



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Dell Inc.

SPECspeed®2017\_int\_base = 13.9

## PowerEdge T560 (Intel Xeon Silver 4410T)

SPECspeed®2017\_int\_peak = 14.1

CPU2017 License: 6573

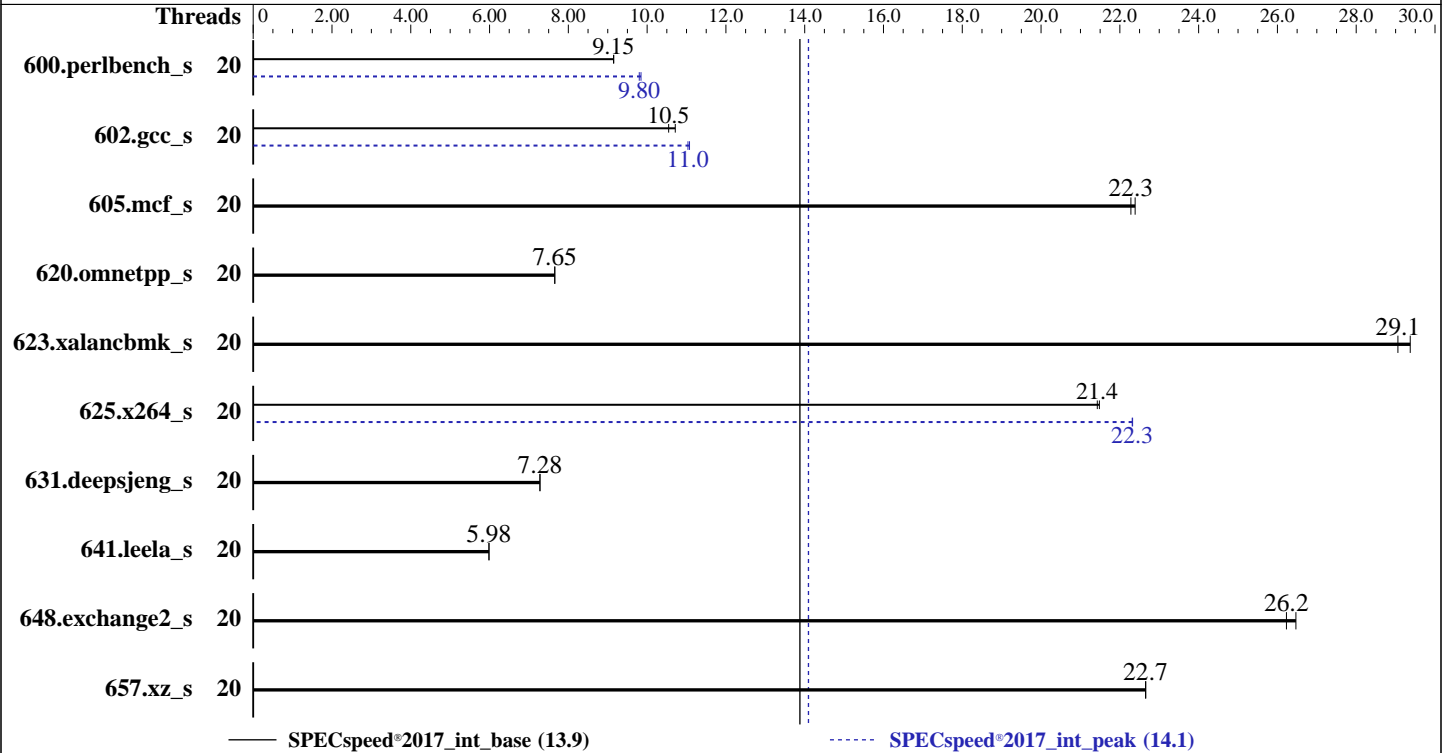
Test Date: Mar-2023

Test Sponsor: Dell Inc.

Hardware Availability: Mar-2023

Tested by: Dell Inc.

