# Lenovo Global Technology

**Specs:**

- **CPU**:
  - Name: Intel Xeon E-2124G
  - Max MHz.: 3.40 GHz
  - Core Count: 4
  - L1 Cache: 32 KB I + 32 KB D per core
  - L2 Cache: 256 KB I+D per core
  - L3 Cache: 8 MB I+D per chip
- **Memory**: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
- **Storage**: 1 x 480 GB SATA SSD
- **Operating System**: Red Hat Enterprise Linux Server release 7.5 (Maipo)
- **Compiler**: C/C++: Version 18.0.2.199 of Intel C/C++
- **Compiler for Linux**: Fortran: Version 18.0.2.199 of Intel Fortran
- **File System**: xfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: Not Applicable
- **Other**: None

**Test Information**

- **License**: 9017
- **Test Sponsor**: Lenovo Global Technology
- **Tested by**: Lenovo Global Technology
- **CPU2017 License**: 9017
- **Test Date**: Dec-2018
- **Hardware Availability**: Jan-2019
- **Test Sponsor**: Lenovo Global Technology
- **Hardware Availability**: Jan-2019
- **Tested by**: Lenovo Global Technology
- **Software Availability**: May-2018
- **Test Date**: Dec-2018
- **Hardware Availability**: Jan-2019
- **Tested by**: Lenovo Global Technology
- **Software Availability**: May-2018

**Results**

- **SPECspeed2017_int_base** = 9.54
- **SPECspeed2017_int_peak** = Not Run

**Threads**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>7.00</td>
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<tr>
<td>602.gcc_s</td>
<td>11.7</td>
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<tr>
<td>605.mcf_s</td>
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<td>620.omnetpp_s</td>
<td>6.43</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>11.5</td>
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<tr>
<td>625.x264_s</td>
<td>13.8</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>6.50</td>
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<tr>
<td>641.leela_s</td>
<td>5.22</td>
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<td>648.exchange2_s</td>
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<tr>
<td>657.xz_s</td>
<td>9.00</td>
</tr>
</tbody>
</table>

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**Software**

- **OS**: Red Hat Enterprise Linux Server release 7.5 (Maipo)
- **Compiler**: C/C++: Version 18.0.2.199 of Intel C/C++
- **Compiler for Linux**: Fortran: Version 18.0.2.199 of Intel Fortran
- **Firmware**: Lenovo BIOS Version ISE105G 1.01 released Oct-2018
- **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
Lenovo Global Technology

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

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
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</table>

**SPECspeed2017_int_base =** 9.54  
**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-ic18.0u2/lib/ia32:/home/cpu2017-1.0.5-ic18.0u2/lib/intel64"

LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-32:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-64"

OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-6700K 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.

Lenovo Global Technology

Thinksystem SR250
(3.40 GHz, Intel Xeon E-2124G)

SPEC CPU2017 Integer Speed Result

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

SPECspeed2017_int_base = 9.54
SPECspeed2017_int_peak = Not Run

Test Date: Dec-2018
Hardware Availability: Jan-2019
Software Availability: May-2018

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
CPU P-state Control set to Legacy
Sysinfo program /home/cpu2017-1.0.5-ic18.0u2/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on localhost.localdomain Thu Dec 6 09:59:44 2018

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) E-2124G CPU @ 3.40GHz
  1 "physical id"s (chips)
  4 "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 : 4
siblings : 4
physical 0: cores 0 1 2 3
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 1
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) E-2124G CPU @ 3.40GHz
Stepping: 10
CPU MHz: 4452.954
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 6816.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3
```
Lenovo Global Technology
Thinksystem SR250
(3.40 GHz, Intel Xeon E-2124G)

SPECspeed2017_int_base = 9.54
SPECspeed2017_int_peak = Not Run

Platform Notes (Continued)

Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 cli flush 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
aperfmperf eagerfp eu pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xti pr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb intel_pt tpr_shadow vnummi
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
mpx rdseed adx smap clflushopt xsaveopt xsavec xread xgetbv1 ibpb ibrs stibp dtherm ida
ar pl pns ht wwp wwp_notify wwp_act_window wwp_epp spec_ctrl intel_stibp ssbd

/proc/cpuinfo cache data
cache size : 8192 KB

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 1 nodes (0)
node 0 cpus: 0 1 2 3
node 0 size: 65486 MB
node 0 free: 63586 MB
node distances:
   node  0
   0:  10

From /proc/meminfo
MemTotal: 65926976 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server

uname -a:
Linux localhost.localdomain 3.10.0-862.3.2.el7.x86_64 #1 SMP Tue May 15 18:22:15 EDT 2018 x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

(Continued on next page)
Lenovo Global Technology
Thinksystem SR250
(3.40 GHz, Intel Xeon E-2124G)

SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECspeed2017_int_base = 9.54
SPECspeed2017_int_peak = Not Run

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

Test Date: Dec-2018
Hardware Availability: Jan-2019
Software Availability: May-2018

Platform Notes (Continued)

CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Dec 6 09:56

SPEC is set to: /home/cpu2017-1.0.5-ic18.0u2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 365G 6.4G 359G 2% /home

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 -[ISE105G-1.01]- 10/25/2018
Memory:
4x Micron 18ASF2G72AZ-2G6D1 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
657.xz_s(base)
==============================================================================
icc (ICC) 18.0.2 20180210
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)
==============================================================================
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================
FC 648.exchange2_s(base)
==============================================================================
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
## Lenovo Global Technology

**Thinksystem SR250**  
(3.40 GHz, Intel Xeon E-2124G)  

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

### 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  
- 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-AVX2 -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-AVX2 -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-AVX2 -ipo -O3 -no-prec-div  
  - -qopt-mem-layout-trans=3 -nostandard-realloc-lhs  
  - -L/usr/local/je5.0.1-64/lib -ljemalloc
Lenovo Global Technology  
Thinksystem SR250  
(3.40 GHz, Intel Xeon E-2124G)

SPECspeed2017_int_base = 9.54  
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CPU2017 License: 9017  
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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:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-H.xml

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

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