



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR850 V3  
(2.00 GHz, Intel Xeon Platinum 8450H)

SPECrate®2017\_int\_base = 930

SPECrate®2017\_int\_peak = Not Run

CPU2017 License: 9017

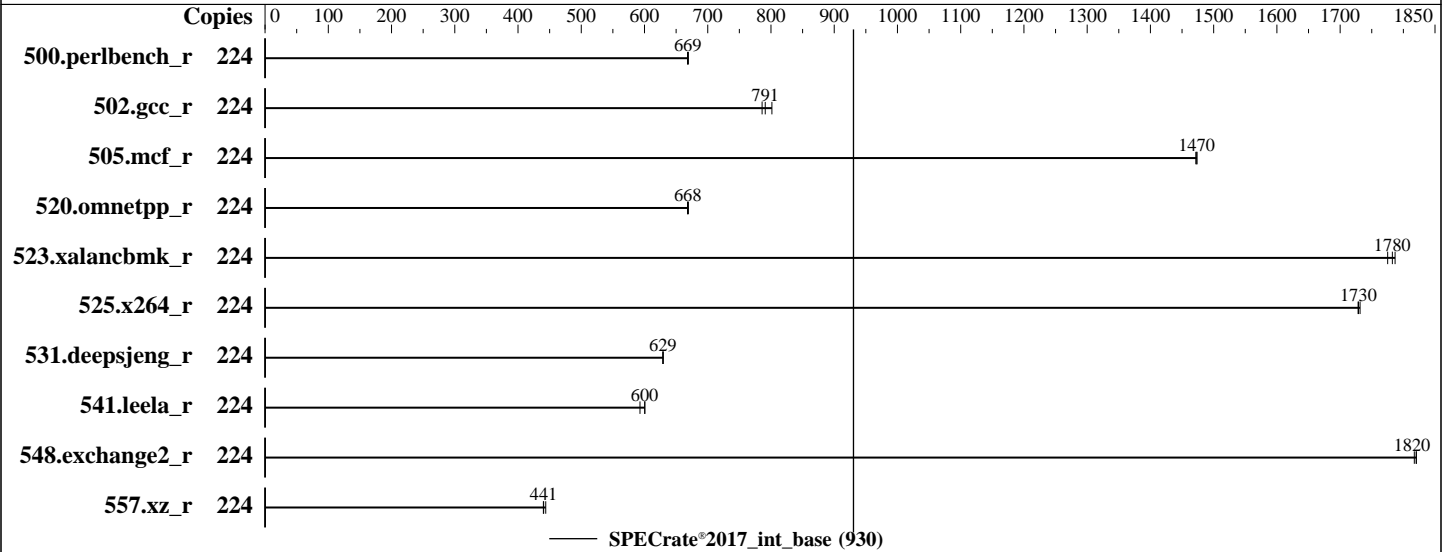
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Aug-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Platinum 8450H  
 Max MHz: 3500  
 Nominal: 2000  
 Enabled: 112 cores, 4 chips, 2 threads/core  
 Orderable: 2,4 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 75 MB I+D on chip per chip  
 Other: None  
 Memory: 2 TB (32 x 64 GB 2Rx4 PC5-4800B-R)  
 Storage: 1 x 960 GB M.2 NVME SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux 9.1 (Plow) (x86\_64)  
 Kernel 5.14.0-162.6.1.el9\_1.x86\_64  
 Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;  
 Parallel: No  
 Firmware: Lenovo BIOS Version RSE105E 1.10 released May-2023  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: None  
 Power Management: BIOS and OS set to prefer performance at the cost of additional power usage



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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	224	534	668	533	669	<b>533</b>	<b>669</b>							
502.gcc_r	224	396	801	<b>401</b>	<b>791</b>	404	786							
505.mcf_r	224	246	1470	<b>246</b>	<b>1470</b>	246	1470							
520.omnetpp_r	224	439	669	<b>440</b>	<b>668</b>	440	668							
523.xalancbmk_r	224	<b>133</b>	<b>1780</b>	132	1790	133	1780							
525.x264_r	224	227	1730	227	1730	<b>227</b>	<b>1730</b>							
531.deepsjeng_r	224	<b>408</b>	<b>629</b>	408	629	408	630							
541.leela_r	224	626	593	<b>618</b>	<b>600</b>	618	601							
548.exchange2_r	224	322	1820	<b>322</b>	<b>1820</b>	323	1820							
557.xz_r	224	545	444	550	440	<b>549</b>	<b>441</b>							

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

## Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk\_r / 623.xalancbmk\_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 [https://www.spec.org/cpu2017/Docs/runrules.html#rule\\_1.4](https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4)), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

## 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"

## Environment Variables Notes

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

```
LD_LIBRARY_PATH =  
    "/home/cpu2017-1.1.9-ic2023.0/lib/intel64:/home/cpu2017-1.1.9-ic2023.0/lib/ia32:/home/cpu2017-1.1.9-ic  
    2023.0/je5.0.1-32"  
MALLOC_CONF = "retain:true"
```



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## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM  
memory using Red Hat Enterprise Linux 8.4  
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>

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.