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Silver 4410T  
 Max MHz: 4000  
 Nominal: 2700  
 Enabled: 20 cores, 2 chips  
 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: 26.25 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R, running at 4000)  
 Storage: 125 GB on tmpfs  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP4  
 5.14.21-150400.22-default  
 Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++  
 Compiler for Linux;  
 Fortran: Version 2023.0 of Intel Fortran Compiler  
 for Linux;  
 Parallel: Yes  
 Firmware: Version 1.0.1 released Mar-2023  
 File System: tmpfs  
 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							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	20	194	9.15	<b>194</b>	<b>9.15</b>			20	<b>181</b>	<b>9.80</b>	180	9.84		
602.gcc_s	20	<b>378</b>	<b>10.5</b>	372	10.7			20	360	11.1	<b>361</b>	<b>11.0</b>		
605.mcf_s	20	<b>212</b>	<b>22.3</b>	211	22.4			20	<b>212</b>	<b>22.3</b>	211	22.4		
620.omnetpp_s	20	<b>213</b>	<b>7.65</b>	213	7.66			20	<b>213</b>	<b>7.65</b>	213	7.66		
623.xalancbmk_s	20	48.2	29.4	<b>48.8</b>	<b>29.1</b>			20	48.2	29.4	<b>48.8</b>	<b>29.1</b>		
625.x264_s	20	82.1	21.5	<b>82.3</b>	<b>21.4</b>			20	<b>79.1</b>	<b>22.3</b>	79.0	22.3		
631.deepsjeng_s	20	197	7.28	<b>197</b>	<b>7.28</b>			20	197	7.28	<b>197</b>	<b>7.28</b>		
641.leela_s	20	285	5.99	<b>285</b>	<b>5.98</b>			20	285	5.99	<b>285</b>	<b>5.98</b>		
648.exchange2_s	20	<b>112</b>	<b>26.2</b>	111	26.5			20	<b>112</b>	<b>26.2</b>	111	26.5		
657.xz_s	20	<b>273</b>	<b>22.7</b>	273	22.7			20	<b>273</b>	<b>22.7</b>	273	22.7		

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

## Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk\_r / 623.xalancbmk\_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 [https://www.spec.org/cpu2017/Docs/runrules.html#rule\\_1.4](https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4)), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

## 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:

KMP\_AFFINITY = "granularity=fine,scatter"

LD\_LIBRARY\_PATH =

"/mnt/ramdisk/cpu2017-1.1.9-ic2023.0/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2023.0/je5.0.1-64"

MALLOC\_CONF = "retain:true"

OMP\_STACKSIZE = "192M"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM memory using Redhat Enterprise Linux 8.0  
Transparent Huge Pages enabled by default

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## General Notes (Continued)

Prior to runcpu invocation  
Filesystem page cache synced and cleared with:  
sync; echo 3> /proc/sys/vm/drop\_caches  
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

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 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS settings:

ADDC Setting : Disabled  
DIMM Self Healing on  
Uncorrectable Memory Error : Disabled  
Logical Processor : Disabled  
Virtualization Technology : Disabled  
Sub NUMA Cluster : 2-way Clustering

System Profile : Custom  
CPU Power Management : Maximum Performance  
CIE : Disabled  
C States : Autonomous  
Memory Patrol Scrub : Disabled  
Energy Efficiency Policy : Performance  
PCI ASPM L1 Link  
Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2023.0/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost Fri Mar 17 09:44:18 2023

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 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info

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## Platform Notes (Continued)

- 15. sysctl
- 16. /sys/kernel/mm/transparent\_hugepage
- 17. /sys/kernel/mm/transparent\_hugepage/khugepaged
- 18. OS release
- 19. Disk information
- 20. /sys/devices/virtual/dmi/id
- 21. dmidecode
- 22. BIOS

```
1. uname -a
Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222/lp)
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
09:44:18 up 26 min, 1 user, load average: 8.58, 16.68, 15.21
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
root     tty1    -             09:17   26:30   0.96s  0.00s /bin/bash ./dell-run-specspeed.sh
--iterations 2 --output_format csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --define Dell-BIOS-LogProcD=1
```

```
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) 4124686
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) 4124686
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited
```

```
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
login -- root
-bash
/bin/bash ./DELL_speed.sh
/bin/bash ./dell-run-main.sh speed
/bin/bash ./dell-run-main.sh speed
/bin/bash ./dell-run-specspeed.sh --iterations 2 --output_format csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --define Dell-BIOS-LogProcD=1
/bin/bash ./dell-run-specspeed.sh --iterations 2 --output_format csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --define Dell-BIOS-LogProcD=1
runcpu --nobuild --action validate --define default-platform-flags -c ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=20 --tune base,peak -o all --define
```

