SPEC CPU®2026 Integer Rate Result

Hewlett Packard Enterprise

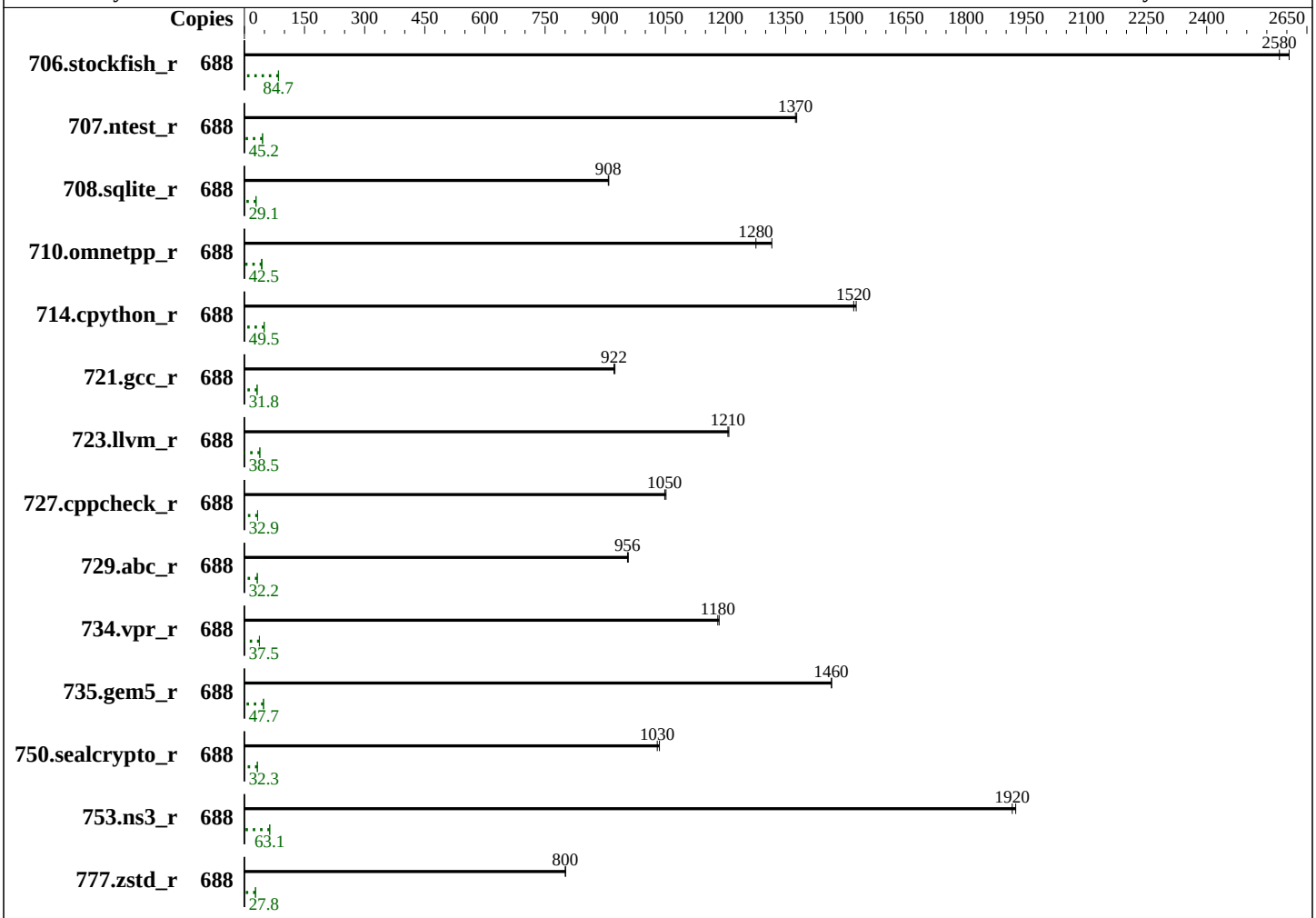
(Test Sponsor: HPE)

ProLiant Compute DL580 Gen12 (2.00 Ghz, Intel Xeon 6788P)

