



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Dell Inc.

SPECrate®2017\_int\_base = 478

### PowerEdge R660xs (Intel Xeon Gold 5520+)

SPECrate®2017\_int\_peak = 493

CPU2017 License: 6573

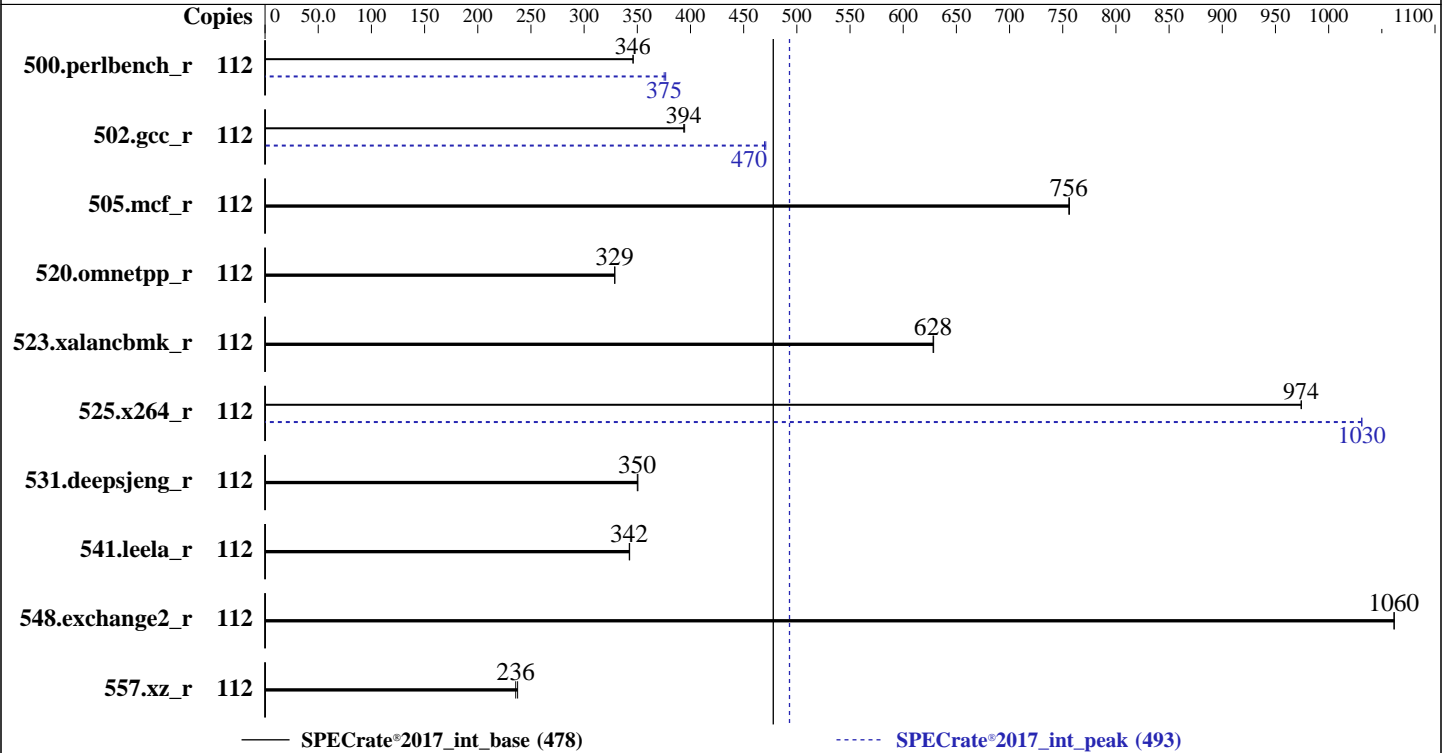
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2025

Hardware Availability: Feb-2024

Software Availability: Apr-2024



### Hardware

CPU Name: Intel Xeon Gold 5520+  
 Max MHz: 4000  
 Nominal: 2200  
 Enabled: 56 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: 52.5 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)  
 Storage: 80 GB on tmpfs  
 Other: CPU Cooling: Air

