



SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant Compute DL340e Gen12

(2.30 GHz, Intel Xeon 6511P)

SPECspeed®2017_int_base = 14.8

SPECspeed®2017_int_peak = 15.1

CPU2017 License: 3

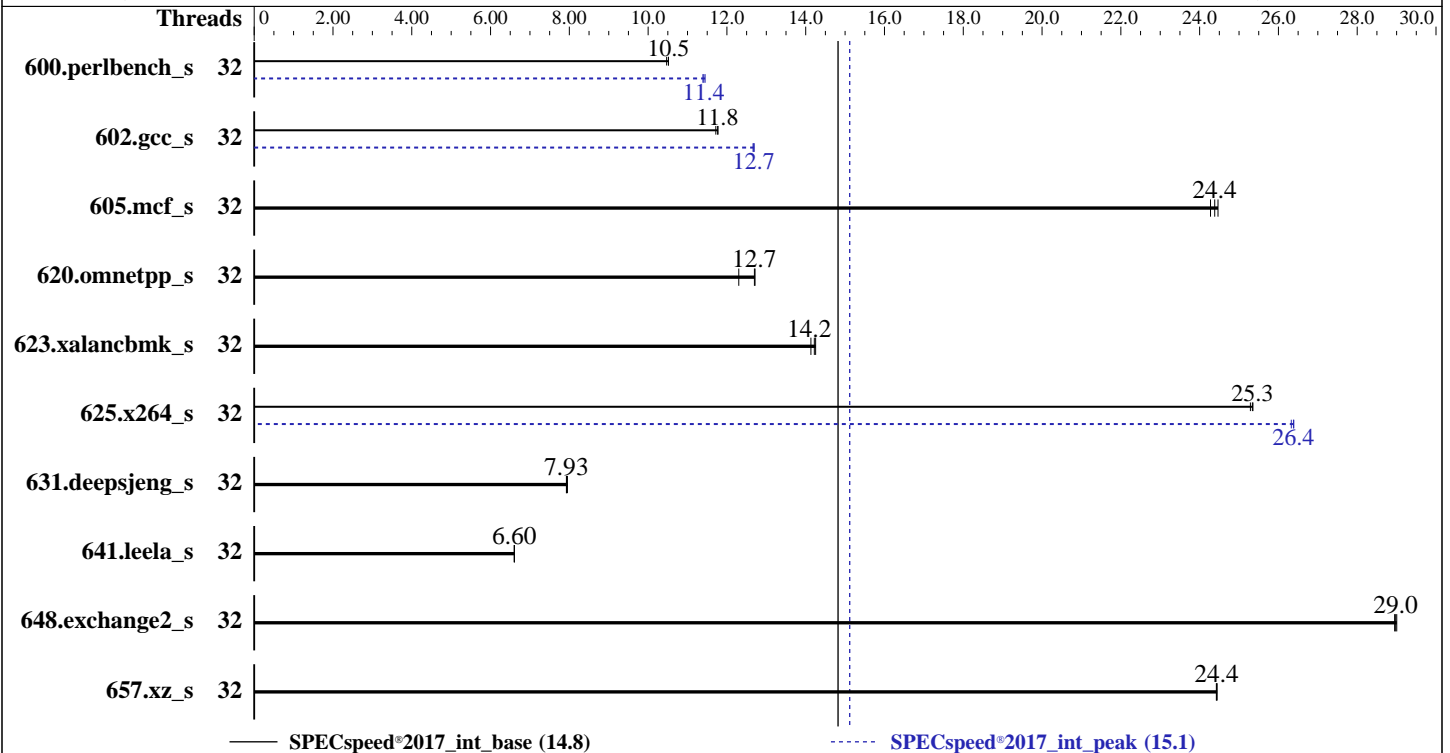
Test Sponsor: HPE

Tested by: HPE

Test Date: Apr-2026

Hardware Availability: May-2026

Software Availability: Jul-2025



Hardware

CPU Name: Intel Xeon 6511P
 Max MHz: 4200
 Nominal: 2300
 Enabled: 16 cores, 1 chip, 2 threads/core
 Orderable: 1 Chip
 Cache L1: 64 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 72 MB I+D on chip per chip
 Other: None
 Memory: 256 GB (8 x 32 GB 2Rx8 PC5-6400B-R)
 Storage: 1 x 6.4 TB NVMe SSD
 Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP7
 Kernel 6.4.0-150700.53.6-default
 Compiler: C/C++: Version 2025.2 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2025.2 of Intel Fortran Compiler for Linux;
 Parallel: Yes
 Firmware: HPE BIOS Version v1.62 02/06/2026 released Feb-2026
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: jemalloc memory allocator V5.0.1
 Power Management: BIOS and OS is set to prefer performance at the cost of additional power usage



