SPEC CPU®2017 Integer Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

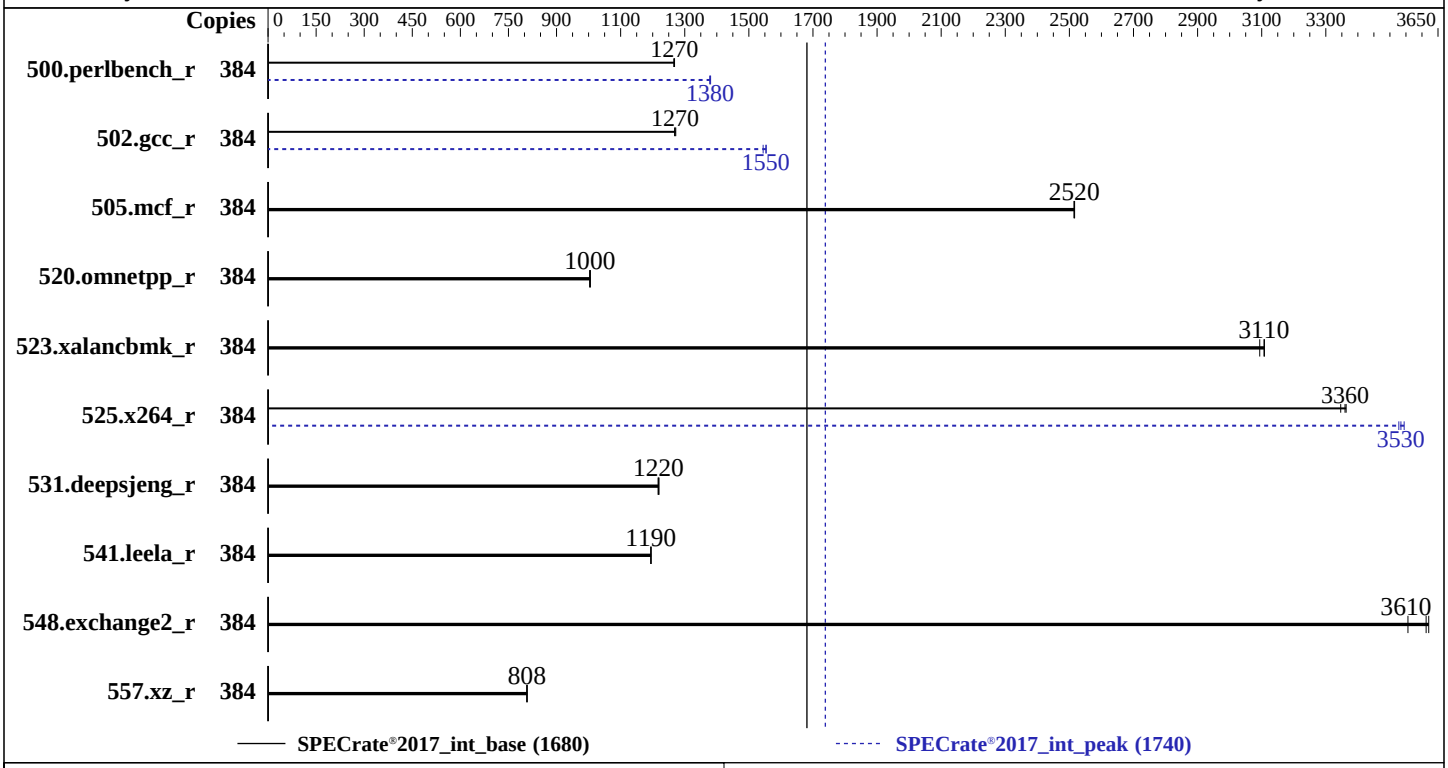
ProLiant DL560 Gen11
(2.10 GHz, Intel Xeon Platinum 8468H)

SPECrate®2017_int_base = 1680

SPECrate®2017_int_peak = 1740

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Apr-2023
Hardware Availability: May-2023
Software Availability: Dec-2022



Hardware

CPU Name:	Intel Xeon Platinum 8468H
Max MHz:	3800
Nominal:	2100
Enabled:	192 cores, 4 chips, 2 threads/core
Orderable:	1, 2, 4 chip(s)
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	105 MB I+D on chip per chip
Other:	None
Memory:	1 TB (32 x 32 GB 2Rx8 PC5-4800B-R)
Storage:	1 x 480 GB SATA SSD
Other:	None

