# SPEC® CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

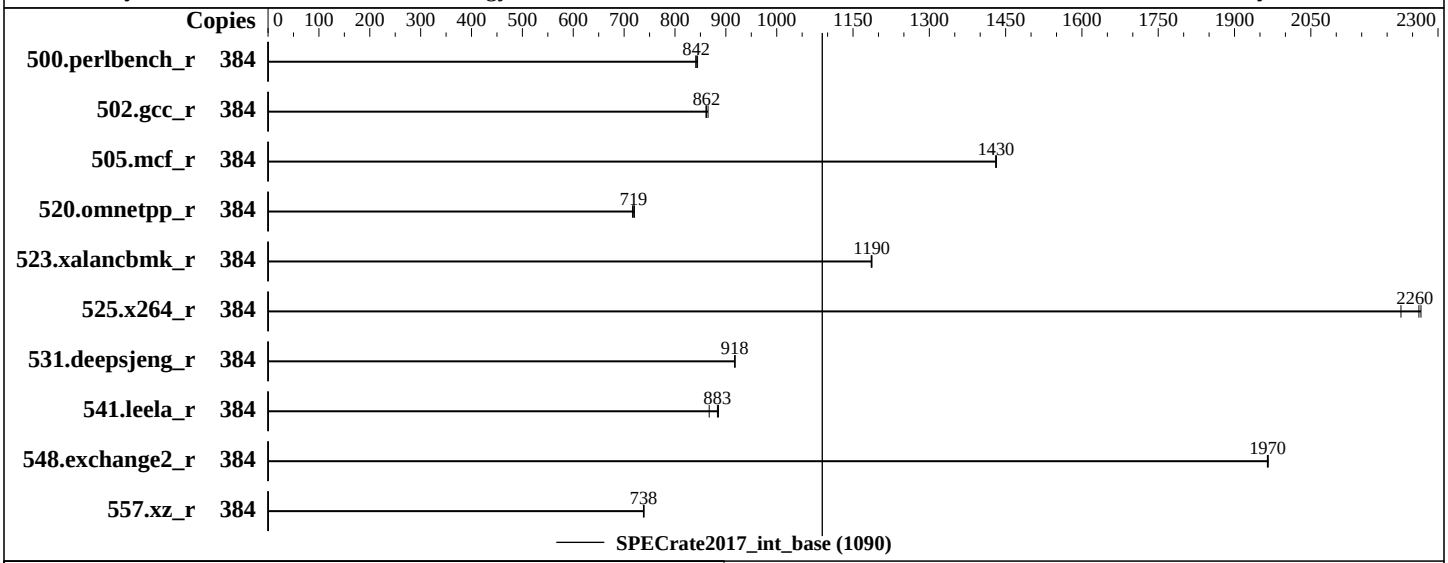
ThinkSystem SR950
(2.40 GHz, Intel Xeon Platinum 8260Y)

SPECrate2017_int_base = 1090

SPECrate2017_int_peak = Not Run

**CPU2017 License:** 9017
**Test Sponsor:** Lenovo Global Technology
**Tested by:** Lenovo Global Technology

**Test Date:** Apr-2019
**Hardware Availability:** Apr-2019
**Software Availability:** Dec-2018




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon Platinum 8260Y |
| Max MHz.: | 3900 |
| Nominal: | 2400 |
| Enabled: | 192 cores, 8 chips, 2 threads/core |
| Orderable: | 2,3,4,6,8 chips |
| Cache L1: | 32 KB I + 32 KB D on chip per core |
| L2: | 1 MB I+D on chip per core |
| L3: | 35.75 MB I+D on chip per chip |
| Other: | None |
| Memory: | 3 TB (96 x 32 GB 2Rx4 PC4-2933Y-R) |
| Storage: | 960 GB tmpfs |
| Other: | None |

