



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 1050

PowerEdge XE7740 (Intel Xeon 6747P)

SPECrate®2017\_int\_peak = 1090

CPU2017 License: 6573

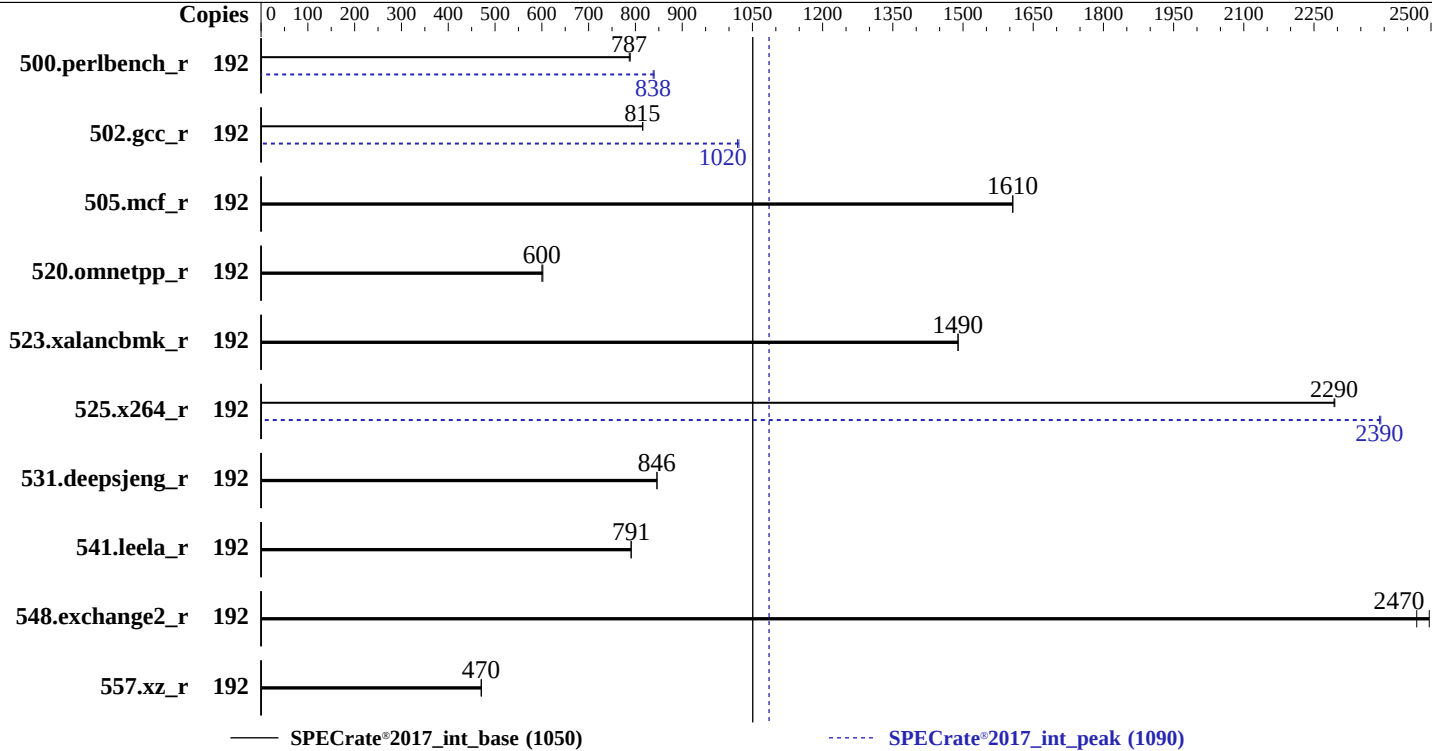
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2025

Hardware Availability: Apr-2025

Software Availability: Jun-2024



## Hardware

CPU Name: Intel Xeon 6747P  
Max MHz: 3900  
Nominal: 2700  
Enabled: 96 cores, 2 chips, 2 threads/core  
Orderable: 1,2 chips  
Cache L1: 64 KB I + 48 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 288 MB I+D on chip per chip  
Other: None  
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-6400B-R)  
Storage: 110 GB on tmpfs  
Other: CPU Cooling: Air