SPECrate®2026_int_base =	1230
SPECrate®2026_int_energy_base =	40.4
SPECrate®2026_int_peak =	1230
SPECrate®2026_int_energy_peak =	40.4

CPU2026 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Feb-2026
Hardware Availability: Jul-2025
Software Availability: Jan-2026



Hardware

CPU Name:	Intel Xeon 6788P
Max MHz:	3800
Nominal:	2000
Enabled:	344 cores, 4 chips, 2 threads/core
Orderable:	1,2,4 Chips
Cache L1:	64 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	336 MB I+D on chip per chip
Other:	None
Memory:	2 TB (32 x 64 GB 2Rx4 PC5-6400B-R)
Storage:	1 x 1.6 TB NVMe SSD

(Continued on next page)

Software

OS:	Ubuntu 24.04.3 LTS Kernel 6.8.0-94-generic
Compiler:	C/C++: Version 2025.3 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2025.3 of Intel Fortran Compiler for Linux
Compiler Category:	Vendor
Firmware:	HPE BIOS Version v1.60 released Jan-2026
File System:	ext4
System State:	Run level 5 (multi-user, graphical)
Base Pointers:	64-bit

(Continued on next page)

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Hardware (Continued)

Cooling: Air
Other: None

Software (Continued)

Peak Pointers: 64-bit
Other: None
Power Management: BIOS is set to prefer performance at the cost of additional power usage

Power

Max. Power (W): 2916.5
Idle Power (W): 1010.39
Min. Temperature (C): 20.50
Elevation (m): 132
Line Standard: 206 V / 60 Hz / 1 phase / 2 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 1.19.00 of iLO7 released Dec 02 2025
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 1 x 2400 W (non-redundant)
Details: HPE 2400W M-CRPS Titanium Hot Plug Power Supply Kit (P67252-B21)
Backplane: N/A
Other Storage: 1 X Samsung 1.60TB 64G NVME SSD
Storage Model #s: MO001600KYDMU
NICs Installed: 1 x Intel Ethernet I350T4 Adapter @ 1 Gb
NICs Enabled (FW/OS): 2 / 2
NICs Connected/Speed: 2 @ 1 Gb
Other HW Model #s: 4 X performance fan kits

Power Analyzer #1

Power Analyzer: 192.168.1.10:8888
Hardware Vendor: Yokogawa
Model: WT210
Serial Number: 91GB45371
Input Connection: GPIB
Metrology Institute: NIST
Calibration By: Transcat
Calibration Label: 8-15
Calibration Date: 28-Jul-2025
PTDaemon® Version: 1.11.1 (462c978e; 2024-09-07)
Setup Description: Connected to power supply
Current Ranges Used: 5A, 10A
Voltage Range Used: 300V

Power Analyzer #2

Power Analyzer: 192.168.1.10:8890
Hardware Vendor: Yokogawa
Model: WT310E
Serial Number: C2SF14001V
Input Connection: GPIB
Metrology Institute: NIST
Calibration By: Transcat
Calibration Label: 5-JH2RG-40-1
Calibration Date: 07-Mar-2025
PTDaemon Version: 1.11.1 (462c978e; 2024-09-07)
Setup Description: Connected to power supply
Current Ranges Used: 5A, 10A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: 192.168.1.10:8889
Hardware Vendor: Digi
Model: Watchport
Serial Number: SV73303523
Input Connection: USB
PTDaemon Version: 1.11.1 (462c978e; 2024-09-07)
Setup Description: In front of main air inlet

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ProLiant Compute DL580 Gen12 (2.00 Ghz, Intel Xeon 6788P)

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SPECrate®2026_int_energy_base = 40.4

SPECrate®2026_int_peak = 1230

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CPU2026 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Feb-2026
Hardware Availability: Jul-2025
Software Availability: Jan-2026

