# SPEC CPU®2017 Integer Speed Result

## Lenovo Global Technology

ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Gold 6438Y+)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Feb-2023</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Feb-2023</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2022</td>
</tr>
</tbody>
</table>

### SPECspeed®2017 int_base = 15.5

### SPECspeed®2017 int_peak = Not Run

#### Hardware

**CPU Name:** Intel Xeon Gold 6438Y+

**Max MHz:** 4000

**Nominal:** 2000

**Enabled:** 64 cores, 2 chips, 2 threads/core

**Orderable:** 1,2 chips

**Cache L1:** 32 KB I + 48 KB D on chip per core

**L2:** 2 MB I+D on chip per core

**L3:** 60 MB I+D on chip per chip

**Other:** None

**Memory:** 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)

**Storage:** 1 x 960 GB SATA SSD

**Other:** None

<table>
<thead>
<tr>
<th>Threads</th>
<th>600.perlbench_s</th>
<th>602.gcc_s</th>
<th>605.mcf_s</th>
<th>620.omnetpp_s</th>
<th>623.xalancbmk_s</th>
<th>625.x264_s</th>
<th>631.deepsjeng_s</th>
<th>641.leela_s</th>
<th>648.exchange2_s</th>
<th>657.xz_s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
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<tr>
<td>1</td>
<td>9.86</td>
<td>12.5</td>
<td>12.7</td>
<td>23.4</td>
<td>30.2</td>
<td>22.7</td>
<td>7.34</td>
<td>5.98</td>
<td>26.5</td>
<td>28.1</td>
</tr>
</tbody>
</table>

**Software**

**OS:** SUSE Linux Enterprise Server 15 SP4 (x86_64)  
Kernel 5.14.21-150400.22-default

**Compiler:**  
C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;  
Fortran: Version 2023.0 of Intel Fortran Compiler Classic for Linux;  
C/C++: Version 2023.0 of Intel C/C++ Compiler Classic for Linux

**Parallel:** Yes

**Firmware:** Lenovo BIOS Version ESE109L 1.10 released Jan-2023

**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 and OS set to prefer performance at the cost of additional power usage
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>128</td>
<td>180</td>
<td>9.85</td>
<td>180</td>
<td>9.86</td>
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<td>602.gcc_s</td>
<td>128</td>
<td>319</td>
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<td>320</td>
<td>12.4</td>
<td>319</td>
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<tr>
<td>605.mcf_s</td>
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<td>23.4</td>
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<td></td>
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<tr>
<td>620.omnetpp_s</td>
<td>128</td>
<td>129</td>
<td>12.7</td>
<td>130</td>
<td>12.5</td>
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<td>12.8</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>128</td>
<td>46.9</td>
<td>30.2</td>
<td>47.0</td>
<td>30.1</td>
<td>46.6</td>
<td>30.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>128</td>
<td>77.9</td>
<td>22.7</td>
<td>77.8</td>
<td>22.7</td>
<td>77.9</td>
<td>22.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>128</td>
<td>195</td>
<td>7.34</td>
<td>195</td>
<td>7.34</td>
<td>195</td>
<td>7.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
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<td>285</td>
<td>5.98</td>
<td>285</td>
<td>5.98</td>
<td>285</td>
<td>5.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>128</td>
<td>111</td>
<td>26.5</td>
<td>111</td>
<td>26.5</td>
<td>111</td>
<td>26.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>128</td>
<td>219</td>
<td>28.2</td>
<td>220</td>
<td>28.1</td>
<td>220</td>
<td>28.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECSpeed®2017_int_base = 15.5
SPECSpeed®2017_int_peak = Not Run

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

Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

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-ic2023.0/lib/intel64:/home/cpu2017-1.1.9-ic2023.0/je5.0.1-64"
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

(Continued on next page)
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**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

---

**General Notes (Continued)**

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.


