



SPEC CPU®2017 Integer Rate Result

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KTNF

(Test Sponsor: Telecommunications Technology Association)

KTNF KR580S3

(2.90 GHz, Intel Xeon Gold 6542Y)

SPECrate®2017_int_base = 511

SPECrate®2017_int_peak = 519

CPU2017 License: A83

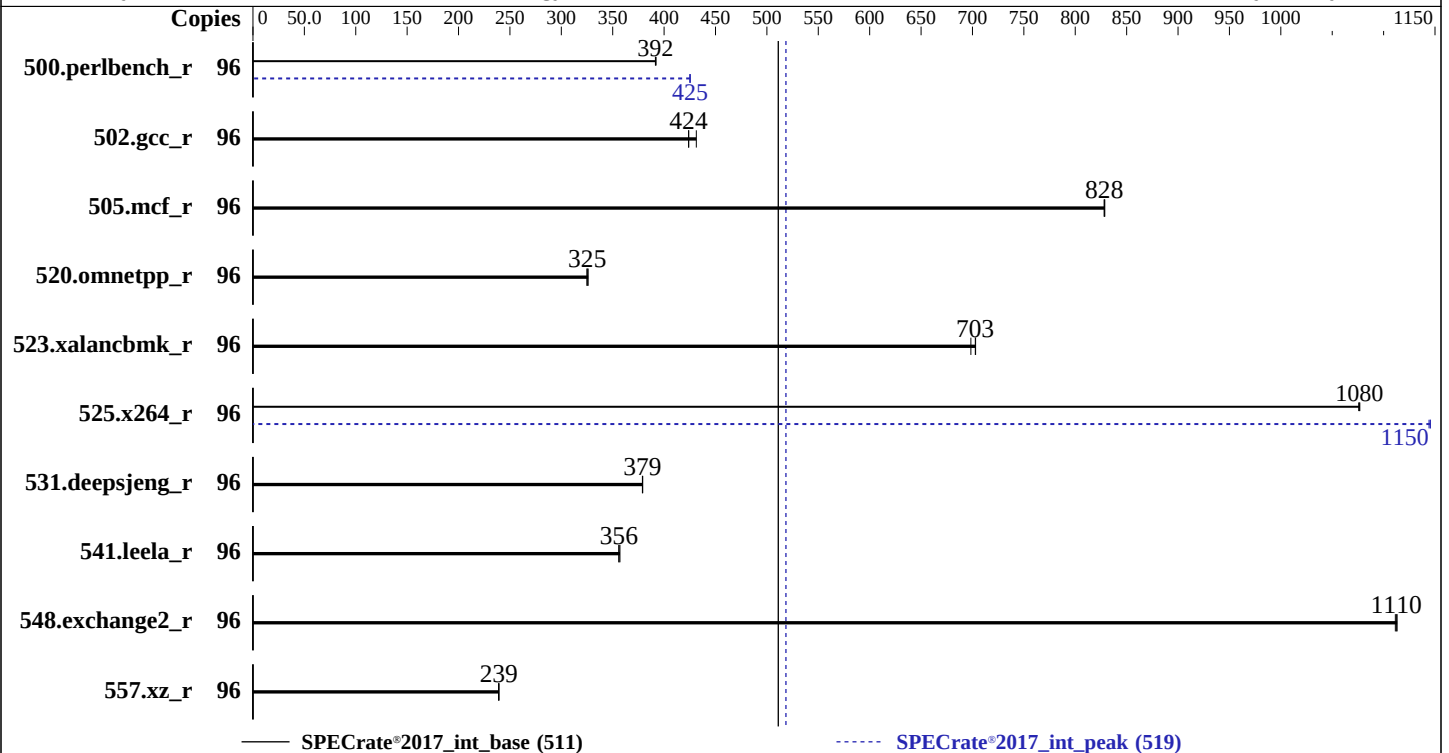
Test Sponsor: Telecommunications Technology Association

Tested by: Telecommunications Technology Association

Test Date: Aug-2025

Hardware Availability: Dec-2023

Software Availability: May-2023



Hardware

CPU Name: Intel Xeon Gold 6542Y
Max MHz: 4100
Nominal: 2900
Enabled: 48 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: 60 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 1.92 TB SATA SSD
Other: CPU Cooling: Air

