SPEC CPU®2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant ML30 Gen11
(2.80 GHz, Intel Xeon 6315P)

$SPECrate®2017\_fp\_base = 69.6$

$SPECrate®2017\_fp\_peak = 70.5$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Mar-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

Benchmark	Copies	Result
503.bwaves_r	4	276
507.cactuBSSN_r	4	100
508.namd_r	4	37.6
510.parest_r	4	47.5
511.povray_r	4	57.4 / 67.9
519.lbm_r	4	47.8
521.wrf_r	4	64.3
526.blender_r	4	49.1
527.cam4_r	4	64.2 / 64.4
538.imagick_r	4	181
544.nab_r	4	71.3
549.fotonik3d_r	4	66.6
554.roms_r	4	38.0

SPECrate®2017_fp_base (69.6)   SPECrate®2017_fp_peak (70.5)

Hardware

CPU Name: Intel Xeon 6315P
 Max MHz: 4700
 Nominal: 2800
Enabled: 4 cores, 1 chip
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: 12 MB I+D on chip per chip
 Other: None
Memory: 64 GB (2 x 32 GB 2Rx8 PC5-5600B-E, running at 4400 , orderable using HPE part# P64339-B21)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6
 Kernel 6.4.0-150600.21-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 v2.10 12/06/2024 released Dec-2024
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 set to prefer performance at the cost of additional power usage

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Hewlett Packard Enterprise
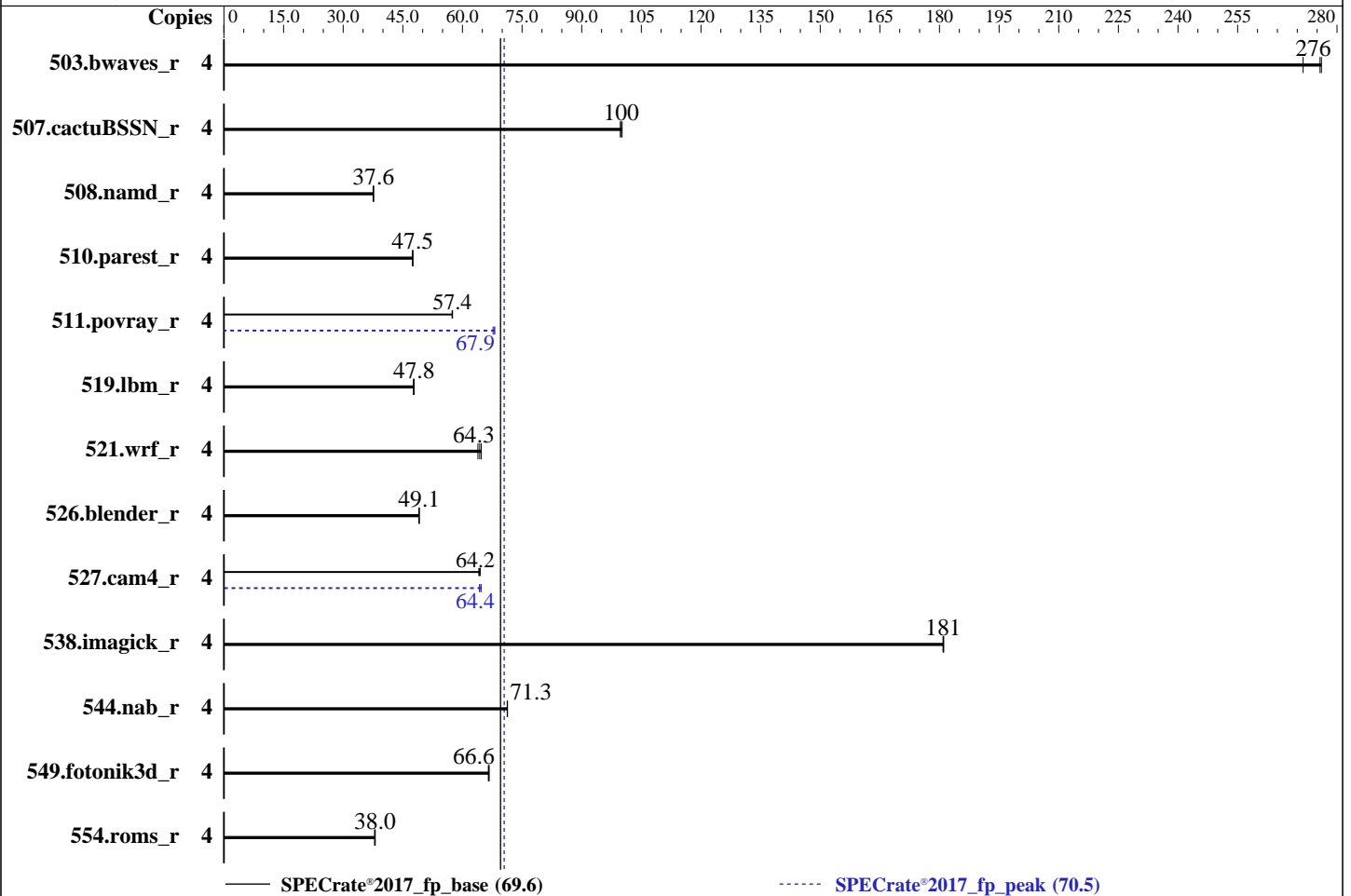(Test Sponsor: HPE)