---

**Platform Notes**

**BIOS configuration:**
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
C-state set to Legacy

Sysinfo program /home/cpu2017-1.1.9-ic2023.0/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Fri Feb 10 21:44:19 2023

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

```
Table of contents

1. uname -a  
2. w  
3. Username  
4. ulimit -a  
5. sysinfo process ancestry  
6. /proc/cpuinfo  
7. lscpu  
8. numaclt1 --hardware  
9. /proc/meminfo  
10. who -r  
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)  
12. Services, from systemctl list-unit-files  
13. Linux kernel boot-time arguments, from /proc/cmdline  
14. cpupower frequency-info  
15. sysctl  
16. /sys/kernel/mm/transparent_hugepage  
17. /sys/kernel/mm/transparent_hugepage/klhugepaged  
18. OS release  
19. Disk information  
20. /sys/devices/virtual/dmi/id  
21. dmidecode  
22. BIOS
```

```
1. uname -a
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
   x86_64 x86_64 x86_64 GNU/Linux

2. w
   21:45:19 up 1 min, 1 user, load average: 0.21, 0.16, 0.07
```

(Continued on next page)
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Platform Notes (Continued)

<table>
<thead>
<tr>
<th>USER</th>
<th>TTY</th>
<th>FROM</th>
<th>LOGIN@</th>
<th>IDLE</th>
<th>JCPU</th>
<th>PCPU</th>
<th>WHAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>tty1</td>
<td>-</td>
<td>21:43</td>
<td>6.00s</td>
<td>0.75s</td>
<td>0.00s</td>
<td>-bash</td>
</tr>
</tbody>
</table>

3. Username
From environment variable $USER: root

4. 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) 2062491
   max locked memory (kbytes, -l) 64
   max memory size (kbytes, -m) unlimited
   open files (-n) 1024
   pipe size (512 bytes, -p) 8
   POSIX message queues (bytes, -q) 819200
   real-time priority (-r) 0
   stack size (kbytes, -s) unlimited
   cpu time (seconds, -t) unlimited
   max user processes (-u) 2062491
   virtual memory (kbytes, -v) unlimited
   file locks (-x) unlimited

5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   runcpu --nobuild --action validate --define default-platform-flags -c
      ic2023.0-lin-saphirerapids-speed-202212201.cfg --define cores=64 --tune base -o all --define
      intspeedaffinity --define smt-on --define drop_caches intspeed
      runcpu --nobuild --action validate --define default-platform-flags --configfile
      ic2023.0-lin-saphirerapids-speed-202212201.cfg --define cores=64 --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/CPU2017.029/templogs/preenv.intspeed.029.0.log --lognum 029.0 --from_runcpu 2
      specperl $SPEC/bin/sysinfo
      $SPEC = /home/cpu2017-1.1.9-ic2023.0

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Gold 6438Y+
   vendor_id  : GenuineIntel
   cpu family : 6
   model      : 143
   stepping   : 8
   microcode  : 0x2b000161
   bugs       : spectre_v1 spectre_v2 spec_store_bypass swapgs
   cpu cores  : 32
   siblings  : 64
   2 physical ids (chips)
   128 processors (hardware threads)
   physical id 0: core ids 0-31
   physical id 1: core ids 0-31
   physical id 0: apicids 0-63
   physical id 1: apicids 128-191

(Continued on next page)
Platform Notes (Continued)

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.

7. lscpu

From lscpu from util-linux 2.37.2:

Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 128
On-line CPU(s) list: 0-127
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 6438Y+
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
Stepping: 8
BogoMIPS: 4000.00
Flags:

