SPEC CPU®2017 Integer Speed Result

Lenovo Global Technology

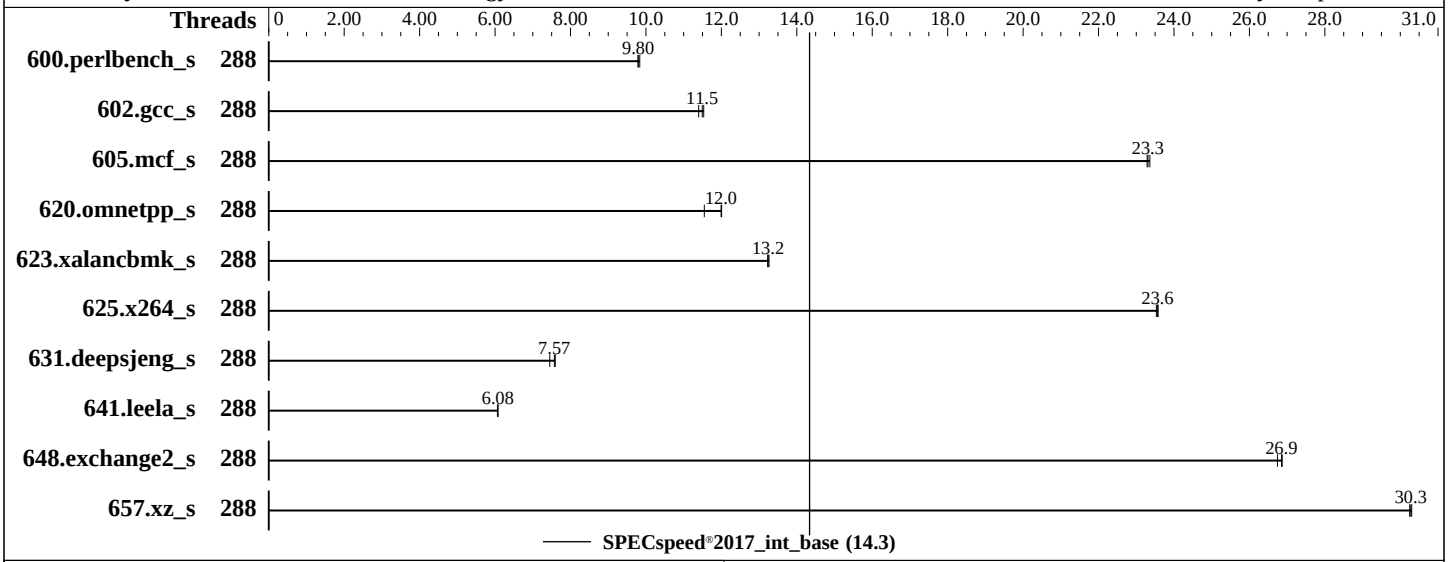
ThinkSystem SC750 V4
(2.70 GHz, Intel Xeon 6960P)

SPECspeed®2017_int_base = 14.3

SPECspeed®2017_int_peak = Not Run

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

Test Date: May-2026
Hardware Availability: Mar-2026
Software Availability: Apr-2026



Hardware

CPU Name:	Intel Xeon 6960P
Max MHz:	3900
Nominal:	2700
Enabled:	144 cores, 2 chips, 2 threads/core
Orderable:	2 chips
Cache L1:	64 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	432 MB I+D on chip per chip
Other:	None
Memory:	768 GB (24 x 32 GB 2Rx8 PC5-88/64B-H)
Storage:	1 x 1.92 TB NVME SSD
Other:	CPU Cooling: DLC

Software

OS:	SUSE Linux Enterprise Server 15 SP7 Kernel 6.4.0-150700.51-default
Compiler:	C/C++: Version 2026.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2026.0 of Intel Fortran Compiler for Linux;
Parallel:	Yes
Firmware:	Lenovo BIOS Version Q5E111L 1.20 released Dec-2025
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc memory allocator V5.0.1
Power Management:	BIOS set to prefer performance at the cost of additional power usage

