



SPEC CPU®2017 Floating Point Rate Result

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Epsilon IT Sp. z o.o.

SPECrate®2017_fp_base = 358

eterio 220 RE3 (2.40 GHz, Intel Xeon Silver 4510)

SPECrate®2017_fp_peak = 365

CPU2017 License: 9081

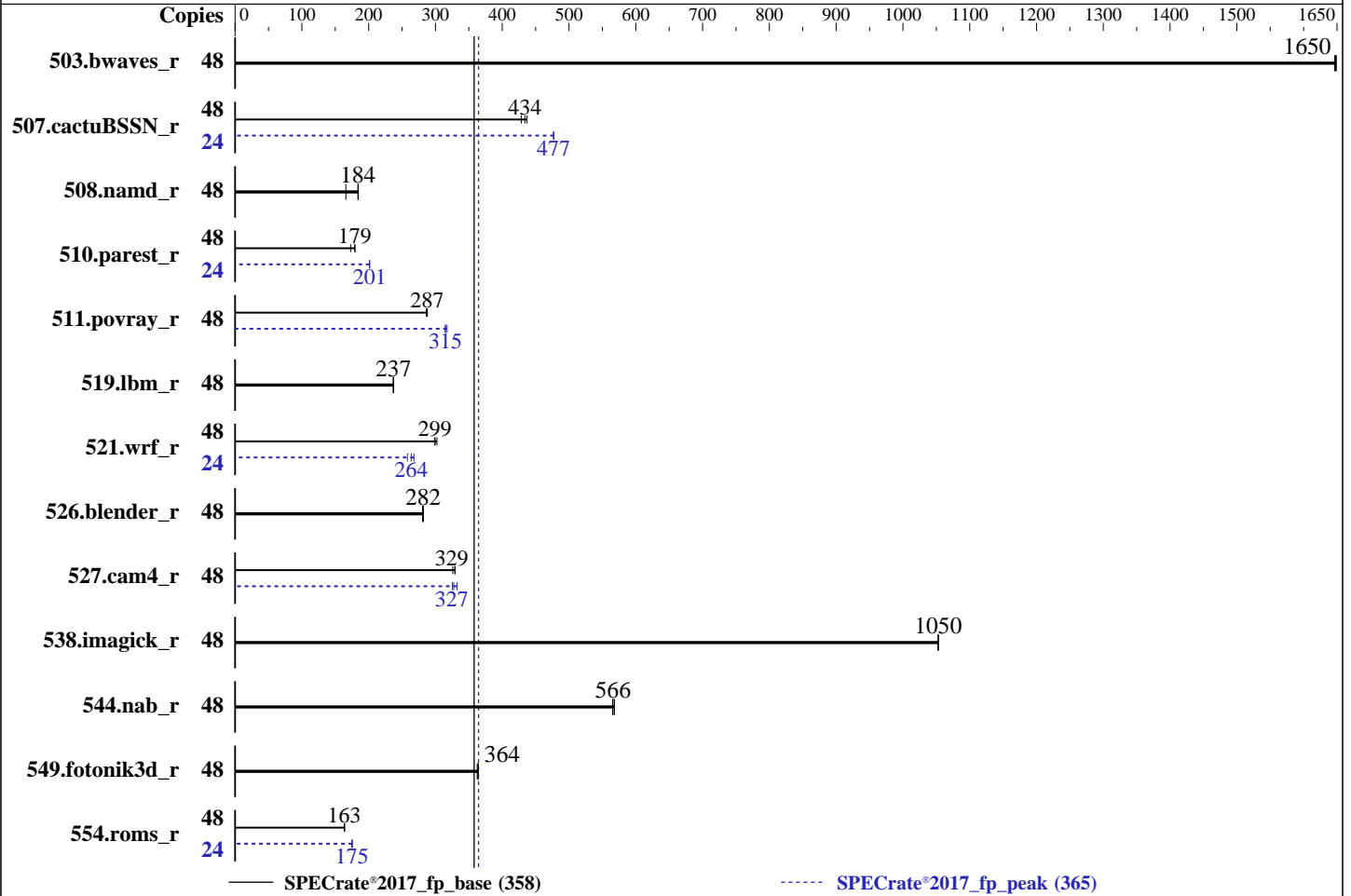
Test Date: Feb-2026

Test Sponsor: Epsilon IT Sp. z o.o.

Hardware Availability: Dec-2023

Tested by: Epsilon IT Sp. z o.o.

