## Lenovo Global Technology

### ThinkSystem SR850 V3

(2.00 GHz, Intel Xeon Platinum 8450H)

### 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

---

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 930</th>
<th>SPECrate®2017_int_peak = Not Run</th>
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<tbody>
<tr>
<td><strong>Lenovo Global Technology</strong></td>
<td><strong>ThinkSystem SR850 V3</strong></td>
</tr>
<tr>
<td>(2.00 GHz, Intel Xeon Platinum 8450H)</td>
<td></td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>Red Hat Enterprise Linux 9.1 (Plow) (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kernel:</td>
<td>5.14.0-162.6.1.el9_1.x86_64</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Lenovo BIOS Version RSE105E 1.10 released May-2023</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
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</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
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<table>
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<tr>
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<tr>
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<tr>
<td>502.gcc_r</td>
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<tr>
<td>505.mcf_r</td>
<td>224</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
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<tr>
<td>523.xalancbmk_r</td>
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<td>525.x264_r</td>
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<tr>
<td>557.xz_r</td>
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</tbody>
</table>

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### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Platinum 8450H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>3500</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2000</td>
</tr>
<tr>
<td>Enabled:</td>
<td>112 cores, 4 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>2.4 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>2 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>2 TB (32 x 64 GB 2Rx4 PC5-4800B-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 960 GB M.2 NVME SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>
## Lenovo Global Technology

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

### SPEC CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Aug-2023</td>
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<td>Hardware Availability:</td>
<td>Jun-2023</td>
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<tr>
<td>Software Availability:</td>
<td>Dec-2022</td>
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</table>

### Results Table

<table>
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<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
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<td>224</td>
<td>534</td>
<td>668</td>
<td>533</td>
<td>669</td>
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<td>502.gcc_r</td>
<td>224</td>
<td>396</td>
<td>801</td>
<td>401</td>
<td>791</td>
<td>404</td>
<td>786</td>
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<tr>
<td>505.mcf_r</td>
<td>224</td>
<td>246</td>
<td>1470</td>
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<td>1470</td>
<td>246</td>
<td>1470</td>
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<tr>
<td>520.omnetpp_r</td>
<td>224</td>
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<td>669</td>
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<td>668</td>
<td>440</td>
<td>668</td>
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<tr>
<td>523.xalancbmk_r</td>
<td>224</td>
<td>133</td>
<td>1780</td>
<td>132</td>
<td>1790</td>
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<td>1780</td>
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<tr>
<td>525.x264_r</td>
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<td>227</td>
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<td>531.deepsjeng_r</td>
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<td>541.leela_r</td>
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<td>600</td>
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<td>548.exchange2_r</td>
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<td>322</td>
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<td>545</td>
<td>444</td>
<td>550</td>
<td>440</td>
<td>549</td>
<td>441</td>
</tr>
</tbody>
</table>

### 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), 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-ic2023.0/jre5.0.1-32"
 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.

---

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---

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lsocpu
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/klhugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS

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SPEC CPU®2017 Integer Rate Result

Lenovo Global Technology
ThinkSystem SR850 V3
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SPECrat®2017_int_base = 930
SPECrat®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

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

2. `w`
   - 13:09:04 up 1 min, 1 user, load average: 0.16, 0.07, 0.02

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
   - 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
   - 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 reframe 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

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

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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
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SPECrate®2017_int_base = 930
SPECrate®2017_int_peak = Not Run

Test Date: Aug-2023
Hardware Availability: Jun-2023
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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 pse syscall nx pdpe1gb rdtsscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperftmsprof tsc_known_freq pni pclmulqdq dtes64 monitor
des_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 3nowprefetch cpuid_fault epb cat_l3 cat_l2 cd gclflush

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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SPECRate®2017_int_base = 930
SPECRate®2017_int_peak = Not Run

CPU2017 License: 9017
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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 L1t: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mnio stale data: Not affected
Vulnerability Retbleed: 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; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-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 PHYS-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
node 6 size: 129020 MB
node 6 free: 128661 MB
node 7 cpus: 49-55,161-167
node 7 size: 129020 MB
node 7 free: 128661 MB
node 8 cpus: 56-62,168-174
node 8 size: 129020 MB
node 8 free: 128661 MB
node 9 cpus: 63-69,175-181
node 9 size: 129020 MB
node 9 free: 128661 MB
node 10 cpus: 70-76,182-188
node 10 size: 129020 MB
node 10 free: 128661 MB
node 11 cpus: 77-83,189-195
node 11 size: 129020 MB
node 11 free: 128661 MB
node 12 cpus: 84-90,196-202
node 12 size: 129020 MB
node 12 free: 128661 MB
node 13 cpus: 91-97,203-209
node 13 size: 129020 MB
node 13 free: 128661 MB
node 14 cpus: 98-104,210-216
node 14 size: 129020 MB
node 14 free: 128661 MB
node 15 cpus: 105-111,217-223
node 15 size: 129020 MB
node 15 free: 128661 MB
node 16 cpus: 112-118,124-130
node 16 size: 129020 MB
node 16 free: 128661 MB