Software

OS:	Ubuntu 22.04.1 LTS Kernel 5.15.0-43-generic
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:	HPE BIOS Version v1.30 03/01/2023 released Mar-2023
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other:	jemalloc memory allocator V5.0.1
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	384	482	1270	**482**	**1270**	483	1270	384	443	1380	444	1380	**443**	**1380**
502.gcc_r	384	**428**	**1270**	429	1270	427	1270	384	350	1550	**350**	**1550**	352	1540
505.mcf_r	384	**247**	**2520**	247	2510	247	2520	384	**247**	**2520**	247	2510	247	2520
520.omnetpp_r	384	502	1000	**502**	**1000**	501	1010	384	502	1000	**502**	**1000**	501	1010
523.xalancbmk_r	384	130	3110	131	3090	**131**	**3110**	384	130	3110	131	3090	**131**	**3110**
525.x264_r	384	201	3350	**200**	**3360**	200	3360	384	190	3540	191	3530	**190**	**3530**
531.deepsjeng_r	384	361	1220	**361**	**1220**	362	1220	384	361	1220	**361**	**1220**	362	1220
541.leela_r	384	533	1190	532	1200	**532**	**1190**	384	533	1190	532	1200	**532**	**1190**
548.exchange2_r	384	278	3620	**278**	**3610**	283	3560	384	278	3620	**278**	**3610**	283	3560
557.xz_r	384	514	807	513	809	**513**	**808**	384	514	807	513	809	**513**	**808**

SPECrate®2017_int_base = 1680

SPECrate®2017_int_peak = 1740

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"
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>
IRQ balance service was stopped using "systemctl stop irqbalance.service"
tuned-adm profile was set to Accelerator-Performance using "tuned-adm profile accelerator-performance"
perf-bias for all the CPUs is set using "cpupower set -b 0"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/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
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.
 jemalloc, a general purpose malloc implementation
 built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
The system ROM used for this result contains Intel microcode version 0x2b0001b0 for
the Intel Xeon Platinum 8468H Processor
BIOS Configuration
 Workload Profile set to General Throughput Compute
 Memory Patrol Scrubbing set to Disabled
 Last Level Cache (LLC) Dead Line Allocation set to Disabled
 Enhanced Processor Performance Profile set to Aggressive
 Thermal Configuration set to Maximum Cooling
 Workload Profile set to Custom
  Adjacent Sector Prefetch set to Disabled
  DCU Stream Prefetcher set to Disabled
  Intel UPI Link Power Management set to Enabled
  Minimum Processor Idle Power Package C-State set to Package C6 (non-retention) State
The reported date by sysinfo is incorrect due to computer clock being not set correctly.
The correct test date is: Apr-2023

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on admin1 Mon Jun 27 20:23:46 2022

 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 249 (249.11-0ubuntu3.4)
 12. Failed units, from systemctl list-units --state=failed
```

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Platform Notes (Continued)

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

------------------------------------------------------------
1. uname -a
  Linux admin1 5.15.0-43-generic #46-Ubuntu SMP Tue Jul 12 10:30:17 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   20:23:46 up  1:55,  3 users,  load average: 0.15, 0.05, 1.44
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  admin1   tty1     -                18:31    1:51m  0.05s  0.00s -bash
  admin1   pts/0    172.16.0.100     18:33    1:50m  0.22s  0.02s sshd: admin1 [priv]
  admin1   pts/1    172.16.0.100     18:33   18.00s  1.16s  0.21s sudo -i

------------------------------------------------------------
3. Username
  From environment variable $USER:  root
  From the command 'logname':       admin1

------------------------------------------------------------
4. ulimit -a
  time(seconds)        unlimited
  file(blocks)         unlimited
  data(kbytes)         unlimited
  stack(kbytes)        unlimited
  coredump(blocks)     0
  memory(kbytes)       unlimited
  locked memory(kbytes) 132050020
  process              4126124
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: admin1 [priv]
 sshd: admin1@pts/0
 -bash
 sudo -i
 sudo -i
 -bash
 -bash
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=384 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=192 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base,peak -o all intrate
```

