



SPEC® CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_base = 45.1

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

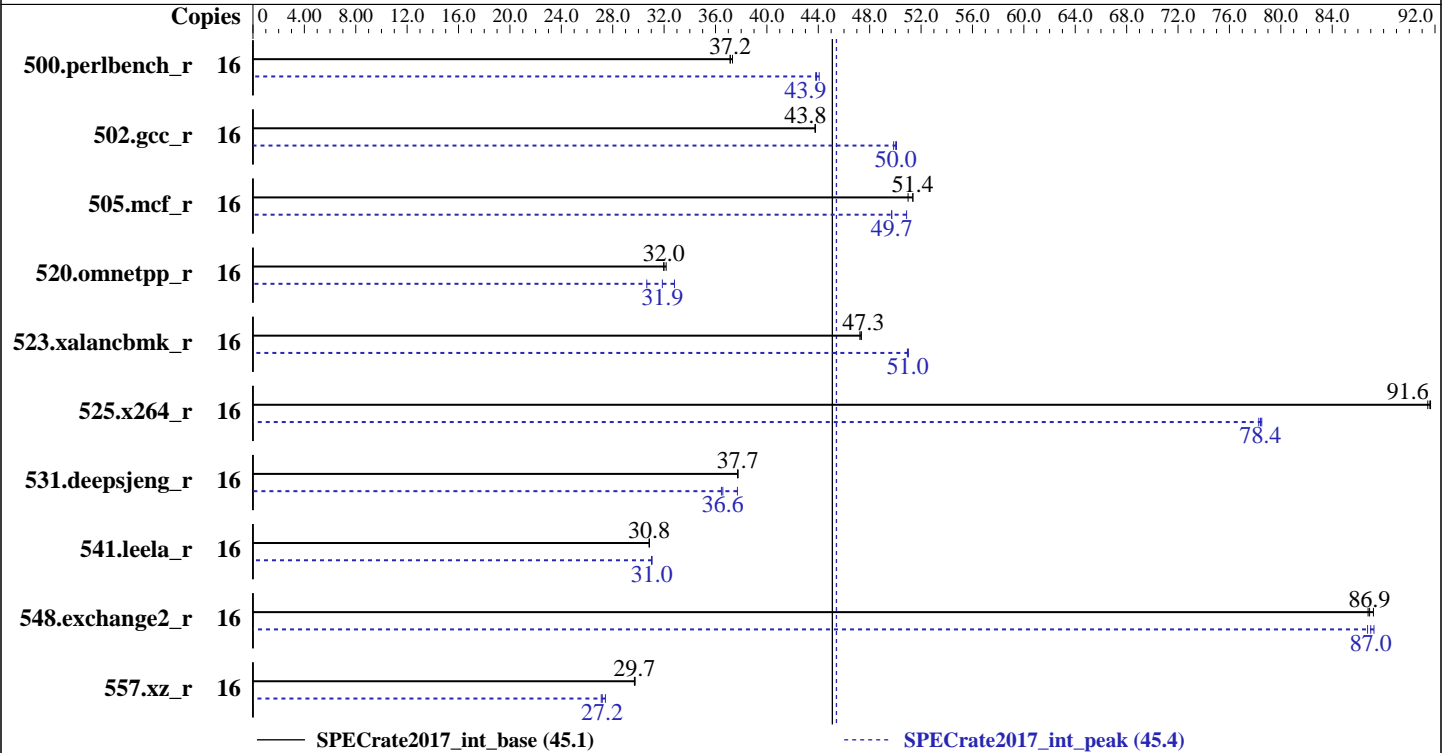
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2018

Hardware Availability: Nov-2017

Software Availability: Sep-2017



Hardware

CPU Name: Intel Xeon Bronze 3106
 Max MHz.: 1700
 Nominal: 1700
 Enabled: 16 cores, 2 chips
 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: 11 MB I+D on chip per chip
 Other: None
 Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2133)
 Storage: 1 x 800 GB SAS SSD
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
 Kernel 4.4.73-5-default
 Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
 Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
 Parallel: No
 Firmware: Lenovo BIOS Version TEE119J 1.20 released Sep-2017
 File System: btrfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other: jemalloc: jemalloc memory allocator library V5.0.1;
 jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
 jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;
 jemalloc: sources available from jemalloc.net or releases



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

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

Test Date: Jan-2018
Hardware Availability: Nov-2017
Software Availability: Sep-2017

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	16	686	37.2	686	37.1	682	37.3	16	581	43.9	578	44.1	582	43.8
502.gcc_r	16	517	43.8	518	43.8	518	43.7	16	453	50.0	452	50.1	454	49.9
505.mcf_r	16	503	51.4	503	51.4	507	51.0	16	508	50.9	520	49.7	520	49.7
520.omnetpp_r	16	653	32.2	657	32.0	656	32.0	16	640	32.8	659	31.9	685	30.7
523.xalancbmk_r	16	357	47.4	357	47.3	358	47.2	16	331	51.0	331	51.0	332	50.9
525.x264_r	16	306	91.6	306	91.7	306	91.4	16	357	78.5	357	78.4	358	78.3
531.deepsjeng_r	16	486	37.7	486	37.7	486	37.7	16	486	37.7	503	36.5	501	36.6
541.leela_r	16	859	30.8	859	30.8	859	30.9	16	854	31.0	854	31.0	853	31.1
548.exchange2_r	16	481	87.2	482	86.9	483	86.8	16	480	87.3	482	87.0	483	86.8
557.xz_r	16	582	29.7	581	29.7	582	29.7	16	630	27.4	637	27.1	636	27.2

