



# SPEC CPU®2017 Integer Speed Result

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## Lenovo Global Technology

### ThinkSystem SR665 V3

#### 4.10 GHz, AMD EPYC 9174F

SPECspeed®2017\_int\_base = 15.8

SPECspeed®2017\_int\_energy\_base = 86.0

SPECspeed®2017\_int\_peak = 16.1

SPECspeed®2017\_int\_energy\_peak = 87.4

CPU2017 License: 9017

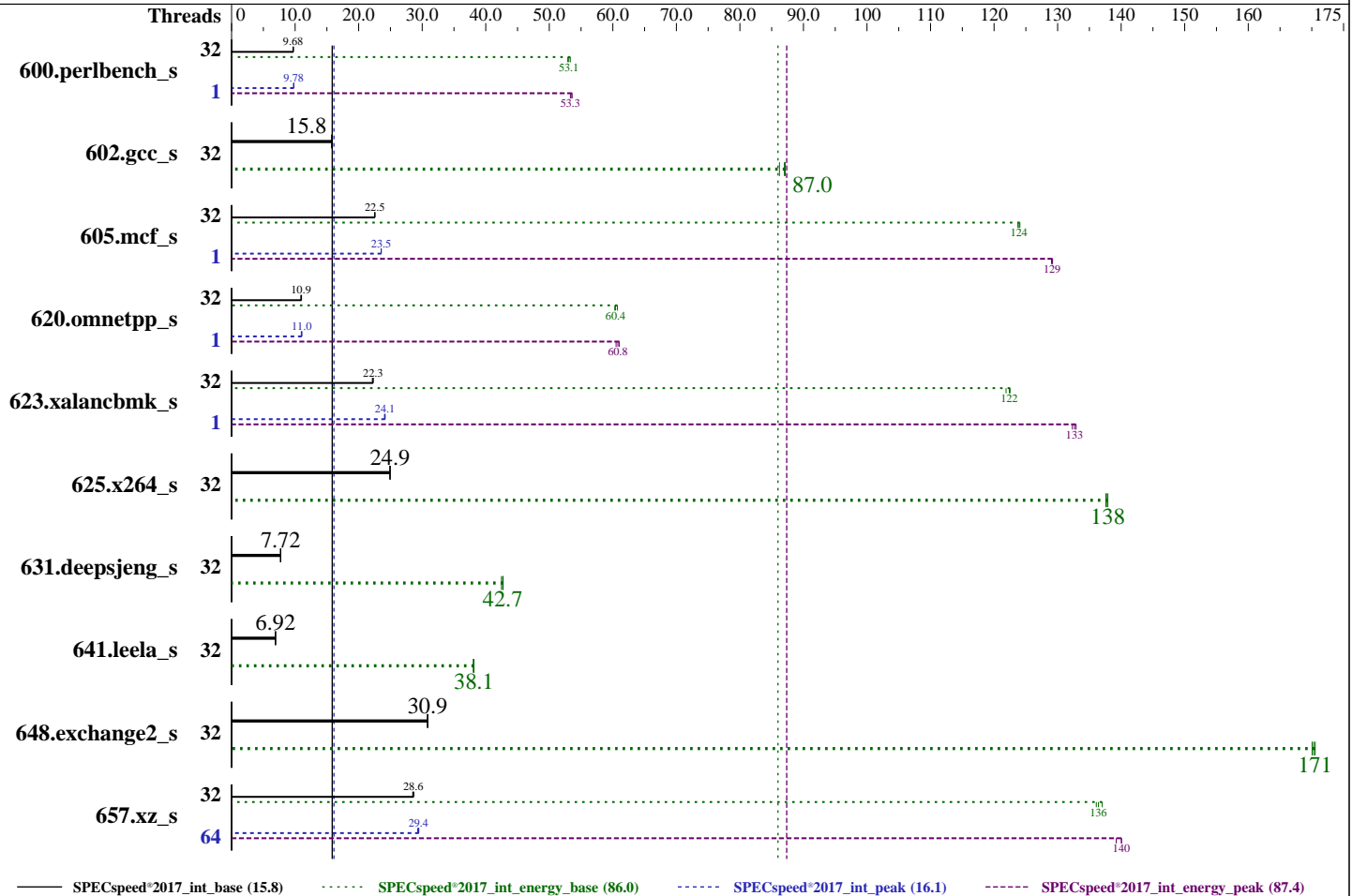
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Nov-2022



