4
-L/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries  
-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse  
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4  
-L/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin  
-lqkmalloc
```

Fortran benchmarks:

```
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs  
-xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte -auto  
-mbranches-within-32B-boundaries  
-L/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin  
-lqkmalloc
```

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/Intel-ic19.1ul-official-linux64_revA.html

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevF.html>

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic19.1ul-official-linux64_revA.xml

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevF.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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