Lenovo Global Technology
ThinkSystem SR650 V2
(2.40 GHz, Intel Xeon Platinum 8360Y)

SPECspeed®2017_int_base = 12.0
SPECspeed®2017_int_peak = Not Run

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

Test Date: May-2021
Hardware Availability: Jul-2021
Software Availability: Feb-2021

Threads

<table>
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<tr>
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<tr>
<td>600.perlbench_s</td>
<td>144</td>
<td>7.16</td>
</tr>
<tr>
<td>602.gcc_s</td>
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<td>605.mcf_s</td>
<td>144</td>
<td>19.6</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>144</td>
<td>12.3</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>144</td>
<td>13.6</td>
</tr>
<tr>
<td>625.x264_s</td>
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<td>631.deepsjeng_s</td>
<td>144</td>
<td>5.85</td>
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<tr>
<td>641.leela_s</td>
<td>144</td>
<td>4.77</td>
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<tr>
<td>648.exchange2_s</td>
<td>144</td>
<td>20.2</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>144</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Hardware
CPU Name: Intel Xeon Platinum 8360Y
Max MHz: 3500
Nominal: 2400
Enabled: 72 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 54 MB I+D on chip per chip
Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC4-32000AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: Red Hat Enterprise Linux 8.3 (Ootpa)
Kernel 4.18.0-240.el8.x86_64
Compiler: C/C++, Version 2021.1 of Intel oneAPI DPC++/C++
Compiler Build 20201113 for Linux;
Fortran: Version 2021.1 of Intel Fortran Compiler
Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler
Classic Build 20201112 for Linux
Parallel: Yes
Firmware: Lenovo BIOS Version AFE109PT1 1.00 released Apr-2021
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
Lenovo Global Technology  
ThinkSystem SR650 V2  
(2.40 GHz, Intel Xeon Platinum 8360Y)  

SPECspeed®2017_int_base = 12.0
SPECspeed®2017_int_peak = Not Run

Results Table

<table>
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<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>
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<tr>
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<td>144</td>
<td>249</td>
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<td>368</td>
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<td>106</td>
<td>13.4</td>
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<tr>
<td>625.x264_s</td>
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<td>5.82</td>
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<td>5.85</td>
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<tr>
<td>641.leela_s</td>
<td>144</td>
<td>358</td>
<td>4.77</td>
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<td>24.8</td>
<td>250</td>
<td>24.8</td>
<td>250</td>
<td>24.8</td>
</tr>
</tbody>
</table>

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/cpu2017-1.1.5-ic2021.1-revB/lib/intel64:/home/cpu2017-1.1.5-ic2021.1-revB/je5.0.1-64"
MALLOCONF = "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:
 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.
Lenovo Global Technology
ThinkSystem SR650 V2
(2.40 GHz, Intel Xeon Platinum 8360Y)

SPECspeed²017_int_base = 12.0
SPECspeed²017_intpeak = Not Run

General Notes (Continued)
jemalloc, a general purpose malloc implementation
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 and then set it to Custom Mode
C-States set to Legacy

Sysinfo program /home/cpu2017-1.1.5-ic2021.1-revB/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e21c
running on localhost.localdomain Mon May 10 21:27:22 2021

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 8360Y CPU @ 2.40GHz
  2 "physical id"s (chips)
  144 "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 : 36
siblings : 72
physical 0: cores 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 28 29 30 31 32 33 34 35
physical 1: cores 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 28 29 30 31 32 33 34 35

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 144
On-line CPU(s) list: 0-143
Thread(s) per core: 2
Core(s) per socket: 36
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Platinum 8360Y CPU @ 2.40GHz
Stepping: 6

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR650 V2
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SPECspeed®2017_int_base = 12.0
SPECspeed®2017_int_peak = Not Run

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

Platform Notes (Continued)

CPU MHz: 1928.539
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 55296K
NUMA node0 CPU(s): 0-35,72-107
NUMA node1 CPU(s): 36-71,108-143

Flags: fpu vme de pse 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 nopl nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcd 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 invpcid_single intel_pstate ssbd mba ibpb stibp ibrs enhanced_tpr shadow vnmi flexpriority ept vpid ept_ad pcidclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcd 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 invpcid_single intel_pstate ssbd mba ibpb stibp ibrs enhanced_tpr shadow vnmi flexpriority ept vpid ept_ad pcid

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 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 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 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107
node 0 size: 479964 MB
node 0 free: 514668 MB
node 1 cpus: 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 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 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107
node 1 size: 55296 KB
node 1 free: 514500 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 105649576 KB

(Continued on next page)
Lenovo Global Technology
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(2.40 GHz, Intel Xeon Platinum 8360Y)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
<th>Test Date:</th>
<th>May-2021</th>
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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Jul-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>Feb-2021</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 12.0
SPECspeed®2017_int_peak = Not Run

