### Lenovo Global Technology

ThinkSystem SR665  
2.75 GHz, AMD EPYC 7453

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 11.2</th>
<th>SPECspeed®2017_int_peak = 11.3</th>
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CPU2017 License: 9017  
Test Sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology  
Test Date: Apr-2021  
Hardware Availability: Apr-2021  
Software Availability: Mar-2021

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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<th>SPECspeed®2017_int_peak</th>
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<td>600.perlbench_s</td>
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<tr>
<td>605.mcf_s</td>
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<tr>
<td>620.omnetpp_s</td>
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<tr>
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<td>56</td>
<td>13.3</td>
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<td>625.x264_s</td>
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<tr>
<td>648.exchange2_s</td>
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</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
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</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 7453
- **Max MHz:** 3450
- **Nominal:** 2750
- **Enabled:** 56 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:** 64 MB I+D on chip per chip, 16 MB shared / 7 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:** Red Hat Enterprise Linux 8.3 (Ootpa)
- **Kernel:** 4.18.0-240.el8.x86_64
- **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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**Lenovo Global Technology**

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**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Apr-2021

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**Software Availability:** Mar-2021

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### Results Table

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<th>Seconds</th>
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<th>Seconds</th>
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<td>107</td>
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<tr>
<td>625.x264_s</td>
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<td>269</td>
<td>23.0</td>
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<td>22.8</td>
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</table>

