



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Hewlett Packard Enterprise

(Test Sponsor: HPE)

### ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

## SPECrate®2017\_fp\_base = 773

## SPECrate®2017\_fp\_peak = 805

CPU2017 License: 3

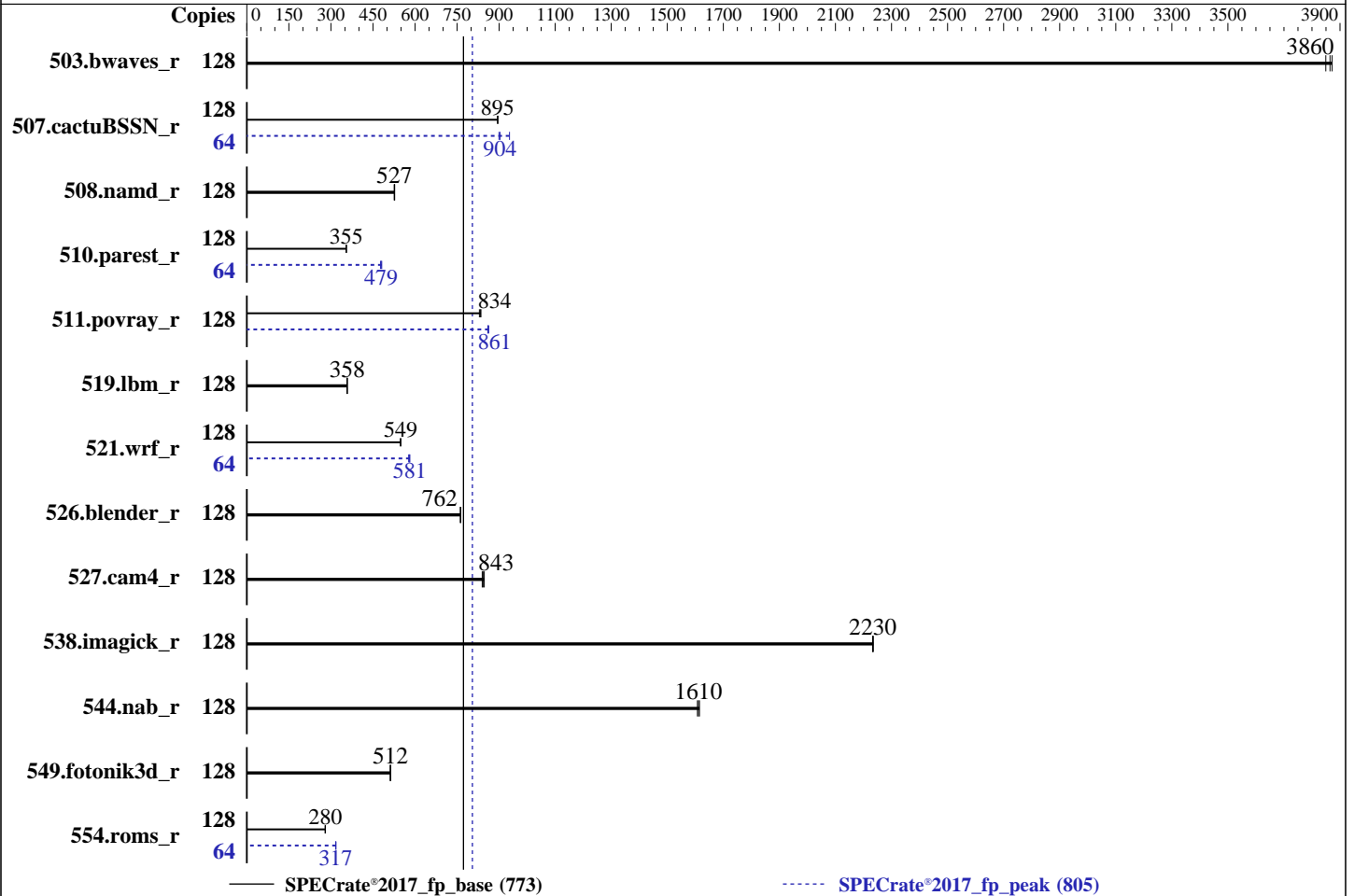
Test Sponsor: HPE

Tested by: HPE

Test Date: Jul-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Platinum 8462Y+  
 Max MHz: 4100  
 Nominal: 2800  
 Enabled: 64 cores, 2 chips, 2 threads/core  
 Orderable: 1, 2 chip(s)  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 60 MB I+D on chip per chip  
 Other: None  
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)  
 Storage: 1 x 1.6 TB NVMe SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux 9.0 (Plow)  
 Kernel 5.14.0-70.13.1.el9\_0.x86\_64  
 Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;  
 Parallel: No  
 Firmware: HPE BIOS Version v1.40 06/1/2023 released Jun-2023  
 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 set to prefer performance at the cost of additional power usage