### Software

| | |
|---|---|
| OS: | SUSE Linux Enterprise Server 12 SP4 (x86_64) Kernel 4.12.14-94.41-default |
| Compiler: | C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux |
| Parallel: | No |
| Firmware: | Lenovo BIOS Version PSE121C 1.50 released Jan-2019 |
| File System: | tmpfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |
| Peak Pointers: | Not Applicable |
| Other: | None |

# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR950
(2.40 GHz, Intel Xeon Platinum 8260Y)

SPECrate2017_int_base = 1090

SPECrate2017_int_peak = Not Run

**CPU2017 License:** 9017
**Test Sponsor:** Lenovo Global Technology
**Tested by:** Lenovo Global Technology

**Test Date:** Apr-2019
**Hardware Availability:** Apr-2019
**Software Availability:** Dec-2018

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 500.perlbench_r | 384 | 724 | 844 | 727 | 841 | **726** | **842** | | | | | | | |
| 502.gcc_r | 384 | **631** | **862** | 629 | 865 | 632 | 861 | | | | | | | |
| 505.mcf_r | 384 | 433 | 1430 | **434** | **1430** | 434 | 1430 | | | | | | | |
| 520.omnetpp_r | 384 | 699 | 720 | 703 | 716 | **701** | **719** | | | | | | | |
| 523.xalancbmk_r | 384 | 342 | 1190 | **342** | **1190** | 342 | 1190 | | | | | | | |
| 525.x264_r | 384 | **297** | **2260** | 302 | 2230 | 297 | 2270 | | | | | | | |
| 531.deepsjeng_r | 384 | 480 | 917 | **480** | **918** | 479 | 918 | | | | | | | |
| 541.leela_r | 384 | 718 | 885 | **720** | **883** | 733 | 867 | | | | | | | |
| 548.exchange2_r | 384 | 512 | 1970 | 512 | 1960 | **512** | **1970** | | | | | | | |
| 557.xz_r | 384 | **562** | **738** | 562 | 738 | 561 | 739 | | | | | | | |

**SPECrate2017_int_base = 1090**

**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"
Tmpfs filesystem can be set with:
 mount -t tmpfs -o size=960g tmpfs /home
```

## General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0u1/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>
Yes: 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)
```

**(Continued on next page)**

## General Notes (Continued)

```
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.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4)
is mitigated in the system as tested and documented.
```

## Platform Notes

```
BIOS configuration:
Choose Operating Mode set to Maximum Performance
Trusted Execution Technology set to Enable
DCU Streamer Prefetcher set to Disable
SNC set to Enable
Patrol Scrub set to Disable
Stale AtoS set to Enable
 Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on sles12sp4 Fri Apr 19 05:56:41 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) Platinum 8260Y CPU @ 2.40GHz
       8  "physical id"s (chips)
       384 "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 8 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
       physical 4: 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 5: cores 0 1 2 3 4 5 6 8 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       physical 6: 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 7: 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
```