### Hardware

CPU Name: AMD EPYC 9174F  
 Max MHz: 4400  
 Nominal: 4100  
 Enabled: 32 cores, 2 chips, 2 threads/core  
 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: 256 MB I+D on chip per chip,  
 32 MB shared / 2 cores  
 Other: None  
 Memory: 384 GB (24 x 16 GB 1Rx8 PC5-4800B-R,  
 running at 3600)  
 Storage: 1 x 480 GB SATA SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux 9.0 (Plow)  
 Kernel 5.14.0-70.13.1.el9\_0.x86\_64  
 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 balance power and performance



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### Power

Max. Power (W): 422.41  
Idle Power (W): 94.9  
Min. Temperature (C): 22.06  
Elevation (m): 43  
Line Standard: 220 V / 50 Hz / 1 phase / 3 wires  
Provisioning: Line-powered

### Power Settings

Management FW: Version 1.20 of KAX307N  
Memory Mode: Normal

### Power-Relevant Hardware

Power Supply: 1 x 750 W (non-redundant)  
Details: ThinkSystem 750W Titanium Power Supply 4P57A82019  
Backplane: 8 x 2.5-inch HDD back plane  
Other Storage: None  
Storage Model #: 4XB7A17101  
NICs Installed: 1 x ThinkSystem Ethernet 4-port Adaptor @ 1 Gb  
NICs Enabled (FW/OS): 4 / 1  
NICs Connected/Speed: 1 @ 1 Gb  
Other HW Model #: 6 x Performance fans

### Power Analyzer

Power Analyzer: WIN:9888  
Hardware Vendor: YOKOGAWA, Inc.  
Model: YokogawaWT310E  
Serial Number: C3UD17024E  
Input Connection: Default  
Metrology Institute: CNAS  
Calibration By: GRG METROLOGY & TEST (BEIJING) CO., LTD.  
Calibration Label: J202210116758A-0003  
Calibration Date: 19-Oct-2022  
PTDaemon® Version: 1.9.2 (3976349f; 2020-12-08)  
Setup Description: Connected to PSU1  
Current Ranges Used: 2.5A  
Voltage Range Used: 300V

### Temperature Meter

Temperature Meter: WIN:9889  
Hardware Vendor: Digi International, Inc.  
Model: DigiWATCHPORT\_H  
Serial Number: W62330940  
Input Connection: USB  
PTDaemon Version: 1.9.2 (3976349f; 2020-12-08)  
Setup Description: 50 mm in front of SUT main intake

## Base Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
600.perlbench_s	32	182	9.74	36.1	53.3	198	199	<b>183</b>	<b>9.68</b>	<b>36.3</b>	<b>53.1</b>	<b>198</b>	<b>200</b>	184	9.66	36.4	52.9	198	199
602.gcc_s	32	253	15.7	50.2	86.2	198	201	<b>251</b>	<b>15.8</b>	<b>49.8</b>	<b>87.0</b>	<b>198</b>	<b>201</b>	251	15.9	49.7	87.1	198	201
605.mcf_s	32	<b>209</b>	<b>22.5</b>	<b>41.6</b>	<b>124</b>	<b>199</b>	<b>201</b>	209	22.6	41.5	124	198	200	210	22.5	41.6	124	198	200
620.omnetpp_s	32	149	10.9	29.4	60.3	197	198	148	11.0	29.2	60.7	197	199	<b>149</b>	<b>10.9</b>	<b>29.4</b>	<b>60.4</b>	<b>197</b>	<b>198</b>
623.xalancbmk_s	32	63.6	22.3	12.6	123	198	201	<b>63.6</b>	<b>22.3</b>	<b>12.6</b>	<b>122</b>	<b>198</b>	<b>201</b>	64.0	22.2	12.6	122	197	201
625.x264_s	32	<b>70.7</b>	<b>24.9</b>	<b>13.9</b>	<b>138</b>	<b>197</b>	<b>199</b>	70.8	24.9	13.9	138	197	199	70.7	25.0	13.9	138	197	199
631.deepsjeng_s	32	<b>186</b>	<b>7.72</b>	<b>36.5</b>	<b>42.7</b>	<b>197</b>	<b>198</b>	185	7.74	36.4	42.7	197	199	186	7.69	36.7	42.5	197	198
641.leela_s	32	246	6.92	48.4	38.1	197	198	247	6.90	48.6	38.0	197	197	<b>247</b>	<b>6.92</b>	<b>48.4</b>	<b>38.1</b>	<b>196</b>	<b>198</b>
648.exchange2_s	32	<b>95.3</b>	<b>30.9</b>	<b>18.8</b>	<b>171</b>	<b>197</b>	<b>200</b>	95.3	30.9	18.8	170	197	199	95.4	30.8	18.8	170	197	200
657.xz_s	32	<b>216</b>	<b>28.6</b>	<b>49.3</b>	<b>136</b>	<b>228</b>	<b>355</b>	217	28.5	49.5	136	228	356	216	28.7	49.1	137	228	363

