



SPEC CPU®2017 Floating Point Rate Result

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Supermicro

Mainstream SuperServer SYS-741P-TRT
(X13DEI-T , Intel Xeon Silver 4510)

SPECrate®2017_fp_base = 366

SPECrate®2017_fp_peak = 370

CPU2017 License: 001176

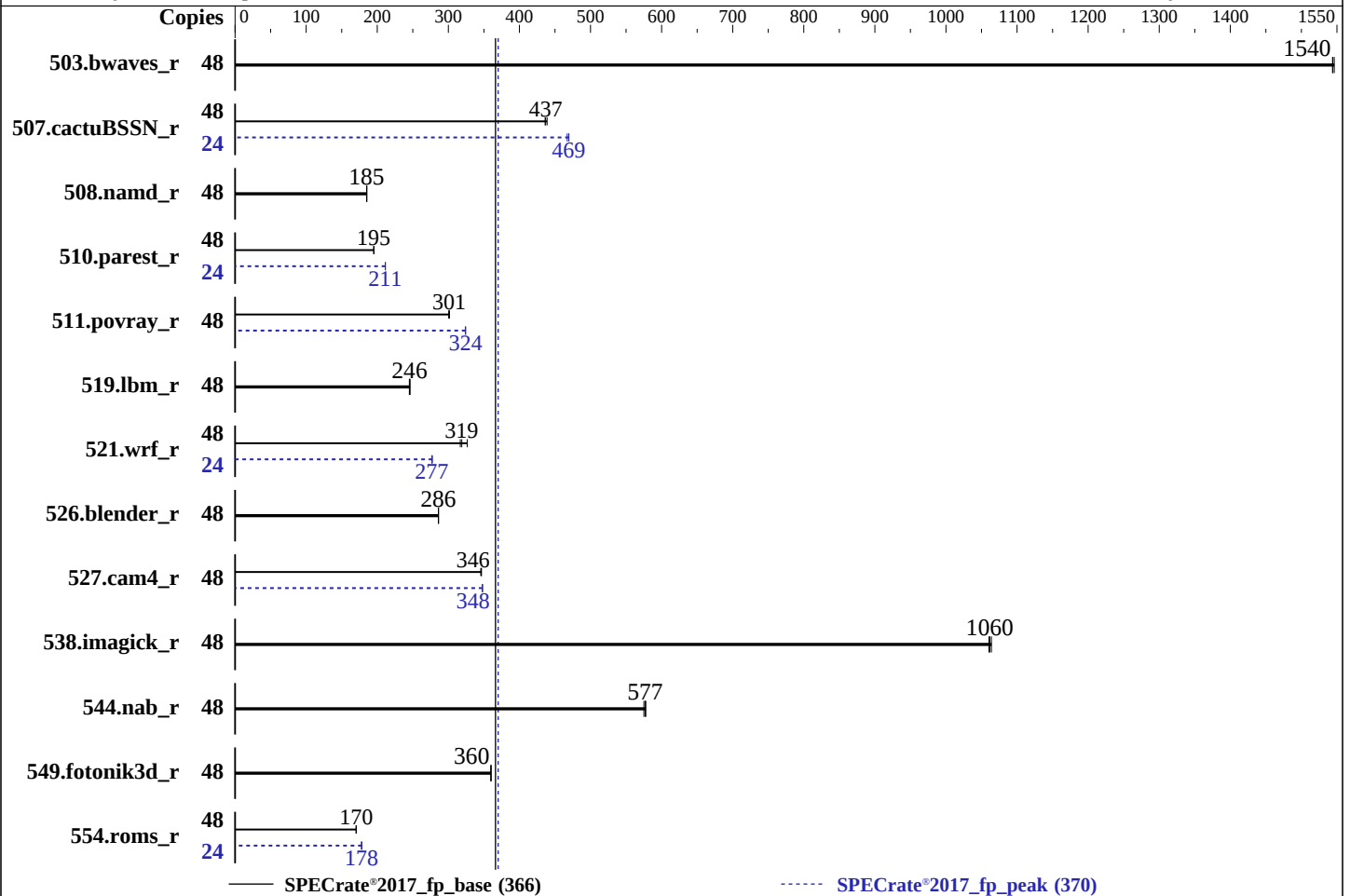
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Sep-2025

