SPEC CPU®2017 Integer Speed Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECspeed®2017_int_base = 14.0

ThinkSystem SR665 V3
(2.25 GHz,AMD EPYC 9634)

SPECspeed®2017_int_peak = 14.1

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Threads

Benchmark	Threads	Value
600.perlbench_s	168	8.38
602.gcc_s	168	14.3
605.mcf_s	168	20.2
605.mcf_s	1	21.0
620.omnetpp_s	168	10.4
623.xalancbmk_s	168	19.0
623.xalancbmk_s	1	20.4
625.x264_s	168	21.3
631.deepsjeng_s	168	6.99
641.leela_s	168	5.84
648.exchange2_s	168	25.9
657.xz_s	168	26.1
657.xz_s		26.2

SPECspeed®2017_int_base (14.0)
SPECspeed®2017_int_peak (14.1)

Hardware

CPU Name: AMD EPYC 9634
 Max MHz: 3700
 Nominal: 2250
Enabled: 168 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: 384 MB I+D on chip per chip,
 32 MB shared / 7 cores
Other: None
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 480 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86_64)
 Kernel 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: Yes
Firmware: Lenovo BIOS Version KAE105L 1.20 released Dec-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

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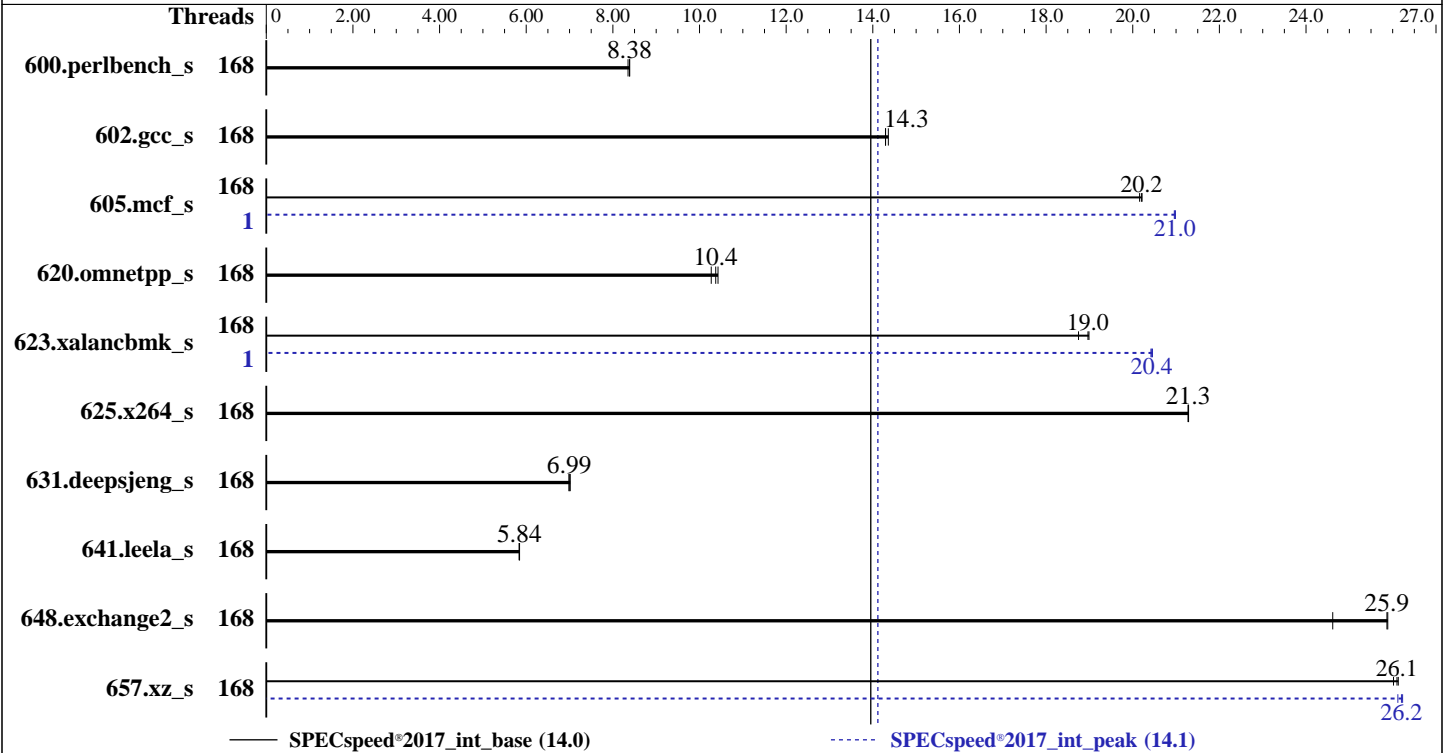**Test Sponsor:** Lenovo Global Technology
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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	168	212	8.39	213	8.35	**212**	**8.38**	168	212	8.39	213	8.35	**212**	**8.38**
602.gcc_s	168	277	14.4	**279**	**14.3**	279	14.3	168	277	14.4	**279**	**14.3**	279	14.3
605.mcf_s	168	**234**	**20.2**	234	20.2	234	20.2	1	**225**	**21.0**	225	21.0	225	21.0
620.omnetpp_s	168	**157**	**10.4**	159	10.3	156	10.4	168	**157**	**10.4**	159	10.3	156	10.4
623.xalancbmk_s	168	**74.7**	**19.0**	74.6	19.0	75.6	18.7	1	69.3	20.5	**69.3**	**20.4**	69.4	20.4
625.x264_s	168	**82.9**	**21.3**	82.9	21.3	82.9	21.3	168	**82.9**	**21.3**	82.9	21.3	82.9	21.3
631.deepsjeng_s	168	205	6.99	**205**	**6.99**	204	7.02	168	205	6.99	**205**	**6.99**	204	7.02
641.leela_s	168	292	5.84	**292**	**5.84**	292	5.85	168	292	5.84	**292**	**5.84**	292	5.85
648.exchange2_s	168	114	25.9	**114**	**25.9**	119	24.6	168	114	25.9	**114**	**25.9**	119	24.6
657.xz_s	168	**237**	**26.1**	238	26.0	237	26.1	168	237	26.1	236	26.2	**236**	**26.2**
SPECspeed®2017_int_base =		**14.0**												
SPECspeed®2017_int_peak =		**14.1**												