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

SPECrate®2017\_fp\_base = 773

SPECrate®2017\_fp\_peak = 805

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

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	332	3870	<b><u>332</u></b>	<b><u>3860</u></b>	333	3850	128	332	3870	<b><u>332</u></b>	<b><u>3860</u></b>	333	3850
507.cactuBSSN_r	128	181	895	181	895	<b><u>181</u></b>	<b><u>895</u></b>	64	86.5	937	<b><u>89.7</u></b>	<b><u>904</u></b>	90.1	900
508.namd_r	128	231	526	230	528	<b><u>231</u></b>	<b><u>527</u></b>	128	231	526	230	528	<b><u>231</u></b>	<b><u>527</u></b>
510.parest_r	128	944	355	<b><u>944</u></b>	<b><u>355</u></b>	942	355	64	351	477	348	481	<b><u>349</u></b>	<b><u>479</u></b>
511.povray_r	128	360	830	358	835	<b><u>358</u></b>	<b><u>834</u></b>	128	346	863	348	860	<b><u>347</u></b>	<b><u>861</u></b>
519.lbm_r	128	378	357	<b><u>377</u></b>	<b><u>358</u></b>	376	359	128	378	357	<b><u>377</u></b>	<b><u>358</u></b>	376	359
521.wrf_r	128	<b><u>523</u></b>	<b><u>549</u></b>	523	548	522	549	64	247	581	248	577	<b><u>247</u></b>	<b><u>581</u></b>
526.blender_r	128	<b><u>256</u></b>	<b><u>762</u></b>	256	763	256	762	128	<b><u>256</u></b>	<b><u>762</u></b>	256	763	256	762
527.cam4_r	128	264	847	<b><u>266</u></b>	<b><u>843</u></b>	267	840	128	264	847	<b><u>266</u></b>	<b><u>843</u></b>	267	840
538.imagick_r	128	143	2230	<b><u>143</u></b>	<b><u>2230</u></b>	142	2240	128	143	2230	<b><u>143</u></b>	<b><u>2230</u></b>	142	2240
544.nab_r	128	133	1610	134	1610	<b><u>134</u></b>	<b><u>1610</u></b>	128	133	1610	134	1610	<b><u>134</u></b>	<b><u>1610</u></b>
549.fotonik3d_r	128	975	512	973	513	<b><u>973</u></b>	<b><u>512</u></b>	128	975	512	973	513	<b><u>973</u></b>	<b><u>512</u></b>
554.roms_r	128	<b><u>727</u></b>	<b><u>280</u></b>	728	279	725	280	64	<b><u>320</u></b>	<b><u>317</u></b>	320	318	321	317

SPECrate®2017\_fp\_base = 773

SPECrate®2017\_fp\_peak = 805

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>  
IRQ balance service was stopped using "systemctl stop irqbalance.service"  
tuned-adm profile was set to Throughput-Performance using "tuned-adm profile throughput-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/je5.0.1-64"  
MALLOC\_CONF = "retain:true"



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380a Gen11**

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Jul-2023

**Hardware Availability:** Jun-2023

**Software Availability:** Dec-2022

## 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 Intel Xeon Platinum 8462Y+ Processor

BIOS Configuration:

Workload Profile set to General Throughput Compute

Thermal Configuration set to Maximum Cooling

Enhanced Processor Performance Profile set to Aggressive

Last Level Cache (LLC) Dead Line Allocation set to Disabled

Memory Patrol Scrubbing set to Disabled

Workload Profile set to Custom

DCU Stream Prefetcher set to Disabled

Adjacent Sector Prefetch set to Disabled

Minimum Processor Idle Power Package C-State set to Package C6 (non-retention) State

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost.localdomain Thu Jul 6 18:32:08 2023

