Lenovo Global Technology
ThinkSystem SR645
2.80 GHz, AMD EPYC 7543

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

Hardware
CPU Name: AMD EPYC 7543
Max MHz: 3700
Nominal: 2800
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1.2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 512 KB I+D on chip per core
L3: 256 MB I+D on chip per chip, 32 MB shared / 4 cores
Other: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: SUSE Linux Enterprise Server 15 SP2 (x86_64)
Kernel: 5.3.18-22-default
Compiler: C/C++/Fortran: Version 3.0.0 of AOCC
Parallel: Yes
Firmware: Lenovo BIOS Version D8E115G 2.02 released Mar-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc; jemalloc memory allocator library v5.1.0
Power Management: BIOS set to prefer performance at the cost of additional power usage

SPEC CPU®2017 Integer Speed Result
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SPECspeed®2017_int_base = 12.7
SPECspeed®2017_int_peak = 12.7

TEST RESULT

Threads
0
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
22.00
24.00
26.00
27.00

600.perlbench_s
64
602.gcc_s
1
605.mcf_s
1
620.omnetpp_s
1
623.xalancbmk_s
64
625.x264_s
1
631.deepsjeng_s
64
641.leela_s
1
648.exchange2_s
1
657.xz_s
64

SPECspeed®2017_int_base (12.7)
SPECspeed®2017_int_peak (12.7)

64
7.23
13.7
8.69
14.4
6.60
8.55
5.85
8.75
23.7
26.4
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2.80 GHz, AMD EPYC 7543

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**SPEC CPU®2017 Integer Speed Result**  
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2.80 GHz, AMD EPYC 7543  
ThinkSystem SR645

---

**SPECspeed®2017_int_base = 12.7**  
**SPECspeed®2017_int_peak = 12.7**

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#### Results Table

<table>
<thead>
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<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>64</td>
<td>245</td>
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<td>648.exchange2_s</td>
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<td>657.xz_s</td>
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<td>233</td>
<td>26.5</td>
<td>234</td>
<td>26.4</td>
<td></td>
</tr>
</tbody>
</table>

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### Compiler Notes


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### Submit Notes

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.  
See the configuration file for details.

---

### Operating System Notes

'ulimit -s unlimited' was used to set environment stack size  
'ulimit -l 2097152' was used to set environment locked pages in memory limit  
runcpu command invoked through numactl i.e.:  
```
numactl --interleave=all runcpu <etc>
```

'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.  
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.  
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.  
'sync; echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.  
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.  
To enable Transparent Hugepages (THP) for all allocations,  
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and

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SPECspeed®2017_int_base = 12.7
SPECspeed®2017_int_peak = 12.7

Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

GOMP_CPU_AFFINITY = "0-127"
LD_LIBRARY_PATH =
   "/home/cpu2017-1.1.5-amd-aocc300-milan-B1/amd_speed_aocc300_milan_B_lib/64;"/home/cpu2017-1.1.5-amd-aocc300-milan-B1/amd_speed_aocc300_milan_B_lib/32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

Environment variables set by runcpu during the 602.gcc_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 625.x264_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 641.leela_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:

GOMP_CPU_AFFINITY = "0-63"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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.

(Continued on next page)
**SPEC CPU®2017 Integer Speed Result**

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ThinkSystem SR645  
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<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 12.7</th>
<th>SPECspeed®2017_int_peak = 12.7</th>
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</table>

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Apr-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Mar-2021

**General Notes (Continued)**

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.

jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)  
jemalloc 5.1.0 is available here:  
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

**Platform Notes**

BIOS configuration:  
Operating Mode set to Maximum Performance and then set it to Custom Mode  
4-Link xGMI Max Speed set to 16Gbps  
SOC P-States set to P0  
NUMA nodes per socket set to NFS2

Sysinfo program /home/cpu2017-1.1.5-amd-aocc300-milan-B1/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d708a2eae93d84b38e2f1c  
running on localhost Tue Apr 27 11:21:04 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 : AMD EPYC 7543 32-Core Processor  
2 "physical id"s (chips)  
128 "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 : 32  
siblings : 64  
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  
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

From lscpu:  
Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
Address sizes: 48 bits physical, 48 bits virtual  
CPU(s): 128  
On-line CPU(s) list: 0-127  
Thread(s) per core: 2  
Core(s) per socket: 32  
Socket(s): 2