### Software

OS: Red Hat Enterprise Linux 9.4 (Plow)  
 5.14.0-427.13.1.el9\_4.x86\_64  
 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 2.4.4 released Sep-2024  
 File System: tmpfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-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
500.perlbench_r	112	515	346	<b><u>515</u></b>	<b><u>346</u></b>			112	473	377	<b><u>475</u></b>	<b><u>375</u></b>		
502.gcc_r	112	<b><u>403</u></b>	<b><u>394</u></b>	402	395			112	<b><u>338</u></b>	<b><u>470</u></b>	337	471		
505.mcf_r	112	<b><u>240</u></b>	<b><u>756</u></b>	239	756			112	<b><u>240</u></b>	<b><u>756</u></b>	239	756		
520.omnetpp_r	112	447	329	<b><u>447</u></b>	<b><u>329</u></b>			112	447	329	<b><u>447</u></b>	<b><u>329</u></b>		
523.xalancbmk_r	112	<b><u>188</u></b>	<b><u>628</u></b>	188	629			112	<b><u>188</u></b>	<b><u>628</u></b>	188	629		
525.x264_r	112	201	974	<b><u>201</u></b>	<b><u>974</u></b>			112	<b><u>190</u></b>	<b><u>1030</u></b>	190	1030		
531.deepsjeng_r	112	366	351	<b><u>367</u></b>	<b><u>350</u></b>			112	366	351	<b><u>367</u></b>	<b><u>350</u></b>		
541.leela_r	112	541	343	<b><u>542</u></b>	<b><u>342</u></b>			112	541	343	<b><u>542</u></b>	<b><u>342</u></b>		
548.exchange2_r	112	276	1060	<b><u>276</u></b>	<b><u>1060</u></b>			112	276	1060	<b><u>276</u></b>	<b><u>1060</u></b>		
557.xz_r	112	509	237	<b><u>513</u></b>	<b><u>236</u></b>			112	509	237	<b><u>513</u></b>	<b><u>236</u></b>		

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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 =
"/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/ia32:/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/je5.0.1-32"
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>  
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>

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## General Notes (Continued)

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.

Benchmark run from a 80 GB ramdisk created with the cmd: "mount -t tmpfs -o size=80G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS Settings:

Virtualization Technology : Disabled  
 DCU Streamer Prefetcher : Disabled  
 Sub NUMA Cluster : 2-Way Clustering  
 UMA Based Clustering Status : Disable  
 Dead Line LLC Alloc : Disabled  
 x2APIC Mode : Disabled

System Profile : Custom  
 CPU Power Management : Maximum Performance  
 Energy Efficient Turbo : Disabled  
 C1E : Disabled  
 C-States : Autonomous  
 Memory Patrol Scrub : Disabled  
 Energy Efficient Policy : Performance

CPU Interconnect Bus -  
 Link Power Management : Disabled  
 PCI ASPM L1 Link Power Management : Disabled  
 ADDDC Setting : Disabled  
 DIMM Self Healing -  
 on Uncorrectable Memory Error : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.1/bin/sysinfo  
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
 running on 3XCJ7V3-R660xs Thu Jan 16 16:39:43 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 (252-32.el9\_4)
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

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## Platform Notes (Continued)

```

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
24. BIOS

```

```

1. uname -a
Linux 3XCJ7V3-R660xs 5.14.0-427.13.1.el9_4.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Apr 10 10:29:16 EDT 2024
x86_64 x86_64 x86_64 GNU/Linux

```

```

2. w
16:39:43 up 4 min, 1 user, load average: 0.13, 0.05, 0.01
USER      TTY      LOGIN@   IDLE   JCPU   PCPU WHAT
root     tty1    16:35   23.00s  0.92s  0.00s /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh
rate --define DL-VERS=6.1 --output_format html,pdf,txt

```

```

3. Username
From environment variable $USER: root

```

```

4. ulimit -a
real-time non-blocking time (microseconds, -R) unlimited
core file size (blocks, -c) 0
data seg size (kbytes, -d) unlimited
scheduling priority (-e) 0
file size (blocks, -f) unlimited
pending signals (-i) 4126097
max locked memory (kbytes, -l) 64
max memory size (kbytes, -m) unlimited
open files (-n) 1024
pipe size (512 bytes, -p) 8
POSIX message queues (bytes, -q) 819200
real-time priority (-r) 0
stack size (kbytes, -s) unlimited
cpu time (seconds, -t) unlimited
max user processes (-u) 4126097
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited

```

```

5. sysinfo process ancestry
/usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
login -- root
-bash
/bin/bash /home/DellFiles/bin/DELL_rate.sh
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1 --output_format
html,pdf,txt
/bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1 --output_format
html,pdf,txt
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=112 -c
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=56 --define physicalfirst

```

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## Platform Notes (Continued)

```
--define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 2 --define
DL-VERS=6.1 --output_format html,pdf,txt intrate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=112 --configfile
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=56 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 2
--define DL-VERS=6.1 --output_format html,pdf,txt --nopower --runmode rate --tune base:peak --size refrate
intrate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.001/temlogs/preenv.intrate.001.0.log
--lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
```

```
6. /proc/cpuinfo
model name      : INTEL(R) XEON(R) GOLD 5520+
vendor_id      : GenuineIntel
cpu family     : 6
model          : 207
stepping       : 2
microcode      : 0x21000283
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores      : 28
siblings       : 56
2 physical ids (chips)
112 processors (hardware threads)
physical id 0: core ids 0-27
physical id 1: core ids 0-27
physical id 0: apicids 0-55
physical id 1: apicids 128-183
```

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: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 112
On-line CPU(s) list: 0-111
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel
Model name: INTEL(R) XEON(R) GOLD 5520+
BIOS Model name: INTEL(R) XEON(R) GOLD 5520+
CPU family: 6
Model: 207
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
Stepping: 2
BogoMIPS: 4400.00
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 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 cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase
```

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### Platform Notes (Continued)

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 avx\_vnni avx512\_bf16 wbnoinvd dtherm ida arat pln pts 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\_lld arch\_capabilities

L1d cache: 2.6 MiB (56 instances)  
L1i cache: 1.8 MiB (56 instances)  
L2 cache: 112 MiB (56 instances)  
L3 cache: 105 MiB (2 instances)  
NUMA node(s): 4  
NUMA node0 CPU(s): 0,4,8,12,16,20,24,28,32,36,40,44,48,54,56,60,64,68,72,76,80,84,88,92,96,100,104,110  
NUMA node1 CPU(s): 2,6,10,14,18,22,26,30,34,38,42,46,50,52,58,62,66,70,74,78,82,86,90,94,98,102,106,108  
NUMA node2 CPU(s): 1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101,105,109  
NUMA node3 CPU(s): 3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79,83,87,91,95,99,103,107,111  
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 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  
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	2.6M	12	Data	1	64	1	64
L1i	32K	1.8M	8	Instruction	1	64	1	64
L2	2M	112M	16	Unified	2	2048	1	64
L3	52.5M	105M	15	Unified	3	57344	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: 0,4,8,12,16,20,24,28,32,36,40,44,48,54,56,60,64,68,72,76,80,84,88,92,96,100,104,110  
node 0 size: 257492 MB  
node 0 free: 254736 MB  
node 1 cpus: 2,6,10,14,18,22,26,30,34,38,42,46,50,52,58,62,66,70,74,78,82,86,90,94,98,102,106,108  
node 1 size: 257999 MB  
node 1 free: 257300 MB  
node 2 cpus: 1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101,105,109  
node 2 size: 258040 MB  
node 2 free: 247170 MB  
node 3 cpus: 3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79,83,87,91,95,99,103,107,111  
node 3 size: 258035 MB  
node 3 free: 251397 MB

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## Platform Notes (Continued)

```
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:      1056325348 kB
-----
```

```
-----
10. who -r
   run-level 3 Jan 16 16:35
-----
```

```
-----
11. Systemd service manager version: systemd 252 (252-32.el9_4)
   Default Target   Status
   multi-user       degraded
-----
```

```
-----
12. Failed units, from systemctl list-units --state=failed
   UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
* mdmonitor.service loaded failed failed Software RAID monitoring and management
-----
```