fpv vme de pse ts mcr 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 rdscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperf perf tsc_known_freq pni pclmulqdq dtes64 monitor
dsc_pl nx mmx ext osfxsr pdcm pcid sdx pdcm dca sse4_1
lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_12 cdr13
invpcid single intel_pni cdp_l2 sbbd mba ibrs ibpb ibrs_enhanced
prf_shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle
avx2 smep bmi2 ems invpcid rtm cmqm rd_a avx512f avx512d qde seed adx srm
avx512ifma clflushopt clwb intel_pt avx512dc sha_ha avx512bw avx512vl
xsaveopt xsaves xgetbv1 xsavec csaves cmqm llc cmqw_occup llc cmqm_mb_mtotal
cqm_mb_local split_lock_detect avx_vnni avx512_sdf ldh emd tdm isar pln pts
avx512vmbi umip kpu oapke waitkg avx512_vmbi2 gfn vaes
vpcmludq avx512_vnni avx512_bitalg tme avx512_vppcnd qsl 77 rdpid
bus_lock_detect cldemote movdir movdir64b enqcmd maryd_clear serialize
txsltrk pcconfig arch_lbr avx512_fip64 axm_tie flush_lid arch_capabilities

Virtualization: VT-x
L1d cache: 3 MiB (64 instances)
L1i cache: 2 MiB (64 instances)
L2 cache: 128 MiB (64 instances)
L3 cache: 120 MiB (2 instances)
NUMA node(s): 2
NUMA node0 CPU(s): 0-31, 64-95
NUMA node1 CPU(s): 32-63, 96-127
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation: Speculative Store Bypass disabled via pctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitation
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbdcs: Not affected
Vulnerability Tsa async abort: Not affected

From lscpu --cache:

NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 48K 3M 12 Data 1 64 1 64

(Continued on next page)
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<tbody>
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<td>Not Run</td>
</tr>
</tbody>
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### Platform Notes (Continued)

<table>
<thead>
<tr>
<th>L1</th>
<th>32K</th>
<th>2M</th>
<th>8 Instruction</th>
<th>1</th>
<th>64</th>
<th>1</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2</td>
<td>2M</td>
<td>128M</td>
<td>16 Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>60M</td>
<td>120M</td>
<td>15 Unified</td>
<td>3</td>
<td>65536</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

available: 2 nodes (0-1)
node 0 cpus: 0-31,64-95
node 0 size: 257695 MB
node 0 free: 256541 MB
node 1 cpus: 32-63,96-127
node 1 size: 257950 MB
node 1 free: 257478 MB
node distances:
node   0   1
0:   10  21
1:  21  10

9. /proc/meminfo

MemTotal: 528022068 kB

10. who -r

run-level 3 Feb 10 21:43

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)

12. Services, from systemctl list-unit-files

<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ havedeg irbalance issue-generator kbdsettings klog lvm2-monitor nsed postfix purge-kernels rollback rayslog smartd ssdh wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny</td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
</tbody>
</table>

13. Linux kernel boot-time arguments, from /proc/cmdline

BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=/dev/vg/lenovo/log0/phys podemos=
splash=silent
mitigations=auto
quiet
security=apparmor

14. cpupower frequency-info

analyzing CPU 0:
Unable to determine current policy

(Continued on next page)
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<td>Not Run</td>
</tr>
</tbody>
</table>

---

**Platform Notes (Continued)**

```plaintext
boost state support:  
  Supported: yes  
  Active: yes

---

#### 15. sysctl

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kernel.numa_balancing</td>
<td>1</td>
</tr>
<tr>
<td>kernel.randomize_va_space</td>
<td>2</td>
</tr>
<tr>
<td>vm.compaction_proactiveness</td>
<td>20</td>
</tr>
<tr>
<td>vm.dirty_background_bytes</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_background_ratio</td>
<td>10</td>
</tr>
<tr>
<td>vm.dirty_bytes</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_expire_centisecs</td>
<td>3000</td>
</tr>
<tr>
<td>vm.dirty_ratio</td>
<td>20</td>
</tr>
<tr>
<td>vm.dirty_writeback_centisecs</td>
<td>500</td>
</tr>
<tr>
<td>vm.dirtytime_expire_seconds</td>
<td>43200</td>
</tr>
<tr>
<td>vm.extfrag_threshold</td>
<td>500</td>
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<tr>
<td>vm.min_unmapped_ratio</td>
<td>1</td>
</tr>
<tr>
<td>vm.nr_hugepages</td>
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<tr>
<td>vm.nr_hugepages_mempolicy</td>
<td>0</td>
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<tr>
<td>vm.nr_overcommit_hugepages</td>
<td>0</td>
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<tr>
<td>vm.swappiness</td>
<td>60</td>
</tr>
<tr>
<td>vm.watermark_boost_factor</td>
<td>15000</td>
</tr>
<tr>
<td>vm.watermark_scale_factor</td>
<td>10</td>
</tr>
<tr>
<td>vm.zone_reclaim_mode</td>
<td>0</td>
</tr>
</tbody>
</table>

---

#### 16. /sys/kernel/mm/transparent_hugepage