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**SPECspeed®2017_int_base = 12.7**  
**SPECspeed®2017_int_peak = 12.7**

<table>
<thead>
<tr>
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</tr>
<tr>
<td>Vendor ID:</td>
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<tr>
<td>CPU family:</td>
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<tr>
<td>Model:</td>
</tr>
<tr>
<td>Model name:</td>
</tr>
<tr>
<td>Stepping:</td>
</tr>
<tr>
<td>CPU MHz:</td>
</tr>
<tr>
<td>CPU max MHz:</td>
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<tr>
<td>CPU min MHz:</td>
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<tr>
<td>BogoMIPS:</td>
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<tr>
<td>Virtualization:</td>
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<tr>
<td>L1d cache:</td>
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<tr>
<td>L1i cache:</td>
</tr>
<tr>
<td>L2 cache:</td>
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<tr>
<td>L3 cache:</td>
</tr>
<tr>
<td>NUMA node0 CPU(s):</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
</tr>
<tr>
<td>NUMA node2 CPU(s):</td>
</tr>
<tr>
<td>NUMA node3 CPU(s):</td>
</tr>
<tr>
<td>Flags:</td>
</tr>
<tr>
<td>/proc/cpuinfo cache data</td>
</tr>
<tr>
<td>cache size:</td>
</tr>
</tbody>
</table>

From numactl --hardware  
WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 4 nodes (0-3)  
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  
node 0 size: 128827 MB  
node 0 free: 128211 MB  
node 1 cpus: 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  
node 1 size: 128968 MB  
node 1 free: 128446 MB  
node 2 cpus: 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  
(Continued on next page)
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SPEC CPU 2017 Integer Speed Result

SPECspeed®2017_int_base = 12.7
SPECspeed®2017_int_peak = 12.7

Platform Notes (Continued)

103 104 105 106 107 108 109 110 111
node 2 size: 129014 MB
node 2 free: 128730 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 112 113 114 115 116 117
118 119 120 121 122 123 124 125 126 127
node 3 size: 129012 MB
node 3 free: 128737 MB
node distances:
node 0 1 2 3
0: 10 12 32 32
1: 12 10 32 32
2: 32 32 10 12
3: 32 32 12 10

From /proc/meminfo
MemTotal:       528204108 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

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

os-release:
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) 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):
Not affected
CVE-2018-3639 (Speculative Store Bypass):
Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):
Mitigation: usercopy/swapgs

(Continued on next page)
Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2):

barriers and __user pointer sanitization
Mitigation: Full AMD retpoline,
IBPB: conditional, IBRS_FW, STIBP:
always-on, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Apr 27 11:19

SPEC is set to: /home/cpu2017-1.1.5-amd-aocc300-milan-B1
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb3 xfs 889G 92G 797G 11% /

From /sys/devices/virtual/dmi/id
Vendor: Lenovo
Product: ThinkSystem SR645 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:
16x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200
16x Unknown Unknown

BIOS:
BIOS Vendor: Lenovo
BIOS Version: D8E115G-2.02
BIOS Date: 03/25/2021
BIOS Revision: 2.2
Firmware Revision: 3.1

(End of data from sysinfo program)

Compiler Version Notes

******************************************************************************
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
******************************************************************************

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu

(Continued on next page)
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SPECspeed®2017_int_base = 12.7
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Tested by: Lenovo Global Technology
Test Date: Apr-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021

Compiler Version Notes (Continued)

Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)
     | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Fortran | 648.exchange2_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64

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**SPECspeed®2017_int_base = 12.7**

**SPECspeed®2017_int_peak = 12.7**

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**Base Portability Flags (Continued)**

<table>
<thead>
<tr>
<th>Base Portability Flags</th>
<th>Details</th>
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<tbody>
<tr>
<td>625.x264_s: -DSPEC_LP64</td>
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<tr>
<td>631.deepsjeng_s: -DSPEC_LP64</td>
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</tr>
<tr>
<td>648.exchange2_s: -DSPEC_LP64</td>
<td></td>
</tr>
<tr>
<td>657.xz_s: -DSPEC_LP64</td>
<td></td>
</tr>
</tbody>
</table>

