Lenovo Global Technology
ThinkSystem SR630
(2.70 GHz, Intel Xeon Platinum 8280L)

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

---

**Hardware**

- **CPU Name**: Intel Xeon Platinum 8280L
- **Max MHz.**: 4000
- **Nominal**: 2700
- **Enabled**: 56 cores, 2 chips, 2 threads/core
- **Orderable**: 1.2 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**: 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
- **Storage**: 1 x 800 GB SATA SSD
- **Other**: None

---

**Software**

- **OS**: SUSE Linux Enterprise Server 12 SP4 (x86_64)
- **Kernel**: 4.12.14-94.41-default
- **Compiler**: C/C++: Version 19.0.0.117 of Intel
- **Compiler for Linux**: C/C++
- **Fortran**: Version 19.0.0.117 of Intel Fortran
- **Compiler for Linux**: Compiler for Linux
- **Parallel**: Yes
- **Firmware**: Lenovo BIOS Version IVE135P 2.10 released Feb-2019
- **File System**: btrfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: Not Applicable
- **Other**: jemalloc memory allocator V5.0.1

---

**SPECspeed2017_int_base = 9.93**

**SPECspeed2017_int_peak = Not Run**
SPEC CPU2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR630
(2.70 GHz, Intel Xeon Platinum 8280L)

SPECspeed2017_int_base = 9.93
SPECspeed2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>112</td>
<td>263</td>
<td>6.75</td>
<td>262</td>
<td>6.77</td>
<td>263</td>
<td>6.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>112</td>
<td>391</td>
<td>10.2</td>
<td>390</td>
<td>10.2</td>
<td>390</td>
<td>10.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>112</td>
<td>405</td>
<td>11.6</td>
<td>406</td>
<td>11.6</td>
<td>407</td>
<td>11.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>112</td>
<td>199</td>
<td>8.21</td>
<td>197</td>
<td>8.30</td>
<td>198</td>
<td>8.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>112</td>
<td>140</td>
<td>10.1</td>
<td>139</td>
<td>10.2</td>
<td>139</td>
<td>10.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>112</td>
<td>127</td>
<td>13.9</td>
<td>127</td>
<td>13.9</td>
<td>126</td>
<td>14.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>112</td>
<td>258</td>
<td>5.56</td>
<td>258</td>
<td>5.54</td>
<td>258</td>
<td>5.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>112</td>
<td>351</td>
<td>4.86</td>
<td>352</td>
<td>4.85</td>
<td>351</td>
<td>4.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>112</td>
<td>203</td>
<td>14.5</td>
<td>202</td>
<td>14.6</td>
<td>202</td>
<td>14.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>112</td>
<td>245</td>
<td>25.3</td>
<td>245</td>
<td>25.3</td>
<td>245</td>
<td>25.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 9.93
SPECspeed2017_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"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "'/home/cpu2017-1.0.5-ic19/lib/ia32:/home/cpu2017-1.0.5-ic19/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19/je5.0.1-32:/home/cpu2017-1.0.5-ic19/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X 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

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) 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.
jemalloc, a general purpose malloc implementation

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

**Lenovo Global Technology**

**ThinkSystem SR630**

(2.70 GHz, Intel Xeon Platinum 8280L)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base =</th>
<th>9.93</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Test Date:** Mar-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Oct-2018

---

**General Notes (Continued)**

built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  

---

**Platform Notes**

BIOS configuration:  
Choose Operating Mode set to Maximum Performance  
Choose Operating Mode set to Custom Mode  
C-states set to Legacy  
Sysinfo program /home/cpu2017-1.0.5-ic19/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcd82f999c33d61f64985e45859ea9  
running on linux-ptrp Wed Mar 13 19:44:59 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 8280L CPU @ 2.70GHz  
- 2 "physical id"s (chips)  
- 112 "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

From lscpu:  
- Architecture: x86_64  
- CPU op-mode(s): 32-bit, 64-bit  
- Byte Order: Little Endian  
- CPU(s): 112  
- On-line CPU(s) list: 0-111  
- Thread(s) per core: 2  
- Core(s) per socket: 28  
- Socket(s): 2  
- NUMA node(s): 2  
- Vendor ID: GenuineIntel  
- CPU family: 6  
- Model: 85  
- Model name: Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz  
- Stepping: 6  
- CPU MHz: 2700.000

(Continued on next page)
### Lenovo Global Technology

**ThinkSystem SR630**  
(2.70 GHz, Intel Xeon Platinum 8280L)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License</td>
<td>9017</td>
</tr>
<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>Mar-2019</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Oct-2018</td>
</tr>
</tbody>
</table>

**SPEC Speed2017 Integer Speed Result**

**SPECspeed2017_int_base** = 9.93  
**SPECspeed2017_int_peak** = Not Run

**Platform Notes (Continued)**

- CPU max MHz: 4000.0000  
- CPU min MHz: 1000.0000  
- BogoMIPS: 5400.00  
- Virtualization: VT-x  
- L1d cache: 32K  
- L1i cache: 32K  
- L2 cache: 1024K  
- L3 cache: 39424K  
- NUMA node0 CPU(s): 0-27,56-83  
- NUMA node1 CPU(s): 28-55,84-111  
- Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nst tsc cpuid aperfmperf 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 cdp l3 invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ets invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cqmm llc cqmm_occup_llc cqmm_mbm_total cqmm_mbm_local dtherm ida arat pin pts pku ospke avx512_vnni flush_lld arch_capabilities

From `numactl --hardware`  
WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 2 nodes (0-1)  
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83  
node 0 size: 386651 MB  
node 0 free: 385524 MB  
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111  
node 1 size: 387009 MB  
node 1 free: 386546 MB  
node distances:  
node 0 1  
0: 10 21  
1: 21 10

From `/proc/meminfo`  
MemTotal: 792228928 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

(Continued on next page)
### Lenovo Global Technology

**ThinkSystem SR630**
(2.70 GHz, Intel Xeon Platinum 8280L)

<table>
<thead>
<tr>
<th>SPEC CPU2017 Integer Speed Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>SPECspeed2017_int_base = 9.93</td>
</tr>
<tr>
<td>SPECspeed2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

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:
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_PW

run-level 3 Mar 13 19:43

SPEC is set to: /home/cpu2017-1.0.5-ic19

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>btrfs</td>
<td>744G</td>
<td>23G</td>
<td>721G</td>
<td>4%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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 -[IVE135P-2.10]- 02/13/2019

Memory:
- 24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from `sysinfo` program)
Lenovo Global Technology
ThinkSystem SR630
(2.70 GHz, Intel Xeon Platinum 8280L)

SPECspeed2017_int_base = 9.93
SPECspeed2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Oct-2018

Compiler Version Notes
==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  648.exchange2_s(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.0.117 Build 20180804
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
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630
(2.70 GHz, Intel Xeon Platinum 8280L)

| SPECspeed2017_int_base = 9.93 |
| SPECspeed2017_int_peak = Not Run |

CPU2017 License: 9017
Test Date: Mar-2019
Test Sponsor: Lenovo Global Technology
Hardware Availability: Apr-2019
Tested by: Lenovo Global Technology
Software Availability: Oct-2018

Base Portability Flags (Continued)

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:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

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

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

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 2019-03-13 07:44:59-0400.
Originally published on 2019-04-02.