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## Platform Notes (Continued)

```

intspeedaffinity --define drop_caches --iterations 2 --output_format csv,html,pdf,txt -define
Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --define Dell-BIOS-LogProcD=1 intspeed
runcpu --nobuild --action validate --define default-platform-flags --configfile
ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=20 --tune base,peak --output_format all
--define intspeedaffinity --define drop_caches --iterations 2 --output_format csv,html,pdf,txt --define
Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --define Dell-BIOS-LogProcD=1 --nopower --runmode speed --tune
base:peak --size refspeed intspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templogs/preenv.intspeed.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2023.0

```

```

6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Silver 4410T
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping       : 8
microcode      : 0x2b0001b0
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 10
siblings       : 10
2 physical ids (chips)
20 processors (hardware threads)
physical id 0: core ids 0-9
physical id 1: core ids 0-9
physical id 0: apicids 0,2,4,6,8,10,12,14,16,18
physical id 1: apicids 128,130,132,134,136,138,140,142,144,146
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 2.37.2:

```

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):                20
On-line CPU(s) list:   0-19
Vendor ID:             GenuineIntel
Model name:            Intel(R) Xeon(R) Silver 4410T
CPU family:            6
Model:                 143
Thread(s) per core:    1
Core(s) per socket:    10
Socket(s):             2
Stepping:              8
BogoMIPS:              5400.00
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 invpcid_single
                        cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle
                        avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
                        avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl

```

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## Platform Notes (Continued)

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 avx512\_fp16 amx\_tile flush\_lld arch\_capabilities

L1d cache: 960 KiB (20 instances)  
L1i cache: 640 KiB (20 instances)  
L2 cache: 40 MiB (20 instances)  
L3 cache: 52.5 MiB (2 instances)  
NUMA node(s): 4  
NUMA node0 CPU(s): 0,4,8,12,16  
NUMA node1 CPU(s): 2,6,10,14,18  
NUMA node2 CPU(s): 1,5,9,13,17  
NUMA node3 CPU(s): 3,7,11,15,19  
Vulnerability Itlb multihit: Not affected  
Vulnerability L1tf: Not affected  
Vulnerability Mds: Not affected  
Vulnerability Meltdown: Not affected  
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp  
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling  
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	960K	12	Data	1	64	1	64
L1i	32K	640K	8	Instruction	1	64	1	64
L2	2M	40M	16	Unified	2	2048	1	64
L3	26.3M	52.5M	15	Unified	3	28672	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  
node 0 size: 257426 MB  
node 0 free: 256480 MB  
node 1 cpus: 2,6,10,14,18  
node 1 size: 258012 MB  
node 1 free: 257704 MB  
node 2 cpus: 1,5,9,13,17  
node 2 size: 258046 MB  
node 2 free: 249004 MB  
node 3 cpus: 3,7,11,15,19  
node 3 size: 257711 MB  
node 3 free: 257279 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: 1055945128 kB

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## Platform Notes (Continued)

10. who -r  
run-level 3 Mar 17 09:17

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)  
Default Target Status  
multi-user running

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	YaST2-Firstboot YaST2-Second-Stage apparmor auditd bluetooth cron display-manager firewalld getty@ haveged irqbalance iscsi issue-generator kbdsettings kdump kdump-early klog libvirtd lvm2-monitor nscd nvme-fc-boot-connections oracle postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny xencommons
enabled-runtime	systemd-remount-fs
disabled	accounts-daemon amavis apache2 apache2@ appstream-sync-cache autofs autoyast-initscripts bgpd blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd clamav-milter clamd console-getty cups cups-browsed ddclient debug-shell dhcpd dhcpd6 dhcrelay dhcrelay6 dirsrv@ dnsmasq ebttables exchange-info fetchmail freshclam gpm grub2-once haveged-switch-root hwloc-dump-hwdata instsvcdrv ipmi ipmievd iscsi-init iscsid iscsiuiio isisd issue-add-ssh-keys kexec-load ksm kvm_stat libvirt-guests lunmask man-db-create mariadb mariadb@ multipathd named nfs nfs-blkmap nfs-server nfsserver nmb nvme-fc-autoconnect ospf6d ospfd ostree-remount racoon racoon-setkey radvd rarpd@ rdisc ripd ripngd rpcbind rpmconfigcheck rsyncd rtkit-daemon sapconf serial-getty@ smartd_generate_opts smb snmpd snmptrapd spamd spampd speech-dispatcherd squid srp_daemon srp_daemon_port@ strongswan strongswan-starter svnserve sysstat systemd-boot-check-no-failures systemd-network-generator systemd-nsd systemd-sysext systemd-time-wait-sync systemd-timesyncd tcsd udisks2 upower virtinterfaced virtnetworkd virtnodevd virtnwfilterd virtproxyd virtqemu virtsecret virtstorage virtxend vsftpd winbind xen-dom0-modules xen-init-dom0 xen-qemu-dom0-disk-backend xen-watchdog xenconsole xendomains xenstored zebra
indirect	pcsd uidd virtlockd virtlogd wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default  
root=UUID=35458c4c-5e83-48b0-808c-9f9263c843b9  
splash=silent  
mitigations=auto  
quiet  
security=apparmor  
crashkernel=320M,high  
crashkernel=72M,low

14. cpupower frequency-info  
analyzing CPU 0:  
Unable to determine current policy  
boost state support:  
Supported: yes  
Active: yes

15. sysctl  
kernel.numa\_balancing 1  
kernel.randomize\_va\_space 2  
vm.compaction\_proactiveness 20  
vm.dirty\_background\_bytes 0

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### Platform Notes (Continued)