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

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 limit
'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>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.
```

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Operating System Notes (Continued)

```
To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'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 = "0-167"
LD_LIBRARY_PATH =
     "/home/cpu2017-1.1.8-amd-aocc400-genoa-B1b/amd_speed_aocc400_genoa_B_lib
     /lib:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOC_CONF = "oversize_threshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "168"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-167"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "8"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

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.
```

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Platform Notes

```
BIOS configuration:
Operating Mode set to Maximum Performance and then set it to Custom Mode
NUMA Nodes per Socket set to NPS4
SMT Mode set to Disabled

 Sysinfo program /home/cpu2017-1.1.8-amd-aocc400-genoa-B1b/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on localhost Tue Jan  3 07:26:05 2023

 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 9634 84-Core Processor
       2  "physical id"s (chips)
       168 "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 : 84
       siblings  : 84
       physical 0: cores 0 1 2 3 4 5 6 19 20 21 22 35 36 37 38 48 49 50 51 52 53 54 64 65
       66 67 68 69 70 83 84 85 86 96 97 98 99 100 101 102 112 113 114 115 116 117 118 128
       129 130 131 132 133 134 144 145 146 147 148 149 150 160 161 162 163 164 165 166 176
       177 178 179 180 181 182
       physical 1: cores 0 1 2 3 4 5 6 19 20 21 22 35 36 37 38 48 49 50 51 52 53 54 64 65
       66 67 68 69 70 83 84 85 86 96 97 98 99 100 101 102 112 113 114 115 116 117 118 128
       129 130 131 132 133 134 144 145 146 147 148 149 150 160 161 162 163 164 165 166 176
       177 178 179 180 181 182

 From lscpu from util-linux 2.37.2:
       Architecture:            x86_64
       CPU op-mode(s):          32-bit, 64-bit
       Address sizes:           52 bits physical, 57 bits virtual
       Byte Order:              Little Endian
       CPU(s):                  168
       On-line CPU(s) list:     0-167
       Vendor ID:               AuthenticAMD
       Model name:              AMD EPYC 9634 84-Core Processor
       CPU family:              25
       Model:                   17
       Thread(s) per core:      1
       Core(s) per socket:      84
       Socket(s):               2
       Stepping:                1
       Frequency boost:         enabled
       CPU max MHz:             3700.1951
```

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Platform Notes (Continued)

```
        CPU min MHz:                    1500.0000
        BogoMIPS:                       4493.09
        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 nopl nonstop_tsc cpuid extd_apicid
        aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe
        popcnt aes xsave 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
        bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs
        ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
        avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw
        avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
        cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt
        lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
        pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku ospke
        avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57
        rdpid overflow_recov succor smca fsrm flush_l1d
        Virtualization:                 AMD-V
        L1d cache:                      5.3 MiB (168 instances)
        L1i cache:                      5.3 MiB (168 instances)
        L2 cache:                       168 MiB (168 instances)
        L3 cache:                       768 MiB (24 instances)
        NUMA node(s):                   8
        NUMA node0 CPU(s):              0-20
        NUMA node1 CPU(s):              21-41
        NUMA node2 CPU(s):              42-62
        NUMA node3 CPU(s):              63-83
        NUMA node4 CPU(s):              84-104
        NUMA node5 CPU(s):              105-125
        NUMA node6 CPU(s):              126-146
        NUMA node7 CPU(s):              147-167
        Vulnerability Itlb multihit:    Not affected
        Vulnerability L1tf:             Not affected
        Vulnerability Mds:              Not affected
        Vulnerability Meltdown:         Not affected
        Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
        prctl and seccomp
        Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user
        pointer sanitization
        Vulnerability Spectre v2:        Mitigation; Retpolines, IBPB conditional, IBRS_FW,
        STIBP disabled, RSB filling
        Vulnerability Srbds:            Not affected
        Vulnerability Tsx async abort:  Not affected