## Software

OS: SUSE Linux Enterprise Server 15 SP6  
6.4.0-150600.21-default  
Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++  
Compiler for Linux;  
Fortran: Version 2024.1 of Intel Fortran Compiler  
for Linux;  
Parallel: No  
Firmware: Version 1.0.2 released Mar-2025  
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 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 | 192    | 387               | 789                | <b><u>388</u></b> | <b><u>787</u></b>  |         |       | 192    | <b><u>365</u></b> | <b><u>838</u></b>  | 364               | 840                |         |       |
| 502.gcc_r       | 192    | <b><u>334</u></b> | <b><u>815</u></b>  | 333               | 816                |         |       | 192    | <b><u>267</u></b> | <b><u>1020</u></b> | 266               | 1020               |         |       |
| 505.mcf_r       | 192    | 193               | 1610               | <b><u>193</u></b> | <b><u>1610</u></b> |         |       | 192    | 193               | 1610               | <b><u>193</u></b> | <b><u>1610</u></b> |         |       |
| 520.omnetpp_r   | 192    | 418               | 602                | <b><u>420</u></b> | <b><u>600</u></b>  |         |       | 192    | 418               | 602                | <b><u>420</u></b> | <b><u>600</u></b>  |         |       |
| 523.xalancbmk_r | 192    | <b><u>136</u></b> | <b><u>1490</u></b> | 136               | 1490               |         |       | 192    | <b><u>136</u></b> | <b><u>1490</u></b> | 136               | 1490               |         |       |
| 525.x264_r      | 192    | 147               | 2290               | <b><u>147</u></b> | <b><u>2290</u></b> |         |       | 192    | 141               | 2390               | <b><u>141</u></b> | <b><u>2390</u></b> |         |       |
| 531.deepsjeng_r | 192    | <b><u>260</u></b> | <b><u>846</u></b>  | 260               | 846                |         |       | 192    | <b><u>260</u></b> | <b><u>846</u></b>  | 260               | 846                |         |       |
| 541.leela_r     | 192    | 402               | 791                | <b><u>402</u></b> | <b><u>791</u></b>  |         |       | 192    | 402               | 791                | <b><u>402</u></b> | <b><u>791</u></b>  |         |       |
| 548.exchange2_r | 192    | 202               | 2500               | <b><u>204</u></b> | <b><u>2470</u></b> |         |       | 192    | 202               | 2500               | <b><u>204</u></b> | <b><u>2470</u></b> |         |       |
| 557.xz_r        | 192    | 440               | 471                | <b><u>441</u></b> | <b><u>470</u></b>  |         |       | 192    | 440               | 471                | <b><u>441</u></b> | <b><u>470</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 110 GB ramdisk created with the cmd: "mount -t tmpfs -o size=110G tmpfs /mnt/ramdisk"

## Platform Notes

### BIOS Settings:

Adjacent Cache Line Prefetch : Disabled  
DCU Streamer Prefetcher : Disabled  
Sub NUMA Cluster : Enabled  
MADT Core Enumeration : Linear  
UPI Prefetch : Disabled  
XPT Prefetch : Disabled  
LLC Prefetch : Enabled  
Optimizer Mode : Enabled

System Profile : Custom  
CPU Power Management : Maximum Performance  
Energy Efficient Turbo : Disabled  
C1E : Disabled  
C-States : Autonomous  
Latency Optimized Mode : Enabled  
Energy Efficient Policy : Performance  
CPU Interconnect Bus -  
Link Power Management : Disabled  
PCI ASPM L1 Link Power Management : Disabled  
Correctable Memory ECC SMI : 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 1234567-XE7740 Thu Mar 27 21:42:09 2025

SUT (System Under Test) info as seen by some common utilities.