```plaintext
defrag always defer defer+madvise [madvise] never
enabled [always] madvise never
hpage_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force
```

---

#### 17. /sys/kernel/mm/transparent_hugepage/klhugepaged

```plaintext
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
```

---

#### 18. OS release

```plaintext
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP4
```

---

#### 19. Disk information

```plaintext
SPEC is set to: /home/cpu2017-1.1.9-ic2023.0
/dev/sda2  
  xfs  894G  66G  828G  8% /
```

---

#### 20. /sys/devices/virtual/dmi/id

```plaintext
Vendor: Lenovo
Product: ThinkSystem SR630 V3 MB,EGS,DDR5,NY,1U
Product Family: ThinkSystem
Serial: 1234567890
```

(Continued on next page)
## Platform Notes (Continued)

21. dmidecode
   Additional information from dmidecode 3.2 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:
   - 2x Samsung M321R4GA3BB0-CQKM 32 GB 2 rank 4800
   - 14x Samsung M321R4GA3BB0-CQKV 32 GB 2 rank 4800

22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor: Lenovo
   BIOS Version: ESE109L-1.10
   BIOS Date: 01/07/2023
   BIOS Revision: 1.10
   Firmware Revision: 1.0

## Compiler Version Notes

### C

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s(base)</td>
<td></td>
</tr>
<tr>
<td>602.qcc_s(base)</td>
<td></td>
</tr>
<tr>
<td>605.mcf_s(base)</td>
<td></td>
</tr>
<tr>
<td>625.x264_s(base)</td>
<td></td>
</tr>
<tr>
<td>657.xz_s(base)</td>
<td></td>
</tr>
</tbody>
</table>

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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### C++

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>620.omnetpp_s(base)</td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s(base)</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s(base)</td>
<td></td>
</tr>
<tr>
<td>641.leela_s(base)</td>
<td></td>
</tr>
</tbody>
</table>

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### Fortran

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>648.exchange2_s(base)</td>
<td></td>
</tr>
</tbody>
</table>

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## Base Compiler Invocation

**C benchmarks:**
- icx

**C++ benchmarks:**
- icpx

**Fortran benchmarks:**
- ifx
## SPEC CPU®2017 Integer Speed Result

### Lenovo Global Technology

**ThinkSystem SR630 V3**  
(2.00 GHz, Intel Xeon Gold 6438Y+)

| SPECspeed®2017_int_base = | 15.5 |
| SPECspeed®2017_int_peak = | Not Run |

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Feb-2023  
**Hardware Availability:** Feb-2023  
**Software Availability:** Dec-2022

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s:</td>
<td>DSPEC_LP64 DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>602.gcc_s:</td>
<td>DSPEC_LP64</td>
</tr>
<tr>
<td>605.mcf_s:</td>
<td>DSPEC_LP64</td>
</tr>
<tr>
<td>620.omnetpp_s:</td>
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<td>DSPEC_LP64</td>
</tr>
<tr>
<td>657.xz_s:</td>
<td>DSPEC_LP64</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

#### C benchmarks:
- m64 -std=c11 -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:
- m64 -std=c++14 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
- L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

#### Fortran benchmarks:
- 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/Intel-ic2023-official-linux64.html](http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html)

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

- [http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml](http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml)

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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 2023-02-10 08:44:18-0500.  
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