



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

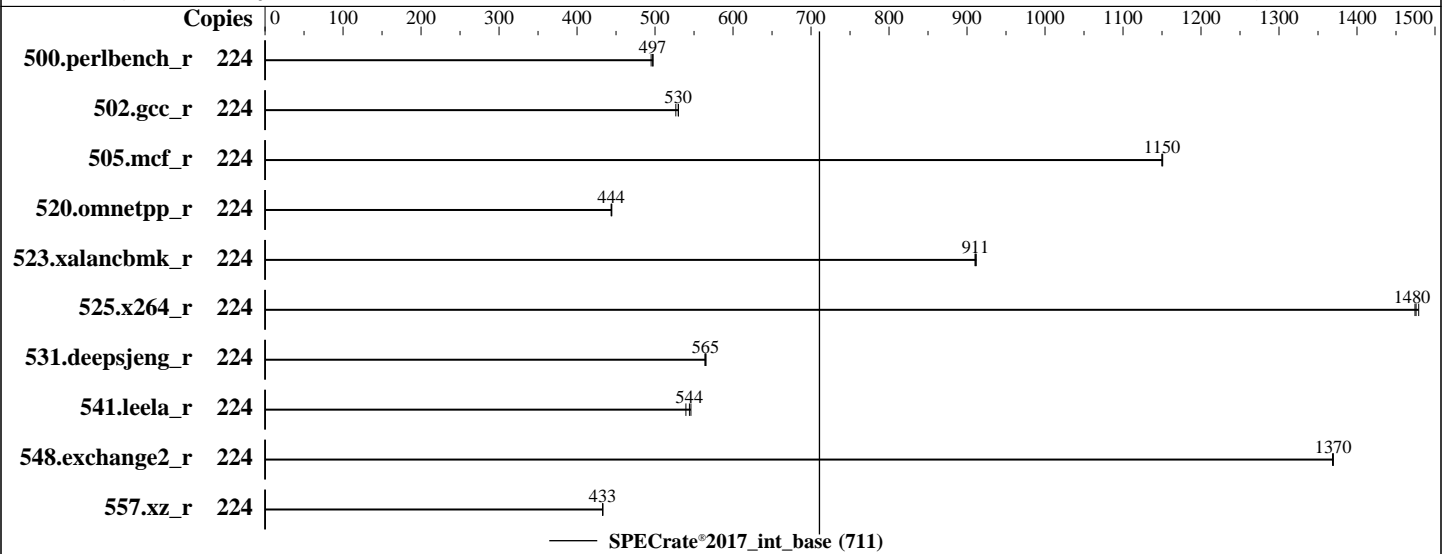
PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020



Hardware

CPU Name: Intel Xeon Platinum 8376HL
 Max MHz: 4300
 Nominal: 2600
 Enabled: 112 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: 38.5 MB I+D on chip per chip
 Other: None
 Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-3200AA-R)
 Storage: 1 x SATA M.2 SSD, 480GB
 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 V1.0.0.0 R1.8.0 for D3892-A1x. Released Jan-2021 tested as V1.0.0.0 R1.1.1 for D3892-A1x Sep-2020
 File System: xfs
 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



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
500.perlbench_r	224	720	495	<u>718</u>	<u>497</u>	717	498									
502.gcc_r	224	602	527	<u>599</u>	<u>530</u>	599	530									
505.mcf_r	224	<u>315</u>	<u>1150</u>	315	1150	315	1150									
520.omnetpp_r	224	661	445	<u>662</u>	<u>444</u>	662	444									
523.xalancbmk_r	224	259	912	260	910	<u>260</u>	<u>911</u>									
525.x264_r	224	265	1480	<u>266</u>	<u>1480</u>	266	1470									
531.deepsjeng_r	224	454	565	455	564	<u>455</u>	<u>565</u>									
541.leela_r	224	687	540	<u>682</u>	<u>544</u>	679	546									
548.exchange2_r	224	<u>429</u>	<u>1370</u>	429	1370	429	1370									
557.xz_r	224	<u>559</u>	<u>433</u>	559	433	559	433									

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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=1-223
echo 15000000 > /proc/sys/kernel/sched_min_granularity_ns

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/home/Benchmark/speccpu-ic19_lu1/lib/intel64:/home/Benchmark/speccpu-ic19_lu1/lib/ia32:/home/Benchmark/speccpu-ic19_lu1/je5.0.1-32"
MALLOC_CONF = "retain:true"



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL,
2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2020

Hardware Availability: Nov-2020

Software Availability: Jul-2020

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-ic19_lu1/bin/sysinfo

Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011

running on localhost Sat Dec 26 15:42:31 2020

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

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Platform Notes (Continued)

```

model name : Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
  4 "physical id"s (chips)
  224 "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 : 28
  siblings  : 56
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30
  physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30
  physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30