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	288	181	9.79	**181**	**9.80**	180	9.84							
602.gcc_s	288	**346**	**11.5**	345	11.5	349	11.4							
605.mcf_s	288	202	23.4	**203**	**23.3**	203	23.3							
620.omnetpp_s	288	141	11.5	136	12.0	**136**	**12.0**							
623.xalancbmk_s	288	107	13.3	**107**	**13.2**	107	13.2							
625.x264_s	288	75.0	23.5	74.8	23.6	**74.9**	**23.6**							
631.deepsjeng_s	288	192	7.45	**189**	**7.57**	189	7.60							
641.leela_s	288	**281**	**6.08**	281	6.06	281	6.08							
648.exchange2_s	288	110	26.7	109	26.9	**109**	**26.9**							
657.xz_s	288	**204**	**30.3**	204	30.3	204	30.2							

SPECspeed®2017_int_base = 14.3

SPECspeed®2017_int_peak = Not Run

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017-1.1.9-ic2026.0/lib/intel64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
 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
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.
 jemalloc, a general purpose malloc implementation
 built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
BIOS configuration:
Workload Profile set to General Computing - Max Performance and then set it to Custom
C-States set to Legacy
SNC set to Enabled
Latency Optimized Mode set to Enabled

 Sysinfo program /home/cpu2017-1.1.9-ic2026.0/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Thu May 21 14:27:55 2026

 SUT (System Under Test) info as seen by some common utilities.

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. ulimit -a
  4. sysinfo process ancestry
  5. /proc/cpuinfo
  6. lscpu
  7. numactl --hardware
  8. /proc/meminfo
  9. who -r
 10. Systemd service manager version: systemd 254 (254.24+suse.148.g83b9060b6e)
 11. Services, from systemctl list-unit-files
 12. Linux kernel boot-time arguments, from /proc/cmdline
 13. cpupower frequency-info
 14. sysctl
 15. /sys/kernel/mm/transparent_hugepage
 16. /sys/kernel/mm/transparent_hugepage/khugepaged
 17. OS release
 18. Disk information
 19. /sys/devices/virtual/dmi/id
 20. dmidecode
 21. BIOS
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 ------------------------------------------------------------
 1. uname -a
   Linux localhost 6.4.0-150700.51-default #1 SMP PREEMPT_DYNAMIC Wed Apr 30 21:35:43 UTC 2025 (6930611)
   x86_64 x86_64 x86_64 GNU/Linux

 ------------------------------------------------------------
 2. w
    14:27:55 up 5 min,  0 users,  load average: 0.03, 0.17, 0.09
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT

 ------------------------------------------------------------
 3. ulimit -a
   core file size          (blocks, -c) unlimited
   data seg size           (kbytes, -d) unlimited
   scheduling priority             (-e) 0
   file size               (blocks, -f) unlimited
   pending signals                 (-i) 3094385
   max locked memory       (kbytes, -l) 8192
   max memory size         (kbytes, -m) unlimited
   open files                      (-n) 1024
   pipe size            (512 bytes, -p) 8
   POSIX message queues     (bytes, -q) 819200
```

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Platform Notes (Continued)

```
  real-time priority              (-r) 0
  stack size              (kbytes, -s) unlimited
  cpu time               (seconds, -t) unlimited
  max user processes              (-u) 3094385
  virtual memory          (kbytes, -v) unlimited
  file locks                      (-x) unlimited

------------------------------------------------------------
4. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize=42
 /bin/bash /root/auto_executor.sh
 /bin/bash ./Run542-compliant-ic2026.0-lin-sapphirerapids-speedint-base-smt-on-20260429.sh
 runcpu --nobuild --action validate --define default-platform-flags -c
   ic2026.0-lin-sapphirerapids-speed-20260429.cfg --define cores=144 --tune base -o all --define
   intspeedaffinity --define smt-on --define drop_caches intspeed
 runcpu --nobuild --action validate --define default-platform-flags --configfile
   ic2026.0-lin-sapphirerapids-speed-20260429.cfg --define cores=144 --tune base --output_format all --define
   intspeedaffinity --define smt-on --define drop_caches --nopower --runmode speed --tune base --size
   refspeed intspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.024/templogs/preenv.intspeed.024.0.log --lognum 024.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-ic2026.0

------------------------------------------------------------
5. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) 6960P
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 173
    stepping        : 1
    microcode       : 0x1000405
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
    cpu cores       : 72
    siblings        : 144
    2 physical ids (chips)
    288 processors (hardware threads)
    physical id 0: core ids 0-23,64-87,128-151
    physical id 1: core ids 0-23,64-87,128-151
    physical id 0: apicids 0-47,128-175,256-303
    physical id 1: apicids 512-559,640-687,768-815
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.