## Platform Notes

BIOS configuration:

Choose Operating Mode set to Maximum Performance and then set it to Custom Mode  
C-States set to Legacy  
DCU Streamer Prefetcher set to Disabled  
SNC set to SNC4  
UPI Link Disable set to Disabled 1 Link  
LLC Prefetch set to Disabled

Sysinfo program /home/cpu2017-1.1.9-ic2023.0/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost.localdomain Mon Aug 21 13:09:04 2023

SUT (System Under Test) info as seen by some common utilities.

-----  
Table of contents  
-----

1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
  10. who -r
  11. Systemd service manager version: systemd 250 (250-12.el9\_1)
  12. Failed units, from systemctl list-units --state=failed
  13. Services, from systemctl list-unit-files
  14. Linux kernel boot-time arguments, from /proc/cmdline
  15. cpupower frequency-info
  16. sysctl
  17. /sys/kernel/mm/transparent\_hugepage
  18. /sys/kernel/mm/transparent\_hugepage/khugepaged
  19. OS release
  20. Disk information
  21. /sys/devices/virtual/dmi/id
  22. dmidecode
  23. BIOS
- 

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### Platform Notes (Continued)

```
-----
1. uname -a
Linux localhost.localdomain 5.14.0-162.6.1.el9_1.x86_64 #1 SMP PREEMPT_DYNAMIC Fri Sep 30 07:36:03 EDT 2022
x86_64 x86_64 x86_64 GNU/Linux
```

```
-----
2. w
13:09:04 up 1 min, 1 user, load average: 0.16, 0.07, 0.02
USER      TTY      LOGIN@   IDLE   JCPU   PCPU   WHAT
root      tty1    13:07    9.00s  1.02s  0.01s  -bash
```

```
-----
3. Username
From environment variable $USER: root
```

```
-----
4. ulimit -a
real-time non-blocking time (microseconds, -R) unlimited
core file size              (blocks, -c) 0
data seg size               (kbytes, -d) unlimited
scheduling priority        (-e) 0
file size                   (blocks, -f) unlimited
pending signals             (-i) 8255574
max locked memory           (kbytes, -l) 64
max memory size             (kbytes, -m) unlimited
open files                  (-n) 1024
pipe size                   (512 bytes, -p) 8
POSIX message queues        (bytes, -q) 819200
real-time priority          (-r) 0
stack size                  (kbytes, -s) unlimited
cpu time                    (seconds, -t) unlimited
max user processes          (-u) 8255574
virtual memory              (kbytes, -v) unlimited
file locks                  (-x) unlimited
```

```
-----
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
login -- root
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 -c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base -o all intrate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base --output_format all --nopower --runmode
rate --tune base --size refrate intrate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.091/templogs/preenv.intrate.091.0.log --lognum 091.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-ic2023.0
```

```
-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Platinum 8450H
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping      : 8
microcode     : 0x2b0001b0
```

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### Platform Notes (Continued)

```

bugs          : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores     : 28
siblings      : 56
4 physical ids (chips)
224 processors (hardware threads)
physical id 0: core ids 0-27
physical id 1: core ids 0-27
physical id 2: core ids 0-27
physical id 3: core ids 0-27
physical id 0: apicids 0-55
physical id 1: apicids 128-183
physical id 2: apicids 256-311
physical id 3: apicids 384-439

```

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

#### 7. lscpu

From lscpu from util-linux 2.37.4:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         46 bits physical, 57 bits virtual
Byte Order:            Little Endian
CPU(s):                224
On-line CPU(s) list:   0-223
Vendor ID:             GenuineIntel
BIOS Vendor ID:       Intel(R) Corporation
Model name:            Intel(R) Xeon(R) Platinum 8450H
BIOS Model name:      Intel(R) Xeon(R) Platinum 8450H
CPU family:            6
Model:                 143
Thread(s) per core:   2
Core(s) per socket:   28
Socket(s):             4
Stepping:              8
BogoMIPS:              4000.00
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 cpuid aperfmperf tsc_known_freq 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 cpuid_fault epb cat_l3 cat_l2 cdp_l3
                      invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced
                      tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2
                      smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                      avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                      xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                      cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
                      arat pln pts hfi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes
                      vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid
                      bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear serialize
                      tsxldtrk pconfig arch_lbr amx_bf16 avx512_fp16 amx_tile amx_int8 flush_l1d
                      arch_capabilities
Virtualization:        VT-x
L1d cache:             5.3 MiB (112 instances)
L1i cache:             3.5 MiB (112 instances)
L2 cache:              224 MiB (112 instances)
L3 cache:              300 MiB (4 instances)

```

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### Platform Notes (Continued)