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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	32	170	10.5	169	10.5	169	10.5	32	155	11.4	156	11.4	156	11.4
602.gcc_s	32	338	11.8	338	11.8	340	11.7	32	314	12.7	314	12.7	314	12.7
605.mcf_s	32	193	24.5	194	24.4	194	24.3	32	193	24.5	194	24.4	194	24.3
620.omnetpp_s	32	128	12.7	128	12.7	133	12.3	32	128	12.7	128	12.7	133	12.3
623.xalancbmk_s	32	99.7	14.2	99.4	14.3	100	14.1	32	99.7	14.2	99.4	14.3	100	14.1
625.x264_s	32	69.8	25.3	69.6	25.4	69.6	25.3	32	66.8	26.4	66.9	26.4	67.0	26.3
631.deepsjeng_s	32	180	7.95	181	7.93	181	7.93	32	180	7.95	181	7.93	181	7.93
641.leela_s	32	258	6.60	258	6.60	258	6.60	32	258	6.60	258	6.60	258	6.60
648.exchange2_s	32	101	29.0	101	29.0	102	28.9	32	101	29.0	101	29.0	102	28.9
657.xz_s	32	253	24.4	253	24.4	253	24.4	32	253	24.4	253	24.4	253	24.4

SPECspeed®2017_int_base = **14.8**

SPECspeed®2017_int_peak = **15.1**

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

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
tuned-adm profile was set to throughput-performance using 'tuned-adm profile throughput-performance'
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Redhat Enterprise Linux 8.0
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
```



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Platform Notes

BIOS Configuration: Parameters are selected in the order shown below
 Workload Profile set to General Peak Frequency Compute
 Memory Patrol Scrubbing set to Disabled
 Thermal Configuration set to Maximum Cooling
 Enhanced Processor Performance Profile set to Aggressive
 Last Level Cache (LLC) Prefetch set to Enabled
 Minimum Processor Idle Power Core C-State set to C6 as ACPI C3 State
 Workload Profile set to Custom
 Minimum Processor Idle Power Package C-State set to No Package State

Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Sun Apr 12 07:58:13 2026

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

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13. Linux kernel boot-time arguments, from /proc/cmdline
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23. BIOS

 1. uname -a
 Linux localhost 6.4.0-150700.53.6-default #1 SMP PREEMPT_DYNAMIC Tue Jul 1 14:54:47 UTC 2025 (8ab7501)
 x86_64 x86_64 x86_64 GNU/Linux

2. w
 07:58:13 up 1 min, 4 users, load average: 0.25, 0.10, 0.03
 USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT

3. Username
 From environment variable \$USER: root

4. ulimit -a

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Platform Notes (Continued)

```

core file size      (blocks, -c) unlimited
data seg size      (kbytes, -d) unlimited
scheduling priority (-e) 0
file size          (blocks, -f) unlimited
pending signals    (-i) 1029904
max locked memory  (kbytes, -l) 8192
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) 1029904
virtual memory     (kbytes, -v) unlimited
file locks         (-x) unlimited

```

```

-----
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@notty
bash -c cd $SPEC/ && $SPEC/reportable-ic2025.2-lin-sapphirerapids-speed-smt-on-20250605.sh
runcpu --nobuild --action validate --define default-platform-flags -c
  ic2025.2-lin-sapphirerapids-speed-20250605.cfg --define cores=16 --tune base,peak -o all --define
  intspeedaffinity --define smt-on --define drop_caches intspeed
runcpu --nobuild --action validate --define default-platform-flags --configfile
  ic2025.2-lin-sapphirerapids-speed-20250605.cfg --define cores=16 --tune base,peak --output_format all
  --define intspeedaffinity --define smt-on --define drop_caches --nopower --runmode speed --tune base:peak
  --size refspeed intspeed --nopreenv --note-preenv --logfile
  $SPEC/tmp/CPU2017.001/tempslogs/preenv.intspeed.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

```

```

-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) 6511P
vendor_id      : GenuineIntel
cpu family     : 6
model          : 173
stepping       : 1
microcode      : 0xa000133
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores      : 16
siblings       : 32
1 physical ids (chips)
32 processors (hardware threads)
physical id 0: core ids 0-15
physical id 0: apicids 0-31
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 2.40.4:
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         46 bits physical, 57 bits virtual

```

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Platform Notes (Continued)

```

Byte Order:                Little Endian
CPU(s):                    32
On-line CPU(s) list:      0-31
Vendor ID:                 GenuineIntel
Model name:               Intel(R) Xeon(R) 6511P
CPU family:               6
Model:                    173
Thread(s) per core:       2
Core(s) per socket:      16
Socket(s):                1
Stepping:                 1
BogoMIPS:                 4600.00
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 intel_ppin
                          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 hfi vnni 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_lld arch_capabilities

