SPEC CPU®2017 Integer Rate Result

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Inspur Electronic Information Industry Co., Ltd.

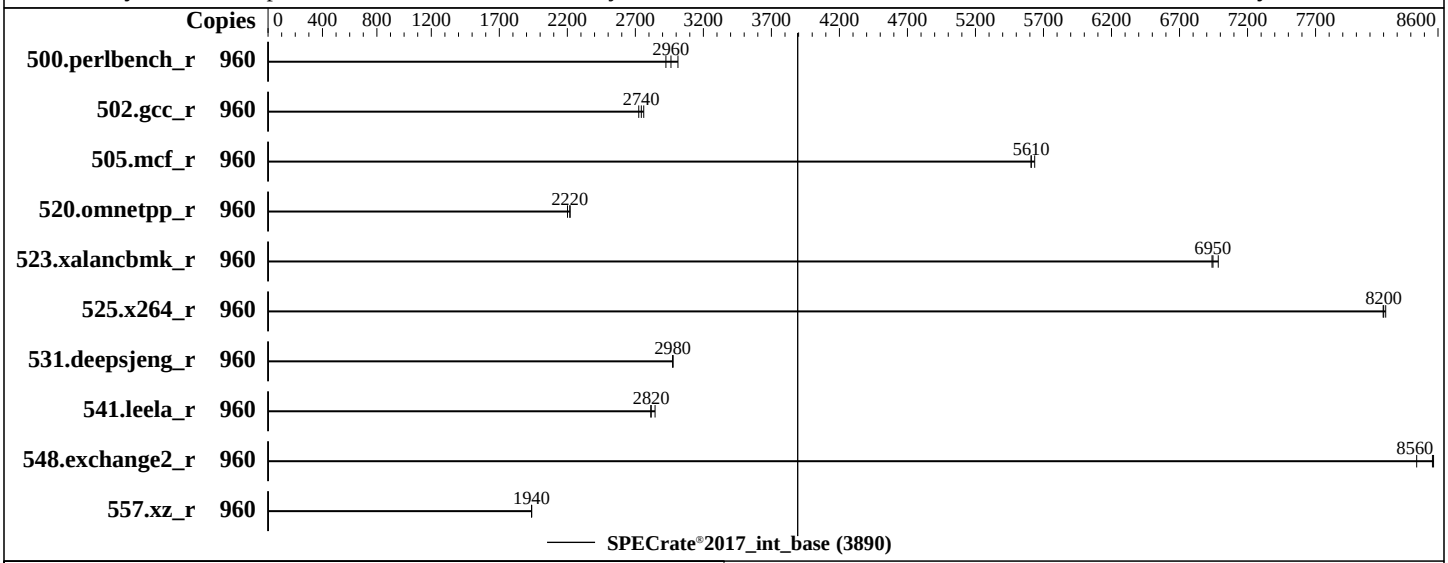
TS860G7 (Intel Xeon Platinum 8490H)

SPECrate®2017_int_base = 3890

SPECrate®2017_int_peak = Not Run

CPU2017 License: 3358
Test Sponsor: Inspur Electronic Information Industry Co., Ltd.
Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Jun-2023
Hardware Availability: Jul-2023
Software Availability: Dec-2022



Hardware

CPU Name:	Intel Xeon Platinum 8490H
Max MHz:	3500
Nominal:	1900
Enabled:	480 cores, 8 chips, 2 threads/core
Orderable:	2,4,8 chips
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	112.5 MB I+D on chip per chip
Other:	None
Memory:	2 TB (64 x 32 GB 2Rx4 PC5-4800B-R)
Storage:	1 x 3.2 TB NVME SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux 9.0 (Plow) 5.14.0-70.22.1.el9_0.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:	Version 05.00.00 released Apr-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	960	**516**	**2960**	507	3010	523	2920							
502.gcc_r	960	**495**	**2740**	492	2760	499	2720							
505.mcf_r	960	277	5610	275	5640	**277**	**5610**							
520.omnetpp_r	960	572	2200	567	2220	**568**	**2220**							
523.xalancbmk_r	960	145	6980	146	6940	**146**	**6950**							
525.x264_r	960	**205**	**8200**	205	8220	205	8200							
531.deepsjeng_r	960	370	2980	370	2980	**370**	**2980**							
541.leela_r	960	565	2810	**564**	**2820**	559	2840							
548.exchange2_r	960	294	8570	**294**	**8560**	298	8440							
557.xz_r	960	**535**	**1940**	535	1940	535	1940							

