## SPEC® CPU2017 Floating Point Speed Result

**Lenovo Global Technology**

ThinkSystem SR150  
(3.40 GHz, Intel Xeon E-2124G)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>24.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
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### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E-2124G</td>
</tr>
<tr>
<td>Max MHz.</td>
<td>4500</td>
</tr>
<tr>
<td>Nominal</td>
<td>3400</td>
</tr>
<tr>
<td>Enabled</td>
<td>4 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Cache L2</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>Cache L3</td>
<td>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
</tr>
<tr>
<td>Kernel</td>
<td>4.4.131-94.29-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware</td>
<td>Lenovo BIOS Version ISE105G 1.01 released Oct-2018</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
</tbody>
</table>
Lenovo Global Technology
ThinkSystem SR150 (3.40 GHz, Intel Xeon E-2124G)

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

Results Table

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<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>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>4</td>
<td>746</td>
<td>79.1</td>
<td>745</td>
<td>79.2</td>
<td>745</td>
<td>79.2</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>4</td>
<td>408</td>
<td>40.9</td>
<td>407</td>
<td>41.0</td>
<td>406</td>
<td>41.0</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>4</td>
<td>727</td>
<td>7.20</td>
<td>726</td>
<td>7.21</td>
<td>727</td>
<td>7.21</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>4</td>
<td>429</td>
<td>30.8</td>
<td>428</td>
<td>30.9</td>
<td>431</td>
<td>30.7</td>
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<tr>
<td>627.cam4_s</td>
<td>4</td>
<td>497</td>
<td>17.8</td>
<td>497</td>
<td>17.8</td>
<td>497</td>
<td>17.8</td>
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<tr>
<td>628.pop2_s</td>
<td>4</td>
<td>405</td>
<td>29.3</td>
<td>406</td>
<td>29.2</td>
<td>405</td>
<td>29.3</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>4</td>
<td>739</td>
<td>19.5</td>
<td>739</td>
<td>19.5</td>
<td>740</td>
<td>19.5</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>4</td>
<td>471</td>
<td>37.1</td>
<td>471</td>
<td>37.1</td>
<td>471</td>
<td>37.1</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
<td>512</td>
<td>17.8</td>
<td>511</td>
<td>17.8</td>
<td>511</td>
<td>17.8</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>4</td>
<td>1025</td>
<td>15.4</td>
<td>1025</td>
<td>15.4</td>
<td>1026</td>
<td>15.4</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = **24.4**
SPECspeed2017_fp_peak = Not Run

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,compact"
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 SR150
(3.40 GHz, Intel Xeon E-2124G)

SPECspeed2017_fp_base = 24.4
SPECspeed2017_fp_peak = Not Run

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Execute Disable Bit set to Disable
DCA set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic18.0u2/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d6f64985e45859ea9
running on linux-tsn1 Tue Nov 27 18:12:21 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: 4424.610
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 6815.96
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3

(Continued on next page)
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**SPEC CPU2017 Floating Point Speed Result**

**SPECspeed2017_fp_base = 24.4**

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---

**Platform Notes (Continued)**

Flags:
- fpu
- vme
- de
- pse
- tsc
- 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
- rdtscp
- lm
- constant_tsc
- art
- arch_perfmon
- pebs
- bts
- rep_good
- nopl
- xtopology
- nonstop_tsc
- aperfmperf
- eagerfs
- pni
- pclmulqdq
- dtes64
- monitor
des64
- svm
- ssse3
- sdbg
- fma
- cx16
- xtr
- pdcm
- pcid
- sse4_1
- sse4_2
- x2apic
- movbe
- popcnt
tsc_deadline_timer
aes
xsave
avx
f16c
rdrr
lahf
lm
abm
3dnowprefetch
ida
arat
epb
invpcl
single
pln
pts
dtherm
hwp
hwp_notify
hwp_act_window
hwp_epp
intel_pt
rsb_ctxsw
spec_ctrl
stibp
ssbd
ret polyline
kaiser
ptr_shadow
vmni
flexpriority
ept
vpid
fsgsbase
tsc_adjust
bm1
hle
avx2
smep
bmi2
erms
invpcl
rtm
mpx
rdseed
adx
smap
clflushopt
xsaveopt
xsavc
xgetbv1

```
/spec/cpuinfo cache data
cache size : 8192 KB
```

From numactl --hardware

```bash
WARNING: a numactl 'node' might or might not correspond to a physical chip.
```

```bash
available: 1 nodes (0)
node 0 cpus: 0 1 2 3
node 0 size: 64382 MB
node 0 free: 62895 MB
node distances:
node 0
0: 10
```

From /proc/meminfo

```bash
MemTotal: 65927492 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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

```bash
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 3
# 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-SP3"
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"
```

```bash
uname -a:
Linux linux-tsni 4.4.131-94.29-default #1 SMP Mon May 21 14:41:34 UTC 2018 (f49bc78)
```

(Continued on next page)
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**SPECspeed2017_fp_base = 24.4**

**SPECspeed2017_fp_peak = Not Run**

---

### Platform Notes (Continued)

- **x86_64 x86_64 x86_64 GNU/Linux**

  Kernel self-reported vulnerability status:

  - CVE-2017-5754 (Meltdown): Mitigation: PTI
  - CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
  - CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

  run-level 3 Nov 27 14:43

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

  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  619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
-------------------------------
icc (ICC) 18.0.2 20180210
```

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
FC  607.cactuBSSN_s(base)
-------------------------------
icpc (ICC) 18.0.2 20180210
```

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
(Continued on next page)
```
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### SPECspeed2017_fp_base = 24.4

### SPECspeed2017_fp_peak = Not Run

---

### Compiler Version Notes (Continued)

```plaintext
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```plaintext
==============================================================================
CC  621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
==============================================================================
```  
```plaintext
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```  
```plaintext
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

---

### Base Compiler Invocation

**C benchmarks:**
```bash
icc -m64 -std=c11
```

**Fortran benchmarks:**
```bash
ifort -m64
```

**Benchmarks using both Fortran and C:**
```bash
ifort -m64 icc -m64 -std=c11
```

**Benchmarks using Fortran, C, and C++:**
```bash
icpc -m64 icc -m64 -std=c11 ifort -m64
```

---

### Base Portability Flags

- 603.bwaves_s: -DSPEC_LP64
- 607.cactusBBSSN_s: -DSPEC_LP64
- 619.lbm_s: -DSPEC_LP64
- 621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- assume byterecl
- 638.imagick_s: -DSPEC_LP64
- 644.nab_s: -DSPEC_LP64
- 649.fotonik3d_s: -DSPEC_LP64
- 654.roms_s: -DSPEC_LP64
```
**SPEC CPU2017 Floating Point Speed Result**

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</table>

### Base Optimization Flags

**C benchmarks:**
- `-Wl,-z,muldefs` `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp` `-DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib` `-ljemalloc`

**Fortran benchmarks:**
- `-Wl,-z,muldefs` `-DSPEC_OPENMP` `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div`
- `-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp`
- `-nostandard-realloc-lhs` `-L/usr/local/je5.0.1-64/lib` `-ljemalloc`

**Benchmarks using both Fortran and C:**
- `-Wl,-z,muldefs` `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp` `-DSPEC_OPENMP`
- `-nostandard-realloc-lhs` `-L/usr/local/je5.0.1-64/lib` `-ljemalloc`

**Benchmarks using Fortran, C, and C++:**
- `-Wl,-z,muldefs` `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp` `-DSPEC_OPENMP`
- `-nostandard-realloc-lhs` `-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:**


---

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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