Software Availability: Feb-2026



Hardware

CPU Name: Intel Xeon Silver 4510
 Max MHz: 4100
 Nominal: 2400
 Enabled: 24 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: 30 MB I+D on chip per chip
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-6400B-R, running at 4400)
 Storage: 1 x 1.92 TB SATA III SSD
 Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 16.0
 Kernel 6.12.0-160000.9-default x86_64
 Compiler: C/C++: Version 2025.2 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2025.2 of Intel Fortran Compiler for Linux;
 Parallel: No
 Firmware: BIOS Version 2.8 released Oct-2025
 File System: ext4
 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.



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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 | 48 | <u>292</u> | <u>1650</u> | 292 | 1650 | 292 | 1650 | 48 | <u>292</u> | <u>1650</u> | 292 | 1650 | 292 | 1650 |
| 507.cactuBSSN_r | 48 | <u>140</u> | <u>434</u> | 142 | 429 | 139 | 437 | 24 | 63.7 | 477 | <u>63.7</u> | <u>477</u> | 63.6 | 477 |
| 508.namd_r | 48 | 247 | 184 | <u>248</u> | <u>184</u> | 275 | 166 | 48 | 247 | 184 | <u>248</u> | <u>184</u> | 275 | 166 |
| 510.parest_r | 48 | <u>700</u> | <u>179</u> | 726 | 173 | 700 | 179 | 24 | 312 | 201 | <u>312</u> | <u>201</u> | 312 | 201 |
| 511.povray_r | 48 | <u>390</u> | <u>287</u> | 389 | 288 | 392 | 286 | 48 | 356 | 315 | <u>356</u> | <u>315</u> | 353 | 317 |
| 519.lbm_r | 48 | 213 | 237 | 214 | 237 | <u>213</u> | <u>237</u> | 48 | 213 | 237 | 214 | 237 | <u>213</u> | <u>237</u> |
| 521.wrf_r | 48 | 359 | 299 | <u>359</u> | <u>299</u> | 356 | 302 | 24 | 201 | 268 | 208 | 258 | <u>204</u> | <u>264</u> |
| 526.blender_r | 48 | 259 | 282 | <u>260</u> | <u>282</u> | 260 | 281 | 48 | 259 | 282 | <u>260</u> | <u>282</u> | 260 | 281 |
| 527.cam4_r | 48 | <u>255</u> | <u>329</u> | 255 | 329 | 258 | 326 | 48 | 253 | 332 | <u>256</u> | <u>327</u> | 258 | 325 |
| 538.imagick_r | 48 | 113 | 1050 | 113 | 1050 | <u>113</u> | <u>1050</u> | 48 | 113 | 1050 | 113 | 1050 | <u>113</u> | <u>1050</u> |
| 544.nab_r | 48 | 142 | 568 | <u>143</u> | <u>566</u> | 143 | 565 | 48 | 142 | 568 | <u>143</u> | <u>566</u> | 143 | 565 |
| 549.fotonik3d_r | 48 | 516 | 362 | 514 | 364 | <u>514</u> | <u>364</u> | 48 | 516 | 362 | 514 | 364 | <u>514</u> | <u>364</u> |
| 554.roms_r | 48 | 467 | 163 | 465 | 164 | <u>467</u> | <u>163</u> | 24 | 219 | 174 | 217 | 176 | <u>218</u> | <u>175</u> |

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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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/cpu2017-1.1.9/lib/intel64:/cpu2017-1.1.9/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) is mitigated in the system as tested and documented.

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General Notes (Continued)

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 settings:
ENERGY_PERF_BIAS_CFG mode = Performance
Patrol Scrub = Disabled
SNC = Enable SNC2 (2-Clusters)
Hyper-Threading (All) = Enable

BMC Configuration:
Fan mode = Full speed mode

Sysinfo program /cpu2017-1.1.9/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on SUT Fri Feb 27 16:22:04 2026

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

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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. Systemd service manager version: systemd 257 (257.10+suse.31.gfb9d92682b)
11. Services, from systemctl list-unit-files
12. Linux kernel boot-time arguments, from /proc/cmdline
13. cpupower frequency-info
14. tuned-adm active
15. systemctl
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 SUT 6.12.0-160000.9-default #1 SMP PREEMPT_DYNAMIC Fri Jan 16 09:29:05 UTC 2026 (9badd3c) x86_64
x86_64 x86_64 GNU/Linux