Hardware Availability: Nov-2023

Software Availability: Jun-2025



Hardware

CPU Name: Intel Xeon Silver 4510
Max MHz: 4100
Nominal: 2400
Enabled: 24 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
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: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R, running at 4400)
Storage: 1 x 240 GB SATA III SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP7
Kernel 6.4.0-150700.51-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: Version 2.7 released Jul-2025
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.



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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	311	1550	312	1540	<u>312</u>	<u>1540</u>	48	311	1550	312	1540	<u>312</u>	<u>1540</u>
507.cactuBSSN_r	48	138	439	<u>139</u>	<u>437</u>	139	436	24	64.7	470	<u>64.8</u>	<u>469</u>	65.0	467
508.namd_r	48	246	185	<u>246</u>	<u>185</u>	246	185	48	246	185	<u>246</u>	<u>185</u>	246	185
510.parest_r	48	<u>643</u>	<u>195</u>	643	195	643	195	24	<u>297</u>	<u>211</u>	297	211	297	211
511.povray_r	48	373	301	<u>372</u>	<u>301</u>	372	301	48	346	324	<u>346</u>	<u>324</u>	346	324
519.lbm_r	48	206	246	206	245	<u>206</u>	<u>246</u>	48	206	246	206	245	<u>206</u>	<u>246</u>
521.wrf_r	48	339	317	329	327	<u>337</u>	<u>319</u>	24	194	277	<u>194</u>	<u>277</u>	194	278
526.blender_r	48	<u>256</u>	<u>286</u>	255	286	256	286	48	<u>256</u>	<u>286</u>	255	286	256	286
527.cam4_r	48	<u>242</u>	<u>346</u>	242	346	243	346	48	<u>241</u>	<u>348</u>	241	348	241	348
538.imagick_r	48	<u>112</u>	<u>1060</u>	113	1060	112	1060	48	<u>112</u>	<u>1060</u>	113	1060	112	1060
544.nab_r	48	140	575	140	578	<u>140</u>	<u>577</u>	48	140	575	140	578	<u>140</u>	<u>577</u>
549.fotonik3d_r	48	520	360	<u>520</u>	<u>360</u>	520	360	48	520	360	<u>520</u>	<u>360</u>	520	360
554.roms_r	48	448	170	447	170	<u>448</u>	<u>170</u>	24	<u>214</u>	<u>178</u>	214	178	215	178

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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 = "/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
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>

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)

(Continued on next page)



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General Notes (Continued)

is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)

is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)

is mitigated in the system as tested and documented.

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 = HPC

SNC = Enable SNC2 (2-clusters)

LLC Dead Line Alloc = Disable

KTI Prefetch = Enable

Stale AtoS = Disable

Patrol Scrub = Disable

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost Fri Sep 26 16:14:59 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 (254.24+suse.148.g83b9060b6e)
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

1. uname -a
Linux localhost 6.4.0-150700.51-default #1 SMP PREEMPT_DYNAMIC Wed Apr 30 21:35:43 UTC 2025 (6930611)
x86_64 x86_64 x86_64 GNU/Linux

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Platform Notes (Continued)

```
-----
2. w
   16:14:59 up  5:24,  1 user,  load average: 34.65, 45.03, 46.95
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU   WHAT
root      tty1      -             10:51    5:22m  0.92s  0.04s  -bash
```