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

-----  
Table of contents  
-----

1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
  10. who -r
  11. Systemd service manager version: systemd 250 (250-6.el9\_0)
  12. 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
- 

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Platform Notes (Continued)

-----  
1. `uname -a`  
Linux localhost.localdomain 5.14.0-70.13.1.el9\_0.x86\_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86\_64 x86\_64 x86\_64 GNU/Linux

-----  
2. `w`  
18:32:08 up 1 min, 0 users, load average: 8.41, 3.38, 1.22  
USER TTY LOGIN@ IDLE JCPU PCPU WHAT

-----  
3. Username  
From environment variable \$USER: root

-----  
4. `ulimit -a`  
real-time non-blocking time (microseconds, -R) unlimited  
core file size (blocks, -c) 0  
data seg size (kbytes, -d) unlimited  
scheduling priority (-e) 0  
file size (blocks, -f) unlimited  
pending signals (-i) 2062702  
max locked memory (kbytes, -l) 64  
max memory size (kbytes, -m) unlimited  
open files (-n) 1024  
pipe size (512 bytes, -p) 8  
POSIX message queues (bytes, -q) 819200  
real-time priority (-r) 0  
stack size (kbytes, -s) unlimited  
cpu time (seconds, -t) unlimited  
max user processes (-u) 2062702  
virtual memory (kbytes, -v) unlimited  
file locks (-x) unlimited

-----  
5. `sysinfo process ancestry`  
/usr/lib/systemd/systemd --switched-root --system --deserialize 30  
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups  
sshd: root [priv]  
sshd: root@notty  
bash -c cd \$SPEC/ && \$SPEC/fprate.sh  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --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=128 --configfile ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --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/CPU2017.002/temlogs/preenv.fprate.002.0.log --lognum 002.0 --from\_runcpu 2  
specperl \$SPEC/bin/sysinfo  
\$SPEC = /home/cpu2017

-----  
6. `/proc/cpuinfo`  
model name : Intel(R) Xeon(R) Platinum 8462Y+  
vendor\_id : GenuineIntel  
cpu family : 6  
model : 143  
stepping : 8

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Platform Notes (Continued)

```
microcode      : 0x2b000461
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 32
siblings       : 64
2 physical ids (chips)
128 processors (hardware threads)
physical id 0: core ids 0-31
physical id 1: core ids 0-31
physical id 0: apicids 0-63
physical id 1: apicids 128-191
```

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

### 7. lscpu

From lscpu from util-linux 2.37.4:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         46 bits physical, 57 bits virtual
Byte Order:            Little Endian
CPU(s):                128
On-line CPU(s) list:   0-127
Vendor ID:             GenuineIntel
BIOS Vendor ID:        Intel(R) Corporation
Model name:            Intel(R) Xeon(R) Platinum 8462Y+
BIOS Model name:       Intel(R) Xeon(R) Platinum 8462Y+
CPU family:            6
Model:                 143
Thread(s) per core:    2
Core(s) per socket:    32
Socket(s):             2
Stepping:              8
BogoMIPS:              5600.00
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 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 fsgsbase tsc_adjust bmi1
                        avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                        avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                        xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                        cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 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 avx512_fp16 amx_tile flush_lld arch_capabilities
L1d cache:            3 MiB (64 instances)
L1i cache:            2 MiB (64 instances)
L2 cache:             128 MiB (64 instances)
L3 cache:             120 MiB (2 instances)
NUMA node(s):         2
NUMA node0 CPU(s):    0-31,64-95
NUMA node1 CPU(s):    32-63,96-127
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:   Not affected
Vulnerability Mds:    Not affected
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380a Gen11**

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Platform Notes (Continued)

Vulnerability Meltdown: 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 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	3M	12	Data	1	64	1	64
L1i	32K	2M	8	Instruction	1	64	1	64
L2	2M	128M	16	Unified	2	2048	1	64
L3	60M	120M	15	Unified	3	65536	1	64

8. numactl --hardware

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

```
available: 2 nodes (0-1)
node 0 cpus: 0-31,64-95
node 0 size: 257728 MB
node 0 free: 256580 MB
node 1 cpus: 32-63,96-127
node 1 size: 257987 MB
node 1 free: 256864 MB
node distances:
node  0  1
  0: 10 20
  1: 20 10
```