```

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                  20
vm.watermark_boost_factor     15000
vm.watermark_scale_factor     10
vm.zone_reclaim_mode          0

```

```

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

```

```

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

```

```

-----
18. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP4

```

```

-----
19. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2023.0
Filesystem  Type  Size  Used Avail Use% Mounted on
tmpfs      tmpfs 125G  4.3G 121G   4% /mnt/ramdisk

```

```

-----
20. /sys/devices/virtual/dmi/id
Vendor:      Dell Inc.
Product:     PowerEdge T560
Product Family: PowerEdge

```

```

-----
21. dmidecode
Additional information from dmidecode 3.2 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:
3x 002C0632002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800, configured at 4000
5x 002C069D002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800, configured at 4000
8x 00CE00B300CE M321R8GA0BB0-CQKDG 64 GB 2 rank 4800, configured at 4000

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## Platform Notes (Continued)

-----  
22. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: Dell Inc.  
BIOS Version: 1.0.1  
BIOS Date: 03/09/2023  
BIOS Revision: 1.0

## Compiler Version Notes

-----  
C | 600.perlbench\_s(base, peak) 602.gcc\_s(base, peak) 605.mcf\_s(base, peak) 625.x264\_s(base, peak)  
| 657.xz\_s(base, peak)

-----  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
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-----  
C++ | 620.omnetpp\_s(base, peak) 623.xalancbmk\_s(base, peak) 631.deepsjeng\_s(base, peak)  
| 641.leela\_s(base, peak)

-----  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
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-----  
Fortran | 648.exchange2\_s(base, peak)

-----  
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
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## Base Compiler Invocation

C benchmarks:  
icx

C++ benchmarks:  
icpx

Fortran benchmarks:  
ifx

## Base Portability Flags

600.perlbench\_s: -DSPEC\_LP64 -DSPEC\_LINUX\_X64

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

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Dell Inc.

SPECspeed®2017\_int\_base = 13.9

PowerEdge T560 (Intel Xeon Silver 4410T)

SPECspeed®2017\_int\_peak = 14.1

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2023

Hardware Availability: Mar-2023

Software Availability: Dec-2022

## Base Portability Flags (Continued)

```
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```

## Base Optimization Flags

C benchmarks:

```
-m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:

```
-m64 -std=c++14 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:

```
-m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx



# SPEC CPU®2017 Integer Speed Result

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Dell Inc.

SPECspeed®2017\_int\_base = 13.9

PowerEdge T560 (Intel Xeon Silver 4410T)

SPECspeed®2017\_int\_peak = 14.1

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2023

Hardware Availability: Mar-2023

Software Availability: Dec-2022

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fiopenmp -DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fiopenmp -DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc
```

605.mcf\_s: basepeak = yes

```
625.x264_s: -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

657.xz\_s: basepeak = yes

C++ benchmarks:

620.omnetpp\_s: basepeak = yes

623.xalancbmk\_s: basepeak = yes

631.deepsjeng\_s: basepeak = yes

641.leela\_s: basepeak = yes

Fortran benchmarks:

648.exchange2\_s: basepeak = yes



# SPEC CPU®2017 Integer Speed Result

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SPECspeed®2017\_int\_base = 13.9

PowerEdge T560 (Intel Xeon Silver 4410T)

SPECspeed®2017\_int\_peak = 14.1

**CPU2017 License:** 6573

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Mar-2023

**Software Availability:** Dec-2022

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

<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.3.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.3.xml>

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