



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Dell Inc.

SPECspeed®2017\_int\_base = 14.0

### PowerEdge R760 (Intel Xeon Platinum 8470N)

SPECspeed®2017\_int\_peak = 14.2

CPU2017 License: 6573

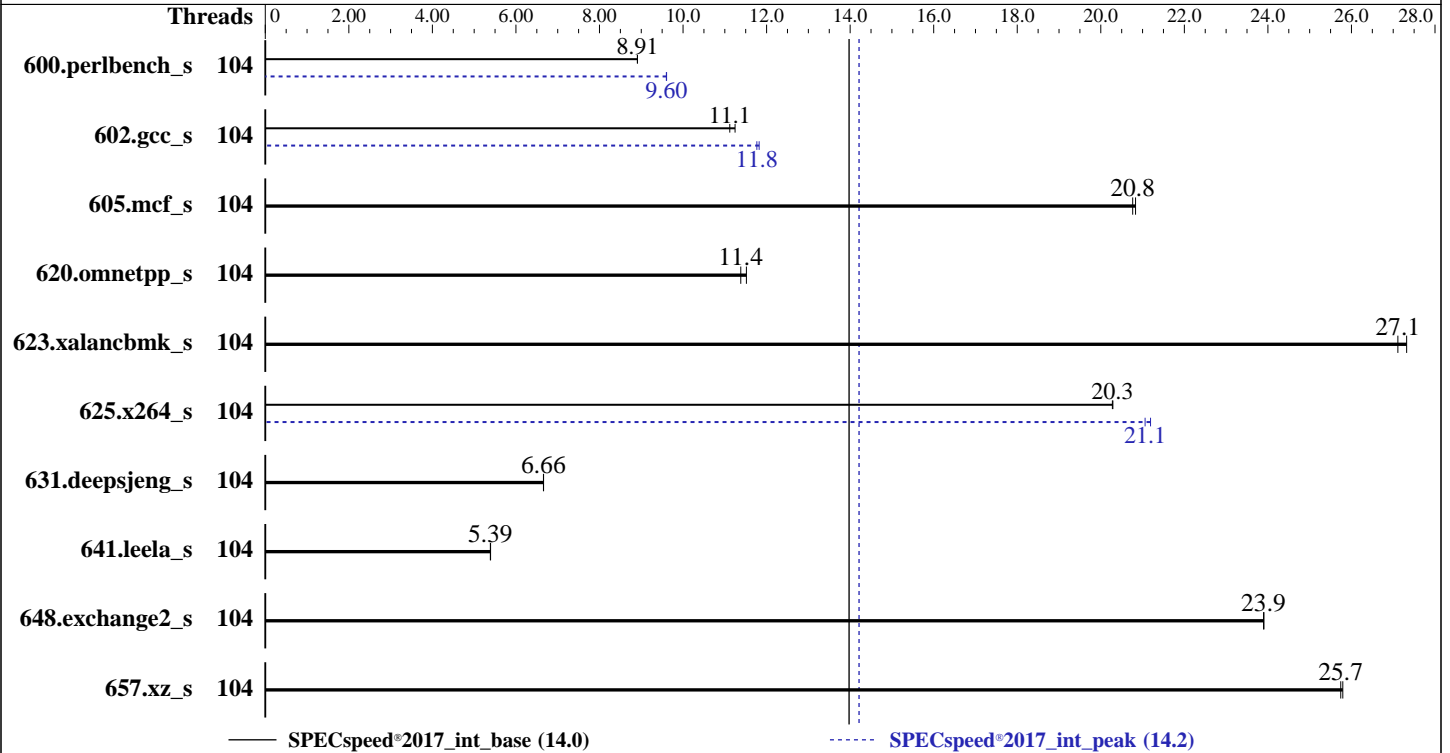
Test Date: Feb-2023

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2023

Tested by: Dell Inc.