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
706.stockfish_r	688	333	2610	863	85.3	2590	2790	**336**	**2580**	**869**	**84.7**	**2590**	**2770**						
707.ntest_r	688	296	1380	752	45.4	2550	2640	**296**	**1370**	**755**	**45.2**	**2550**	**2640**						
708.sqlite_r	688	400	909	1040	29.2	2610	2880	**400**	**908**	**1050**	**29.1**	**2610**	**2900**						
710.omnetpp_r	688	**262**	**1280**	**663**	**42.5**	**2530**	**2710**	254	1320	638	44.1	2510	2740						
714.cpython_r	688	**217**	**1520**	**557**	**49.5**	**2570**	**2810**	216	1530	557	49.5	2580	2820						
721.gcc_r	688	**512**	**922**	**1250**	**31.8**	**2450**	**2800**	511	924	1250	31.8	2450	2810						
723.llvm_r	688	**289**	**1210**	**759**	**38.5**	**2630**	**2810**	289	1210	758	38.6	2630	2810						
727.cppcheck_r	688	235	1050	629	33.0	2680	2880	**236**	**1050**	**631**	**32.9**	**2680**	**2920**						
729.abc_r	688	330	957	819	32.3	2480	2830	**330**	**956**	**822**	**32.2**	**2490**	**2840**						
734.vpr_r	688	**269**	**1180**	**709**	**37.5**	**2640**	**2880**	268	1180	707	37.6	2640	2890						
735.gem5_r	688	**229**	**1460**	**587**	**47.7**	**2570**	**2770**	229	1460	587	47.7	2570	2770						
750.sealcrypto_r	688	356	1040	960	32.4	2690	2720	**358**	**1030**	**964**	**32.3**	**2690**	**2730**						
753.ns3_r	688	**220**	**1920**	**561**	**63.1**	**2550**	**2710**	219	1920	559	63.3	2550	2710						
777.zstd_r	688	**554**	**800**	**1340**	**27.8**	**2420**	**2780**	553	801	1340	27.7	2430	2800						

SPECrate®2026_int_base = 1230

SPECrate®2026_int_energy_base = 40.4

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

Peak Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
706.stockfish_r	688	333	2610	863	85.3	2590	2790	**336**	**2580**	**869**	**84.7**	**2590**	**2770**						
707.ntest_r	688	296	1380	752	45.4	2550	2640	**296**	**1370**	**755**	**45.2**	**2550**	**2640**						
708.sqlite_r	688	400	909	1040	29.2	2610	2880	**400**	**908**	**1050**	**29.1**	**2610**	**2900**						
710.omnetpp_r	688	**262**	**1280**	**663**	**42.5**	**2530**	**2710**	254	1320	638	44.1	2510	2740						
714.cpython_r	688	**217**	**1520**	**557**	**49.5**	**2570**	**2810**	216	1530	557	49.5	2580	2820						
721.gcc_r	688	**512**	**922**	**1250**	**31.8**	**2450**	**2800**	511	924	1250	31.8	2450	2810						
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729.abc_r	688	330	957	819	32.3	2480	2830	**330**	**956**	**822**	**32.2**	**2490**	**2840**						
734.vpr_r	688	**269**	**1180**	**709**	**37.5**	**2640**	**2880**	268	1180	707	37.6	2640	2890						
735.gem5_r	688	**229**	**1460**	**587**	**47.7**	**2570**	**2770**	229	1460	587	47.7	2570	2770						
750.sealcrypto_r	688	356	1040	960	32.4	2690	2720	**358**	**1030**	**964**	**32.3**	**2690**	**2730**						
753.ns3_r	688	**220**	**1920**	**561**	**63.1**	**2550**	**2710**	219	1920	559	63.3	2550	2710						
777.zstd_r	688	**554**	**800**	**1340**	**27.8**	**2420**	**2780**	553	801	1340	27.7	2430	2800						

SPECrate®2026_int_peak = 1230

SPECrate®2026_int_energy_peak = 40.4

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

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>
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2026/lib"
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.
```

Platform Notes

```
BIOS Configurations : Parameters are selected in the order shown below
Workload Profile set to General Throughput Compute
Enhanced Processor Performance Profile set to Aggressive
Thermal Configuration set to Maximum Cooling
Memory Patrol Scrubbing set to Disabled
Last Level Cache (LLC) Prefetch set to Enabled
XPT Prefetch set to Disabled
Intel UPI Prefetch set to Disabled
  Workload Profile set to Custom
   DCU Stream Prefetcher set to Disabled
   Adjacent Sector Prefetch set to Disabled

