Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen11
(1.80 GHz, Intel Xeon Gold 6421N)

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

Hardware
CPU Name: Intel Xeon Gold 6421N
Max MHz: 3600
Nominal: 1800
Enabled: 32 cores, 1 chip, 2 threads/core
Orderable: 1 Chip
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: 256 GB (8 x 32 GB 2Rx8 PC5-4800B-R, running at 4400)
Storage: 1 x 480 GB Embedded SATA M.2 drive
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 v1.50 (07/12/2023) released Jul-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

SPECrater®2017.fp_base = 326
SPECrater®2017.fp_peak = 339

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 326
SPECrate®2017_fp_peak = 339

Test Date: Oct-2023
Hardware Availability: Oct-2023
Software Availability: Dec-2022

<table>
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### Results Table

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</tr>
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</table>

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**SPECrate®2017_fp_peak = 339**

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

### Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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 numaclt 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

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

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 Red Hat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

The system ROM used for this result contains Intel microcode version 0x2b0004b1 for
the Intel Xeon Gold 6421N 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 fe91c89b9ed5c36ae2c92cc097bec197
running on localhost.localdomain Sat Oct 14 13:59:57 2023

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

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Test Date: Oct-2023  
Hardware Availability: Oct-2023  
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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 GNU/Linux

2. w
   13:59:57 up 2 min, 0 users, load average: 0.87, 0.83, 0.35
   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 (-l) 1029798
   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) 1029798
   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]
   bash -c cd $SPEC/ & & SPEC/fprate.sh
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=32 --define physicalfirst
   --define no-numa --tune base,peak --all --define drop_caches fprate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=32 --define physicalfirst
   --define no-numa --tune base,peak --output_format all --define drop_caches --nopower --runmode rate --tune
   base:peak --size refrate fprate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.003/templogs/preenv.fprate.003.0.log --lognum 003.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Gold 6421N
   vendor_id : GenuineIntel
   cpu family : 6
   model : 143

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<td>Software Availability:</td>
<td>Dec-2022</td>
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</table>

Platform Notes (Continued)

- **stepping**: 7
- **microcode**: 0x2b0004b1
- **bugs**: specre_v1 specre_v2 spec_store_bypass swaps
- **cpu cores**: 32
- **siblings**: 64
  - 1 physical ids (chips)
  - 64 processors (hardware threads)
- **physical id 0**: core ids 0-31
- **physical id 0**: apic ids 0-63

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

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):                        64
On-line CPU(s) list:           0-63
Vendor ID:                     GenuineIntel
BIOS Vendor ID:                Intel(R) Corporation
Model name:                    Intel(R) Xeon(R) Gold 6421N
BIOS Model name:               Intel(R) Xeon(R) Gold 6421N
CPU family:                    6
Model:                         143
Thread(s) per core:            2
Core(s) per socket:            32
Socket(s):                     1
Stepping:                      7
BogoMIPS:                      3600.00

Flags:                        
  fpu vme de pse tsb 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 rdtsscp
  lm constant_tsc art arch_perfmon pebs bts rep_good nopl nonstop_tsc
  aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
  pge mca extprefetch cpuid_fault epb cat_14 cat_12 cat_13 cpd_13
  invpcid_single cdp_12 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
  vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bts mmu bicpu
  invpcid cqm rdt_a avx512f avx512dq rdseed adx vmpc invpcid64f
  clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl avx512f v Synd
  xgetbv1 xsaves cqm_1lc cqm_occup_1lc cqm_msb cqm_total cqm_msb_local
  split_lock_detect avx_vnni avx512_bf16 wbinvd dtherm tdc arat pln pts
  avx512vbm umip pku ospke wmitg pkv avx512vbm2 gfn1 vaa vpcmulqdq
  avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect
  cldemote movdiri movdir64b enqcmd fasm md_clear serialize tscidtrk pconfig
  arch_lbr avx512_fp16 flush_lld arch_capabilities

Virtualization:               VT-x
L1d cache:                    1.5 MiB (32 instances)
L1i cache:                    1.0 MiB (32 instances)
L2 cache:                     64 MiB (32 instances)
L3 cache:                     60 MiB (1 instance)
NUMA node(s):                 1
NUMA node0 CPU(s):            0-63
Vulnerability Itlb multihit:  Not affected
Vulnerability L1f:           Not affected
Vulnerability Mds:           Not affected
```

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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 Srbd: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

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<th>WAYS</th>
<th>TYPE</th>
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<td>Unified</td>
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<td>1</td>
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8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 1 nodes (0)
node 0 cpus: 0-63
node 0 size: 257489 MB
node 0 free: 256381 MB
node distances:
node   0
0:  10

9. /proc/meminfo
MemTotal: 263669108 kB

10. who -r
run-level 3 Oct 14 13:57

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 chrony cron dmesg-monitor systemd-systemd usermode-udevd
enabled-runtime NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chrony cron dmesg-monitor systemd-systemd usermode-udevd

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

(Continued on next page)
Platform Notes (Continued)

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  0
   kernel randomized 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 ext frag 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+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
   alloc sleep milli seconds  60000
   defrag  1
   max ptes none  511
   max ptes shared  256
   max ptes swap  64
   pages to scan  4096
   scan sleep milli seconds  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)
   system release Red Hat Enterprise Linux release 9.0 (Plow)

20. Disk information

(Continued on next page)
Platform Notes (Continued)

SPEC is set to: /home/cpu2017
Filesystem  Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home  xfs  372G  112G  261G  30%  /home

21. /sys/devices/virtual/dmi/id
   Vendor:  HPE
   Product:  ProLiant DL110 Gen11
   Product Family:  ProLiant
   Serial:  7CE244P9LL

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 HMC88MB8A113N 32 GB 2 rank 4800, configured at 4400
   1x Hynix HMC88MB8A115N 32 GB 2 rank 4800, configured at 4400

22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:  HPE
   BIOS Version:  1.50
   BIOS Date:  07/12/2023
   BIOS Revision:  1.50
   Firmware Revision:  1.50

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
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201

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

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen11
(1.80 GHz, Intel Xeon Gold 6421N)

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

SPECrate®2017_fp_base = 326
SPECrate®2017_fp_peak = 339

Compiler Version Notes (Continued)

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
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Compilation Summary

Fortran, C

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 only Fortran, C, and C++:
icpx icx ifx

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64

(Continued on next page)
Base Portability Flags (Continued)

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

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen11
(1.80 GHz, Intel Xeon Gold 6421N)

Spec CPU2017 FP Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

SPECrates®2017_fp_base = 326
SPECrates®2017_fp_peak = 339

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

Test Date: Oct-2023
Hardware Availability: Oct-2023
Software Availability: Dec-2022

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-w -m64 -std=c++14 -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

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
538.imagick_r: basepeak = yes

(Continued on next page)
Peak Optimization Flags (Continued)

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.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
-mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

526.blender_r: basepeak = yes

(Continued on next page)
# SPEC CPU®2017 Floating Point Rate Result

## Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

- `-w` `-m64` `-std=c++14` `-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`

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-rev2.4.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-rev2.4.xml