```
-----
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-onboot
              iscsi-starter kdump libstoragemgmt low-memory-monitor lvm2-monitor mcelog mdmonitor
              microcode multipathd nis-domainname nvme-fc-boot-connections rhsmcertd rsyslog rtkit-daemon
              selinux-autorelabel-mark 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-wait chronyd-restricted console-getty cpupower
              debug-shell dnf-system-upgrade hwloc-dump-hwdata iprdump iprinit iprupdate ipsec
              iscsi-init iscsid iscsiui kpatch kvm_stat ledmon man-db-restart-cache-update nftables
              nvme-fc-autoconnect pesign psacct rdisc rhcd rhsm rhsm-facts rpmdb-rebuild
              selinux-check-proper-disable serial-getty@ sshd-keygen@ systemd-boot-check-no-failures
              systemd-pstore systemd-sysext
indirect     iscsi sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo systemd-sysupdate
              systemd-sysupdate-reboot
-----
```

```
-----
14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=(hd6,gpt2)/vmlinuz-5.14.0-427.13.1.el9_4.x86_64
   root=/dev/mapper/rhel-root
   ro
   resume=/dev/mapper/rhel-swap
   rd.lvm.lv=rhel/root
   rd.lvm.lv=rhel/swap
   rhgb
   quiet
-----
```

```
-----
15. cpupower frequency-info
   analyzing CPU 48:
   Unable to determine current policy
-----
```

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## Platform Notes (Continued)

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  
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 9.4 (Plow)  
redhat-release Red Hat Enterprise Linux release 9.4 (Plow)  
system-release Red Hat Enterprise Linux release 9.4 (Plow)

-----  
21. Disk information  
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1  
Filesystem Type Size Used Avail Use% Mounted on  
tmpfs tmpfs 80G 5.0G 76G 7% /mnt/ramdisk

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Tested by: Dell Inc.

Test Date: Jan-2025

Hardware Availability: Feb-2024

Software Availability: Apr-2024

## Platform Notes (Continued)

```

-----
22. /sys/devices/virtual/dmi/id
Vendor:      Dell Inc.
Product:     PowerEdge R660xs
Product Family: PowerEdge
Serial:      3XCJ7V3
-----

```

```

-----
23. dmidecode
Additional information from dmidecode 3.5 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:
6x 002C0632002C MTC40F2046S1RC56BG1 64 GB 2 rank 5600, configured at 4800
3x 00AD063200AD HMC94AGBRA181N 64 GB 2 rank 5600, configured at 4800
7x 00CE042300CE M321R8GA0PB0-CWMCH 64 GB 2 rank 5600, configured at 4800
-----

```

```

-----
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      Dell Inc.
BIOS Version:     2.4.4
BIOS Date:        09/27/2024
BIOS Revision:    2.4
-----

```

## Compiler Version Notes

```

=====
C | 502.gcc_r(peak)
-----

```

```

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
-----

```

```

=====
C | 500.perlbench_r(base, peak) 502.gcc_r(base) 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 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
-----

```

```

=====
C | 502.gcc_r(peak)
-----

```

```

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
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-----

```

```

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

```

```

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-----

```

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# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 478

PowerEdge R660xs (Intel Xeon Gold 5520+)

SPECrate®2017\_int\_peak = 493

CPU2017 License: 6573  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.

Test Date: Jan-2025  
Hardware Availability: Feb-2024  
Software Availability: Apr-2024

## Compiler Version Notes (Continued)

-----  
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 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.  
-----

-----  
Fortran | 548.exchange2\_r(base, peak)  
-----

Intel(R) Fortran 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

## 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

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Hardware Availability: Feb-2024

Software Availability: Apr-2024

## Base Optimization Flags (Continued)

C benchmarks (continued):

`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

C++ benchmarks:

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

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

`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

Fortran benchmarks:

`-w -m64 -Wl,-z,muldefs -xsaphirerapids -O3 -ffast-math -flto`

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

`-nostandard-realloc-lhs -align array32byte -auto`

`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

## Peak Compiler Invocation

C benchmarks:

`icx`

C++ benchmarks:

`icpx`

Fortran benchmarks:

`ifx`

## Peak Portability Flags

500.perlbench\_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`

502.gcc\_r: `-D_FILE_OFFSET_BITS=64`

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`



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CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2025

Hardware Availability: Feb-2024

Software Availability: Apr-2024

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profddata(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/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

```
502.gcc_r: -m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc
```

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/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

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/Intel-ic2024-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.10.html>



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**Test Date:** Jan-2025

**Hardware Availability:** Feb-2024

**Software Availability:** Apr-2024

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/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.10.xml>

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