



SPEC CPU®2017 Floating Point Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant Compute DL580 Gen12

(4.00 Ghz, Intel Xeon 6714P)

SPECrate®2017_fp_base = 597

SPECrate®2017_fp_peak = 607

CPU2017 License: 3

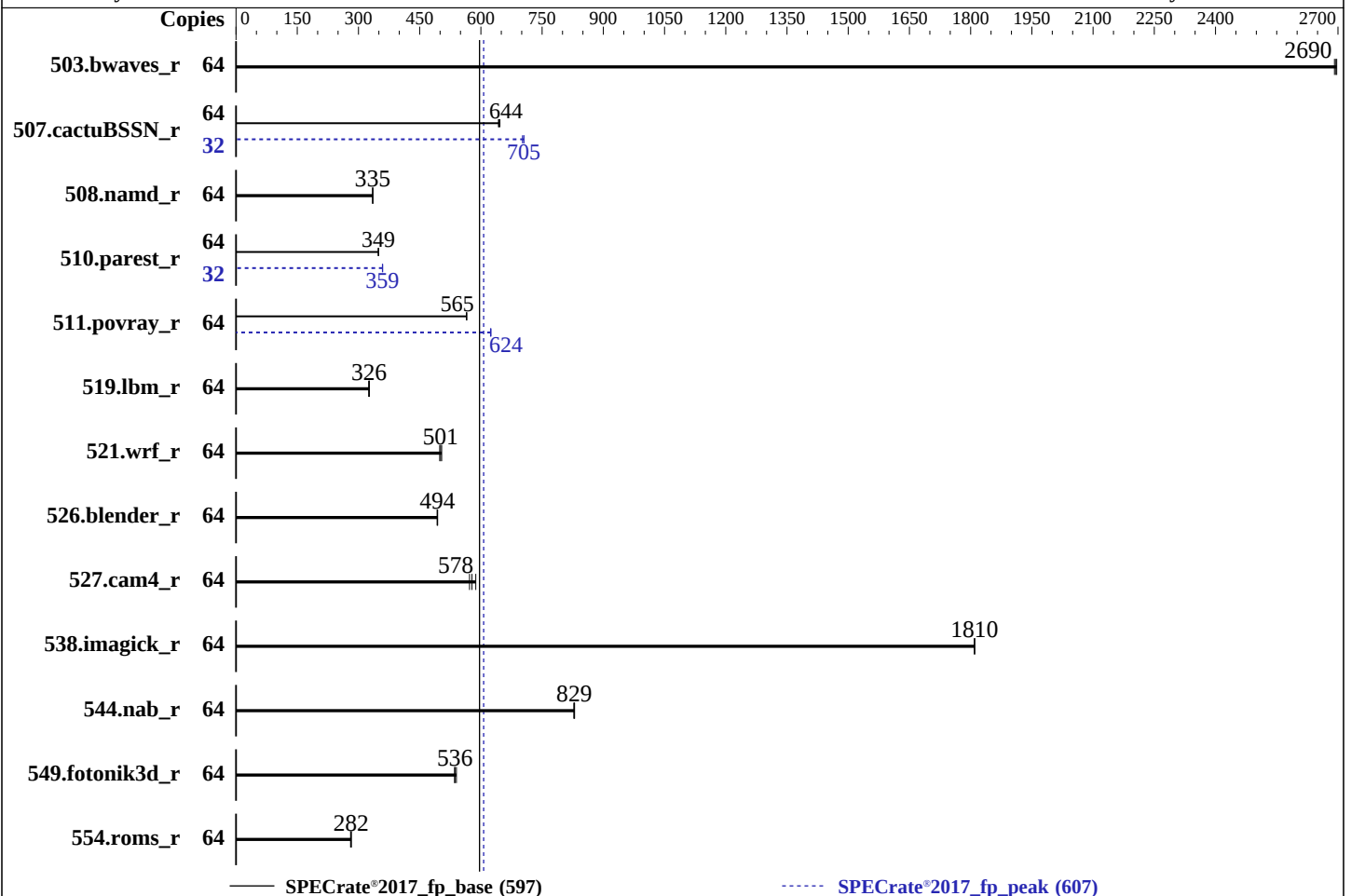
Test Sponsor: HPE

Tested by: HPE

Test Date: Sep-2025

Hardware Availability: Jul-2025

Software Availability: Jul-2025



Hardware

CPU Name: Intel Xeon 6714P
Max MHz: 4300
Nominal: 4000
Enabled: 32 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: 48 MB I+D on chip per chip
Other: None
Memory: 2 TB (32 x 64 GB 2Rx4 PC5-6400B-R)
Storage: 1 x 1.8 TB NVMe SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6
Kernel 6.4.0-150600.23.60-default
Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: HPE BIOS Version v1.43 07/09/2025 released Jul-2025
File System: btrfs
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 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
503.bwaves_r	64	238	2690	238	2690	238	2700	64	238	2690	238	2690	238	2700
507.cactuBSSN_r	64	126	644	125	647	126	643	32	57.7	702	57.4	705	57.5	705
508.namd_r	64	182	335	182	335	181	335	64	182	335	182	335	181	335
510.parest_r	64	480	349	480	349	480	349	32	233	359	233	359	233	359
511.povray_r	64	265	565	264	565	264	565	64	240	624	240	624	239	625
519.lbm_r	64	206	327	207	326	208	325	64	206	327	207	326	208	325
521.wrf_r	64	287	499	285	504	286	501	64	287	499	285	504	286	501
526.blender_r	64	197	494	198	493	197	494	64	197	494	198	493	197	494
527.cam4_r	64	191	587	194	578	196	572	64	191	587	194	578	196	572
538.imagick_r	64	87.9	1810	88.0	1810	88.0	1810	64	87.9	1810	88.0	1810	88.0	1810
544.nab_r	64	130	830	130	828	130	829	64	130	830	130	828	130	829
549.fotonik3d_r	64	462	540	465	536	466	535	64	462	540	465	536	466	535
554.roms_r	64	361	282	360	282	362	281	64	361	282	360	282	362	281

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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>
tuned-adm profile was stopped using "systemctl stop tuned"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOCONF = "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)

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General Notes (Continued)

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.

runcpu command invoked through numactl i.e.:

numactl --interleave=all runcpu <etc>

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

BIOS Configurations : Parameters are selected in the order shown below

Workload Profile set to General Peak Frequency 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