**(Continued on next page)**

## Platform Notes (Continued)

```
CPU(s):                384
On-line CPU(s) list:   0-383
Thread(s) per core:    2
Core(s) per socket:    24
Socket(s):             8
NUMA node(s):          16
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Platinum 8260Y CPU @ 2.40GHz
Stepping:              7
CPU MHz:               2700.000
CPU max MHz:           3900.0000
CPU min MHz:           1000.0000
BogoMIPS:              5400.00
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K
L3 cache:              36608K
NUMA node0 CPU(s):     0-3,7-9,13-15,19,20,192-195,199-201,205-207,211,212
NUMA node1 CPU(s):     4-6,10-12,16-18,21-23,196-198,202-204,208-210,213-215
NUMA node2 CPU(s):     24-27,31,32,36-38,42-44,216-219,223,224,228-230,234-236
NUMA node3 CPU(s):     28-30,33-35,39-41,45-47,220-222,225-227,231-233,237-239
NUMA node4 CPU(s):     48-51,55,56,60-62,66-68,240-243,247,248,252-254,258-260
NUMA node5 CPU(s):     52-54,57-59,63-65,69-71,244-246,249-251,255-257,261-263
NUMA node6 CPU(s):     72-75,79-81,85-87,91,92,264-267,271-273,277-279,283,284
NUMA node7 CPU(s):     76-78,82-84,88-90,93-95,268-270,274-276,280-282,285-287
NUMA node8 CPU(s):     96-99,103-105,109-111,115,116,288-291,295-297,301-303,307,308
NUMA node9 CPU(s):
100-102,106-108,112-114,117-119,292-294,298-300,304-306,309-311
NUMA node10 CPU(s):
120-123,127,128,132-134,138-140,312-315,319,320,324-326,330-332
NUMA node11 CPU(s):
124-126,129-131,135-137,141-143,316-318,321-323,327-329,333-335
NUMA node12 CPU(s):
144-147,151,152,156-158,162-164,336-339,343,344,348-350,354-356
NUMA node13 CPU(s):
148-150,153-155,159-161,165-167,340-342,345-347,351-353,357-359
NUMA node14 CPU(s):
168-171,175-177,181-183,187,188,360-363,367-369,373-375,379,380
NUMA node15 CPU(s):
172-174,178-180,184-186,189-191,364-366,370-372,376-378,381-383
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 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
```

**(Continued on next page)**

## Platform Notes (Continued)

```
      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 ssbd
      mba ibrs ibpb stibp 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 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: 16 nodes (0-15)
    node 0 cpus: 0 1 2 3 7 8 9 13 14 15 19 20 192 193 194 195 199 200 201 205 206 207 211
    212
    node 0 size: 193119 MB
    node 0 free: 192721 MB
    node 1 cpus: 4 5 6 10 11 12 16 17 18 21 22 23 196 197 198 202 203 204 208 209 210 213
    214 215
    node 1 size: 193530 MB
    node 1 free: 192683 MB
    node 2 cpus: 24 25 26 27 31 32 36 37 38 42 43 44 216 217 218 219 223 224 228 229 230
    234 235 236
    node 2 size: 193530 MB
    node 2 free: 180580 MB
    node 3 cpus: 28 29 30 33 34 35 39 40 41 45 46 47 220 221 222 225 226 227 231 232 233
    237 238 239
    node 3 size: 193530 MB
    node 3 free: 193335 MB
    node 4 cpus: 48 49 50 51 55 56 60 61 62 66 67 68 240 241 242 243 247 248 252 253 254
    258 259 260
    node 4 size: 193530 MB
    node 4 free: 193362 MB
    node 5 cpus: 52 53 54 57 58 59 63 64 65 69 70 71 244 245 246 249 250 251 255 256 257
    261 262 263
    node 5 size: 193530 MB
    node 5 free: 193380 MB
    node 6 cpus: 72 73 74 75 79 80 81 85 86 87 91 92 264 265 266 267 271 272 273 277 278
    279 283 284
    node 6 size: 193530 MB
    node 6 free: 193311 MB
    node 7 cpus: 76 77 78 82 83 84 88 89 90 93 94 95 268 269 270 274 275 276 280 281 282
    285 286 287
    node 7 size: 193530 MB
    node 7 free: 193331 MB
    node 8 cpus: 96 97 98 99 103 104 105 109 110 111 115 116 288 289 290 291 295 296 297
```