Platform Notes (Continued)

HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

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

<table>
<thead>
<tr>
<th>os-release:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME=&quot;Red Hat Enterprise Linux&quot;</td>
</tr>
<tr>
<td>VERSION=&quot;8.3 (Ootpa)&quot;</td>
</tr>
<tr>
<td>ID=&quot;rhel&quot;</td>
</tr>
<tr>
<td>ID_LIKE=&quot;fedora&quot;</td>
</tr>
<tr>
<td>VERSION_ID=&quot;8.3&quot;</td>
</tr>
<tr>
<td>PLATFORM_ID=&quot;platform:el8&quot;</td>
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<tr>
<td>PRETTY_NAME=&quot;Red Hat Enterprise Linux 8.3 (Ootpa)&quot;</td>
</tr>
<tr>
<td>ANSI_COLOR=&quot;0;31&quot;</td>
</tr>
</tbody>
</table>

redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

- CVE-2018-12207 (iTLB Multihit): Not affected
- CVE-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: Not affected
- CVE-2017-5754 (Meltdown): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps barriers and __user pointer sanitation
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
- CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 May 10 21:25
SPEC is set to: /home/cpu2017-1.1.5-ic2021.1-revB

<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/sdb4</td>
<td>xfs</td>
<td>819G</td>
<td>234G</td>
<td>585G</td>
<td>29%</td>
<td>/home</td>
</tr>
</tbody>
</table>

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR650 V2
(2.40 GHz, Intel Xeon Platinum 8360Y)

**SPECspeed®2017_int_base = 12.0**

**SPECspeed®2017_int_peak = Not Run**

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
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<th>Hardware Availability: Jul-2021</th>
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</thead>
<tbody>
<tr>
<td>Software Availability: Feb-2021</td>
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</tr>
</tbody>
</table>

---

**Platform Notes (Continued)**

From /sys/devices/virtual/dmi/id

Vendor: Lenovo
Product: ThinkSystem SR650 V2 MB
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:
32x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200

BIOS:
BIOS Vendor: Lenovo
BIOS Version: AFE109PT1-1.00
BIOS Date: 04/28/2021
BIOS Revision: 1.0
Firmware Revision: 1.0

(End of data from sysinfo program)

---

**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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

```
C++
| 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
 | 641.leea_s(base)
```

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

```
Fortran
| 648.exchange2_s(base)
```

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR650 V2**

(2.40 GHz, Intel Xeon Platinum 8360Y)

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<tr>
<th>SPECspeed®2017_int_base =</th>
<th>12.0</th>
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<tbody>
<tr>
<td>SPECspeed®2017_int_peak =</td>
<td>Not Run</td>
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**Test Sponsor:** Lenovo Global Technology  
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**Software Availability:** Feb-2021

### Compiler Version Notes (Continued)

Intel(R) 64, Version 2021.1 Build 20201112_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### Base Compiler Invocation

C benchmarks:
- icx

C++ benchmarks:
- icpx

Fortran benchmarks:
- ifort

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>gcc_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>mcf_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>x264_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>leela_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xz_s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

C benchmarks:
- -DSPEC_OPENMP  
- std=c11  
- m64  
- fioopenmp  
- Wl,-z,muldefs  
- xCORE-AVX2  
- O3  
- fffast-math -flto  
- mfpmath=sse  
- funroll-loops  
- qopt-mem-layout-trans=4  
- mbranches-within-32B-boundaries  
- L/usr/local/jemalloc64-5.0.1/lib  
- ljemalloc

C++ benchmarks:
- -DSPEC_OPENMP  
- m64  
- Wl,-z,muldefs  
- xCORE-AVX2  
- O3  
- fffast-math -flto  
- mfpmath=sse  
- funroll-loops  
- qopt-mem-layout-trans=4  
- mbranches-within-32B-boundaries  
- L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/
Lenovo Global Technology
ThinkSystem SR650 V2
(2.40 GHz, Intel Xeon Platinum 8360Y)

SPECspeed 2017 Integer Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Lenovo Global Technology
Tested by: Lenovo Global Technology

SPECspeed 2017 Int Base = 12.0
SPECspeed 2017 Int Peak = Not Run

CPU2017 License: 9017
Test Date: May-2021
Test Sponsor: Lenovo Global Technology
Hardware Availability: Jul-2021
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Software Availability: Feb-2021

Base Optimization Flags (Continued)

C++ benchmarks (continued):
- lqkmalloc

Fortran benchmarks:
- m64 -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
- nostandard-realloc-lhs -align array32byte -auto
- 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-ICElake-D.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-ICElake-D.xml
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.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 v1.1.5 on 2021-05-10 09:27:22-0400.
Report generated on 2021-06-08 20:07:22 by CPU2017 PDF formatter v6442.
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