 Sysinfo program /home/cpu2026/bin/sysinfo
 Rev: 069f95da7e7f5d81b2ce48a82150e54f
 running on admin1 Mon Feb  9 00:21:46 2026
```

(Continued on next page)

Platform Notes (Continued)

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

------------------------------------------------------------
Table of contents
------------------------------------------------------------
 1. uname -srvm
 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 255 (255.4-1ubuntu8.12)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -srvm
  Linux 6.8.0-94-generic #96-Ubuntu SMP PREEMPT_DYNAMIC Fri Jan  9 20:36:55 UTC 2026 x86_64

------------------------------------------------------------
2. w
   00:21:46 up 2 min,  3 users,  load average: 0.26, 0.36, 0.16
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU  WHAT
  admin1            172.16.0.100     00:20    2:09   0.00s  0.01s sshd: admin1 [priv]
  admin1            172.16.0.100     00:19    2:09   0.00s   ?    sshd: admin1 [priv]
  admin1   tty1     -                00:19    2:10   0.03s   ?    sudo -i

------------------------------------------------------------
3. Username
```

(Continued on next page)

Platform Notes (Continued)

```
  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) 264124528
  process              8253571
  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/1
 -bash
 sudo -i
 sudo -i
 -bash
 -bash
 runcpu --nobuild --reportable --action validate --power --define default-platform-flags --copies 688 -c
   ic2025.3-sapphirerapids-cpu2026-0.902-rate-20260121.cfg --define smt-on --define cores=344 --define
   physicalfirst --define invoke_with_interleave --define drop_caches --tune base -n 2 -o all intrate
 runcpu --nobuild --reportable --action validate --power --define default-platform-flags --copies 688
   --configfile ic2025.3-sapphirerapids-cpu2026-0.902-rate-20260121.cfg --define smt-on --define cores=344
   --define physicalfirst --define invoke_with_interleave --define drop_caches --tune base --iterations 2
   --output_format all --runmode rate --tune base --size refrate intrate --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2026.047/templogs/preenv.intrate.047.0.log --lognum 047.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2026

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) 6788P
    vendor_id       : GenuineIntel
    cpu family      : 6
```

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Platform Notes (Continued)

```
     model           : 173
     stepping        : 1
     microcode       : 0x1000411
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi vmscape
     cpu cores       : 86
     siblings        : 172
     4 physical ids (chips)
     688 processors (hardware threads)
     physical id 0: core ids 0-42,64-106
     physical id 1: core ids 0-42,64-106
     physical id 2: core ids 0-42,64-106
     physical id 3: core ids 0-42,64-106
     physical id 0: apicids 0-85,128-213
     physical id 1: apicids 256-341,384-469
     physical id 2: apicids 512-597,640-725
     physical id 3: apicids 768-853,896-981
   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 2.39.3:
   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):                               688
   On-line CPU(s) list:                  0-687
   Vendor ID:                            GenuineIntel
   BIOS Vendor ID:                       Intel(R) Corporation
   Model name:                           Intel(R) Xeon(R) 6788P
   BIOS Model name:                      Intel(R) Xeon(R) 6788P  CPU @ 2.0GHz
   BIOS CPU family:                      179
   CPU family:                           6
   Model:                                173
   Thread(s) per core:                   2
   Core(s) per socket:                   86
   Socket(s):                            4
   Stepping:                             1
   CPU(s) scaling MHz:                   21%
   CPU max MHz:                          3800.0000
   CPU min MHz:                          800.0000
   BogoMIPS:                             4000.00
   Flags:                          fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
```

(Continued on next page)