SPECrate®2017_int_base = 3890

SPECrate®2017_int_peak = Not Run

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), 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/19cpu2017/lib/intel64:/home/19cpu2017/lib/ia32:/home/19cpu2017/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.
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:
ENERGY_PERF_BIAS_CFG mode set to Performance
Hardware Prefetch set to Disable
VT Support set to Disable
Sub NUMA Cluster (SNC) set to SNC4

Sysinfo program /home/19cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Wed Jun 28 17:43:25 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 (250-6.el9_0)
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. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS
------------------------------------------------------------
```

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Platform Notes (Continued)

```
------------------------------------------------------------
1. uname -a
  Linux localhost.localdomain 5.14.0-70.22.1.el9_0.x86_64 #1 SMP PREEMPT Tue Aug 2 10:02:12 EDT 2022 x86_64
  x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   17:43:25 up 3 min,  1 user,  load average: 20.10, 37.29, 17.63
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1      13:40   13.00s  1.34s  0.02s -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) 8254452
  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) 8254452
  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=960 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=480 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base -o all intrate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=960 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=480 --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/CPU2017.012/templogs/preenv.intrate.012.0.log --lognum 012.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/19cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8490H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 6
```

(Continued on next page)

Platform Notes (Continued)

```
     microcode       : 0x2b0001b0
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 60
     siblings        : 120
     8 physical ids (chips)
     960 processors (hardware threads)
     physical id 0: core ids 0-59
     physical id 1: core ids 0-59
     physical id 2: core ids 0-59
     physical id 3: core ids 0-59
     physical id 4: core ids 0-59
     physical id 5: core ids 0-59
     physical id 6: core ids 0-59
     physical id 7: core ids 0-59
     physical id 0: apicids 0-119
     physical id 1: apicids 128-247
     physical id 2: apicids 256-375
     physical id 3: apicids 384-503
     physical id 4: apicids 512-631
     physical id 5: apicids 640-759
     physical id 6: apicids 768-887
     physical id 7: apicids 896-1015
   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):                          960
   On-line CPU(s) list:             0-959
   Vendor ID:                       GenuineIntel
   BIOS Vendor ID:                  Intel(R) Corporation
   Model name:                      Intel(R) Xeon(R) Platinum 8490H
   BIOS Model name:                 Intel(R) Xeon(R) Platinum 8490H
   CPU family:                      6
   Model:                           143
   Thread(s) per core:              2
   Core(s) per socket:              60
   Socket(s):                       8
   Stepping:                        6
   CPU max MHz:                     3500.0000
   CPU min MHz:                     800.0000
   BogoMIPS:                        3800.00
   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 ds_cpl
                                    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 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
```

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Platform Notes (Continued)

```
                          wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req
                          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 avx512_fp16 amx_tile flush_l1d arch_capabilities
  L1d cache:              22.5 MiB (480 instances)
  L1i cache:              15 MiB (480 instances)
  L2 cache:               960 MiB (480 instances)
  L3 cache:               900 MiB (8 instances)
  NUMA node(s):           32
  NUMA node0 CPU(s):      0-14,480-494
  NUMA node1 CPU(s):      15-29,495-509
  NUMA node2 CPU(s):      30-44,510-524
  NUMA node3 CPU(s):      45-59,525-539
  NUMA node4 CPU(s):      60-74,540-554
  NUMA node5 CPU(s):      75-89,555-569
  NUMA node6 CPU(s):      90-104,570-584
  NUMA node7 CPU(s):      105-119,585-599
  NUMA node8 CPU(s):      120-134,600-614
  NUMA node9 CPU(s):      135-149,615-629
  NUMA node10 CPU(s):     150-164,630-644
  NUMA node11 CPU(s):     165-179,645-659
  NUMA node12 CPU(s):     180-194,660-674
  NUMA node13 CPU(s):     195-209,675-689
  NUMA node14 CPU(s):     210-224,690-704
  NUMA node15 CPU(s):     225-239,705-719
  NUMA node16 CPU(s):     240-254,720-734
  NUMA node17 CPU(s):     255-269,735-749
  NUMA node18 CPU(s):     270-284,750-764
  NUMA node19 CPU(s):     285-299,765-779
  NUMA node20 CPU(s):     300-314,780-794
  NUMA node21 CPU(s):     315-329,795-809
  NUMA node22 CPU(s):     330-344,810-824
  NUMA node23 CPU(s):     345-359,825-839
  NUMA node24 CPU(s):     360-374,840-854
  NUMA node25 CPU(s):     375-389,855-869
  NUMA node26 CPU(s):     390-404,870-884
  NUMA node27 CPU(s):     405-419,885-899
  NUMA node28 CPU(s):     420-434,900-914
  NUMA node29 CPU(s):     435-449,915-929
  NUMA node30 CPU(s):     450-464,930-944
  NUMA node31 CPU(s):     465-479,945-959
  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; Enhanced IBRS, IBPB conditional, 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       48K    22.5M   12 Data            1     64        1             64
      L1i       32K     15M    8 Instruction     1     64        1             64
      L2         2M     960M   16 Unified         2   2048        1             64
      L3     112.5M     900M   15 Unified         3 122880        1             64