Software

OS: Red Hat Enterprise Linux 9.2 (Plow)
5.14.0-284.11.1.el9_2.x86_64
Compiler: C/C++: Version 2024.2.1 of Intel oneAPI DPC++/C++
Compiler for Linux;
Fortran: Version 2024.2.1 of Intel Fortran
Compiler for Linux;
Parallel: No
Firmware: Version KTF-580S3-STD.037 released Jul-2025
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: Not Applicable
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
500.perlbench_r	96	390	392	<u>390</u>	<u>392</u>	390	392	96	359	425	360	425	<u>359</u>	<u>425</u>
502.gcc_r	96	<u>321</u>	<u>424</u>	321	424	315	431	96	<u>321</u>	<u>424</u>	321	424	315	431
505.mcf_r	96	<u>187</u>	<u>828</u>	187	828	187	829	96	<u>187</u>	<u>828</u>	187	828	187	829
520.omnetpp_r	96	386	326	<u>387</u>	<u>325</u>	388	325	96	386	326	<u>387</u>	<u>325</u>	388	325
523.xalancbmk_r	96	<u>144</u>	<u>703</u>	145	698	144	703	96	<u>144</u>	<u>703</u>	145	698	144	703
525.x264_r	96	156	1080	156	1080	<u>156</u>	<u>1080</u>	96	<u>147</u>	<u>1150</u>	147	1140	147	1150
531.deepsjeng_r	96	290	379	<u>290</u>	<u>379</u>	290	379	96	290	379	<u>290</u>	<u>379</u>	290	379
541.leela_r	96	447	356	445	357	<u>446</u>	<u>356</u>	96	447	356	445	357	<u>446</u>	<u>356</u>
548.exchange2_r	96	226	1110	226	1110	<u>226</u>	<u>1110</u>	96	226	1110	226	1110	<u>226</u>	<u>1110</u>
557.xz_r	96	<u>433</u>	<u>239</u>	434	239	433	239	96	<u>433</u>	<u>239</u>	434	239	433	239

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

Submit Notes

The config file option 'submit' was used.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH =

"/home/speccpu/SPECcpu2017-1.1.9/lib/intel64:/home/speccpu/SPECcpu2017-1.1.9/lib/ia32:/home/speccpu/SP
ECcpu2017-1.1.9/je5.3.0-32"

MALLOC_CONF = "retain:true"

General Notes

Binaries were compiled on a system with 2x Intel Xeon Platinum 8490H CPU + 1TiB Memory using RHEL 9.0

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.

Platform Notes

BIOS Configuration:

VT-d = Disabled

Patrol Scrub = Disabled

SNC = Enable SNC4 (4-clusters)

Engine Boost = Aggressive

SR-IOV Support = Disabled

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Platform Notes (Continued)

BMC Configuration:

Fan mode = Full speed mode

Sysinfo program /home/speccpu/SPECcpu2017-1.1.9/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on ktnfsvr Tue Aug 26 13:05:54 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 252 (252-13.el9_2)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode warning
24. BIOS

1. uname -a
Linux ktnfsvr 5.14.0-284.11.1.el9_2.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Apr 12 10:45:03 EDT 2023 x86_64
x86_64 x86_64 GNU/Linux

2. w
13:05:54 up 1 day, 3:36, 3 users, load average: 0.00, 0.00, 1.14
USER TTY LOGIN@ IDLE JCPU PCPU WHAT
speccpu pts/0 Mon09 2:00s 1.00s 0.00s sh -c w 2>/dev/null
speccpu pts/1 Mon09 4:01m 0.04s 0.04s -bash
speccpu pts/2 Mon10 3:41m 0.08s 0.08s -bash

3. Username
From environment variable \$USER: speccpu

4. ulimit -a
real-time non-blocking time (microseconds, -R) unlimited
core file size (blocks, -c) 0
data seg size (kbytes, -d) unlimited

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Platform Notes (Continued)

scheduling priority	(-e) 0
file size	(blocks, -f) unlimited
pending signals	(-i) 4124730
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) 8192
cpu time	(seconds, -t) unlimited
max user processes	(-u) 4124730
virtual memory	(kbytes, -v) unlimited
file locks	(-x) unlimited