Platform Notes (Continued)

```
                    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 cdp_l2 ssbd mba
                    ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad
                    fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a
                    avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt
                    avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves
                    cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect
                    user_shstk avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hwp
                    hwp_act_window hwp_epp hwp_pkg_req vnmi 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
                    ibt amx_bf16 avx512_fp16 amx_tile amx_int8 flush_l1d
                    arch_capabilities ibpb_exit_to_user
Virtualization:                     VT-x
L1d cache:                          16.1 MiB (344 instances)
L1i cache:                          21.5 MiB (344 instances)
L2 cache:                           688 MiB (344 instances)
L3 cache:                           1.3 GiB (4 instances)
NUMA node(s):                       8
NUMA node0 CPU(s):                  0-42,344-386
NUMA node1 CPU(s):                  43-85,387-429
NUMA node2 CPU(s):                  86-128,430-472
NUMA node3 CPU(s):                  129-171,473-515
NUMA node4 CPU(s):                  172-214,516-558
NUMA node5 CPU(s):                  215-257,559-601
NUMA node6 CPU(s):                  258-300,602-644
NUMA node7 CPU(s):                  301-343,645-687
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:        Not affected
Vulnerability L1tf:                 Not affected
Vulnerability Mds:                  Not affected
Vulnerability Meltdown:             Not affected
Vulnerability Mmio stale data:      Not affected
Vulnerability Reg file data sampling: Not affected
Vulnerability Retbleed:             Not affected
Vulnerability Spec rstack overflow: 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 / Automatic IBRS; IBPB conditional; RSB filling;
```

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Platform Notes (Continued)

```
                                       PBRSB-eIBRS Not affected; BHI BHI_DIS_S
  Vulnerability Srbds:                 Not affected
  Vulnerability Tsx async abort:       Not affected
  Vulnerability Vmscape:               Mitigation; IBPB before exit to userspace

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
     L1d       48K    16.1M   12 Data            1     64        1             64
     L1i       64K    21.5M   16 Instruction     1     64        1             64
     L2         2M     688M   16 Unified         2   2048        1             64
     L3       336M     1.3G   16 Unified         3 344064        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0-42,344-386
  node 0 size: 257414 MB
  node 0 free: 253662 MB
  node 1 cpus: 43-85,387-429
  node 1 size: 258018 MB
  node 1 free: 256924 MB
  node 2 cpus: 86-128,430-472
  node 2 size: 257975 MB
  node 2 free: 256952 MB
  node 3 cpus: 129-171,473-515
  node 3 size: 258018 MB
  node 3 free: 256920 MB
  node 4 cpus: 172-214,516-558
  node 4 size: 258018 MB
  node 4 free: 256940 MB
  node 5 cpus: 215-257,559-601
  node 5 size: 258018 MB
  node 5 free: 256718 MB
  node 6 cpus: 258-300,602-644
  node 6 size: 258018 MB
  node 6 free: 256526 MB
  node 7 cpus: 301-343,645-687
  node 7 size: 257989 MB
  node 7 free: 256789 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  12  21  21  21  21  21  21
    1:  12  10  21  21  21  21  21  21
    2:  21  21  10  12  21  21  21  21
```

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Platform Notes (Continued)

```
     3:  21  21  12  10  21  21  21  21
     4:  21  21  21  21  10  12  21  21
     5:  21  21  21  21  12  10  21  21
     6:  21  21  21  21  21  21  10  12
     7:  21  21  21  21  21  21  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       2112996224 kB

------------------------------------------------------------
10. who -r
  run-level 5 Feb 9 00:19

------------------------------------------------------------
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.12)
  Default Target  Status
  graphical       running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager apparmor apport 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 keyboard-setup lvm2-monitor multipathd
                   networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
                     snapd sysstat 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 rsync serial-getty@ ssh
                   systemd-boot-check-no-failures systemd-confext systemd-network-generator
                 systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code
                 systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy
                 systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysext
                     systemd-time-wait-sync upower
  indirect         systemd-sysupdate systemd-sysupdate-reboot uuidd
  masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.8.0-94-generic
  root=UUID=1167c2a9-3418-41e4-8aa6-434d83833b85
  ro
```

(Continued on next page)

Platform Notes (Continued)

```
------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 638:
    current policy: frequency should be within 800 MHz and 3.80 GHz.
                    The governor "powersave" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
15. tuned-adm active
  Current active profile: balanced

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

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

------------------------------------------------------------
18. /sys/kernel/mm/transparent_hugepage/khugepaged
```