SPECspeed®2017\_int\_base = 15.8

SPECspeed®2017\_int\_energy\_base = 86.0

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



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### Peak Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
600.perlbench_s	1	<b>181</b>	<b>9.78</b>	<b>36.1</b>	<b>53.3</b>	<b>199</b>	<b>200</b>	181	9.80	35.9	53.6	198	200	182	9.77	36.0	53.4	198	200
602.gcc_s	32	253	15.7	50.2	86.2	198	201	<b>251</b>	<b>15.8</b>	<b>49.8</b>	<b>87.0</b>	<b>198</b>	<b>201</b>	251	15.9	49.7	87.1	198	201
605.mcf_s	1	201	23.5	39.9	129	199	202	200	23.6	39.9	129	199	202	<b>201</b>	<b>23.5</b>	<b>39.9</b>	<b>129</b>	<b>199</b>	<b>202</b>
620.omnetpp_s	1	149	11.0	29.3	60.5	197	199	<b>148</b>	<b>11.0</b>	<b>29.2</b>	<b>60.8</b>	<b>198</b>	<b>199</b>	148	11.0	29.1	61.0	197	199
623.xalancbmk_s	1	58.9	24.1	11.6	132	197	201	<b>58.7</b>	<b>24.1</b>	<b>11.6</b>	<b>133</b>	<b>198</b>	<b>201</b>	58.6	24.2	11.6	133	197	201
625.x264_s	32	<b>70.7</b>	<b>24.9</b>	<b>13.9</b>	<b>138</b>	<b>197</b>	<b>199</b>	70.8	24.9	13.9	138	197	199	70.7	25.0	13.9	138	197	199
631.deepsjeng_s	32	<b>186</b>	<b>7.72</b>	<b>36.5</b>	<b>42.7</b>	<b>197</b>	<b>198</b>	185	7.74	36.4	42.7	197	199	186	7.69	36.7	42.5	197	198
641.leela_s	32	246	6.92	48.4	38.1	197	198	247	6.90	48.6	38.0	197	197	<b>247</b>	<b>6.92</b>	<b>48.4</b>	<b>38.1</b>	<b>196</b>	<b>198</b>
648.exchange2_s	32	<b>95.3</b>	<b>30.9</b>	<b>18.8</b>	<b>171</b>	<b>197</b>	<b>200</b>	95.3	30.9	18.8	170	197	199	95.4	30.8	18.8	170	197	200
657.xz_s	64	211	29.3	48.4	139	229	420	<b>210</b>	<b>29.4</b>	<b>48.1</b>	<b>140</b>	<b>229</b>	<b>422</b>	210	29.5	48.1	140	229	418

SPECSpeed®2017\_int\_peak = 16.1

SPECSpeed®2017\_int\_energy\_peak = 87.4

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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 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.