Collaborative Power Control set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost Wed Sep 3 20:24:48 2025

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

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1. uname -a
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 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 254 (254.27+suse.167.g130293e510)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
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Platform Notes (Continued)

```
1. uname -a
Linux localhost 6.4.0-150600.23.60-default #1 SMP PREEMPT_DYNAMIC Tue Jul 1 14:43:49 UTC 2025 (6f98261)
x86_64 x86_64 x86_64 GNU/Linux

-----

2. w
 20:24:48 up 9:03, 1 user, load average: 52.18, 64.43, 66.18
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
benchmark pts/8        :pts/6:S.0     11:32    8:49m 0.84s  0.03s sudo su

-----

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

-----

4. ulimit -a
core file size          (blocks, -c) 0
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size               (blocks, -f) unlimited
pending signals         (-i) 8255477
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) 8255477
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited

-----

5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
SCREEN -S spec
/bin/bash
sudo su
sudo su
su
bash
bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 -c
6714P-avx512-rate-20240308.cfg --define smt-on --define cores=32 --define physicalfirst --define
invoke_with_interleave --define drop_caches --tune base,peak -o all fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 --configfile
6714P-avx512-rate-20240308.cfg --define smt-on --define cores=32 --define physicalfirst --define
invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower --runmode rate
--tune base:peak --size refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.004/temlogs/preenv.fprate.004.0.log --lognum 004.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

-----

6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) 6714P
vendor_id      : GenuineIntel
cpu family     : 6
```

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Platform Notes (Continued)

```
model          : 173
stepping       : 1
microcode      : 0x10003c2
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores      : 8
siblings       : 16
4 physical ids (chips)
64 processors (hardware threads)
physical id 0: core ids 0-7
physical id 1: core ids 0-7
physical id 2: core ids 0-7
physical id 3: core ids 0-7
physical id 0: apicids 0-15
physical id 1: apicids 128-143
physical id 2: apicids 256-271
physical id 3: apicids 384-399
```