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Platform Notes (Continued)

```
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=384 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=192 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower
   --runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.003/templogs/preenv.intrate.003.0.log --lognum 003.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8468H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 6
    microcode       : 0x2b0001b0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 48
    siblings        : 96
    4 physical ids (chips)
    384 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    physical id 2: core ids 0-47
    physical id 3: core ids 0-47
    physical id 0: apicids 0-95
    physical id 1: apicids 128-223
    physical id 2: apicids 256-351
    physical id 3: apicids 384-479
  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:
  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):                          384
  On-line CPU(s) list:             0-383
  Vendor ID:                       GenuineIntel
  Model name:                      Intel(R) Xeon(R) Platinum 8468H
  CPU family:                      6
  Model:                           143
  Thread(s) per core:              2
  Core(s) per socket:              48
  Socket(s):                       4
  Stepping:                        6
  BogoMIPS:                        4200.00
  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 cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                                   vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2
```

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Platform Notes (Continued)

```
                                 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
                                 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:                     9 MiB (192 instances)
  L1i cache:                     6 MiB (192 instances)
  L2 cache:                      384 MiB (192 instances)
  L3 cache:                      420 MiB (4 instances)
  NUMA node(s):                  16
  NUMA node0 CPU(s):             0-11,192-203
  NUMA node1 CPU(s):             12-23,204-215
  NUMA node2 CPU(s):             24-35,216-227
  NUMA node3 CPU(s):             36-47,228-239
  NUMA node4 CPU(s):             48-59,240-251
  NUMA node5 CPU(s):             60-71,252-263
  NUMA node6 CPU(s):             72-83,264-275
  NUMA node7 CPU(s):             84-95,276-287
  NUMA node8 CPU(s):             96-107,288-299
  NUMA node9 CPU(s):             108-119,300-311
  NUMA node10 CPU(s):            120-131,312-323
  NUMA node11 CPU(s):            132-143,324-335
  NUMA node12 CPU(s):            144-155,336-347
  NUMA node13 CPU(s):            156-167,348-359
  NUMA node14 CPU(s):            168-179,360-371
  NUMA node15 CPU(s):            180-191,372-383
  Vulnerability Itlb multihit:   Not affected
  Vulnerability L1tf:            Not affected
  Vulnerability Mds:             Not affected
  Vulnerability Meltdown:        Not affected
  Vulnerability Mmio stale data: Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  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       9M   12 Data            1     64        1             64
     L1i       32K       6M    8 Instruction     1     64        1             64
     L2         2M     384M   16 Unified         2   2048        1             64
     L3       105M     420M   15 Unified         3 114688        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: 0-11,192-203
  node 0 size: 64092 MB
  node 0 free: 57415 MB
  node 1 cpus: 12-23,204-215
  node 1 size: 64472 MB
  node 1 free: 62419 MB
  node 2 cpus: 24-35,216-227
```

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Platform Notes (Continued)

```
node 2 size: 64506 MB
node 2 free: 62511 MB
node 3 cpus: 36-47,228-239
node 3 size: 64506 MB
node 3 free: 62474 MB
node 4 cpus: 48-59,240-251
node 4 size: 64506 MB
node 4 free: 62440 MB
node 5 cpus: 60-71,252-263
node 5 size: 64506 MB
node 5 free: 62508 MB
node 6 cpus: 72-83,264-275
node 6 size: 64506 MB
node 6 free: 62488 MB
node 7 cpus: 84-95,276-287
node 7 size: 64506 MB
node 7 free: 62529 MB
node 8 cpus: 96-107,288-299
node 8 size: 64506 MB
node 8 free: 62536 MB
node 9 cpus: 108-119,300-311
node 9 size: 64506 MB
node 9 free: 62509 MB
node 10 cpus: 120-131,312-323
node 10 size: 64506 MB
node 10 free: 62493 MB
node 11 cpus: 132-143,324-335
node 11 size: 64506 MB
node 11 free: 62531 MB
node 12 cpus: 144-155,336-347
node 12 size: 64506 MB
node 12 free: 62476 MB
node 13 cpus: 156-167,348-359
node 13 size: 64506 MB
node 13 free: 62520 MB
node 14 cpus: 168-179,360-371
node 14 size: 64506 MB
node 14 free: 62397 MB
node 15 cpus: 180-191,372-383
node 15 size: 64495 MB
node 15 free: 62233 MB
node distances:
node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
  0:  10  20  30  30  30  30  30  30  30  30  30  30  30  30  30  30
  1:  20  10  30  30  30  30  30  30  30  30  30  30  30  30  30  30
  2:  30  30  10  20  30  30  30  30  30  30  30  30  30  30  30  30
  3:  30  30  20  10  30  30  30  30  30  30  30  30  30  30  30  30
  4:  30  30  30  30  10  20  30  30  30  30  30  30  30  30  30  30
  5:  30  30  30  30  20  10  30  30  30  30  30  30  30  30  30  30
  6:  30  30  30  30  30  30  10  20  30  30  30  30  30  30  30  30
  7:  30  30  30  30  30  30  20  10  30  30  30  30  30  30  30  30
  8:  30  30  30  30  30  30  30  30  10  20  30  30  30  30  30  30
  9:  30  30  30  30  30  30  30  30  20  10  30  30  30  30  30  30
 10:  30  30  30  30  30  30  30  30  30  30  10  20  30  30  30  30
 11:  30  30  30  30  30  30  30  30  30  30  20  10  30  30  30  30
 12:  30  30  30  30  30  30  30  30  30  30  30  30  10  20  30  30
 13:  30  30  30  30  30  30  30  30  30  30  30  30  20  10  30  30
 14:  30  30  30  30  30  30  30  30  30  30  30  30  30  30  10  20
 15:  30  30  30  30  30  30  30  30  30  30  30  30  30  30  20  10
```