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Results Table

	Base						Peak					
Benchmark	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	4	**145**	**276**	148	271	145	276	4	**145**	**276**	148	271	145	276
507.cactuBSSN_r	4	**50.7**	**100**	50.8	99.7	50.6	100	4	**50.7**	**100**	50.8	99.7	50.6	100
508.namd_r	4	101	37.5	101	37.7	**101**	**37.6**	4	101	37.5	101	37.7	**101**	**37.6**
510.parest_r	4	220	47.5	220	47.5	**220**	**47.5**	4	220	47.5	220	47.5	**220**	**47.5**
511.povray_r	4	**163**	**57.4**	163	57.4	162	57.5	4	138	67.7	**137**	**67.9**	137	68.1
519.lbm_r	4	**88.1**	**47.8**	88.1	47.9	88.5	47.7	4	**88.1**	**47.8**	88.1	47.9	88.5	47.7
521.wrf_r	4	140	63.9	**139**	**64.3**	138	64.7	4	140	63.9	**139**	**64.3**	138	64.7
526.blender_r	4	124	49.1	**124**	**49.1**	124	49.1	4	124	49.1	**124**	**49.1**	124	49.1
527.cam4_r	4	109	64.1	**109**	**64.2**	108	64.5	4	108	64.7	**109**	**64.4**	109	64.3
538.imagick_r	4	55.0	181	54.9	181	**55.0**	**181**	4	55.0	181	54.9	181	**55.0**	**181**
544.nab_r	4	**94.4**	**71.3**	94.4	71.3	94.5	71.3	4	**94.4**	**71.3**	94.4	71.3	94.5	71.3
549.fotonik3d_r	4	234	66.6	**234**	**66.6**	234	66.7	4	234	66.6	**234**	**66.6**	234	66.7
554.roms_r	4	**167**	**38.0**	167	38.1	168	37.9	4	**167**	**38.0**	167	38.1	168	37.9
SPECrate®2017_fp_base =		**69.6**												
SPECrate®2017_fp_peak =		**70.5**												

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
```

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"
```

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)
```

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General Notes (Continued)

```
 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

```
BIOS Configuration:
 Workload Profile set to General Throughput Compute
 Thermal Configuration set to Maximum Cooling
 Enhanced Processor Performance Profile set to Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Sat Mar  8 07:24:21 2025

 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 254 (254.10+suse.84.ge8d77af424)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
 ------------------------------------------------------------


 ------------------------------------------------------------
 1. uname -a
   Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
   x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
    07:24:21 up  2:44,  6 users,  load average: 3.18, 3.82, 3.94
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT


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

(Continued on next page)

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Platform Notes (Continued)

```
  -----------------------------------------------------------
  4. ulimit -a
    core file size          (blocks, -c) unlimited
    data seg size           (kbytes, -d) unlimited
    scheduling priority             (-e) 0
    file size               (blocks, -f) unlimited
    pending signals                 (-i) 256739
    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) 256739
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited


  -----------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize=31
   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=4 -c
     ic2024.1-lin-core-avx2-rate-20240308.cfg --define smt-on --define cores=2 --define physicalfirst --define
     no-numa --tune base,peak -o all --define drop_caches fprate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=4 --configfile
     ic2024.1-lin-core-avx2-rate-20240308.cfg --define smt-on --define cores=2 --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/CPU2017.004/templogs/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) 6315P
    vendor_id          : GenuineIntel
    cpu family         : 6
    model              : 183
    stepping           : 1
    microcode          : 0x12c
    bugs               : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb bhi
    cpu cores          : 4
    siblings           : 4
    1 physical ids (chips)
    4 processors (hardware threads)
    physical id 0: core ids 0-3
    physical id 0: apicids 0,2,4,6
   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
```

(Continued on next page)

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Platform Notes (Continued)

```
       CPU op-mode(s):                   32-bit, 64-bit
       Address sizes:                    46 bits physical, 48 bits virtual
       Byte Order:                       Little Endian
       CPU(s):                           4
       On-line CPU(s) list:              0-3
       Vendor ID:                        GenuineIntel
       BIOS Vendor ID:                   Intel(R) Corporation
       Model name:                       Intel(R) Xeon(R) 6315P
       BIOS Model name:                  Intel(R) Xeon(R) 6315P To Be Filled By O.E.M. CPU @ 2.8GHz
       BIOS CPU family:                  179
       CPU family:                       6
       Model:                            183
       Thread(s) per core:               1
       Core(s) per socket:               4
       Socket(s):                        1
       Stepping:                         1
       BogoMIPS:                         5606.40
       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 sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
                                         xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb ssbd
                                         ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad
                                         fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid rdseed adx smap
                                         clflushopt clwb intel_pt sha_ni xsaveopt xsavec xgetbv1 xsaves
                                         split_lock_detect user_shstk avx_vnni dtherm ida arat pln pts hfi
                                         vnmi umip pku ospke waitpkg gfni vaes vpclmulqdq tme rdpid movdiri
                                         movdir64b fsrm md_clear serialize pconfig arch_lbr ibt flush_l1d
                                         arch_capabilities
       Virtualization:                   VT-x
       L1d cache:                        192 KiB (4 instances)
       L1i cache:                        128 KiB (4 instances)
       L2 cache:                         8 MiB (4 instances)
       L3 cache:                         12 MiB (1 instance)
       NUMA node(s):                     1
       NUMA node0 CPU(s):                0-3
       Vulnerability Gather data sampling:  Not affected
       Vulnerability Itlb multihit:      Not affected
       Vulnerability L1tf:               Not affected
       Vulnerability Mds:                Not affected
       Vulnerability Meltdown:           Not affected
       Vulnerability Mmio stale data:    Not affected
       Vulnerability Reg file data sampling: Not affected
       Vulnerability Retbleed:           Not affected
       Vulnerability Spec rstack overflow:  Not affected
       Vulnerability Spec store bypass:  Mitigation; Speculative Store Bypass disabled via prctl
       Vulnerability Spectre v1:         Mitigation; usercopy/swapgs barriers and __user pointer sanitization
       Vulnerability Spectre v2:         Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;
                                         PBRSB-eIBRS SW sequence; 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      192K   12 Data            1    64       1            64
        L1i      32K      128K    8 Instruction     1    64       1            64
        L2        2M        8M   16 Unified         2  2048       1            64
        L3       12M       12M    6 Unified         3 32768       1            64
```

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Platform Notes (Continued)

```
          ------------------------------------------------------------
          8. numactl --hardware
          NOTE: a numactl 'node' might or might not correspond to a physical chip.
            available: 1 nodes (0)
            node 0 cpus: 0-3
            node 0 size: 64209 MB
            node 0 free: 54474 MB
            node distances:
            node   0
              0:  10


          ------------------------------------------------------------
          9. /proc/meminfo
            MemTotal:       65751028 kB


          ------------------------------------------------------------
          10. who -r
            run-level 3 Mar 8 04:40


          ------------------------------------------------------------
          11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
            Default Target  Status
            multi-user      running