SPECrate2017_int_base = 45.1

SPECrate2017_int_peak = 45.4

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

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:
LD_LIBRARY_PATH = "/home/cpu2017.1.0.2.ic18.0/lib/ia32:/home/cpu2017.1.0.2.ic18.0/lib/intel64"
LD_LIBRARY_PATH = "\$LD_LIBRARY_PATH:/home/cpu2017.1.0.2.ic18.0/je5.0.1-32:/home/cpu2017.1.0.2.ic18.0/je5.0.1-64"
Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: 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.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

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

Test Date: Jan-2018
Hardware Availability: Nov-2017
Software Availability: Sep-2017

General Notes (Continued)

is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, <http://www.spec.org/osg/policy.html>

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS configuration:

Choose Operating Mode set to Maximum Performance
DCU Streamer Prefetcher set to Enable
MONITORMWAIT set to Enable
XPT Prefetcher set to Enable
Stale AtoS set to Enable
LLC Deadline Alloc set to Disable
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-3fwh Sun Jan 7 09:47:21 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) Bronze 3106 CPU @ 1.70GHz
 2 "physical id"s (chips)
16 "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 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
```

From lscpu:

Architecture: x86_64

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

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

Test Date: Jan-2018
Hardware Availability: Nov-2017
Software Availability: Sep-2017

Platform Notes (Continued)

```

CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
CPU(s):              16
On-line CPU(s) list: 0-15
Thread(s) per core:  1
Core(s) per socket:  8
Socket(s):           2
NUMA node(s):        2
Vendor ID:            GenuineIntel
CPU family:           6
Model:                85
Model name:           Intel(R) Xeon(R) Bronze 3106 CPU @ 1.70GHz
Stepping:             4
CPU MHz:              1696.009
BogoMIPS:             3392.01
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:             1024K
L3 cache:             11264K
NUMA node0 CPU(s):   0-7
NUMA node1 CPU(s):   8-15
Flags:                fpu vme de pse tsc msr 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
aperfmpperf eagerfpu 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 arat epb pln pts dtherm intel_pt
tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bml hle avx2 smep bmi2
erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke

```

```

/proc/cpuinfo cache data
cache size : 11264 KB

```

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
node 0 size: 96060 MB
node 0 free: 95614 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 96749 MB
node 1 free: 96389 MB
node distances:
node  0  1
0:  10  21

```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_base = 45.1

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2018

Hardware Availability: Nov-2017

Software Availability: Sep-2017

Platform Notes (Continued)

1: 21 10

From /proc/meminfo

```
MemTotal:      197437652 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

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

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"
```

uname -a:

```
Linux linux-3fwh 4.4.73-5-default #1 SMP Tue Jul 4 15:33:39 UTC 2017 (b7ce4e4) x86_64
x86_64 x86_64 GNU/Linux
```

run-level 3 Jan 7 09:45

SPEC is set to: /home/cpu2017.1.0.2.ic18.0

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2        btrfs    744G   36G  708G   5% /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 -[TEE119J-1.20]- 09/06/2017

Memory:

4x NO DIMM NO DIMM

12x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666, configured at 2133

(End of data from sysinfo program)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2018

Hardware Availability: Nov-2017

Software Availability: Sep-2017

Compiler Version Notes

=====
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
525.x264_r(base, peak) 557.xz_r(base, peak)

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CC 500.perlbench_r(peak) 502.gcc_r(peak)

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CXXC 520.omnetpp_r(base) 523.xalanbmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CXXC 520.omnetpp_r(peak) 523.xalanbmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
FC 548.exchange2_r(base, peak)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Date: Jan-2018

Test Sponsor: Lenovo Global Technology

Hardware Availability: Nov-2017

Tested by: Lenovo Global Technology

Software Availability: Sep-2017

Base Compiler Invocation (Continued)

Fortran benchmarks:

ifort

Base Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

Base Optimization Flags

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
```

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
```

Base Other Flags

C benchmarks:

```
-m64 -std=c11
```

C++ benchmarks:

```
-m64
```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_base = 45.1

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2018

Hardware Availability: Nov-2017

Software Availability: Sep-2017

Base Other Flags (Continued)

Fortran benchmarks:

-m64

Peak Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Peak Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc
```

```
502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc
```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate2017_int_base = 45.1

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Date: Jan-2018

Test Sponsor: Lenovo Global Technology

Hardware Availability: Nov-2017

Tested by: Lenovo Global Technology

Software Availability: Sep-2017

Peak Optimization Flags (Continued)

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

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -fno-alias
-L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc

523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

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

Peak Other Flags

C benchmarks (except as noted below):

-m64 -std=c11

502.gcc_r: -m32 -std=c11

C++ benchmarks (except as noted below):

-m64

523.xalancbmk_r: -m32

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR570
(1.70 GHz, Intel Xeon Bronze 3106)

SPECrate2017_int_base = 45.1

SPECrate2017_int_peak = 45.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2018

Hardware Availability: Nov-2017

Software Availability: Sep-2017

Peak Other Flags (Continued)

Fortran benchmarks:

-m64

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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-A.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-A.xml>

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 v1.0.2 on 2018-01-06 20:47:20-0500.

Report generated on 2018-10-31 16:47:17 by CPU2017 PDF formatter v6067.

Originally published on 2018-03-06.