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):                 64
On-line CPU(s) list:    0-63
Vendor ID:              GenuineIntel
Model name:             Intel(R) Xeon(R) 6714P
CPU family:             6
Model:                  173
Thread(s) per core:     2
Core(s) per socket:     8
Socket(s):              4
Stepping:               1
BogoMIPS:               8000.00
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 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_l1d arch_capabilities
Virtualization:         VT-x
L1d cache:              1.5 MiB (32 instances)
```

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Platform Notes (Continued)

L1i cache: 2 MiB (32 instances)
L2 cache: 64 MiB (32 instances)
L3 cache: 192 MiB (4 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-7,32-39
NUMA node1 CPU(s): 8-15,40-47
NUMA node2 CPU(s): 16-23,48-55
NUMA node3 CPU(s): 24-31,56-63
Vulnerability Gather data sampling: Not affected
Vulnerability Indirect target selection: 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; 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	1.5M	12	Data	1	64	1	64
L1i	64K	2M	16	Instruction	1	64	1	64
L2	2M	64M	16	Unified	2	2048	1	64
L3	48M	192M	16	Unified	3	49152	1	64

8. numactl --hardware

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

available: 4 nodes (0-3)
node 0 cpus: 0-7,32-39
node 0 size: 515691 MB
node 0 free: 504294 MB
node 1 cpus: 8-15,40-47
node 1 size: 516091 MB
node 1 free: 504918 MB
node 2 cpus: 16-23,48-55
node 2 size: 516091 MB
node 2 free: 499205 MB
node 3 cpus: 24-31,56-63
node 3 size: 516028 MB
node 3 free: 503584 MB
node distances:
node 0 1 2 3
0: 10 21 21 21
1: 21 10 21 21
2: 21 21 10 21
3: 21 21 21 10

9. /proc/meminfo

MemTotal: 2113435884 kB

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Platform Notes (Continued)

10. who -r

run-level 3 Sep 3 11:32 last=5

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

Default Target	Status
graphical	running

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
-------	------------

enabled	ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd bluetooth chronyd cron display-manager getty@ irqbalance iscsi issue-generator kbdsettings klog lvm2-monitor nsd nvme-fc-boot-connections nvme-autoconnect postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore virtqemud 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-init-scripts blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait console-getty cups cups-browsed debug-shell dmraid-activation dnsmasq ebttables exchange-bmc-os-info firewallld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievdev iscsi-init iscsid issue-add-ssh-keys kexec-load ksm kvm_stat libvirt-guests lunmask man-db-create multipathd nfs nfs-blkmap nfs-server nfs-server nmb openvpn@ ostree-remount rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@ smartd-generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-nspawn@ systemd-sysext systemd-time-wait-sync systemd-timesyncd tcshd tuned udisks2 update-system-flatpaks upower virtinterfaced virtlockd virtlogd virtnetworkd virtnodedevd virtnwfilterd virtsecret virtstoraged vncserver@ wpa_supplicant@
----------	---

indirect	pcscd saned@ systemd-userdbd tftp wickedd
----------	---

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

BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.23.60-default
root=UUID=31ddc59e-f5ed-47da-8154-f16fa2fc98b8
splash=silent
mitigations=auto
quiet
security=apparmor

14. cpupower frequency-info

analyzing CPU 51:
Unable to determine current policy
boost state support:
Supported: yes
Active: yes

15. tuned-adm active

Current active profile: virtual-host

16. sysctl

kernel.numa_balancing	1
kernel.randomize_va_space	2
vm.compaction_proactiveness	20
vm.dirty_background_bytes	0
vm.dirty_background_ratio	5

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Platform Notes (Continued)

```
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            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+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 SP6
```

```
-----
20. Disk information
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme1n1p3 btrfs 1.8T 316G 1.5T 18% /home
```

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

```
-----
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:
4x Hynix HMG94AHBRA480N 64 GB 2 rank 6400
5x Micron MTC40F2046S1RC64BD2 MWFF 64 GB 2 rank 6400
23x Micron MTC40F2046S1RC64BD2 QSFF 64 GB 2 rank 6400
```

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Platform Notes (Continued)

23. BIOS

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

BIOS Vendor: HPE
BIOS Version: 1.43
BIOS Date: 07/09/2025
BIOS Revision: 1.43
Firmware Revision: 1.17

Compiler Version Notes

=====
C | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====

=====
C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====

=====
C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====

=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====

=====
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====

=====
Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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SPEC CPU®2017 Floating Point Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant Compute DL580 Gen12

(4.00 Ghz, Intel Xeon 6714P)

SPECrate®2017_fp_base = 597

SPECrate®2017_fp_peak = 607

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Sep-2025

Hardware Availability: Jul-2025

Software Availability: Jul-2025

Compiler Version Notes (Continued)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Benchmarks using both Fortran and C:

ifx icx

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx

Base Portability Flags

503.bwaves_r: -DSPEC_LP64

507.cactuBSSN_r: -DSPEC_LP64

508.namd_r: -DSPEC_LP64

510.parest_r: -DSPEC_LP64

511.povray_r: -DSPEC_LP64

519.lbm_r: -DSPEC_LP64

521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian

526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char

527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG

538.imagick_r: -DSPEC_LP64

544.nab_r: -DSPEC_LP64

549.fotonik3d_r: -DSPEC_LP64

554.roms_r: -DSPEC_LP64



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Base Optimization Flags

C benchmarks:

```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-Wno-implicit-int -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:

```
-w -std=c++14 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both Fortran and C:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-Wno-implicit-int -nostandard-realloc-lhs -align array32byte -auto  
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both C and C++:

```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -Wno-implicit-int -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using Fortran, C, and C++:

```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -Wno-implicit-int -nostandard-realloc-lhs  
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

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Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:

ifx icx

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

538.imagick_r: basepeak = yes

544.nab_r: basepeak = yes

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: -w -std=c++14 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

554.roms_r: basepeak = yes

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

```
511.povray_r: -w -std=c++14 -m64 -std=c11 -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 -Wno-implicit-int
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

```
-w -std=c++14 -m64 -std=c11 -Wl, -z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

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

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-GNR-rev1.3.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-GNR-rev1.3.xml>

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