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Platinum 8470N  
 Max MHz: 3600  
 Nominal: 1700  
 Enabled: 104 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: 97.5 MB I+D on chip per chip  
 Other: None  
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)  
 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 Dec-2022  
 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 | 104     | 199         | 8.91        | <b>199</b> | <b>8.91</b> |         |       | 104     | 185         | 9.61        | <b>185</b> | <b>9.60</b> |         |       |
| 602.gcc_s       | 104     | <b>358</b>  | <b>11.1</b> | 354        | 11.2        |         |       | 104     | <b>338</b>  | <b>11.8</b> | 337        | 11.8        |         |       |
| 605.mcf_s       | 104     | <b>227</b>  | <b>20.8</b> | 227        | 20.8        |         |       | 104     | <b>227</b>  | <b>20.8</b> | 227        | 20.8        |         |       |
| 620.omnetpp_s   | 104     | <b>143</b>  | <b>11.4</b> | 142        | 11.5        |         |       | 104     | <b>143</b>  | <b>11.4</b> | 142        | 11.5        |         |       |
| 623.xalancbmk_s | 104     | <b>52.3</b> | <b>27.1</b> | 51.9       | 27.3        |         |       | 104     | <b>52.3</b> | <b>27.1</b> | 51.9       | 27.3        |         |       |
| 625.x264_s      | 104     | <b>87.0</b> | <b>20.3</b> | 86.9       | 20.3        |         |       | 104     | <b>83.8</b> | <b>21.1</b> | 83.2       | 21.2        |         |       |
| 631.deepsjeng_s | 104     | <b>215</b>  | <b>6.66</b> | 215        | 6.66        |         |       | 104     | <b>215</b>  | <b>6.66</b> | 215        | 6.66        |         |       |
| 641.leela_s     | 104     | <b>317</b>  | <b>5.39</b> | 316        | 5.39        |         |       | 104     | <b>317</b>  | <b>5.39</b> | 316        | 5.39        |         |       |
| 648.exchange2_s | 104     | 123         | 23.9        | <b>123</b> | <b>23.9</b> |         |       | 104     | 123         | 23.9        | <b>123</b> | <b>23.9</b> |         |       |
| 657.xz_s        | 104     | 240         | 25.8        | <b>240</b> | <b>25.7</b> |         |       | 104     | 240         | 25.8        | <b>240</b> | <b>25.7</b> |         |       |

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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

(Continued on next page)



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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:

```

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

  System Profile : Custom
  CPU Power Management : Maximum Performance
  C1E : 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 Sat Feb 25 20:19:53 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

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## Platform Notes (Continued)

```

14. cpupower frequency-info
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)
x86_64 x86_64 x86_64 GNU/Linux

```

```

-----
2. w
 20:19:53 up 16 min,  1 user,  load average: 0.26, 0.08, 0.07
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
root      ttyl    -                20:19   25.00s 0.98s  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) 2061739
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) 2061739
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

```

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## Platform Notes (Continued)

```
ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=104 --tune base,peak -o 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 intspeed
runccpu --nobuild --action validate --define default-platform-flags --configfile
ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=104 --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_runccpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2023.0
```