------------------------------------------------------------
6. lscpu

From lscpu from util-linux 2.40.4:
  Architecture:                         x86_64
  CPU op-mode(s):                       32-bit, 64-bit
  Address sizes:                        52 bits physical, 57 bits virtual
  Byte Order:                           Little Endian
  CPU(s):                               288
  On-line CPU(s) list:                  0-287
  Vendor ID:                            GenuineIntel
  Model name:                           Intel(R) Xeon(R) 6960P
  CPU family:                           6
  Model:                                173
  Thread(s) per core:                   2
  Core(s) per socket:                   72
  Socket(s):                            2
```

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Platform Notes (Continued)

```
  Stepping:                             1
  BogoMIPS:                             5400.00
  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 tsc_known_freq 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 cat_l2 cdp_l3 intel_ppin cdp_l2
                                        ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept
                                        vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm
                                        rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb
                                        intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1
                                        xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                                        split_lock_detect user_shstk avx_vnni avx512_bf16 wbnoinvd dtherm ida
                                        arat pln pts hfi vnmi avx512vbmi umip pku ospke waitpkg avx512_vbmi2
                                        gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq
                                        la57 rdpid bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm
                                        md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16
                                        amx_tile amx_int8 flush_l1d arch_capabilities
  Virtualization:                       VT-x
  L1d cache:                            6.8 MiB (144 instances)
  L1i cache:                            9 MiB (144 instances)
  L2 cache:                             288 MiB (144 instances)
  L3 cache:                             864 MiB (2 instances)
  NUMA node(s):                         6
  NUMA node0 CPU(s):                    0-23,144-167
  NUMA node1 CPU(s):                    24-47,168-191
  NUMA node2 CPU(s):                    48-71,192-215
  NUMA node3 CPU(s):                    72-95,216-239
  NUMA node4 CPU(s):                    96-119,240-263
  NUMA node5 CPU(s):                    120-143,264-287
  Vulnerability Gather data sampling:   Not affected
  Vulnerability Itlb multihit:          Not affected
  Vulnerability L1tf:                   Not affected
  Vulnerability Mds:                    Not affected
  Vulnerability Meltdown:               Not affected
  Vulnerability Mmio stale data:        Not affected
  Vulnerability Reg file data sampling: Not affected
  Vulnerability Retbleed:               Not affected
  Vulnerability Spec rstack overflow:   Not affected
  Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:             Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;
                                        PBRSB-eIBRS Not affected; BHI BHI_DIS_S
  Vulnerability Srbds:                  Not affected
  Vulnerability Tsx async abort:        Not affected

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
     L1d       48K     6.8M   12 Data            1     64        1             64
     L1i       64K       9M   16 Instruction     1     64        1             64
     L2         2M     288M   16 Unified         2   2048        1             64
     L3       432M     864M   16 Unified         3 442368        1             64

------------------------------------------------------------
7. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 6 nodes (0-5)
```

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Platform Notes (Continued)

```
  node 0 cpus: 0-23,144-167
  node 0 size: 128683 MB
  node 0 free: 128061 MB
  node 1 cpus: 24-47,168-191
  node 1 size: 129011 MB
  node 1 free: 128628 MB
  node 2 cpus: 48-71,192-215
  node 2 size: 129011 MB
  node 2 free: 128627 MB
  node 3 cpus: 72-95,216-239
  node 3 size: 128972 MB
  node 3 free: 128632 MB
  node 4 cpus: 96-119,240-263
  node 4 size: 129011 MB
  node 4 free: 128521 MB
  node 5 cpus: 120-143,264-287
  node 5 size: 128933 MB
  node 5 free: 128543 MB
  node distances:
  node   0   1   2   3   4   5
    0:  10  15  17  26  23  26
    1:  15  10  15  23  26  23
    2:  17  15  10  26  28  21
    3:  26  23  26  10  15  17
    4:  23  26  23  15  10  15
    5:  26  28  21  17  15  10