5. sysinfo process ancestry

```
/usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
```

```
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
```

```
sshd: speccpu [priv]
```

```
sshd: speccpu@pts/0
```

```
-bash
```

```
runcpu --define default-platform-flags --copies 96 --configfile tta.cfg --define smt-on --define cores=48  
--tune base --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate
```

```
runcpu --define default-platform-flags --copies 96 --configfile tta.cfg --define smt-on --define cores=48  
--tune base --output_format all --nopower --runmode rate --tune base:peak --size refrate --nopower
```

```
--runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
```

```
$SPEC/tmp/CPU2017.057/temlogs/preenv.intrate.057.0.log --lognum 057.0 --from_runcpu 2
```

```
specperl $SPEC/bin/sysinfo
```

```
$SPEC = /home/speccpu/SPECcpu2017-1.1.9
```

6. /proc/cpuinfo

```
model name      : INTEL(R) XEON(R) GOLD 6542Y
```

```
vendor_id      : GenuineIntel
```

```
cpu family     : 6
```

```
model         : 207
```

```
stepping      : 2
```

```
microcode     : 0x210002a9
```

```
bugs          : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
```

```
cpu cores     : 24
```

```
siblings      : 48
```

```
2 physical ids (chips)
```

```
96 processors (hardware threads)
```

```
physical id 0: core ids 0-23
```

```
physical id 1: core ids 0-23
```

```
physical id 0: apicids 0-47
```

```
physical id 1: apicids 128-175
```

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

7. lscpu

From lscpu from util-linux 2.37.4:

```
Architecture:    x86_64
```

```
CPU op-mode(s):  32-bit, 64-bit
```

```
Address sizes:    52 bits physical, 57 bits virtual
```

```
Byte Order:       Little Endian
```

```
CPU(s):           96
```

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Platform Notes (Continued)

On-line CPU(s) list: 0-95
Vendor ID: GenuineIntel
Model name: INTEL(R) XEON(R) GOLD 6542Y
CPU family: 6
Model: 207
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 2
Stepping: 2
Frequency boost: enabled
CPU max MHz: 2901.0000
CPU min MHz: 800.0000
BogoMIPS: 5800.00
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 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3 invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi 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 avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hfi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities

Virtualization: VT-x
L1d cache: 2.3 MiB (48 instances)
L1i cache: 1.5 MiB (48 instances)
L2 cache: 96 MiB (48 instances)
L3 cache: 120 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-11,48-59
NUMA node1 CPU(s): 12-23,60-71
NUMA node2 CPU(s): 24-35,72-83
NUMA node3 CPU(s): 36-47,84-95
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: 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 IBRS, IBPB conditional, RSB filling, PBRSE-eIBRS SW sequence
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	2.3M	12	Data	1	64	1	64
L1i	32K	1.5M	8	Instruction	1	64	1	64
L2	2M	96M	16	Unified	2	2048	1	64
L3	60M	120M	15	Unified	3	65536	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: 4 nodes (0-3)

node 0 cpus: 0-11,48-59

node 0 size: 257102 MB

node 0 free: 224095 MB

node 1 cpus: 12-23,60-71

node 1 size: 258042 MB

node 1 free: 234019 MB

node 2 cpus: 24-35,72-83

node 2 size: 258042 MB

node 2 free: 233881 MB

node 3 cpus: 36-47,84-95

node 3 size: 258037 MB

node 3 free: 233852 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: 1055974564 kB

10. who -r

run-level 3 2025-08-25 09:30

11. Systemd service manager version: systemd 252 (252-13.el9_2)

Default Target	Status
multi-user	degraded

12. Failed units, from systemctl list-units --state=failed

UNIT	LOAD	ACTIVE	SUB	DESCRIPTION
* NetworkManager-wait-online.service	loaded	failed	failed	Network Manager Wait Online
* sep5.service	loaded	failed	failed	systemd script to load sep5 driver at boot time

13. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online atd auditd bluetooth chronyd crond dbus-broker firewalld getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname nvme-fc-boot-connections rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark sep5 smartd sshd sssd systemd-boot-update systemd-network-generator tuned udisks2 upower
enabled-runtime	systemd-remount-fs
disabled	arp-ethers blk-availability canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot chrony console-getty cpupower debug-shell dnf-system-upgrade iprump iprinit iprupdate ipsec iscsid iscsiuiop kpatch kvm_stat ledmon man-db-restart-cache-update nftables nvme-fc-autoconnect pesign psacct rdisc rhcd rhsm rhsm-facts rpmdm-rebuild selinux-check-proper-disable serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo systemd-sysupdate systemd-sysupdate-reboot
indirect	

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Platform Notes (Continued)

14. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-284.11.1.el9_2.x86_64
root=/dev/mapper/rhel-root
ro
crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
rhgb
quiet

15. cpupower frequency-info
analyzing CPU 59:
current policy: frequency should be within 800 MHz and 2.90 GHz.
The governor "performance" may decide which speed to use
within this range.
boost state support:
Supported: yes
Active: yes

16. tuned-adm active
Current active profile: throughput-performance

17. 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

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

19. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs 60000
defrag 1

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Platform Notes (Continued)

max_ptes_none 511
max_ptes_shared 256
max_ptes_swap 64
pages_to_scan 4096
scan_sleep_millisecs 10000

20. OS release

From /etc/*-release /etc/*-version
os-release Red Hat Enterprise Linux 9.2 (Plow)
redhat-release Red Hat Enterprise Linux release 9.2 (Plow)
system-release Red Hat Enterprise Linux release 9.2 (Plow)

21. Disk information

SPEC is set to: /home/speccpu/SPECcpu2017-1.1.9
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 1.7T 122G 1.6T 8% /home

22. /sys/devices/virtual/dmi/id

Vendor: KTNF Co.,Ltd.
Product: KM-P680
Product Family: Family

23. dmidecode warning

Cannot run dmidecode; consider saying (as root)
chmod +s /usr/sbin/dmidecode

24. BIOS

(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: KTF-580S3-STD.037
BIOS Date: 07/17/2025

Compiler Version Notes

C | 500.perlbench_r(base, peak) 502.gcc_r(base, peak) 505.mcf_r(base, peak) 525.x264_r(base, peak)
| 557.xz_r(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.2.1 Build 20240711
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
| 541.leela_r(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.2.1 Build 20240711
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

Fortran | 548.exchange2_r(base, peak)

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Compiler Version Notes (Continued)

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.2.1 Build 20240711
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64

502.gcc_r: -DSPEC_LP64

505.mcf_r: -DSPEC_LP64

520.omnetpp_r: -DSPEC_LP64

523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX

525.x264_r: -DSPEC_LP64

531.deepsjeng_r: -DSPEC_LP64

541.leela_r: -DSPEC_LP64

548.exchange2_r: -DSPEC_LP64

557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math

-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4

-L/home/speccpu/SPECcpu2017-1.1.9/lib/intel64 -lqkmallo

C++ benchmarks:

-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math

-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4

-L/home/speccpu/SPECcpu2017-1.1.9/lib/intel64 -lqkmallo

Fortran benchmarks:

-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto

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Tested by: Telecommunications Technology Association

Test Date: Aug-2025

Hardware Availability: Dec-2023

Software Availability: May-2023

Base Optimization Flags (Continued)

Fortran benchmarks (continued):

-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/home/speccpu/SPECcpu2017-1.1.9/lib/intel64 -lqkmallo

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -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
-fno-strict-overflow
-L/home/speccpu/SPECcpu2017-1.1.9/lib/intel64 -lqkmallo

502.gcc_r: basepeak = yes

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/home/speccpu/SPECcpu2017-1.1.9/lib/intel64 -lqkmallo

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

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KTNF

(Test Sponsor: Telecommunications Technology Association)

KTNF KR580S3

(2.90 GHz, Intel Xeon Gold 6542Y)

SPECrate®2017_int_base = 511

SPECrate®2017_int_peak = 519

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Peak Optimization Flags (Continued)

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes

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

<http://www.spec.org/cpu2017/flags/KTNF-Platform-Flags-Version-KM-P680-10B1-SA2.html>

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.2024-12-02.html>

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

<http://www.spec.org/cpu2017/flags/KTNF-Platform-Flags-Version-KM-P680-10B1-SA2.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.2024-12-02.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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