```
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Platinum 8470N
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping       : 8
microcode      : 0x2b000161
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 52
siblings       : 52
2 physical ids (chips)
104 processors (hardware threads)
physical id 0: core ids 0-51
physical id 1: core ids 0-51
physical id 0: apicids
0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102
physical id 1: apicids
128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,1
80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230
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):                104
On-line CPU(s) list:  0-103
Vendor ID:             GenuineIntel
Model name:            Intel(R) Xeon(R) Platinum 8470N
CPU family:            6
Model:                 143
Thread(s) per core:   1
Core(s) per socket:    52
Socket(s):             2
Stepping:              8
BogoMIPS:              3400.00
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
```

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### Platform Notes (Continued)

x2apic movbe popcnt tsc\_deadline\_timer aes xsave avx f16c rdrand lahf\_lm  
abm 3dnowprefetch cpuid\_fault epb cat\_13 cat\_12 cdp\_13 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  
xsavesopt 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\_l1d arch\_capabilities

L1d cache: 4.9 MiB (104 instances)  
L1i cache: 3.3 MiB (104 instances)  
L2 cache: 208 MiB (104 instances)  
L3 cache: 195 MiB (2 instances)  
NUMA node(s): 4  
NUMA node0 CPU(s): 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100  
NUMA node1 CPU(s): 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 98, 102  
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  
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  
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      | 4.9M     | 12   | Data        | 1     | 64     | 1        | 64             |
| L1i  | 32K      | 3.3M     | 8    | Instruction | 1     | 64     | 1        | 64             |
| L2   | 2M       | 208M     | 16   | Unified     | 2     | 2048   | 1        | 64             |
| L3   | 97.5M    | 195M     | 15   | Unified     | 3     | 106496 | 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, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100  
node 0 size: 128435 MB  
node 0 free: 127224 MB  
node 1 cpus: 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 98, 102  
node 1 size: 129017 MB  
node 1 free: 120060 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  
node 2 size: 129017 MB  
node 2 free: 128826 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  
node 3 size: 128988 MB  
node 3 free: 128761 MB  
node distances:  
node 0 1 2 3  
0: 10 12 21 21

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## Platform Notes (Continued)

1: 12 10 21 21  
2: 21 21 10 12  
3: 21 21 12 10

9. /proc/meminfo  
MemTotal: 527829716 kB

10. who -r  
run-level 3 Feb 25 20:04

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 auditd cron display-manager getty@ haveged irqbalance  
issue-generator kbdsettings klog lvm2-monitor nscd nvme-fc-boot-connections postfix  
purge-kernels rollback rsyslog smartd sshd wickedd 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 gpm grub2-once haveged-switch-root ipmi ipmievdev issue-add-ssh-keys kexec-load  
lunmask man-db-create multipathd nfs nfs-blkmap nvme-fc-autoconnect rdisc rpcbind  
rpmconfigcheck rsyncd serial-getty@ smartd\_generate\_opts snmpd snmptrapd  
systemd-boot-check-no-failures systemd-network-generator systemd-sysext  
systemd-time-wait-sync systemd-timesyncd udisks2  
indirect wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default  
root=UUID=019cdd15-228d-4822-ab5d-0684b8532efa  
resume=/dev/disk/by-uuid/2c05284d-888a-461d-8abf-6789dalcd807  
splash=silent  
quiet  
security=  
mitigations=auto

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  
vm.dirty\_background\_ratio 10  
vm.dirty\_bytes 0

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## Platform Notes (Continued)

```

vm.dirty_expire_centisecs      3000
vm.dirty_ratio                 20
vm.dirty_writeback_centisecs  500
vm.dirtytime_expire_seconds   43200
vm.extfrag_threshold           500
vm.min_unmapped_ratio         1
vm.nr_hugepages                0
vm.nr_hugepages_mempolicy      0
vm.nr_overcommit_hugepages    0
vm.swappiness                  60
vm.watermark_boost_factor      15000
vm.watermark_scale_factor      10
vm.zone_reclaim_mode          0

```

```

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

```

```

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

```

```

-----
18. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 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  4.2G 121G   4% /mnt/ramdisk

```

```

-----
20. /sys/devices/virtual/dmi/id
Vendor:         Dell Inc.
Product:        PowerEdge R760
Product Family: PowerEdge
Serial:         SLR7601

```

```

-----
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:
  16x 00AD063200AD HMC888MEBRA107N 32 GB 2 rank 4800

```

(Continued on next page)





# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017\_int\_base = 14.0

PowerEdge R760 (Intel Xeon Platinum 8470N)

SPECspeed®2017\_int\_peak = 14.2

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

Test Date: Feb-2023  
Hardware Availability: Feb-2023  
Software Availability: Dec-2022

## 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: 12/27/2022  
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  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
=====

=====  
C++ | 620.omnetpp\_s(base, peak) 623.xalancbnk\_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  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
=====

=====  
Fortran | 648.exchange2\_s(base, peak)  
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
=====

## Base Compiler Invocation

C benchmarks:  
icx

C++ benchmarks:  
icpx

Fortran benchmarks:  
ifx

## Base Portability Flags

600.perlbench\_s: -DSPEC\_LP64 -DSPEC\_LINUX\_X64  
602.gcc\_s: -DSPEC\_LP64  
605.mcf\_s: -DSPEC\_LP64

(Continued on next page)



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CPU2017 License: 6573

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Tested by: Dell Inc.

Test Date: Feb-2023

Hardware Availability: Feb-2023

Software Availability: Dec-2022

## Base Portability Flags (Continued)

```
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 -xsaphirerapids -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 -xsaphirerapids -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 -xsaphirerapids -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



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PowerEdge R760 (Intel Xeon Platinum 8470N)

SPECspeed®2017\_int\_peak = 14.2

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Feb-2023

Hardware Availability: Feb-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



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**CPU2017 License:** 6573

**Test Date:** Feb-2023

**Test Sponsor:** Dell Inc.

**Hardware Availability:** Feb-2023

**Tested by:** Dell Inc.

**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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