2. w
16:22:04 up 5:41, 2 users, load average: 37.51, 45.58, 47.03
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT

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Platform Notes (Continued)

```

root    tty1    -                10:41    5:32m  0.97s  0.01s -bash
root    tty2    -                10:42    5:32m  0.04s  0.04s -bash

```

3. Username

From environment variable \$USER: root

4. ulimit -a

```

real-time non-blocking time (microseconds, -R) unlimited
core file size              (blocks, -c) unlimited
data seg size                (kbytes, -d) unlimited
scheduling priority         (-e) 0
file size                    (blocks, -f) unlimited
pending signals              (-i) 4126074
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) 4126074
virtual memory               (kbytes, -v) unlimited
file locks                   (-x) unlimited

```

5. sysinfo process ancestry

```

/usr/lib/systemd/systemd --switched-root --system --deserialize=47
login -- root
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 -c
  ic2025.2-linux64-sapphirerapids-rate-20250605.cfg --define smt-on --define cores=24 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak --o pdf fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 --configfile
  ic2025.2-linux64-sapphirerapids-rate-20250605.cfg --define smt-on --define cores=24 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak --output_format pdf --nopower
  --runmode rate --tune base:peak --size refrate fprate --nopreenv --note-preenv --logfile
  $SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /cpu2017-1.1.9

```

6. /proc/cpuinfo

```

model name      : INTEL(R) XEON(R) SILVER 4510
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping       : 8
microcode      : 0x2b000650
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb bhi spectre_v2_user vmscape
cpu cores      : 12
siblings       : 24
2 physical ids (chips)
48 processors (hardware threads)
physical id 0: core ids 0-11
physical id 1: core ids 0-11
physical id 0: apicids 0-23

```

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Platform Notes (Continued)

physical id 1: apicids 64-87

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 2.41.1:

```

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):                      48
On-line CPU(s) list:        0-47
Vendor ID:                   GenuineIntel
Model name:                  INTEL(R) XEON(R) SILVER 4510
CPU family:                  6
Model:                       143
Thread(s) per core:         2
Core(s) per socket:         12
Socket(s):                   2
Stepping:                    8
CPU(s) scaling MHz:         20%
CPU max MHz:                 4100.0000
CPU min MHz:                 800.0000
BogoMIPS:                    4800.00
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 aperfperf 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 intel_ppin
                             cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust
                             bmil 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
                             avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes
                             vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid
                             bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear
                             serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16
                             amx_tile amx_int8 flush_lld arch_capabilities
L1d cache:                   1.1 MiB (24 instances)
L1i cache:                   768 KiB (24 instances)
L2 cache:                    48 MiB (24 instances)
L3 cache:                    60 MiB (2 instances)
NUMA node(s):                4
NUMA node0 CPU(s):          0-5,24-29
NUMA node1 CPU(s):          6-11,30-35
NUMA node2 CPU(s):          12-17,36-41
NUMA node3 CPU(s):          18-23,42-47
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

```

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Platform Notes (Continued)

| | |
|---------------------------------------|-------------------------------------------------------------------------------------------------|
| 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 SW sequence; BHI BHI_DIS_S |
| Vulnerability Srbds: | Not affected |
| Vulnerability Tsa: | Not affected |
| Vulnerability Tsx async abort: | Not affected |
| Vulnerability Vmscape: | Mitigation; IBPB before exit to userspace |

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE | LEVEL | SETS | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d | 48K | 1.1M | 12 | Data | 1 | 64 | 1 | 64 |
| L1i | 32K | 768K | 8 | Instruction | 1 | 64 | 1 | 64 |
| L2 | 2M | 48M | 16 | Unified | 2 | 2048 | 1 | 64 |
| L3 | 30M | 60M | 15 | Unified | 3 | 32768 | 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: 0-5,24-29
node 0 size: 257627 MB
node 0 free: 247166 MB
node 1 cpus: 6-11,30-35
node 1 size: 258043 MB
node 1 free: 252171 MB
node 2 cpus: 12-17,36-41
node 2 size: 258043 MB
node 2 free: 252015 MB
node 3 cpus: 18-23,42-47
node 3 size: 258031 MB
node 3 free: 251820 MB
node distances:
node    0    1    2    3
0:    10   12   21   21
1:    12   10   21   21
2:    21   21   10   12
3:    21   21   12   10

```

9. /proc/meminfo

MemTotal: 1056507172 kB

'who -r' did not return a run level

10. Systemd service manager version: systemd 257 (257.10+suse.31.gfb9d92682b)