9. /proc/meminfo

```
MemTotal: 528092532 kB
```

10. who -r

```
run-level 3 Jul 6 18:31
```

11. Systemd service manager version: systemd 250 (250-6.el9\_0)

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

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned udisks2
enabled-runtime	systemd-remount-fs
disabled	blk-availability chrony-wait chronyd console-getty cpupower debug-shell kvm_stat man-db-restart-cache-update nftables powertop rdisc rhsm rhsm-facts rpmdb-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
indirect	sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

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

```
BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
root=/dev/mapper/rhel-root
ro
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380a Gen11**

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Platform Notes (Continued)

```
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
```

```
-----
14. cpupower frequency-info
analyzing CPU 0:
  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          1
kernel.randomize_va_space     2
vm.compaction_proactiveness    20
vm.dirty_background_bytes      0
vm.dirty_background_ratio      10
vm.dirty_bytes                 0
vm.dirty_expire_centisecs     3000
vm.dirty_ratio                 40
vm.dirty_writeback_centisecs   500
vm.dirtytime_expire_seconds    43200
vm.extfrag_threshold           500
vm.min_unmapped_ratio          1
vm.nr_hugepages                0
vm.nr_hugepages_mempolicy      0
vm.nr_overcommit_hugepages     0
vm.swappiness                   10
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      Red Hat Enterprise Linux 9.0 (Plow)
redhat-release  Red Hat Enterprise Linux release 9.0 (Plow)
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380a Gen11**

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Platform Notes (Continued)

system-release Red Hat Enterprise Linux release 9.0 (Plow)

### 20. Disk information

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel-home	xfs	1.4T	151G	1.3T	11%	/home

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

Vendor: HPE  
Product: ProLiant DL380a Gen11  
Product Family: ProLiant  
Serial: CNX22602MZ

### 22. 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:

7x Hynix HMC88AEBRA168N 32 GB 2 rank 4800  
6x Hynix HMC88MEBRA113N 32 GB 2 rank 4800  
3x Hynix HMC88MEBRA115N 32 GB 2 rank 4800

### 23. BIOS

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

BIOS Vendor: HPE  
BIOS Version: 1.40  
BIOS Date: 06/01/2023  
BIOS Revision: 1.40  
Firmware Revision: 1.30

## 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 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Compiler Version Notes (Continued)

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)  
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
=====

=====  
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 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
=====

## 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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

SPECrate®2017\_fp\_base = 773

SPECrate®2017\_fp\_peak = 805

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Jul-2023

**Hardware Availability:** Jun-2023

**Software Availability:** Dec-2022

## 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

```

## Base Optimization Flags

C benchmarks:

```

-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

```

C++ benchmarks:

```

-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

```

Fortran benchmarks:

```

-w -m64 -Wl,-z,muldefs -xsapphirerapids -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 -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -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 -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

SPECrate®2017\_fp\_base = 773

SPECrate®2017\_fp\_peak = 805

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Jul-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022

## Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):

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

Benchmarks using Fortran, C, and C++:

`-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsaphirerapids -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512  
-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`

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`

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380a Gen11**

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

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

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

## Peak Optimization Flags (Continued)

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 -xsapphirerapids  
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -mprefer-vector-width=512  
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves\_r: basepeak = yes

549.fotonik3d\_r: basepeak = yes

554.roms\_r: -w -m64 -Wl,-z,muldefs -xsapphirerapids -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:

521.wrf\_r: -w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -Wno-implicit-int  
-mprefer-vector-width=512 -nostandard-realloc-lhs  
-align array32byte -auto -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib

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.profddata(pass 2) -xCORE-AVX2(pass 1)  
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse  
-funroll-loops -qopt-mem-layout-trans=4 -Wno-implicit-int  
-mprefer-vector-width=512 -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380a Gen11

(2.80 GHz, Intel Xeon Platinum 8462Y+)

**SPECrate®2017\_fp\_base = 773**

**SPECrate®2017\_fp\_peak = 805**

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Jul-2023

**Hardware Availability:** Jun-2023

**Software Availability:** Dec-2022

## Peak Optimization Flags (Continued)

526.blender\_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

```
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsaphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-gopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-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/HPE-Platform-Flags-Intel-SPR-rev2.1.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-rev2.1.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml>

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.9 on 2023-07-06 09:02:07-0400.

Report generated on 2023-08-02 16:28:31 by CPU2017 PDF formatter v6716.

Originally published on 2023-08-01.