### Table of contents

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
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 1234567-XE7740 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
21:42:09 up 4 min, 1 user, load average: 0.39, 1.45, 0.81
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
root      tty1      -             21:38    1:05   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
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size               (blocks, -f) unlimited
pending signals         (-i) 2060426
max locked memory       (kbytes, -l) 8192
max memory size         (kbytes, -m) unlimited
open files              (-n) 1024
pipe size               (512 bytes, -p) 8
POSIX message queues    (bytes, -q) 819200
real-time priority      (-r) 0
stack size              (kbytes, -s) unlimited
cpu time                (seconds, -t) unlimited
max user processes      (-u) 2060426
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited
```

```
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
login -- root
-bash
/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=192 -c
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=96 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 2 --define
```

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## Platform Notes (Continued)

```
DL-VERS=6.1 --output_format html,pdf,txt intrate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 --configfile
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=96 --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) 6747P
vendor_id       : GenuineIntel
cpu family      : 6
model           : 173
stepping        : 1
microcode       : 0x1000380
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores       : 48
siblings        : 96
2 physical ids (chips)
192 processors (hardware threads)
physical id 0:  core ids 0-23,64-87
physical id 1:  core ids 0-23,64-87
physical id 0:  apicids 0-47,128-175
physical id 1:  apicids 256-303,384-431
```

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 2.39.3:

```
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):            192
On-line CPU(s) list: 0-191
Vendor ID:         GenuineIntel
BIOS Vendor ID:    Intel
Model name:        Intel(R) Xeon(R) 6747P
BIOS Model name:   Intel(R) Xeon(R) 6747P  CPU @ 2.7GHz
BIOS CPU family:   179
CPU family:        6
Model:             173
Thread(s) per core: 2
Core(s) per socket: 48
Socket(s):         2
Stepping:          1
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 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 intel_ppin cdp_l2
```

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## Platform Notes (Continued)

ssbd mba ibrs ibpb stibp ibrs\_enhanced tpr\_shadow flexpriority ept  
vpid ept\_ad 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 xsaveopt xsavec  
xgetbv1 xsaves cqm\_llc cqm\_occup\_llc cqm\_mbm\_total cqm\_mbm\_local  
split\_lock\_detect user\_shstk avx\_vnni avx512\_bf16 wbnoinvd dtherm ida  
arat pln pts hfi vnmi 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\_lid arch\_capabilities

### Virtualization:

L1d cache: 4.5 MiB (96 instances)  
L1i cache: 6 MiB (96 instances)  
L2 cache: 192 MiB (96 instances)  
L3 cache: 576 MiB (2 instances)

NUMA node(s): 4  
NUMA node0 CPU(s): 0-23,96-119  
NUMA node1 CPU(s): 24-47,120-143  
NUMA node2 CPU(s): 48-71,144-167  
NUMA node3 CPU(s): 72-95,168-191

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 Reg file data sampling: Not affected  
Vulnerability Retbleed: Not affected  
Vulnerability Spec rstack overflow: Not affected  
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl  
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;  
PBRSE-eIBRS Not affected; BHI BHI\_DIS\_S  
Vulnerability Srbds: Not affected  
Vulnerability Tsx async abort: Not affected

### From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS   | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|--------|----------|----------------|
| L1d  | 48K      | 4.5M     | 12   | Data        | 1     | 64     | 1        | 64             |
| L1i  | 64K      | 6M       | 16   | Instruction | 1     | 64     | 1        | 64             |
| L2   | 2M       | 192M     | 16   | Unified     | 2     | 2048   | 1        | 64             |
| L3   | 288M     | 576M     | 16   | Unified     | 3     | 294912 | 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: 0-23,96-119  
node 0 size: 128540 MB  
node 0 free: 127782 MB  
node 1 cpus: 24-47,120-143  
node 1 size: 129011 MB  
node 1 free: 128462 MB  
node 2 cpus: 48-71,144-167  
node 2 size: 128972 MB  
node 2 free: 128029 MB  
node 3 cpus: 72-95,168-191  
node 3 size: 128608 MB  
node 3 free: 117896 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: 527496384 kB

10. who -r

run-level 3 Mar 27 21:38

11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)

| Default Target | Status  |
|----------------|---------|
| multi-user     | running |

12. Services, from systemctl list-unit-files

| STATE           | UNIT FILES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| enabled         | ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online<br>YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance<br>issue-generator kbdsettings kdump kdump-early kdump-notify klog lvm2-monitor nscd<br>nvme-fc-boot-connections nvme-autoconnect postfix purge-kernels rollback rsyslog smartd<br>sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny<br>wpa_supplicant                                                                                                                       |
| enabled-runtime | systemd-remount-fs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| disabled        | autofs autostart-initscripts blk-availability boot-sysctl ca-certificates chrony-wait<br>chronyd console-getty cups cups-browsed debug-shell dnsmasq ebttables exchange-bmc-os-info<br>firewalld fsidd gpm grub2-once haveged ipmi ipmievdev issue-add-ssh-keys kexec-load lunmask<br>man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@<br>smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures systemd-confext<br>systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2<br>vncserver@ wpa_supplicant@ |
| indirect        | systemd-userdbd wickedd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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

BOOT\_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default  
root=UUID=4a3e821d-6b9c-4812-b236-2943a80df76d  
splash=silent  
resume=/dev/disk/by-uuid/e83077a7-9fb8-4d68-bd08-bee9447e0b0e  
mitigations=auto  
quiet  
security=apparmor  
crashkernel=363M,high  
crashkernel=72M,low

14. cpupower frequency-info

analyzing CPU 136:  
Unable to determine current policy  
boost state support:  
Supported: yes  
Active: yes

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## Platform Notes (Continued)

### 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     |
| 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 SP6

### 19. Disk information

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1

| Filesystem | Type  | Size | Used | Avail | Use% | Mounted on   |
|------------|-------|------|------|-------|------|--------------|
| tmpfs      | tmpfs | 110G | 5.0G | 106G  | 5%   | /mnt/ramdisk |

### 20. /sys/devices/virtual/dmi/id

|                 |                  |
|-----------------|------------------|
| Vendor:         | Dell Inc.        |
| Product:        | PowerEdge XE7740 |
| Product Family: | PowerEdge        |
| Serial:         | 1234567          |

### 21. dmidecode

Additional information from dmidecode 3.4 follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately

(Continued on next page)





# SPEC CPU®2017 Integer Rate Result

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Dell Inc.

SPECrate®2017\_int\_base = 1050

PowerEdge XE7740 (Intel Xeon 6747P)

SPECrate®2017\_int\_peak = 1090

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2025

Hardware Availability: Apr-2025

Software Availability: Jun-2024

## Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:

2x 002C0423002C MTC20F2085S1RC64BD2 UXCC 32 GB 2 rank 6400  
1x 002C0632002C MTC20F2085S1RC64BD2 MWFF 32 GB 2 rank 6400  
2x 002C069D002C MTC20F2085S1RC64BD2 QSFF 32 GB 2 rank 6400  
11x 00CE042300CE M321R4GA3PB2-CCPEC 32 GB 2 rank 6400

### 22. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: Dell Inc.  
BIOS Version: 1.0.2  
BIOS Date: 03/07/2025  
BIOS Revision: 1.0

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

(Continued on next page)



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## Compiler Version Notes (Continued)

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

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

(Continued on next page)



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Software Availability: Jun-2024

## Base Optimization Flags (Continued)

Fortran benchmarks:

-w -m64 -Wl,-z,muldefs -xsapphirerapids -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 -lqkmallo

## 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

## 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

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## Peak Optimization Flags (Continued)

500.perlbench\_r (continued):

-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo

502.gcc\_r: -m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89

-Wl, -z, muldefs -fprofile-generate(pass 1)

-fprofile-use=default.profd

-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 -lqkmallo

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-v1.13.html>

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

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

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.13.xml>



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**Hardware Availability:** Apr-2025

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