To enable Transparent Hugepages (THP) for all allocations,

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## Operating System Notes (Continued)

```
'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 = "0-63"  
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 = "64"  
  
Environment variables set by runcpu during the 600.perlbench_s peak run:  
GOMP_CPU_AFFINITY = "15"  
  
Environment variables set by runcpu during the 605.mcf_s peak run:  
GOMP_CPU_AFFINITY = "15"  
  
Environment variables set by runcpu during the 620.omnetpp_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 = "0-63"  
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.

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## 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.

## Platform Notes

BIOS configuration:

Operating Mode set to Maximum Performance and then set it to Custom Mode  
NUMA Nodes per Socket set to NPS4  
Determinism Slider set to Performance  
DRAM Scrub Time set to Disabled  
ACPI SRAT L3 Cache as NUMA Domain set to Enabled  
4-Link xGMI Max Speed set to Minimum  
xGMI Maximum Link Width set to 0  
Memory Speed set to 3600MHz  
DF P-States set to P3

Sysinfo program /home/cpu2017-1.1.8-amd-aocc400-genoa-Blb/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
running on localhost.localdomain Mon Jan 9 16:24:20 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 9174F 16-Core Processor
 2 "physical id"s (chips)
 64 "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 : 16
siblings  : 32
physical 0: cores 0 1 16 17 24 25 32 33 40 41 48 49 56 57
physical 1: cores 0 1 16 17 24 25 32 33 40 41 48 49 56 57
```

From lscpu from util-linux 2.37.4:

```
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): 64
On-line CPU(s) list: 0-63
Vendor ID: AuthenticAMD
```

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## Platform Notes (Continued)

```

BIOS Vendor ID:          Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9174F 16-Core Processor
BIOS Model name:       AMD EPYC 9174F 16-Core Processor
CPU family:            25
Model:                 17
Thread(s) per core:   2
Core(s) per socket:   16
Socket(s):             2
Stepping:              1
Frequency boost:      enabled
CPU max MHz:          4408.2998
CPU min MHz:          1500.0000
BogoMIPS:              8187.57
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
aperfmpperf 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
avx512v1 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_lld
Virtualization:       AMD-V
L1d cache:            1 MiB (32 instances)
L1i cache:            1 MiB (32 instances)
L2 cache:              32 MiB (32 instances)
L3 cache:              512 MiB (16 instances)
NUMA node(s):         16
NUMA node0 CPU(s):   0,1,32,33
NUMA node1 CPU(s):   2,3,34,35
NUMA node2 CPU(s):   4,5,36,37
NUMA node3 CPU(s):   6,7,38,39
NUMA node4 CPU(s):   8,9,40,41
NUMA node5 CPU(s):   10,11,42,43
NUMA node6 CPU(s):   12,13,44,45
NUMA node7 CPU(s):   14,15,46,47
NUMA node8 CPU(s):   16,17,48,49
NUMA node9 CPU(s):   18,19,50,51
NUMA node10 CPU(s):  20,21,52,53

```

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```

NUMA node11 CPU(s):      22,23,54,55
NUMA node12 CPU(s):      24,25,56,57
NUMA node13 CPU(s):      26,27,58,59
NUMA node14 CPU(s):      28,29,60,61
NUMA node15 CPU(s):      30,31,62,63
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
Vulnerability Spectre v1:  Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2:  Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, 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	1M	8	Data	1	64	1	64
L1i	32K	1M	8	Instruction	1	64	1	64
L2	1M	32M	8	Unified	2	2048	1	64
L3	32M	512M	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: 16 nodes (0-15)
node 0 cpus: 0 1 32 33
node 0 size: 24002 MB
node 0 free: 23460 MB
node 1 cpus: 2 3 34 35
node 1 size: 24185 MB
node 1 free: 23819 MB
node 2 cpus: 4 5 36 37
node 2 size: 24148 MB
node 2 free: 23939 MB
node 3 cpus: 6 7 38 39
node 3 size: 24185 MB
node 3 free: 23981 MB
node 4 cpus: 8 9 40 41
node 4 size: 24185 MB

```

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## Platform Notes (Continued)