**SPECspeed®2017_int_base = 11.2**

**SPECspeed®2017_int_peak = 11.3**

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### Compiler Notes

The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/

---

### 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 numacl t i.e.:

```bash
c numacl --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...

(Continued on next page)
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ThinkSystem SR665
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**Running 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 = "0-111"
- 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 = "112"

Environment variables set by runcpu during the 600.perlbench_s peak run:

- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_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 = "0-55"

**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.

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.
SPEC CPU®2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR665
2.75 GHz, AMD EPYC 7453

SPECSpeed®2017_int_base = 11.2
SPECSpeed®2017_int_peak = 11.3

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

General Notes (Continued)

ejemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
ejemalloc 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 NPS2

.Sysinfo program /home/cpu2017-1.1.5-amd-aocc300-milan-B1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Wed Apr 28 20:30:41 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 7453 28-Core Processor
 2 "physical id"s (chips)
 112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
 28 29 30

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 112
On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 4
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1

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Lenovo Global Technology
ThinkSystem SR665
2.75 GHz, AMD EPYC 7453

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

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.3

Platform Notes (Continued)

Model name: AMD EPYC 7453 28-Core Processor
Stepping: 1
CPU MHz: 2226.004
CPU max MHz: 2750.0000
CPU min MHz: 1500.0000
BogoMIPS: 5489.57
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-13,56-69
NUMA node1 CPU(s): 14-27,70-83
NUMA node2 CPU(s): 28-41,84-97
NUMA node3 CPU(s): 42-55,98-111
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
constant_tsc rep_good nop1 nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq
monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes avx f16c rdrand
lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw
ibs skinit wdt tce topoext perfctr_core perfctr_nb bext perfctr_llc mwaitx cpb
cat_l3 cdvpcl_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibpb stibp vmmcall
fsqGate base bmi1 avx2 smep bmi2 erms invpcid qcm rdt_a rdseed adx smap clflushopt clwb
sha ni xsaveopt xsave xgetbv xlsvcs qcm_llc qcm_occu1 llc qcm_mbb_total
qcm_mbb_local clzero lrpfr xsaveerrpr wbenoinvd amd_pání arat npt lbv svm_lock
nrnp_save tsc_scale vmcb_clean flushbyasi decodeassist pfthreshold pffnlimit
v_vmsave_vmload vgif umip pku ospke vaes vpcmulqdq rdrid overflw_recov succor smca

/proc/cpuinfo cache data
  cache size : 512 KB

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 70 71 72
   node 0 size: 128616 MB
   node 0 free: 128329 MB
   node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 70 71 72 73 74 75 76 77 78 79 80
   node 1 size: 128709 MB
   node 1 free: 128459 MB
   node 2 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 84 85 86 87 88 89 90 91 92 93 94
   node 2 size: 128881 MB
   node 2 free: 128765 MB
   node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 98 99 100 101 102 103 104 105
   node 3 size: 106 107 108 109 110 111

(Continued on next page)
Platform Notes (Continued)

node 3 size: 128860 MB
node 3 free: 128699 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:       528208280 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

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

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.3 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
  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): Not affected
  CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp

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## Lenovo Global Technology

### ThinkSystem SR665

2.75 GHz, AMD EPYC 7453

---

### SPEC CPU 2017 Integer Speed Result

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<thead>
<tr>
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<th>Test Date</th>
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---

### SPECspeed® 2017 Int Base = 11.2

### SPECspeed® 2017 Int Peak = 11.3

---

### Platform Notes (Continued)

- **CVE-2017-5753 (Spectre variant 1):**
  - Mitigation: usercopy/swapgs barriers and __user pointer sanitization

- **CVE-2017-5715 (Spectre variant 2):**
  - 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

---

### 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) |

---

### Additional Information from dmidecode follows.

**Vendor:** Lenovo

**Product:** ThinkSystem SR665 MB

**Product Family:** ThinkSystem

**Serial:** 1234567890

---

**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)
Lenovo Global Technology
ThinkSystem SR665
2.75 GHz, AMD EPYC 7453

SPEC CPU®2017 Integer Speed Result
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Hardware Availability: Apr-2021
Software Availability: Mar-2021

Compiler Version Notes (Continued)

Target: x86_64-unknown-linux-gnu
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

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SPECspeed®2017_int_base = 11.2
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Base Portability Flags (Continued)

623.xalanbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leea_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-Wl,-mlvm -Wl,-enable-licm-vrp -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -f3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -function-specialize -flv-function-specialization
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -enable-lcm-vrp -mlllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-llflang -lflangrti

C++ benchmarks:
-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mlllvm -Wl,-do-block-reorder=aggressive
-Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -f3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -mlllvm -enable-partial-unswitch
-mlllvm -unroll-threshold=100 -finline-aggressive
-flv-function-specialization -mlllvm -loop-unswitch-threshold=200000
-mlllvm -reroll-loops -mlllvm -aggressive-loop-unswitch
-mlllvm -extra-vectorizer-passes -mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp=true -mlllvm -convert-pow-exp-to-int=false
-z muldefs -mlllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -llflang
-llflangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-inline-recursion=4
-Wl,-mlllvm -Wl,-lsr-in-nested-loop -Wl,-mlllvm -Wl,-enable-iv-split
-Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-function-specialize

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR665
2.75 GHz, AMD EPYC 7453

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.3

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

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

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Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-WL,-mllvm -Wl,-align-all-nofallthru-blocks=6
-WL,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -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
Lenovo Global Technology
ThinkSystem SR665
2.75 GHz, AMD EPYC 7453

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.3

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

Peak Optimization Flags

C benchmarks:

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

602.gcc_s: Same as 600.perlbench_s
605.mcf_s: basepeak = yes
625.x264_s: Same as 600.perlbench_s
657.xz_s: Same as 600.perlbench_s

C++ benchmarks:

620.omnetpp_s: basepeak = yes
623.xalancbmk_s: basepeak = yes
631.deepsjeng_s: basepeak = yes

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

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**Lenovo Global Technology**

**ThinkSystem SR665**  
2.75 GHz, AMD EPYC 7453

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<table>
<thead>
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<th>SPECspeed®2017_int_base = 11.2</th>
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</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak = 11.3</td>
</tr>
</tbody>
</table>

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**Peak Optimization Flags (Continued)**

641.leela_s (continued):
- -ljemalloc -lflang

Fortran benchmarks:
- -m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-inline-recursion=4
- -Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
- -Wl,-mllvm -Wl,-function-specialize
- -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- -Wl,-mllvm -Wl,-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-aggressive
- -mllvm -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

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


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Tested with SPEC CPU®2017 v1.1.5 on 2021-04-28 08:30:40-0400.