  From lscpu --cache:
        NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
        L1d     32K      5.3M    8 Data           1     64      1               64
```

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Platform Notes (Continued)

```
     L1i       32K       5.3M      8 Instruction     1    64       1              64
     L2         1M       168M      8 Unified         2  2048       1              64
     L3        32M       768M     16 Unified         3 32768       1              64

 /proc/cpuinfo cache data
   cache size : 1024 KB


 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
   node 0 size: 96502 MB
   node 0 free: 95097 MB
   node 1 cpus: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
   node 1 size: 96752 MB
   node 1 free: 96418 MB
   node 2 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62
   node 2 size: 96752 MB
   node 2 free: 96509 MB
   node 3 cpus: 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
   node 3 size: 96752 MB
   node 3 free: 96522 MB
   node 4 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104
   node 4 size: 96752 MB
   node 4 free: 96504 MB
   node 5 cpus: 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122
   123 124 125
   node 5 size: 96752 MB
   node 5 free: 96540 MB
   node 6 cpus: 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143
   144 145 146
   node 6 size: 96752 MB
   node 6 free: 96310 MB
   node 7 cpus: 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164
   165 166 167
   node 7 size: 96515 MB
   node 7 free: 96271 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  12  12  12  32  32  32  32
     1:  12  10  12  12  32  32  32  32
     2:  12  12  10  12  32  32  32  32
     3:  12  12  12  10  32  32  32  32
     4:  32  32  32  32  10  12  12  12
     5:  32  32  32  32  12  10  12  12
     6:  32  32  32  32  12  12  10  12
     7:  32  32  32  32  12  12  12  10
```

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Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:        792095080 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-SP4"
       VERSION_ID="15.4"
       PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"
       ID="sles"
       ID_LIKE="suse"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:15:sp4"

uname -a:
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18
   UTC 2022 (49db222) 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
                                                 barriers and __user pointer
                                                 sanitization
CVE-2017-5715 (Spectre variant 2):               Mitigation: Retpolines, IBPB:
                                                 conditional, IBRS_FW, STIBP:
                                                 disabled, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort):         Not affected

run-level 3 Jan 3 07:23

SPEC is set to: /home/cpu2017-1.1.8-amd-aocc400-genoa-B1b
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       xfs   446G   32G  415G   7% /
```

(Continued on next page)

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Platform Notes (Continued)

```
 From /sys/devices/virtual/dmi/id
     Vendor:          Lenovo
     Product:         ThinkSystem SR665 V3 MB,Genoa,Kauai,DDR5,Kauai,2U
     Product Family:  ThinkSystem
     Serial:          1234567890

 Additional information from dmidecode 3.2 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:
     5x SK Hynix HMCG88AEBRA115N 32 GB 2 rank 4800
     19x SK Hynix HMCG88AEBRA168N 32 GB 2 rank 4800

 BIOS:
    BIOS Vendor:       Lenovo
    BIOS Version:      KAE105L-1.20
    BIOS Date:         12/29/2022
    BIOS Revision:     1.20
    Firmware Revision: 1.20

 (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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
```

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Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------

==========================================================================
Fortran | 648.exchange2_s(base, peak)
--------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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`
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:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
```

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Tested by:	Lenovo Global Technology	**Software Availability:**	Nov-2022

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-Wl,-allow-multiple-definition -O3 -march=znver4 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lflang
-lamdalloc
```

C++ benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc-ext
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver4 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -mllvm -optimize-strided-mem-cost
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc
```

Base Other Flags

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

C++ benchmarks:
```
-Wno-unused-command-line-argument
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

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Lenovo Global Technology

ThinkSystem SR665 V3
(2.25 GHz,AMD EPYC 9634)

SPECspeed®2017_int_base = 14.0

SPECspeed®2017_int_peak = 14.1

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Peak Compiler Invocation (Continued)

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

 600.perlbench_s: basepeak = yes

 602.gcc_s: basepeak = yes

 605.mcf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-allow-multiple-definition -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-fstruct-layout=9 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

 625.x264_s: basepeak = yes

 657.xz_s: Same as 605.mcf_s

C++ benchmarks:

 620.omnetpp_s: basepeak = yes

 623.xalancbmk_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp

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Peak Optimization Flags (Continued)

623.xalancbmk_s (continued):
```
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang
```

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

Peak Other Flags

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

C++ benchmarks:
```
-Wno-unused-command-line-argument
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Genoa-P.html
http://www.spec.org/cpu2017/flags/aocc400-flags.html

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-Genoa-P.xml
http://www.spec.org/cpu2017/flags/aocc400-flags.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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