Lenovo Global Technology
ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

SPECrate®2017_int_base = 968
SPECrate®2017_int_peak = Not Run

Hardware
CPU Name: Intel Xeon Platinum 8592V
Max MHz: 3900
Nominal: 2000
Enabled: 128 cores, 2 chips, 2 threads/core
Orderable: 1.2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 320 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: SUSE Linux Enterprise Server 15 SP4
Kernel 5.14.21-150400.22-default
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Lenovo BIOS Version ESE121V 3.10 released Jan-2024
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
Lenovo Global Technology
ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

SPECrstem®2017_int_base = 968
SPECrstem®2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>perbench_r</td>
<td>256</td>
<td>543</td>
<td>751</td>
<td>548</td>
<td>744</td>
<td>548</td>
<td>744</td>
</tr>
<tr>
<td>gcc_r</td>
<td>256</td>
<td>469</td>
<td>772</td>
<td>470</td>
<td>771</td>
<td>471</td>
<td>769</td>
</tr>
<tr>
<td>mcf_r</td>
<td>256</td>
<td>293</td>
<td>1410</td>
<td>293</td>
<td>1410</td>
<td>294</td>
<td>1410</td>
</tr>
<tr>
<td>omnetpp_r</td>
<td>256</td>
<td>584</td>
<td>575</td>
<td>583</td>
<td>576</td>
<td>582</td>
<td>577</td>
</tr>
<tr>
<td>xalancbmk_r</td>
<td>256</td>
<td>202</td>
<td>1340</td>
<td>202</td>
<td>1340</td>
<td>202</td>
<td>1340</td>
</tr>
<tr>
<td>x264_r</td>
<td>256</td>
<td>225</td>
<td>1990</td>
<td>225</td>
<td>1990</td>
<td>224</td>
<td>2000</td>
</tr>
<tr>
<td>deepsjeng_r</td>
<td>256</td>
<td>410</td>
<td>716</td>
<td>411</td>
<td>714</td>
<td>409</td>
<td>717</td>
</tr>
<tr>
<td>leela_r</td>
<td>256</td>
<td>577</td>
<td>734</td>
<td>577</td>
<td>735</td>
<td>576</td>
<td>736</td>
</tr>
<tr>
<td>exchange2_r</td>
<td>256</td>
<td>312</td>
<td>2150</td>
<td>305</td>
<td>2200</td>
<td>304</td>
<td>2200</td>
</tr>
<tr>
<td>xz_r</td>
<td>256</td>
<td>550</td>
<td>502</td>
<td>548</td>
<td>504</td>
<td>549</td>
<td>504</td>
</tr>
</tbody>
</table>

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-ic2023.2.3/lib/intel64:/home/cpu2017-1.1.9-ic2023.2.3/lib/ia32:/home/cpu2017-1.1.9-ic2023.2.3/je5.0.1-32"
MALLOC_CONF = "retain:true"

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.
Lenovo Global Technology
ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

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

SPECrated®2017_int_base = 968
SPECrated®2017_int_peak = Not Run

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

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:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
SNC set to SNC2
LLC Prefetch set to Disabled
UPI Link Disable set to Minimum Number of Links Enabled

Sysinfo program /home/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197 running on test1 Sun Jan 21 01:40:00 2024

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. numacl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/transparent
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. BIOS

1. uname -a
   Linux test1 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222) x86_64 x86_64 GNU/Linux

2. w
   01:40:00 up 1 min, 1 user, load average: 4.74, 2.51, 0.95
   USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
   root tty1 - 01:39 7.00s 1.13s 0.01s -bash

3. Username
   From environment variable $USER: root

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

SPECRate®2017_int_base = 968
SPECRate®2017_int_peak = Not Run

Platform Notes (Continued)

4. ulimit -a
   core file size (blocks, -c) unlimited
   data seg size (kbytes, -d) unlimited
   scheduling priority (-e) 0
   file size (blocks, -f) unlimited
   pending signals (-i) 4126601
   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) 4126601
   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=256 --c
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=128 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base -o all intrate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 --configfile
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=128 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base --output_format all --nopower --runmode
   rate --tune base --size refere intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.323/templogs/preenv.intrate.323.0.log --lognum 323.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017-1.1.9-ic2023.2.3

6. /proc/cpuinfo
   model name : INTEL(R) XEON(R) PLATINUM 8592V
   vendor_id : GenuineIntel
   cpu family : 6
   model : 207
   stepping : 2
   microcode : 0x21000200
   bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
   cpu cores : 64
   siblings : 128
   2 physical ids (chips)
   256 processors (hardware threads)
   physical id 0: core ids 0-63
   physical id 1: core ids 0-63
   physical id 0: apicids 0-127
   physical id 1: apicids 128-255
   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 2.37.2:

(Continued on next page)
**Platform Notes (Continued)**

**Virtualization:**
- VT-x

**Cache:**
- L1d cache: 6 MiB (128 instances)
- L1i cache: 4 MiB (128 instances)
- L2 cache: 256 MiB (128 instances)
- L3 cache: 640 MiB (2 instances)

**NUMA node:**
- NUMA node0 CPU(s): 0-31, 128-159
- NUMA node1 CPU(s): 32-63, 160-191
- NUMA node2 CPU(s): 64-95, 192-223
- NUMA node3 CPU(s): 96-127, 224-255

**Vulnerabilities:**
- Itlb multihit: Not affected
- Lft: Not affected
- Mds: Not affected
- Meltdown: Not affected
- Spec store bypass: Mitigation
- Spectre v1: Mitigation
- Spectre v2: Mitigation
- Srbs: Not affected
- Tsa async abort: Not affected

