## SPEC CPU®2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SR850P  
(3.60 GHz, Intel Xeon Gold 6244)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>12.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

---

### Hardware

**CPU Name:** Intel Xeon Gold 6244  
**Max MHz:** 4400  
**Nominal:** 3600  
**Enabled:** 32 cores, 4 chips  
**Orderable:** 4 chips  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 1 MB I+D on chip per core  
**L3:** 24.75 MB I+D on chip per chip  
**Other:** None  
**Memory:** 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R)  
**Storage:** 1 x 960 GB SATA SSD  
**Other:** None

### Software

**OS:** Red Hat Enterprise Linux 8.0 (Ootpa)  
**Kernel:** 4.18.0-80.el8.x86_64  
**Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++  
**Compiler for Linux:** Intel Fortran  
**Parallel:** Yes  
**Firmware:** Lenovo BIOS Version TEE156L 2.61 released May-2020  
**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

---

[Table of Results]
SPEC CPU®2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR850P
(3.60 GHz, Intel Xeon Gold 6244)

SPECSpeed®2017_int_base = 12.2
SPECSpeed®2017_int_peak = Not Run

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

Test Date: Oct-2020
Hardware Availability: Jun-2020
Software Availability: Apr-2020

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
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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

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/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/j e5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB 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:

(Continued on next page)
**SPEC CPU®2017 Integer Speed Result**

Lenovo Global Technology  
ThinkSystem SR850P  
(3.60 GHz, Intel Xeon Gold 6244)

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<th>9017</th>
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<td>Lenovo Global Technology</td>
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<tr>
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</tr>
<tr>
<td>Software Availability:</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

**General Notes (Continued)**

```
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
MONITOR/MWAIT set to Enable
Hyper-Threading set to Disable
DCU Streamer Prefetcher set to Disable
Patrol Scrub set to Disable
LLC dead line alloc set to Disable

Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
running on localhost.localdomain Wed Oct 21 21:05:26 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
```
model name : Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz
  4 "physical id"s (chips)
  32 "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 : 8
siblings : 8
physical 0: cores 2 3 9 16 17 20 26 27
physical 1: cores 1 2 4 9 18 19 25 27
physical 2: cores 2 9 16 17 18 19 20 27
physical 3: cores 2 4 8 9 11 17 26 27
```

From lscpu:
```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
```

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.60 GHz, Intel Xeon Gold 6244)

SPECspeed®2017_int_base = 12.2
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Oct-2020
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz
Stepping: 6
CPU MHz: 2804.032
CPU max MHz: 4400.0000
CPU min MHz: 1200.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
NUMA node2 CPU(s): 16-23
NUMA node3 CPU(s): 24-31
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdelgb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds cpl vmx smx est tm2 sse3 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_pinn ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow v Core(s) per socket: 8
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From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 386685 MB
node 0 free: 386173 MB
node 1 cpus: 8 9 10 11 12 13 14 15

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

```
node 1 size: 387069 MB
node 1 free: 386739 MB
node 2 cpus: 16 17 18 19 20 21 22 23
node 2 size: 387045 MB
node 2 free: 386521 MB
node 3 cpus: 24 25 26 27 28 29 30 31
node 3 size: 387069 MB
node 3 free: 386148 MB
node distances:
  node  0  1  2  3
0:  10  21  21  21
1:  21  10  21  21
2:  21  21  10  21
3:  21  21  21  10
```

From `/proc/meminfo`

- MemTotal: 1585019700 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From `/etc/*release*` /`/etc/*version*`

```
os-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.0 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.0"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="Red Hat Enterprise Linux 8.0 (Ootpa)"
  ANSI_COLOR="0;31"

redhat-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.0:ga
```

```
uname -a:
Linux localhost.localdomain 4.18.0-80.el8.x86_64 #1 SMP Wed Mar 13 12:02:46 UTC 2019
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- **CVE-2018-3620 (L1 Terminal Fault):** Not affected
- **Microarchitectural Data Sampling:** No status reported
- **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: __user pointer sanitization
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: Enhanced IBRS, IBPB: conditional,

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR850P**  
(3.60 GHz, Intel Xeon Gold 6244)

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

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<tr>
<th>SPECspeed®2017_int_peak</th>
<th>Not Run</th>
<th>SPECspeed®2017_int_base</th>
<th>12.2</th>
</tr>
</thead>
</table>

**Platform Notes (Continued)**

- **Run-level:** 3 Oct 21 18:45
- **SPEC is set to:** /home/cpu2017-1.1.0-ic19.1.1
- **Filesystem:**  
  - /dev/sda4: xfs 839G 22G 817G 3% /home

**From /sys/devices/virtual/dmi/id**
- **BIOS:** Lenovo -[TEE156L-2.61]- 05/20/2020
- **Vendor:** Lenovo
- **Product:** ThinkSystem SR850P -[7D2HCTO1WW]-
- **Product Family:** ThinkSystem
- **Serial:** 1234567890

**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 M393A4K40CB2-CVF 32 GB 2 rank 2933

**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) 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++

- 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
- 641.leela_s(base)

### Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1

**NextGen Build 20200304**

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### Fortran

- 648.exchange2_s(base)

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.60 GHz, Intel Xeon Gold 6244)

SPECIAL CPU®2017 Integer Speed Result

SPECspeed®2017_int_base = 12.2
SPECspeed®2017_int_peak = Not Run

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

Test Date: Oct-2020
Hardware Availability: Jun-2020
Software Availability: Apr-2020

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

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:
-m64 -qnextgen -std=c11
-01,-plugin-opt=-x86-branches-within-32B-boundaries -01,-z,muldefs
-xCORE-AVX512 -03 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-m64 -qnextgen -01,-plugin-opt=-x86-branches-within-32B-boundaries

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.60 GHz, Intel Xeon Gold 6244)

SPECspeed®2017_int_base = 12.2
SPECspeed®2017_int_peak = Not Run

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

Base Optimization Flags (Continued)

C++ benchmarks (continued):
- Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse
- funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4
- L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
- lqkmalloc

Fortran benchmarks:
- m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX512
- O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
- nostandard-realloc-lhs -align array32byte
- mbranches-within-32B-boundaries

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-CLX-I.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.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 v1.1.0 on 2020-10-21 09:05:25-0400.
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