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

```
-----
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) 2062493
   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) 2062493
   virtual memory          (kbytes, -v) unlimited
   file locks              (-x) unlimited
```

```
-----
5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize=42
   login -- root
   -bash
   -bash
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 -c
   ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=24 --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=48 --configfile
   ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=24 --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
   $$SPEC/tmp/CPU2017.003/temlogs/preenv.fprate.003.0.log --lognum 003.0 --from_runcpu 2
   specperl $$SPEC/bin/sysinfo
   $SPEC = /home/cpu2017
```

```
-----
6. /proc/cpuinfo
   model name      : INTEL(R) XEON(R) SILVER 4510
   vendor_id       : GenuineIntel
   cpu family      : 6
   model           : 143
   stepping        : 8
   microcode       : 0x2b000643
   bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb bhi
   cpu cores       : 12
   siblings        : 24
   2 physical ids (chips)
   48 processors (hardware threads)
   physical id 0:  core ids 0-11
```

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Platform Notes (Continued)

physical id 1: core ids 0-11

physical id 0: apicids 0-23

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 2.40.4:

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):	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:	38%
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 aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pcdm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3 intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect user_shstk avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts vnmi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdrpid bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities
Virtualization:	VT-x
L1d cache:	1.1 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 Itlb multihit:	Not affected
Vulnerability L1tf:	Not affected

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Platform Notes (Continued)

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/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2:	Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling; PBRSE-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	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: 128639 MB
node 0 free: 118829 MB
node 1 cpus: 6-11,30-35
node 1 size: 129020 MB
node 1 free: 123181 MB
node 2 cpus: 12-17,36-41
node 2 size: 128982 MB
node 2 free: 123580 MB
node 3 cpus: 18-23,42-47
node 3 size: 129008 MB
node 3 free: 123574 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: 528026644 kB

10. who -r

run-level 3 Sep 26 10:51

11. Systemd service manager version: systemd 254 (254.24+suse.148.g83b9060b6e)

Default Target	Status
multi-user	running

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance

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Platform Notes (Continued)

issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog
smartd sshd systemd-pstore tuned wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
wickedd-nanny
enabled-runtime systemd-remount-fs
disabled autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info
firewalld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievdev issue-add-ssh-keys
kexec-load lunmask man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd
serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
systemd-timesyncd udisks2 vncserver@
indirect systemd-userdbd wickedd

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

```
BOOT_IMAGE=/boot/vmlinuz-6.4.0-150700.51-default  
root=UUID=01258cf4-879b-45f7-9cee-36c456b9e949  
splash=silent  
mitigations=auto  
quiet  
security=apparmor  
nomodeset
```

14. cpupower frequency-info

```
analyzing CPU 21:  
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
```

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
```

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Platform Notes (Continued)

17. /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

18. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs 60000
defrag 1
max_ptes_none 511
max_ptes_shared 256
max_ptes_swap 64
pages_to_scan 4096
scan_sleep_millisecs 10000

19. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP7

20. Disk information
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 221G 37G 185G 17% /

21. /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: SYS-741P-TRT
Product Family: Family
Serial: SYS741PTRT0001

22. dmidecode
Additional information from dmidecode 3.6 follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
Memory:
16x Samsung M321R4GA3PB0-CWMKJ 32 GB 2 rank 5600, configured at 4400

23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 2.7
BIOS Date: 07/11/2025
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 2024.1.0 Build 20240308
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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 2024.1.0 Build 20240308
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=====

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

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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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=====

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

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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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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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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

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SPEC CPU®2017 Floating Point Rate Result

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Supermicro

Mainstream SuperServer SYS-741P-TRT
(X13DEI-T , Intel Xeon Silver 4510)

SPECrate®2017_fp_base = 366

SPECrate®2017_fp_peak = 370

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Sep-2025

Hardware Availability: Nov-2023

Software Availability: Jun-2025

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 -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

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Base Optimization Flags (Continued)

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
```

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



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Tested by: Supermicro

Test Date: Sep-2025

Hardware Availability: Nov-2023

Software Availability: Jun-2025

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.profdata(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 -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/Intel-ic2024-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-EMR-revF.html>

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

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

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-EMR-revF.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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