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#### Platform Notes (Continued)

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<thead>
<tr>
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<th>cpus</th>
<th>size</th>
<th>free</th>
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<tbody>
<tr>
<td>6</td>
<td>69-166</td>
<td>129020 MB</td>
<td>128669 MB</td>
</tr>
<tr>
<td>7</td>
<td>49-166</td>
<td>129020 MB</td>
<td>128687 MB</td>
</tr>
<tr>
<td>8</td>
<td>56-174</td>
<td>129020 MB</td>
<td>128725 MB</td>
</tr>
<tr>
<td>9</td>
<td>63-175</td>
<td>129020 MB</td>
<td>128922 MB</td>
</tr>
<tr>
<td>10</td>
<td>70-176</td>
<td>128752 MB</td>
<td>128790 MB</td>
</tr>
<tr>
<td>11</td>
<td>77-185</td>
<td>128750 MB</td>
<td>128784 MB</td>
</tr>
<tr>
<td>12</td>
<td>84-196</td>
<td>128982 MB</td>
<td>128695 MB</td>
</tr>
<tr>
<td>13</td>
<td>91-203</td>
<td>129020 MB</td>
<td>128709 MB</td>
</tr>
<tr>
<td>14</td>
<td>98-210</td>
<td>128778 MB</td>
<td>128998 MB</td>
</tr>
<tr>
<td>15</td>
<td>105-217</td>
<td>128710 MB</td>
<td></td>
</tr>
</tbody>
</table>

---

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.el9_1)  
   Default Target Status  
   multi-user degraded

(Continued on next page)
Platform Notes (Continued)

12. Failed units, from systemctl list-units --state=failed
   
<table>
<thead>
<tr>
<th>UNIT</th>
<th>LOAD</th>
<th>ACTIVE</th>
<th>SUB</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>* NetworkManager-wait-online.service</td>
<td></td>
<td></td>
<td></td>
<td>loaded failed failed Network Manager Wait Online</td>
</tr>
<tr>
<td>* systemd-sysctl.service</td>
<td></td>
<td></td>
<td></td>
<td>loaded failed failed Apply Kernel Variables</td>
</tr>
</tbody>
</table>

13. Services, from systemctl list-unit-files
   
<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond</td>
</tr>
<tr>
<td></td>
<td>dbus-broker getty@ irqbalance kdump low-memory-monitor mdmmonitor microcode nis-domainname</td>
</tr>
<tr>
<td></td>
<td>rhamcertd rayslog rtkit-daemon selinux-autorelabel-mark sshd sssd systemd-network-generator udisks2_upower</td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
<tr>
<td>indirect</td>
<td>ssd-autofs sssd-kcm sssd-nss sssd-pac sssd-ssh sssd-sudo</td>
</tr>
</tbody>
</table>

14. Linux kernel boot-time arguments, from /proc/cmdline
   
   | BOOT_IMAGE=(hd0,gpt3)/boot/vmlinuz-5.14.0-162.6.1.el9_x86_64 |
   | root=UUID=43a7f1b1-66b0-456a-8c3f-451305a00281 |
   | 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 |

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

**Lenovo Global Technology**

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

**SPECrate®2017_int_base = 930**  
**SPECrate®2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>Lenovo Global Technology</th>
<th>Test Date:</th>
<th>Aug-2023</th>
</tr>
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<tbody>
<tr>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Jun-2023</td>
<td></td>
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<tr>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>Dec-2022</td>
<td></td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

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

18. /sys/kernel/mm/transparent_hugepage/khugepaged  
```
alloc_sleep_millisecs 60000  
deflag 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  
oes-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 HMCG94AEBRA102N 64 GB 2 rank 4800  
4x SK Hynix HMCG94AEBRA109N 64 GB 2 rank 4800  
7x SK Hynix HMCG94AEBRA123N 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
```
Lenovo Global Technology
ThinkSystem SR850 V3
(2.00 GHz, Intel Xeon Platinum 8450H)

SPECrates®2017_int_base = 930
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Compiler Version Notes

<table>
<thead>
<tr>
<th></th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th></th>
<th>520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)</th>
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<td>C++</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>548.exchange2_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fortran</td>
<td>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.</td>
</tr>
</tbody>
</table>

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifix

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
Lenovo Global Technology
ThinkSystem SR850 V3
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**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

**Base Optimization Flags**

**C benchmarks:**
- `-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math`
- `-flto -mfpmath=sse -funroll-loops -gopt-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 -gopt-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 -gopt-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/Intel-ic2023-official-linux64.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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-X.xml)
- [http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.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.

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