```

NUMA node(s): 16
NUMA node0 CPU(s): 0-6,112-118
NUMA node1 CPU(s): 7-13,119-125
NUMA node2 CPU(s): 14-20,126-132
NUMA node3 CPU(s): 21-27,133-139
NUMA node4 CPU(s): 28-34,140-146
NUMA node5 CPU(s): 35-41,147-153
NUMA node6 CPU(s): 42-48,154-160
NUMA node7 CPU(s): 49-55,161-167
NUMA node8 CPU(s): 56-62,168-174
NUMA node9 CPU(s): 63-69,175-181
NUMA node10 CPU(s): 70-76,182-188
NUMA node11 CPU(s): 77-83,189-195
NUMA node12 CPU(s): 84-90,196-202
NUMA node13 CPU(s): 91-97,203-209
NUMA node14 CPU(s): 98-104,210-216
NUMA node15 CPU(s): 105-111,217-223
Vulnerability Itlb multihit: Not affected
Vulnerability Lltf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBRSE-eIBRS SW
sequence
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	48K	5.3M	12	Data	1	64	1	64
L1i	32K	3.5M	8	Instruction	1	64	1	64
L2	2M	224M	16	Unified	2	2048	1	64
L3	75M	300M	15	Unified	3	81920	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```

available: 16 nodes (0-15)
node 0 cpus: 0-6,112-118
node 0 size: 128682 MB
node 0 free: 128174 MB
node 1 cpus: 7-13,119-125
node 1 size: 129020 MB
node 1 free: 128642 MB
node 2 cpus: 14-20,126-132
node 2 size: 129020 MB
node 2 free: 128726 MB
node 3 cpus: 21-27,133-139
node 3 size: 129020 MB
node 3 free: 128692 MB
node 4 cpus: 28-34,140-146
node 4 size: 129020 MB
node 4 free: 128511 MB
node 5 cpus: 35-41,147-153
node 5 size: 129020 MB
node 5 free: 128661 MB
node 6 cpus: 42-48,154-160

```

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### Platform Notes (Continued)

```

node 6 size: 129020 MB
node 6 free: 128669 MB
node 7 cpus: 49-55,161-167
node 7 size: 129020 MB
node 7 free: 128687 MB
node 8 cpus: 56-62,168-174
node 8 size: 129020 MB
node 8 free: 128725 MB
node 9 cpus: 63-69,175-181
node 9 size: 129020 MB
node 9 free: 128752 MB
node 10 cpus: 70-76,182-188
node 10 size: 129020 MB
node 10 free: 128741 MB
node 11 cpus: 77-83,189-195
node 11 size: 129020 MB
node 11 free: 128750 MB
node 12 cpus: 84-90,196-202
node 12 size: 128982 MB
node 12 free: 128695 MB
node 13 cpus: 91-97,203-209
node 13 size: 129020 MB
node 13 free: 128778 MB
node 14 cpus: 98-104,210-216
node 14 size: 129020 MB
node 14 free: 128709 MB
node 15 cpus: 105-111,217-223
node 15 size: 128998 MB
node 15 free: 128710 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
0:  10 12 12 12 21 21 21 21 31 31 31 31 21 21 21 21
1:  12 10 12 12 21 21 21 21 31 31 31 31 21 21 21 21
2:  12 12 10 12 21 21 21 21 31 31 31 31 21 21 21 21
3:  12 12 12 10 21 21 21 21 31 31 31 31 21 21 21 21
4:  21 21 21 21 10 12 12 12 21 21 21 21 31 31 31 31
5:  21 21 21 21 12 10 12 12 21 21 21 21 31 31 31 31
6:  21 21 21 21 12 12 10 12 21 21 21 21 31 31 31 31
7:  21 21 21 21 12 12 12 10 21 21 21 21 31 31 31 31
8:  31 31 31 31 21 21 21 21 10 12 12 12 21 21 21 21
9:  31 31 31 31 21 21 21 21 12 10 12 12 21 21 21 21
10: 31 31 31 31 21 21 21 21 12 12 10 12 21 21 21 21
11: 31 31 31 31 21 21 21 21 12 12 12 10 21 21 21 21
12: 21 21 21 21 31 31 31 31 21 21 21 21 10 12 12 12
13: 21 21 21 21 31 31 31 31 21 21 21 21 12 10 12 12
14: 21 21 21 21 31 31 31 31 21 21 21 21 12 12 10 12
15: 21 21 21 21 31 31 31 31 21 21 21 21 12 12 12 10

```