```

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):                 224
On-line CPU(s) list:   0-223
Thread(s) per core:     2
Core(s) per socket:    28
Socket(s):              4
NUMA node(s):          8
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  85
Model name:             Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
Stepping:               11
CPU MHz:                1002.414
CPU max MHz:            4300.0000
CPU min MHz:            1000.0000
BogoMIPS:               5200.00
Virtualization:         VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               1024K
L3 cache:               39424K
NUMA node0 CPU(s):     0-3,7-9,14-17,21-23,112-115,119-121,126-129,133-135
NUMA node1 CPU(s):     4-6,10-13,18-20,24-27,116-118,122-125,130-132,136-139
NUMA node2 CPU(s):     28-31,35-37,42-45,49-51,140-143,147-149,154-157,161-163
NUMA node3 CPU(s):     32-34,38-41,46-48,52-55,144-146,150-153,158-160,164-167
NUMA node4 CPU(s):     56-59,63-65,70-73,77-79,168-171,175-177,182-185,189-191
NUMA node5 CPU(s):     60-62,66-69,74-76,80-83,172-174,178-181,186-188,192-195

```

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Platform Notes (Continued)

```
NUMA node6 CPU(s): 84-87,91-93,98-101,105-107,196-199,203-205,210-213,217-219
NUMA node7 CPU(s): 88-90,94-97,102-104,108-111,200-202,206-209,214-216,220-223
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
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 fl6c 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 avx512_bf16 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 : 39424 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 14 15 16 17 21 22 23 112 113 114 115 119 120 121 126 127 128
129 133 134 135
node 0 size: 192126 MB
node 0 free: 191580 MB
node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 116 117 118 122 123 124 125 130 131
132 136 137 138 139
node 1 size: 193529 MB
node 1 free: 193086 MB
node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 140 141 142 143 147 148 149 154
155 156 157 161 162 163
node 2 size: 193529 MB
node 2 free: 193332 MB
node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 144 145 146 150 151 152 153 158
159 160 164 165 166 167
node 3 size: 193529 MB
node 3 free: 193356 MB
node 4 cpus: 56 57 58 59 63 64 65 70 71 72 73 77 78 79 168 169 170 171 175 176 177 182
183 184 185 189 190 191
node 4 size: 193495 MB
node 4 free: 193329 MB
node 5 cpus: 60 61 62 66 67 68 69 74 75 76 80 81 82 83 172 173 174 178 179 180 181 186
187 188 192 193 194 195
node 5 size: 193529 MB
node 5 free: 193357 MB
node 6 cpus: 84 85 86 87 91 92 93 98 99 100 101 105 106 107 196 197 198 199 203 204 205
210 211 212 213 217 218 219
```

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Platform Notes (Continued)

```

node 6 size: 193529 MB
node 6 free: 193351 MB
node 7 cpus: 88 89 90 94 95 96 97 102 103 104 108 109 110 111 200 201 202 206 207 208
209 214 215 216 220 221 222 223
node 7 size: 193302 MB
node 7 free: 193119 MB
node distances:
node  0  1  2  3  4  5  6  7
 0:  10  11  20  20  20  20  20  20
 1:  11  10  20  20  20  20  20  20
 2:  20  20  10  11  20  20  20  20
 3:  20  20  11  10  20  20  20  20
 4:  20  20  20  20  10  11  20  20
 5:  20  20  20  20  11  10  20  20
 6:  20  20  20  20  20  20  10  11
 7:  20  20  20  20  20  20  11  10

```

```

From /proc/meminfo
MemTotal:      1583688748 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 localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
x86_64 x86_64 GNU/Linux

```

Kernel self-reported vulnerability status:

```

itlb_multihit:                               Not affected
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

```

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
srbds: Not affected
tsx_async_abort: Not affected

run-level 3 Dec 26 15:39

SPEC is set to: /home/Benchmark/speccpu-ic19_lul
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb3 xfs 376G 94G 282G 25% /home

From /sys/devices/virtual/dmi/id
BIOS: FUJITSU V1.0.0.0 R1.1.1 for D3892-A1x 09/25/2020
Vendor: FUJITSU
Product: PRIMERGY RX4770 M6
Product Family: SERVER
Serial: MABTxxxxxxx

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:
48x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

(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.
=====

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL, 2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Compiler Version Notes (Continued)

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

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

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX4770 M6, Intel Xeon Platinum 8376HL,
2.60GHz

SPECrate®2017_int_base = 711

SPECrate®2017_int_peak = Not Run

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2020

Hardware Availability: Nov-2020

Software Availability: Jul-2020

Base Optimization Flags (Continued)

C benchmarks (continued):

-lqkmalloc

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/Fujitsu-Platform-Settings-V1.0-CPL-RevA.html>

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

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

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CPL-RevA.xml>

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

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-12-26 01:42:31-0500.

Report generated on 2021-02-02 19:48:10 by CPU2017 PDF formatter v6255.

Originally published on 2021-02-02.