```

Default Target Status
multi-user      running

```

11. Services, from systemctl list-unit-files

| STATE | UNIT FILES |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| enabled | NetworkManager NetworkManager-dispatcher NetworkManager-wait-online appstream-sync-cache audit-rules auditd chronyd dbus-broker firewalld getty@ irqbalance issue-generator |

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Platform Notes (Continued)

```

kbdsettings klog lvm2-monitor rollback rsyslog smartd soft-reboot-cleanup sshd
systemd-pstore wpa_supplicant wtmpdb-update-boot
enabled-runtime      systemd-fsck-root systemd-remount-fs
disabled             blk-availability boot-sysctl ca-certificates ca-certificates-setup chrony-wait
                    console-getty containerd debug-shell dnsmasq docker exchange-bmc-os-info gpm grub2-once
                    hwloc-dump-hwdata ipmievd issue-add-ssh-keys jeos-firstboot jeos-firstboot-snapshot
                    kernel-sysctl kexec-load langset lastlog2-import lunmask lvm-devices-import man-db-create
                    multipathd nftables nis-domainname rpmconfigcheck rsyncd serial-getty@
                    setup-systemd-proxy-env smartd_generate_opts snmpd snmptrapd
                    systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-sysex
                    systemd-time-wait-sync systemd-timesyncd systemd-udev-load-credentials tuned udisks2
                    wpa_supplicant@
indirect            systemd-userdbd

```

```

-----
12. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-6.12.0-160000.9-default
root=UUID=59f9f04f-e759-4ecc-8e22-28acb39f7f76
mitigations=auto
quiet
security=

```

```

-----
13. cpupower frequency-info
analyzing CPU 36:
  current policy: frequency should be within 800 MHz and 4.10 GHz.
                  The governor "performance" may decide which speed to use
                  within this range.

  boost state support:
    Supported: yes
    Active: yes

```

```

-----
14. tuned-adm active
    No current active profile.

```

```

-----
15. 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                 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

```

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Platform Notes (Continued)

```

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 16.0

```

```

-----
19. Disk information
SPEC is set to: /cpu2017-1.1.9
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext4  877G  42G  791G   6% /

```

```

-----
20. /sys/devices/virtual/dmi/id
Vendor:          Epsilon IT Sp. z o.o
Product:         eterio 220 RE3
Product Family: Server
Serial:          02600147

```

```

-----
21. 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:
  16x Samsung M321R8GA0PB2-CCPWF 64 GB 2 rank 6400, configured at 4400

```

```

-----
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      American Megatrends International, LLC.
BIOS Version:     2.8
BIOS Date:        10/08/2025
BIOS Revision:    5.32

```

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 2025.2.0 Build 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
=====

```

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Compiler Version Notes (Continued)

=====
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 2025.2.0 Build 20250605
Copyright (C) 1985-2025 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 2025.2.0 Build 20250605
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2025.2.0 Build 20250605
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=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
=====

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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2025.2.0 Build 20250605
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=====
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 2025.2.0 Build 20250605
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=====
Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
=====

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Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

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Epsilon IT Sp. z o.o.

SPECrate®2017_fp_base = 358

eterio 220 RE3 (2.40 GHz, Intel Xeon Silver 4510)

SPECrate®2017_fp_peak = 365

CPU2017 License: 9081

Test Sponsor: Epsilon IT Sp. z o.o.

Tested by: Epsilon IT Sp. z o.o.

Test Date: Feb-2026

Hardware Availability: Dec-2023

Software Availability: Feb-2026

Base 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

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 -xsaphirerapids -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 -xsaphirerapids -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 -xsaphirerapids -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
```

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Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-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 -xsapfirerapids -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 -xsapfirerapids -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
```

Benchmarks using Fortran, C, and C++:

```
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapfirerapids -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
```



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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 -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:

-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++:

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)

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Peak Optimization Flags (Continued)

511.povray_r (continued):

```
-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

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
```

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

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

<http://www.spec.org/cpu2017/flags/Epsilon-Platform-Flags-RevA-Feb-2026-For-Intel-Processors.html>

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

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

<http://www.spec.org/cpu2017/flags/Epsilon-Platform-Flags-RevA-Feb-2026-For-Intel-Processors.xml>

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