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**Base Optimization Flags**

**C benchmarks:**
- -m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
- -Wl,-mlvm -Wl,-enable-licm-vrp -Wl,-mlvm -Wl,-region-vectorize
- -Wl,-mlvm -Wl,-function-specialize
- -Wl,-mlvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mlvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- -fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- -mlvm -unroll-threshold=50 -mlvm -inline-threshold=1000
- -fremap-arrays -mlvm -function-specialize -flv-function-specialization
- -mlvm -enable-gvn-hoist -mlvm -global-vectorize-slp=true
- -mlvm -enable-licm-vrp -mlvm -reduce-array-computations=3 -z muldefs
- -DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
- -lflang -lflangrti

**C++ benchmarks:**
- -m64 -std=c++98 -mno-adx -mno-sse4a
- -Wl,-mlvm -Wl,-do-block-reorder=aggressive
- -Wl,-mlvm -Wl,-region-vectorize -Wl,-mlvm -Wl,-function-specialize
- -Wl,-mlvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mlvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- -fveclib=AMDLIBM -ffast-math -flto -mlvm -enable-partial-unswitch
- -mlvm -unroll-threshold=100 -finline-aggressive
- -flv-function-specialization -mlvm -loop-unswitch-threshold=200000
- -mlvm -rerol-loops -mlvm -aggressive-loop-unswitch
- -mlvm -extra-vectorizer-passes -mlvm -reduce-array-computations=3
- -mlvm -global-vectorize-slp=true -mlvm -convert-pow-exp-to-int=false
- -z muldefs -mlvm -do-block-reorder=aggressive
- -fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
- -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
- -lflang -lflangrti

**Fortran benchmarks:**
- -m64 -mno-adx -mno-sse4a -Wl,-mlvm -Wl,-inline-recursion=4
- -Wl,-mlvm -Wl,-isr-in-nested-loop -Wl,-mlvm -Wl,-enable-iv-split
- -Wl,-mlvm -Wl,-region-vectorize -Wl,-mlvm -Wl,-function-specialize
- -Wl,-mlvm -Wl,-align-all-nofallthru-blocks=6

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(Continued on next page)
Lenovo Global Technology
ThinkSystem SR645
2.80 GHz, AMD EPYC 7543

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

SPECspeed®2017_int_base = 12.7
SPECspeed®2017_int_peak = 12.7

Test Date: Apr-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-ffast-math -flto -z muldefs
-mlibm -unroll-aggressive -mlibm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
-lflangrti

Base Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

C++ benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

(Continued on next page)
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Peak Optimization Flags (Continued)

600.perlbench_s: basepeak = yes

602.gcc_s: -m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-Wl,-ml słow -Wl,-enable-licm-vrp
-Wl,-ml słow -Wl,-function-specialize
-Wl,-ml słow -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml słow -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -ml słow -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-ml słow -inline-threshold=1000 -ml słow -enable-gvn-hoist
-ml słow -global-vectorize-slp=true
-ml słow -function-specialize -ml słow -enable-licm-vrp
-ml słow -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

605.mcf_s: Same as 602.gcc_s
625.x264_s: Same as 602.gcc_s
657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: -m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-ml słow -Wl,-do-block-reorder=aggressive
-Wl,-ml słow -Wl,-function-specialize
-Wl,-ml słow -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml słow -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-finline-aggressive -ml słow -unroll-threshold=100
-flv-function-specialization -ml słow -enable-licm-vrp
-ml słow -reorder-loops -ml słow -aggressive-loop-unswitch
-ml słow -reduce-array-computations=3
-ml słow -global-vectorize-slp=true
-ml słow -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

623.xalancbmk_s: basepeak = yes
631.deepsjeng_s: basepeak = yes
641.leela_s: Same as 620.omnetpp_s
Lenovo Global Technology
ThinkSystem SR645
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SPECspeed®2017_int_base = 12.7
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Test Date: Apr-2021
Hardware Availability: Mar-2021
Test Sponsor: Lenovo Global Technology
Software Availability: Mar-2021
Tested by: Lenovo Global Technology

Peak Optimization Flags (Continued)

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mlirvm -Wl,-inline-recursion=4
-Wl,-mlirvm -Wl,-lsr-in-nested-loop -Wl,-mlirvm -Wl,-enable-iv-split
-Wl,-mlirvm -Wl,-function-specialize
-Wl,-mlirvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -mlirvm -unroll-aggressive
-mlirvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp-libomp
-lomp -lamdlibm -ljemalloc -lflang

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

C++ benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-return-type

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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Milan-E.xml

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Tested with SPEC CPU®2017 v1.1.5 on 2021-04-26 23:21:03-0400.