**(Continued on next page)**

## Platform Notes (Continued)

```
301 302 303 307 308
node 8 size: 193501 MB
node 8 free: 193309 MB
node 9 cpus: 100 101 102 106 107 108 112 113 114 117 118 119 292 293 294 298 299 300
304 305 306 309 310 311
node 9 size: 193530 MB
node 9 free: 193308 MB
node 10 cpus: 120 121 122 123 127 128 132 133 134 138 139 140 312 313 314 315 319 320
324 325 326 330 331 332
node 10 size: 193530 MB
node 10 free: 193379 MB
node 11 cpus: 124 125 126 129 130 131 135 136 137 141 142 143 316 317 318 321 322 323
327 328 329 333 334 335
node 11 size: 193530 MB
node 11 free: 193376 MB
node 12 cpus: 144 145 146 147 151 152 156 157 158 162 163 164 336 337 338 339 343 344
348 349 350 354 355 356
node 12 size: 193530 MB
node 12 free: 193379 MB
node 13 cpus: 148 149 150 153 154 155 159 160 161 165 166 167 340 341 342 345 346 347
351 352 353 357 358 359
node 13 size: 193530 MB
node 13 free: 193376 MB
node 14 cpus: 168 169 170 171 175 176 177 181 182 183 187 188 360 361 362 363 367 368
369 373 374 375 379 380
node 14 size: 193530 MB
node 14 free: 193375 MB
node 15 cpus: 172 173 174 178 179 180 184 185 186 189 190 191 364 365 366 370 371 372
376 377 378 381 382 383
node 15 size: 193527 MB
node 15 free: 193373 MB
node distances:
node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
  0:  10  11  21  21  31  31  21  21  21  21  31  31  31  31  31  31
  1:  11  10  21  21  31  31  21  21  21  21  31  31  31  31  31  31
  2:  21  21  10  11  21  21  31  31  31  31  21  21  31  31  31  31
  3:  21  21  11  10  21  21  31  31  31  31  21  21  31  31  31  31
  4:  31  31  21  21  10  11  21  21  31  31  31  31  21  21  31  31
  5:  31  31  21  21  11  10  21  21  31  31  31  31  21  21  31  31
  6:  21  21  31  31  21  21  10  11  31  31  31  31  31  31  21  21
  7:  21  21  31  31  21  21  11  10  31  31  31  31  31  31  21  21
  8:  21  21  31  31  31  31  31  31  10  11  21  21  21  21  31  31
  9:  21  21  31  31  31  31  31  31  11  10  21  21  21  21  31  31
 10:  31  31  21  21  31  31  31  31  21  21  10  11  31  31  21  21
 11:  31  31  21  21  31  31  31  31  21  21  11  10  31  31  21  21
 12:  31  31  31  31  21  21  31  31  21  21  31  31  10  11  21  21
 13:  31  31  31  31  21  21  31  31  21  21  31  31  11  10  21  21
```

**(Continued on next page)**

## Platform Notes (Continued)

```
   14:  31  31  31  31  31  31  21  21  31  31  21  21  21  21  10  11
   15:  31  31  31  31  31  31  21  21  31  31  21  21  21  21  11  10

From /proc/meminfo
   MemTotal:       3170352164 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 4
      # 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-SP4"
      VERSION_ID="12.4"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
   Linux sles12sp4 4.12.14-94.41-default #1 SMP Wed Oct 31 12:25:04 UTC 2018 (3090901)
   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: Indirect Branch Restricted Speculation,
IBPB, IBRS_FW

run-level 3 Apr 19 05:52

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1
   Filesystem     Type   Size  Used Avail Use% Mounted on
   tmpfs          tmpfs  960G  8.3G  952G   1% /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 Lenovo -[PSE121C-1.50]- 01/16/2019
  Memory:
```

**(Continued on next page)**

## Platform Notes (Continued)

```
    96x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

 (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)
------------------------------------------------------------------------------
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.
------------------------------------------------------------------------------

==============================================================================
 CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
      541.leela_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.
------------------------------------------------------------------------------

==============================================================================
 FC  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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-A.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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-A.xml

SPEC is a registered trademark 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 CPU2017 v1.0.5 on 2019-04-18 17:56:40-0400.
Report generated on 2019-05-15 13:39:02 by CPU2017 PS formatter v6067.
Originally published on 2019-05-14.