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

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Platform Notes (Continued)

```
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 32 nodes (0-31)
  node 0 cpus: 0-14,480-494
  node 0 size: 64063 MB
  node 0 free: 63669 MB
  node 1 cpus: 15-29,495-509
  node 1 size: 64505 MB
  node 1 free: 64242 MB
  node 2 cpus: 30-44,510-524
  node 2 size: 64505 MB
  node 2 free: 64244 MB
  node 3 cpus: 45-59,525-539
  node 3 size: 64505 MB
  node 3 free: 64246 MB
  node 4 cpus: 60-74,540-554
  node 4 size: 64505 MB
  node 4 free: 64253 MB
  node 5 cpus: 75-89,555-569
  node 5 size: 64505 MB
  node 5 free: 64248 MB
  node 6 cpus: 90-104,570-584
  node 6 size: 64505 MB
  node 6 free: 64202 MB
  node 7 cpus: 105-119,585-599
  node 7 size: 64505 MB
  node 7 free: 64260 MB
  node 8 cpus: 120-134,600-614
  node 8 size: 64505 MB
  node 8 free: 64253 MB
  node 9 cpus: 135-149,615-629
  node 9 size: 64505 MB
  node 9 free: 64245 MB
  node 10 cpus: 150-164,630-644
  node 10 size: 64505 MB
  node 10 free: 64226 MB
  node 11 cpus: 165-179,645-659
  node 11 size: 64505 MB
  node 11 free: 64244 MB
  node 12 cpus: 180-194,660-674
  node 12 size: 64505 MB
  node 12 free: 64247 MB
  node 13 cpus: 195-209,675-689
  node 13 size: 64469 MB
  node 13 free: 64208 MB
  node 14 cpus: 210-224,690-704
  node 14 size: 64505 MB
  node 14 free: 64249 MB
  node 15 cpus: 225-239,705-719
  node 15 size: 64505 MB
  node 15 free: 64155 MB
  node 16 cpus: 240-254,720-734
  node 16 size: 64505 MB
  node 16 free: 64214 MB
  node 17 cpus: 255-269,735-749
  node 17 size: 64505 MB
  node 17 free: 64199 MB
  node 18 cpus: 270-284,750-764
  node 18 size: 64505 MB
  node 18 free: 64250 MB
```

(Continued on next page)

Platform Notes (Continued)

```
  node 19 cpus: 285-299,765-779
  node 19 size: 64505 MB
  node 19 free: 64222 MB
  node 20 cpus: 300-314,780-794
  node 20 size: 64505 MB
  node 20 free: 64143 MB
  node 21 cpus: 315-329,795-809
  node 21 size: 64505 MB
  node 21 free: 64151 MB
  node 22 cpus: 330-344,810-824
  node 22 size: 64505 MB
  node 22 free: 63076 MB
  node 23 cpus: 345-359,825-839
  node 23 size: 64505 MB
  node 23 free: 64188 MB
  node 24 cpus: 360-374,840-854
  node 24 size: 64505 MB
  node 24 free: 64196 MB
  node 25 cpus: 375-389,855-869
  node 25 size: 64505 MB
  node 25 free: 64263 MB
  node 26 cpus: 390-404,870-884
  node 26 size: 64505 MB
  node 26 free: 64217 MB
  node 27 cpus: 405-419,885-899
  node 27 size: 64505 MB
  node 27 free: 64232 MB
  node 28 cpus: 420-434,900-914
  node 28 size: 64505 MB
  node 28 free: 64183 MB
  node 29 cpus: 435-449,915-929
  node 29 size: 64505 MB
  node 29 free: 63062 MB
  node 30 cpus: 450-464,930-944
  node 30 size: 64505 MB
  node 30 free: 63491 MB
  node 31 cpus: 465-479,945-959
  node 31 size: 64458 MB
  node 31 free: 64187 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24
  25  26  27  28  29  30  31
    0:  10  12  12  12  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
    21  21  21  31  31  31  31
    1:  12  10  12  12  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
    21  21  21  31  31  31  31
    2:  12  12  10  12  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
    21  21  21  31  31  31  31
    3:  12  12  12  10  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
    21  21  21  31  31  31  31
    4:  21  21  21  21  10  12  12  12  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31
    31  31  31  21  21  21  21
    5:  21  21  21  21  12  10  12  12  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31
    31  31  31  21  21  21  21
    6:  21  21  21  21  12  12  10  12  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31
    31  31  31  21  21  21  21
    7:  21  21  21  21  12  12  12  10  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31
    31  31  31  21  21  21  21
    8:  21  21  21  21  31  31  31  31  10  12  12  12  21  21  21  21  21  21  21  21  31  31  31  31  31
    31  31  31  21  21  21  21
```