------------------------------------------------------------
8. /proc/meminfo
   MemTotal:       792190352 kB

------------------------------------------------------------
9. who -r
  run-level 3 May 21 14:24

------------------------------------------------------------
10. Systemd service manager version: systemd 254 (254.24+suse.148.g83b9060b6e)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
11. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance
                   issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections
                   nvmf-autoconnect postfix purge-kernels rollback rsyslog smartd spec-auto sshd
                   systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
  enabled-runtime  systemd-remount-fs
  disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                   chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                   firewalld fsidd gpm grub2-once haveged ipmi ipmievd issue-add-ssh-keys kexec-load lunmask
                   man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@
                   smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures systemd-confext
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
                   vncserver@
  indirect         systemd-userdbd wickedd

------------------------------------------------------------
12. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150700.51-default
```

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Platform Notes (Continued)

```
  root=UUID=ce1519fb-457a-4b1f-ab59-fcfcc7e58c27
  splash=silent
  mitigations=auto
  quiet
  security=apparmor

------------------------------------------------------------
13. cpupower frequency-info
  analyzing CPU 166:
    Unable to determine current policy
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
14. sysctl
  kernel.numa_balancing               1
  kernel.randomize_va_space           2
  vm.compaction_proactiveness        20
  vm.dirty_background_bytes           0
  vm.dirty_background_ratio          10
  vm.dirty_bytes                      0
  vm.dirty_expire_centisecs        3000
  vm.dirty_ratio                     20
  vm.dirty_writeback_centisecs      500
  vm.dirtytime_expire_seconds     43200
  vm.extfrag_threshold              500
  vm.min_unmapped_ratio               1
  vm.nr_hugepages                     0
  vm.nr_hugepages_mempolicy           0
  vm.nr_overcommit_hugepages          0
  vm.swappiness                      60
  vm.watermark_boost_factor       15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode                0

------------------------------------------------------------
15. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force

------------------------------------------------------------
16. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                      1
  max_ptes_none             511
  max_ptes_shared           256
  max_ptes_swap              64
  pages_to_scan            4096
  scan_sleep_millisecs    10000

------------------------------------------------------------
17. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP7

------------------------------------------------------------
18. Disk information
```

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Platform Notes (Continued)

```
SPEC is set to: /home/cpu2017-1.1.9-ic2026.0
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p3 xfs   1.8T   93G  1.7T   6% /

------------------------------------------------------------
19. /sys/devices/virtual/dmi/id
    Vendor:         Lenovo
    Product:        Lenovo ThinkSystem SC750 V4 Neptune Tray
    Product Family: ThinkSystem
    Serial:         1234567890

------------------------------------------------------------
20. dmidecode
  Additional information from dmidecode 3.6 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:
    7x SK Hynix HMCG88BDJHA380N 32 GB 2 rank 8800
    4x SK Hynix HMCG88BDJHA383N 32 GB 2 rank 8800
    9x SK Hynix HMCG88BDJHA462N 32 GB 2 rank 8800
    4x SK Hynix HMCG88BDJHA464N 32 GB 2 rank 8800


------------------------------------------------------------
21. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Lenovo
   BIOS Version:      Q5E111L-1.20
   BIOS Date:         12/18/2025
   BIOS Revision:     1.20
   Firmware Revision: 2.0
```

Compiler Version Notes

```
==============================================================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)
--------------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2026.0.0 Build 20260331
Copyright (C) 1985-2026 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
--------------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2026.0.0 Build 20260331
Copyright (C) 1985-2026 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran | 648.exchange2_s(base)
--------------------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2026.0.0 Build 20260331
Copyright (C) 1985-2026 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fdelayed-template-parsing -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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

http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Birchstream-K.html
http://www.spec.org/cpu2017/flags/Intel-ic2026-official-linux64.html

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

http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Birchstream-K.xml
http://www.spec.org/cpu2017/flags/Intel-ic2026-official-linux64.xml

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

Tested with SPEC CPU®2017 v1.1.9 on 2026-05-21 02:27:55-0400.
Report generated on 2026-06-16 17:49:39 by CPU2017 PDF formatter v6716.
Originally published on 2026-06-16.