```

node 4 free: 23974 MB
node 5 cpus: 10 11 42 43
node 5 size: 24185 MB
node 5 free: 23965 MB
node 6 cpus: 12 13 44 45
node 6 size: 24185 MB
node 6 free: 23975 MB
node 7 cpus: 14 15 46 47
node 7 size: 24185 MB
node 7 free: 23992 MB
node 8 cpus: 16 17 48 49
node 8 size: 24185 MB
node 8 free: 23989 MB
node 9 cpus: 18 19 50 51
node 9 size: 24185 MB
node 9 free: 23992 MB
node 10 cpus: 20 21 52 53
node 10 size: 24185 MB
node 10 free: 23978 MB
node 11 cpus: 22 23 54 55
node 11 size: 24185 MB
node 11 free: 23987 MB
node 12 cpus: 24 25 56 57
node 12 size: 24185 MB
node 12 free: 23994 MB
node 13 cpus: 26 27 58 59
node 13 size: 24185 MB
node 13 free: 23991 MB
node 14 cpus: 28 29 60 61
node 14 size: 24185 MB
node 14 free: 23981 MB
node 15 cpus: 30 31 62 63
node 15 size: 24113 MB
node 15 free: 23910 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
0:  10 11 12 12 12 12 12 12 32 32 32 32 32 32 32 32
1:  11 10 12 12 12 12 12 12 32 32 32 32 32 32 32 32
2:  12 12 10 11 12 12 12 12 32 32 32 32 32 32 32 32
3:  12 12 11 10 12 12 12 12 32 32 32 32 32 32 32 32
4:  12 12 12 12 10 11 12 12 32 32 32 32 32 32 32 32
5:  12 12 12 12 11 10 12 12 32 32 32 32 32 32 32 32
6:  12 12 12 12 12 12 10 11 32 32 32 32 32 32 32 32
7:  12 12 12 12 12 12 11 10 32 32 32 32 32 32 32 32
8:  32 32 32 32 32 32 32 32 10 11 12 12 12 12 12 12

```

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# SPEC CPU®2017 Integer Speed Result

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**Lenovo Global Technology**  
**ThinkSystem SR665 V3**  
**4.10 GHz, AMD EPYC 9174F**

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SPECspeed®2017\_int\_energy\_base = 86.0  
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SPECspeed®2017\_int\_energy\_peak = 87.4

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

## Platform Notes (Continued)

9:	32	32	32	32	32	32	32	32	11	10	12	12	12	12	12
10:	32	32	32	32	32	32	32	32	12	12	10	11	12	12	12
11:	32	32	32	32	32	32	32	32	12	12	11	10	12	12	12
12:	32	32	32	32	32	32	32	32	12	12	12	12	10	11	12
13:	32	32	32	32	32	32	32	32	12	12	12	12	11	10	12
14:	32	32	32	32	32	32	32	32	12	12	12	12	12	10	11
15:	32	32	32	32	32	32	32	32	12	12	12	12	12	11	10

From /proc/meminfo

MemTotal: 395952944 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="9.0 (Plow)"  
ID="rhel"  
ID\_LIKE="fedora"  
VERSION\_ID="9.0"  
PLATFORM\_ID="platform:el9"  
PRETTY\_NAME="Red Hat Enterprise Linux 9.0 (Plow)"  
ANSI\_COLOR="0;31"

redhat-release: Red Hat Enterprise Linux release 9.0 (Plow)

system-release: Red Hat Enterprise Linux release 9.0 (Plow)

system-release-cpe: cpe:/o:redhat:enterprise\_linux:9::baseos

uname -a:

Linux localhost.localdomain 5.14.0-70.13.1.el9\_0.x86\_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 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

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## Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps barriers and \_\_user pointer sanitization  
CVE-2017-5715 (Spectre variant 2): Mitigation: Retpolines, 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 Jan 9 15:11

SPEC is set to: /home/cpu2017-1.1.8-amd-aocc400-genoa-Blb  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda4 xfs 372G 19G 354G 5% /home

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 3.3 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:  
24x Micron Technology MTC10F1084S1RC48BA1 16 GB 1 rank 4800, configured at 3600

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

(Continued on next page)



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**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

## Compiler Version Notes (Continued)

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

=====  
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



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**Lenovo Global Technology**  
**ThinkSystem SR665 V3**  
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SPECspeed®2017\_int\_energy\_peak = 87.4

**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

## 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
-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
```



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SPECspeed®2017\_int\_peak = 16.1  
SPECspeed®2017\_int\_energy\_peak = 87.4

**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

## 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

C++ benchmarks:

clang++

Fortran benchmarks:

flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
600.perlbench_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
```

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**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023

**Hardware Availability:** Feb-2023

**Software Availability:** Nov-2022

## Peak Optimization Flags (Continued)

602.gcc\_s: basepeak = yes

605.mcf\_s: Same as 600.perlbench\_s

625.x264\_s: basepeak = yes

657.xz\_s: Same as 600.perlbench\_s

C++ benchmarks:

```
620.omnetpp_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang
```

```
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
-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
```

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## Peak Other Flags (Continued)

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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