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Platform Notes (Continued)

```
    9:  21  21  21  21  31  31  31  31  12  10  12  12  21  21  21  21  21  21  21  21  31  31  31  31  31
   31  31  31  21  21  21  21
   10:  21  21  21  21  31  31  31  31  12  12  10  12  21  21  21  21  21  21  21  21  31  31  31  31  31
   31  31  31  21  21  21  21
   11:  21  21  21  21  31  31  31  31  12  12  12  10  21  21  21  21  21  21  21  21  31  31  31  31  31
   31  31  31  21  21  21  21
   12:  31  31  31  31  21  21  21  21  21  21  21  21  10  12  12  12  31  31  31  31  21  21  21  21  21
   21  21  21  31  31  31  31
   13:  31  31  31  31  21  21  21  21  21  21  21  21  12  10  12  12  31  31  31  31  21  21  21  21  21
   21  21  21  31  31  31  31
   14:  31  31  31  31  21  21  21  21  21  21  21  21  12  12  10  12  31  31  31  31  21  21  21  21  21
   21  21  21  31  31  31  31
   15:  31  31  31  31  21  21  21  21  21  21  21  21  12  12  12  10  31  31  31  31  21  21  21  21  21
   21  21  21  31  31  31  31
   16:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  10  12  12  12  21  21  21  21  21
   21  21  21  31  31  31  31
   17:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12  10  12  12  21  21  21  21  21
   21  21  21  31  31  31  31
   18:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12  12  10  12  21  21  21  21  21
   21  21  21  31  31  31  31
   19:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12  12  12  10  21  21  21  21  21
   21  21  21  31  31  31  31
   20:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  10  12  12  12  31
   31  31  31  21  21  21  21
   21:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  12  10  12  12  31
   31  31  31  21  21  21  21
   22:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  12  12  10  12  31
   31  31  31  21  21  21  21
   23:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  12  12  12  10  31
   31  31  31  21  21  21  21
   24:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  10
   12  12  12  21  21  21  21
   25:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12
   10  12  12  21  21  21  21
   26:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12
   12  10  12  21  21  21  21
   27:  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12
   12  12  10  21  21  21  21
   28:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
   21  21  21  10  12  12  12
   29:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
   21  21  21  12  10  12  12
   30:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
   21  21  21  12  12  10  12
   31:  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
   21  21  21  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       2113180384 kB

------------------------------------------------------------
10. who -r
  run-level 3 Jun 28 13:40

------------------------------------------------------------
11. Systemd service manager version: systemd 250 (250-6.el9_0)
  Default Target  Status
  multi-user      degraded
```

(Continued on next page)

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

------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
                   dbus-broker firewalld getty@ kdump lvm2-monitor mdmonitor microcode nis-domainname
                   rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned
                   udisks2 upower
  enabled-runtime  systemd-remount-fs
  disabled         blk-availability canberra-system-bootup canberra-system-shutdown
                   canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell irqbalance
                   kvm_stat man-db-restart-cache-update nftables powertop 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,gpt2)/vmlinuz-5.14.0-70.22.1.el9_0.x86_64
  root=/dev/mapper/rhel-root
  ro
  resume=/dev/mapper/rhel-swap
  rd.lvm.lv=rhel/root
  rd.lvm.lv=rhel/swap

------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 800 MHz and 3.50 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
16. tuned-adm active
  Current active profile: throughput-performance

------------------------------------------------------------
17. 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                     40
  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                      10
```

(Continued on next page)

Platform Notes (Continued)

```
  vm.watermark_boost_factor       15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode                0

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

------------------------------------------------------------
19. /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

------------------------------------------------------------
20. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 9.0 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
  system-release Red Hat Enterprise Linux release 9.0 (Plow)

------------------------------------------------------------
21. Disk information
SPEC is set to: /home/19cpu2017
  Filesystem            Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   2.9T  600G  2.3T  21% /home

------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:         IEI
    Product:        TS860G7
    Product Family: Not specified
    Serial:         000000000

------------------------------------------------------------
23. 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:
    64x Samsung M321R4GA3BB6-CQKEG 32 GB 2 rank 4800


------------------------------------------------------------
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       American Megatrends International, LLC.
   BIOS Version:      05.00.00
   BIOS Date:         04/07/2023
```

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`

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/Intel-ic2023-official-linux64.html
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-intel-V3.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-intel-V3.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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