(Continued on next page)

Platform Notes (Continued)

```
  alloc_sleep_millisecs   60000
  defrag                      1
  max_ptes_none             511
  max_ptes_shared           256
  max_ptes_swap              64
  pages_to_scan            4096
  scan_sleep_millisecs    10000

------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 24.04.3 LTS

------------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2026
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p2 ext4  1.5T  403G  989G  29% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:          HPE
    Product:         HPE ProLiant Compute DL580 Gen12
    Product Family: ProLiant
    Serial:          7CED2FP013

------------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.5 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:
    31x Hynix HMCG94AHBRA480N 64 GB 2 rank 6400
    1x Hynix HMCG94AHBRA487N 64 GB 2 rank 6400


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       HPE
   BIOS Version:      1.60
   BIOS Date:         01/09/2026
   BIOS Revision:     1.60
   Firmware Revision: 1.19
```

Compiler Version Notes

```
==============================================================================
C      | 708.sqlite_r(base) 714.cpython_r(base) 777.zstd_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2025.3.0 Build 20251010
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++    | 706.stockfish_r(base) 707.ntest_r(base) 727.cppcheck_r(base)
       | 753.ns3_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2025.3.0 Build 20251010
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base) 721.gcc_r(base) 723.llvm_r(base) 729.abc_r(base)
       | 734.vpr_r(base) 735.gem5_r(base) 750.sealcrypto_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2025.3.0 Build 20251010
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Benchmarks using both C and C++:
`icpx icx`

Base Portability Flags

706.stockfish_r: `-DSPEC_LP64`

(Continued on next page)

Base Portability Flags (Continued)

707.ntest_r: -DSPEC_LP64
708.sqlite_r: -DSPEC_LP64
710.omnetpp_r: -DSPEC_LP64
714.cpython_r: -DSPEC_LP64
721.gcc_r: -DSPEC_LP64
723.llvm_r: -DSPEC_LP64
727.cppcheck_r: -DSPEC_LP64
729.abc_r: -DSPEC_LP64
734.vpr_r: -DSPEC_LP64
735.gem5_r: -DSPEC_LP64
750.sealcrypto_r: -DSPEC_LP64
753.ns3_r: -DSPEC_LP64
777.zstd_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c18 -Wl,-z,muldefs -xsapphirerapids
-mprefer-vector-width=512 -O3 -ffp-model=fast -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2025.3/lib -lqkmalloc

C++ benchmarks:
-m64 -std=c++17 -Wl,-z,muldefs -xsapphirerapids
-mprefer-vector-width=512 -O3 -ffp-model=fast -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2025.3/lib -lqkmalloc

Benchmarks using both C and C++:
-m64 -std=c++17 -std=c18 -Wl,-z,muldefs -xsapphirerapids
-mprefer-vector-width=512 -O3 -ffp-model=fast -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2025.3/lib -lqkmalloc

Peak Optimization Flags

C benchmarks:

(Continued on next page)

Peak Optimization Flags (Continued)

708.sqlite_r: `basepeak = yes`

714.cpython_r: `basepeak = yes`

777.zstd_r: `basepeak = yes`

C++ benchmarks:

706.stockfish_r: `basepeak = yes`

707.ntest_r: `basepeak = yes`

727.cppcheck_r: `basepeak = yes`

753.ns3_r: `basepeak = yes`

Benchmarks using both C and C++:

710.omnetpp_r: `basepeak = yes`

721.gcc_r: `basepeak = yes`

723.llvm_r: `basepeak = yes`

729.abc_r: `basepeak = yes`

734.vpr_r: `basepeak = yes`

735.gem5_r: `basepeak = yes`

750.sealcrypto_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at

`http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-Intel-GNR-rev1.4.html`
`http://www.spec.org/cpu2026/results/flags/Intel-ic2025-official-linux64-cpu2026-0.902.html`

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

`http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-Intel-GNR-rev1.4.xml`
`http://www.spec.org/cpu2026/results/flags/Intel-ic2025-official-linux64-cpu2026-0.902.xml`

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

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