          ------------------------------------------------------------
          12. Services, from systemctl list-unit-files
            STATE            UNIT FILES
            enabled          apparmor auditd cron getty@ irqbalance issue-generator kbdsettings lvm2-monitor postfix
                             purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4
                             wickedd-dhcp6 wickedd-nanny
            enabled-runtime  systemd-remount-fs
            disabled         blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell
                             grub2-once haveged hwloc-dump-hwdata issue-add-ssh-keys kexec-load lunmask rpmconfigcheck
                             serial-getty@ systemd-boot-check-no-failures systemd-confext systemd-network-generator
                             systemd-sysext systemd-time-wait-sync systemd-timesyncd
            indirect         systemd-userdbd wickedd


          ------------------------------------------------------------
          13. Linux kernel boot-time arguments, from /proc/cmdline
            BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
            root=UUID=1601d4e3-aed0-470e-8bd5-82680fe83224
            splash=silent
            resume=/dev/disk/by-uuid/e928ac5a-0714-4827-a56e-3fd30f6224d5
            mitigations=auto
            quiet
            security=apparmor


          ------------------------------------------------------------
          14. cpupower frequency-info
            analyzing CPU 2:
              Unable to determine current policy
              boost state support:
                Supported: yes
                Active: yes


          ------------------------------------------------------------
          15. sysctl
            kernel.numa_balancing           0
            kernel.randomize_va_space       2
```

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Platform Notes (Continued)

```
    vm.compaction_proactiveness         20
    vm.dirty_background_bytes            0
    vm.dirty_background_ratio           10
    vm.dirty_bytes                       0
    vm.dirty_expire_centisecs         3000
    vm.dirty_ratio                      20
    vm.dirty_writeback_centisecs       500
    vm.dirtytime_expire_seconds      43200
    vm.extfrag_threshold               500
    vm.min_unmapped_ratio                1
    vm.nr_hugepages                      0
    vm.nr_hugepages_mempolicy            0
    vm.nr_overcommit_hugepages           0
    vm.swappiness                       60
    vm.watermark_boost_factor        15000
    vm.watermark_scale_factor           10
    vm.zone_reclaim_mode                 0


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


    ---------------------------------------------------------------
17. /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


    ---------------------------------------------------------------
18. OS release
    From /etc/*-release /etc/*-version
    os-release SUSE Linux Enterprise Server 15 SP6


    ---------------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sdb4      xfs   342G   71G  271G  21% /home


    ---------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         HPE
    Product:        ProLiant ML30 Gen11
    Product Family: ProLiant
    Serial:         LXVBT01BVHZ03N


    ---------------------------------------------------------------
21. dmidecode
    Additional information from dmidecode 3.4 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:
```

(Continued on next page)

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Platform Notes (Continued)

```
     2x Hynix HMCG88AGBEA084N 32 GB 2 rank 5600, configured at 4400


    ------------------------------------------------------------
    22. BIOS
    (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:       HPE
       BIOS Version:      2.10
       BIOS Date:         12/06/2024
       BIOS Revision:     2.10
       Firmware Revision: 1.62
```

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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```
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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`

SPEC CPU®2017 Floating Point Rate Result

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Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant ML30 Gen11
(2.80 GHz, Intel Xeon 6315P)

SPECrate®2017_fp_base = 69.6

SPECrate®2017_fp_peak = 70.5

CPU2017 License: 3		**Test Date:**	Mar-2025
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2025
Tested by:	HPE	**Software Availability:**	Jun-2024

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX2 -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-AVX2 -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-AVX2 -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-AVX2 -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-AVX2 -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-AVX2 -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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Hewlett Packard Enterprise
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CPU2017 License:	3	**Test Date:**	Mar-2025
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2025
Tested by:	HPE	**Software Availability:**	Jun-2024

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: `basepeak = yes`

Fortran benchmarks:

503.bwaves_r: `basepeak = yes`

549.fotonik3d_r: `basepeak = yes`

554.roms_r: `basepeak = yes`

Benchmarks using both Fortran and C:

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant ML30 Gen11
(2.80 GHz, Intel Xeon 6315P)

SPECrate®2017_fp_base = 69.6

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CPU2017 License:	3	**Test Date:**	Mar-2025
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2025
Tested by:	HPE	**Software Availability:**	Jun-2024

Peak Optimization Flags (Continued)

521.wrf_r: `basepeak = yes`

527.cam4_r: `-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -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++:

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 -flto -Ofast -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++:

507.cactuBSSN_r: `basepeak = yes`

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-CatlowRefresh-rev1.0.html

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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-CatlowRefresh-rev1.0.xml

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

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