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Platform Notes (Continued)

```
------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056400184 kB

------------------------------------------------------------
10. who -r
  run-level 5 Jun 27 18:30

------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.4)
  Default Target  Status
  graphical       degraded

------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT                                LOAD   ACTIVE SUB    DESCRIPTION
  * systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured

------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager apparmor blk-availability cloud-config cloud-final cloud-init
                   cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                   grub-common grub-initrd-fallback irqbalance keyboard-setup lvm2-monitor lxd-agent
                   multipathd networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db
                   setvtrgb snapd ssh systemd-networkd systemd-networkd-wait-online systemd-pstore
                   systemd-resolved systemd-timesyncd thermald tuned ua-reboot-cmds ubuntu-advantage udisks2
                   ufw unattended-upgrades vgauth
  enabled-runtime  netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled         console-getty debug-shell iscsid nftables powertop rsync serial-getty@
                   systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                   systemd-time-wait-sync upower
  generated        apport
  indirect         uuidd
  masked           cryptdisks cryptdisks-early hwclock lvm2 multipath-tools-boot rc rcS screen-cleanup sudo
                   x11-common

------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/vmlinuz-5.15.0-43-generic
  root=/dev/mapper/ubuntu--vg-ubuntu--lv
  ro

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

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

------------------------------------------------------------
17. sysctl
  kernel.numa_balancing              1
  kernel.randomize_va_space          2
  vm.compaction_proactiveness       20
```

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Platform Notes (Continued)

```
  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
  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 Ubuntu 22.04.1 LTS

------------------------------------------------------------
21. Disk information
SPEC is set to: /home/cpu2017
  Filesystem                     Type  Size  Used Avail Use% Mounted on
  /dev/mapper/ubuntu--vg-ubuntu--lv ext4  437G   98G  320G  24% /

------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:         HPE
    Product:        ProLiant DL560 Gen11
    Product Family: ProLiant
    Serial:         CNX22605RZ

------------------------------------------------------------
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:
    28x Hynix HMCG88AEBRA168N 32 GB 2 rank 4800
```

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Platform Notes (Continued)

```
     3x Hynix HMCG88MEBRA113N 32 GB 2 rank 4800
     1x Hynix HMCG88MEBRA115N 32 GB 2 rank 4800
     32x UNKNOWN NOT AVAILABLE


 ------------------------------------------------------------
 24. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       HPE
    BIOS Version:      1.30
    BIOS Date:         03/01/2023
    BIOS Revision:     1.30
    Firmware Revision: 1.20
```

Compiler Version Notes

```
==============================================================================================================
C       | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
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==============================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
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==============================================================================================================
C       | 502.gcc_r(peak)
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==============================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
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==============================================================================================================
C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
        | 541.leela_r(base, peak)
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==============================================================================================================
Fortran | 548.exchange2_r(base, peak)
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Compiler Version Notes (Continued)

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

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Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-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

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow

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Peak Optimization Flags (Continued)

500.perlbench_r (continued):
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev1.2.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/HPE-Platform-Flags-Intel-SPR-rev1.2.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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