Virtualization:           VT-x
L1d cache:                768 KiB (16 instances)
L1i cache:                1 MiB (16 instances)
L2 cache:                 32 MiB (16 instances)
L3 cache:                 72 MiB (1 instance)
NUMA node(s):             1
NUMA node0 CPU(s):       0-31
Vulnerability Gather data sampling: Not affected
Vulnerability Indirect target selection: Not affected
Vulnerability Itlb multihit: Not affected
Vulnerability Lltf:       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/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS; IBPB conditional; PBRSE-eIBRS Not affected; BHI BHI_DIS_S
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      768K      12 Data      1      64      1      64

```

(Continued on next page)



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Platform Notes (Continued)

L1i	64K	1M	16	Instruction	1	64	1	64
L2	2M	32M	16	Unified	2	2048	1	64
L3	72M	72M	16	Unified	3	73728	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```
available: 1 nodes (0)
node 0 cpus: 0-31
node 0 size: 257509 MB
node 0 free: 256195 MB
node distances:
node 0
0: 10
```

9. /proc/meminfo

```
MemTotal: 263689436 kB
```

10. who -r

```
run-level 3 Apr 12 07:57
```

11. Systemd service manager version: systemd 254 (254.27+suse.167.g130293e510)

```
Default Target Status
multi-user running
```

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd bluetooth cron display-manager getty@ irqbalance issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore tuned wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant
enabled-runtime	systemd-remount-fs
disabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon autofs autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell dnsmasq ebttables exchange-bmc-os-info firewalld fsidd gnome-remote-desktop gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nmb openvpn@ ostree-remount ostree-state-overlay@ rpcbind rpmconfigcheck rsyncd rtkit-daemon samba-bgqd serial-getty@ smartd-generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2 update-system-flatpaks upower vncserver@ wpa_supplicant@
indirect	pcscd saned@ systemd-userdbd wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline

```
BOOT_IMAGE=/boot/vmlinuz-6.4.0-150700.53.6-default
root=UUID=d3f1ca2b-541e-42c0-84d1-4b817852bd13
splash=silent
resume=/dev/disk/by-uuid/f1ba8061-acd6-49df-9135-102e98ed3970
mitigations=auto
quiet
security=apparmor
```

14. cpupower frequency-info

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Platform Notes (Continued)

```

analyzing CPU 11:
  Unable to determine current policy
boost state support:
  Supported: yes
  Active: yes

```

```

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

```

```

-----
16. sysctl
  kernel.numa_balancing          0
  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
  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+madvice [madvice] never
  enabled         [always] madvice never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force

```

```

-----
18. /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

```

```

-----
19. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP7

```

```

-----
20. Disk information
SPEC is set to: /home/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda6       xfs   5.3T  565G  4.7T  11% /home

```

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Platform Notes (Continued)

21. /sys/devices/virtual/dmi/id

Vendor: HPE
Product: HPE ProLiant Compute DL340e Gen12
Product Family: ProLiant
Serial: VPR069P0101UHO

22. dmidecode

Additional information from dmidecode 3.6 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:

5x Micron MTC20F2085S1RC64BD2 MWWF 32 GB 2 rank 6400
3x Micron MTC20F2085S1RC64BD2 QSFF 32 GB 2 rank 6400

23. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: HPE
BIOS Version: 1.62
BIOS Date: 02/06/2026
BIOS Revision: 1.62
Firmware Revision: 1.18

Compiler Version Notes

C | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
| 657.xz_s(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2025.2.0 Build 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.

C++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
| 641.leela_s(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2025.2.0 Build 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.

Fortran | 648.exchange2_s(base, peak)

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2025.2.0 Build 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:

icx

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Base Compiler Invocation (Continued)

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Base Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -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 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:

```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fdelayed-template-parsing -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

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
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```



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SPECspeed®2017_int_base = 14.8

SPECspeed®2017_int_peak = 15.1

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Apr-2026

Hardware Availability: May-2026

Software Availability: Jul-2025

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fiopenmp -DSPEC_OPENMP -fno-strict-overflow
-fno-strict-aliasing -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc
```

```
602.gcc_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fiopenmp -DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc
```

```
605.mcf_s: basepeak = yes
```

```
625.x264_s: -w -std=c11 -m64 -Wl,-z,muldefs -xsaphirerapids -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

(Continued on next page)



SPEC CPU®2017 Integer Speed Result

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Peak Optimization Flags (Continued)

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

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

<http://www.spec.org/cpu2017/flags/Intel-ic2025-official-linux64.html>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-GNR-rev1.6.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic2025-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-GNR-rev1.6.xml>

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