```

-----
9. /proc/meminfo
MemTotal:      2113467480 kB

```

```

-----
10. who -r
run-level 3 Aug 21 13:07

```

```

-----
11. Systemd service manager version: systemd 250 (250-12.e19_1)
Default Target Status
multi-user      degraded

```

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### Platform Notes (Continued)

-----  
12. Failed units, from systemctl list-units --state=failed

UNIT	LOAD	ACTIVE	SUB	DESCRIPTION
* NetworkManager-wait-online.service	loaded	failed	failed	Network Manager Wait Online
* systemd-sysctl.service	loaded	failed	failed	Apply Kernel Variables

-----  
13. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond dbus-broker getty@ irqbalance kdump low-memory-monitor mdmonitor microcode nis-domainname rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark sshd sssd systemd-network-generator udisks2 upower
enabled-runtime	systemd-remount-fs
disabled	canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot console-getty cpupower debug-shell firewallld kvm_stat man-db-restart-cache-update nftables pesign rdisc rhsm rhsm-facts rpmdb-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
indirect	sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

-----  
14. Linux kernel boot-time arguments, from /proc/cmdline

BOOT\_IMAGE=(hd0,gpt3)/boot/vmlinuz-5.14.0-162.6.1.el9\_1.x86\_64  
root=UUID=43a7f1b1-66b0-456a-8c3f-451305a00281  
ro  
resume=UUID=58de1c40-542f-453b-bb6a-6bbd3510660a

-----  
15. cpupower frequency-info

analyzing CPU 0:  
Unable to determine current policy  
boost state support:  
Supported: yes  
Active: yes

-----  
16. sysctl

kernel.numa_balancing	1
kernel.randomize_va_space	2
vm.compaction_proactiveness	20
vm.dirty_background_bytes	0
vm.dirty_background_ratio	10
vm.dirty_bytes	0
vm.dirty_expire_centisecs	3000
vm.dirty_ratio	20
vm.dirty_writeback_centisecs	500
vm.dirtytime_expire_seconds	43200
vm.extfrag_threshold	500
vm.min_unmapped_ratio	1
vm.nr_hugepages	0
vm.nr_hugepages_mempolicy	0
vm.nr_overcommit_hugepages	0
vm.swappiness	60
vm.watermark_boost_factor	15000
vm.watermark_scale_factor	10
vm.zone_reclaim_mode	0

-----  
17. /sys/kernel/mm/transparent\_hugepage

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### Platform Notes (Continued)

```
defrag          always defer defer+madvise [madvise] never
enabled         [always] madvise never
hpage_pmd_size  2097152
shmem_enabled   always within_size advise [never] deny force
```

```
-----
18. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs  60000
defrag                  1
max_ptes_none          511
max_ptes_shared        256
max_ptes_swap          64
pages_to_scan          4096
scan_sleep_millisecs   10000
```

```
-----
19. OS release
From /etc/*-release /etc/*-version
os-release      Red Hat Enterprise Linux 9.1 (Plow)
redhat-release  Red Hat Enterprise Linux release 9.1 (Plow)
system-release  Red Hat Enterprise Linux release 9.1 (Plow)
```

```
-----
20. Disk information
SPEC is set to: /home/cpu2017-1.1.9-ic2023.0
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p4  xfs   819G  16G  804G  2% /home
```

```
-----
21. /sys/devices/virtual/dmi/id
Vendor:          Lenovo
Product:         ThinkSystem SR850 V3
Product Family: ThinkSystem
Serial:          None
```

```
-----
22. dmidecode
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:
  21x SK Hynix HMC94AEBRA102N 64 GB 2 rank 4800
  4x SK Hynix HMC94AEBRA109N 64 GB 2 rank 4800
  7x SK Hynix HMC94AEBRA123N 64 GB 2 rank 4800
```

```
-----
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      Lenovo
BIOS Version:     RSE105E-1.10
BIOS Date:        05/12/2023
BIOS Revision:    1.10
Firmware Revision: 1.10
```



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR850 V3  
(2.00 GHz, Intel Xeon Platinum 8450H)

SPECrate®2017\_int\_base = 930

SPECrate®2017\_int\_peak = Not Run

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2023

**Hardware Availability:** Jun-2023

**Software Availability:** Dec-2022

## Compiler Version Notes

-----  
C | 500.perlbench\_r(base) 502.gcc\_r(base) 505.mcf\_r(base) 525.x264\_r(base) 557.xz\_r(base)  
-----

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
-----

-----  
C++ | 520.omnetpp\_r(base) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base) 541.leela\_r(base)  
-----

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
-----

-----  
Fortran | 548.exchange2\_r(base)  
-----

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
-----

## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## 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



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**Tested by:** Lenovo Global Technology

**Software Availability:** Dec-2022

## Base Optimization Flags

C benchmarks:

```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:

```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

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-Eaglestream-X.html>  
<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.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-Eaglestream-X.xml>  
<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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