From lscpu --cache:
- NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
- L1d 48K 6M 12 Data 1 64 1 64
- L1i 32K 4M 8 Instruction 1 64 1 64
- L2 2M 256M 16 Unified 2 2048 1 64
- L3 320M 640M 20 Unified 3 262144 1 64

(Continued on next page)
Platform Notes (Continued)

8. numactl --hardware
   NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 4 nodes (0-3)
   node 0 size: 257661 MB
   node 0 free: 255956 MB
   node 1 cpus: 32-63,160-191
   node 1 size: 258031 MB
   node 1 free: 257581 MB
   node 2 cpus: 64-95,192-223
   node 2 size: 258031 MB
   node 2 free: 257722 MB
   node 3 cpus: 96-127,224-255
   node 3 size: 257949 MB
   node 3 free: 257639 MB
   node distances:
   node   0   1   2   3
   0:  10  12  21  21
   1:  12  10  21  21
   2:  21  21  10  12
   3:  21  21  12  10

9. /proc/meminfo
   MemTotal:       1056434404 kB

10. who -r
   run-level 3 Jan 21 01:39

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target  Status
    multi-user       running

12. Services, from systemctl list-unit-files
    STATE            UNIT FILES
    enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ haveged iirbalance iscsi
    issue-generator kbdsettings lvol vmd-monitor nscd postfix purge-kernels rollback rsyslog
    smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny

    enabled-runtime systemctl-remount-fs

    disabled         systemd-remount-fs
    autofs autyaist-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
    chronyd console-getty cups cups-browsed debug-shell etables exchange-bmc-os-info
    firewalld gpm grub2-once haveged-switch-root ipmi ipmielvd iscsi-init iscsid isciuio
    issue-add-ssh-keys kexec-load-luamap man-db-create multipathd nfs nfs-blkmap nmb rdisc
    rpcbind rpmconfigcheck rsync serial-getty@ smartd_generate_opts smb snmpd snmptrapd
    systemd-boot-check-no-failures systemd-network-generator systemd-sysext
    systemd-boot-check-no-failures systemd-network-generator systemd-sysext
    systemd-time-wait-sync systemd-timesyncd

    generated             ntp_sync
    indirect               wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
    root=UUID=f976c541-a329-4c54-ba84-4be16556ee18
    splash=silent
    mitigations=auto
    quiet
    security=apparmor
SPEC CPU®2017 Integer Rate Result

Lenovo Global Technology
ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

SPECrade®2017_int_base = 968
SPECrade®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jan-2024
Tested by: Lenovo Global Technology
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Platform Notes (Continued)

14. cpupower frequency-info
   analyzing CPU 0:
   Unable to determine current policy
   boost state support:
   Supported: yes
   Active: yes

15. 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.extrfrag_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

16. /sys/kernel/mm/transparent_hugepage
   defrag          always defer defer+madvise [madvise] never
   enabled         [always] madvise never
   pmd_size        2097152
   shmem_enabled   always within_size advise [never] deny force

17. /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

18. OS release
   From /etc/*-release /etc/*-version
   os-release SUSE Linux Enterprise Server 15 SP4

19. Disk information
   SPEC is set to: /home/cpu2017-1.1.9-ic2023.2.3
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sdb2 xfs 894G 232G 663G 26% /

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

**Lenovo Global Technology**

ThinkSystem SR630 V3  
(2.00 GHz, Intel Xeon Platinum 8592V)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 968</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Jan-2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Feb-2024</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2023</td>
</tr>
</tbody>
</table>

---

**Platform Notes (Continued)**

20. /sys/devices/virtual/dmi/id
   Vendor: Lenovo  
   Product: ThinkSystem SR630 V3  
   Product Family: ThinkSystem  
   Serial: 1234567890

21. dmidecode
   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: 16x Samsung M321R8GA0PB0-CWMKH 64 GB 2 rank 5600, configured at 4800

22. BIOS
   This section combines info from /sys/devices and dmidecode.)  
   BIOS Vendor: Lenovo  
   BIOS Version: ESE121V-3.10  
   BIOS Date: 01/09/2024  
   BIOS Revision: 3.10  
   Firmware Revision: 12.6

---

**Compiler Version Notes**

<table>
<thead>
<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2023 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C++</th>
<th>520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2023 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fortran</th>
<th>548.exchange2_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2023 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Base Compiler Invocation**

**C benchmarks:**
- icx

**C++ benchmarks:**
- icpx

(Continued on next page)
## Base Compiler Invocation (Continued)

Fortran benchmarks:

```plaintext
cifx
```

## 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
```

## 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/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
```
# Lenovo Global Technology

ThinkSystem SR630 V3
(2.00 GHz, Intel Xeon Platinum 8592V)

<table>
<thead>
<tr>
<th>Table</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECrate®2017_int_base</strong></td>
<td>968</td>
</tr>
<tr>
<td><strong>SPECrate®2017_int_peak</strong></td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Test Date:** Jan-2024
**Hardware Availability:** Feb-2024
**Software Availability:** Dec-2023

The flags files that were used to format this result can be browsed at:
- [Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.html](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.html)
- [Intel-ic2023p2-official-linux64.html](http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html)

You can also download the XML flags sources by saving the following links:
- [Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.xml](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.xml)
- [Intel-ic2023p2-official-linux64.xml](http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml)

---

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.1.9 on 2024-01-20 12:39:59-0500.
Report generated on 2024-02-14 13:40:45 by CPU2017 PDF formatter v6716.
Originally published on 2024-02-14.