



# SPEC CPU®2017 Integer Rate Result

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## Hewlett Packard Enterprise

(Test Sponsor: HPE)

### ProLiant ML350 Gen11

(1.90 GHz, Intel Xeon Platinum 8592+)

SPECrate®2017\_int\_base = 1090

SPECrate®2017\_int\_peak = 1120

CPU2017 License: 3

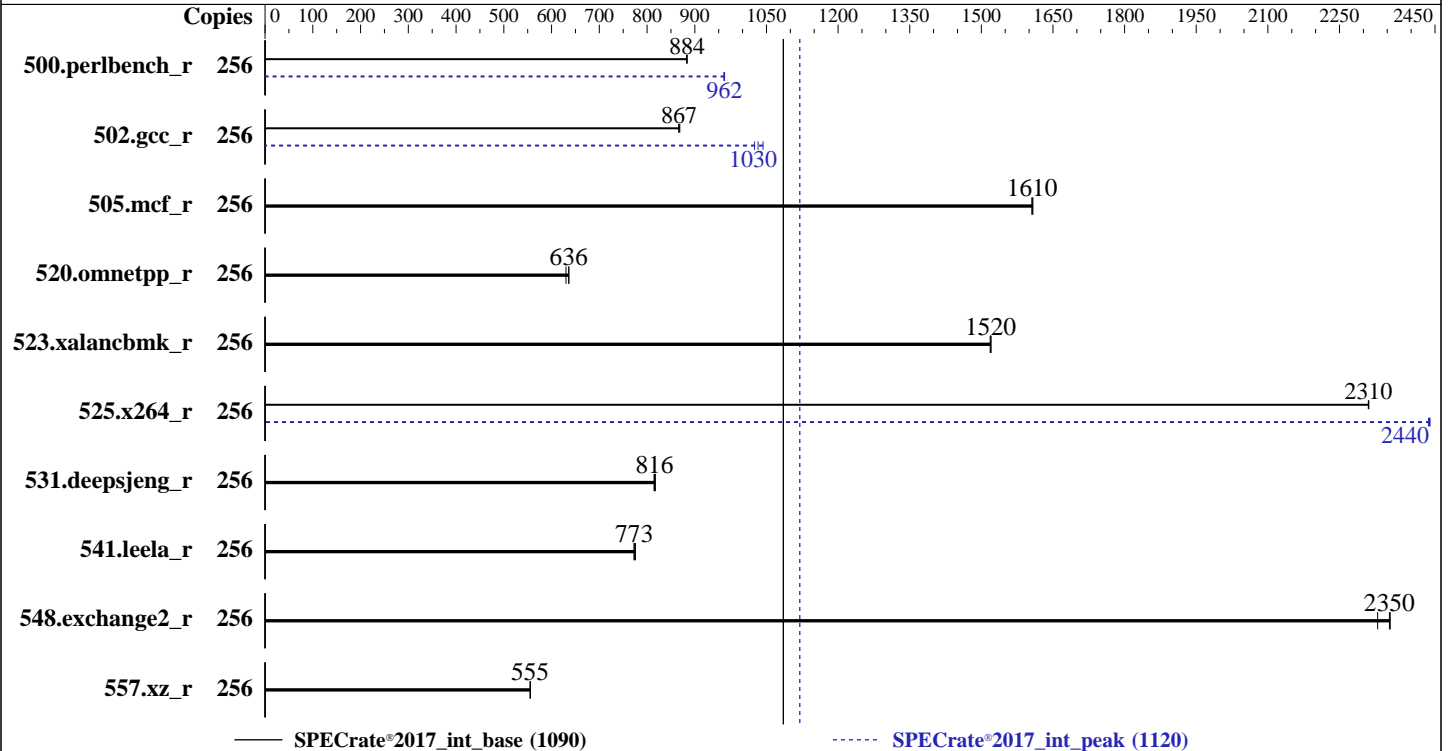
Test Sponsor: HPE

Tested by: HPE

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023



### Hardware

CPU Name: Intel Xeon Platinum 8592+  
 Max MHz: 3900  
 Nominal: 1900  
 Enabled: 128 cores, 2 chips, 2 threads/core  
 Orderable: 1, 2 chip(s)  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 320 MB I+D on chip per chip  
 Other: None  
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R)  
 Storage: 1 x 480 GB SATA SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP5  
 Kernel 5.14.21-150500.53-default  
 Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;  
 Parallel: No  
 Firmware: HPE BIOS Version v2.10 11/28/2023 released Nov-2023  
 File System: btrfs  
 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 | 256    | 462               | 883                | <b><u>461</u></b> | <b><u>884</u></b>  | 461               | 884                | 256    | 424               | 962                | 424               | 961               | <b><u>424</u></b> | <b><u>962</u></b>  |
| 502.gcc_r       | 256    | <b><u>418</u></b> | <b><u>867</u></b>  | 419               | 866                | 417               | 869                | 256    | 348               | 1040               | 354               | 1030              | <b><u>351</u></b> | <b><u>1030</u></b> |
| 505.mcf_r       | 256    | <b><u>258</u></b> | <b><u>1610</u></b> | 257               | 1610               | 258               | 1610               | 256    | <b><u>258</u></b> | <b><u>1610</u></b> | 257               | 1610              | 258               | 1610               |
| 520.omnetpp_r   | 256    | 528               | 636                | 533               | 630                | <b><u>528</u></b> | <b><u>636</u></b>  | 256    | 528               | 636                | 533               | 630               | <b><u>528</u></b> | <b><u>636</u></b>  |
| 523.xalancbmk_r | 256    | 178               | 1520               | 178               | 1520               | <b><u>178</u></b> | <b><u>1520</u></b> | 256    | 178               | 1520               | 178               | 1520              | <b><u>178</u></b> | <b><u>1520</u></b> |
| 525.x264_r      | 256    | 194               | 2310               | <b><u>194</u></b> | <b><u>2310</u></b> | 194               | 2310               | 256    | 184               | 2440               | 184               | 2440              | <b><u>184</u></b> | <b><u>2440</u></b> |
| 531.deepsjeng_r | 256    | 360               | 815                | <b><u>360</u></b> | <b><u>816</u></b>  | 359               | 817                | 256    | 360               | 815                | <b><u>360</u></b> | <b><u>816</u></b> | 359               | 817                |
| 541.leela_r     | 256    | <b><u>548</u></b> | <b><u>773</u></b>  | 549               | 773                | 547               | 776                | 256    | <b><u>548</u></b> | <b><u>773</u></b>  | 549               | 773               | 547               | 776                |
| 548.exchange2_r | 256    | <b><u>285</u></b> | <b><u>2350</u></b> | 285               | 2360               | 288               | 2330               | 256    | <b><u>285</u></b> | <b><u>2350</u></b> | 285               | 2360              | 288               | 2330               |
| 557.xz_r        | 256    | 498               | 556                | 498               | 555                | <b><u>498</u></b> | <b><u>555</u></b>  | 256    | 498               | 556                | 498               | 555               | <b><u>498</u></b> | <b><u>555</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"
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>
tuned-adm profile was set to throughput-performance using "tuned-adm profile throughput-performance"
```

## Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
LD\_LIBRARY\_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/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  
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)

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## General Notes (Continued)

is mitigated in the system as tested and documented.

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>

## Platform Notes

The system ROM used for this result contains Intel microcode version 0x21000200 for the Intel Xeon Platinum 8592+ processor.

BIOS Configuration:

Workload Profile set to General Throughput Compute

Memory Patrol Scrubbing set to Disabled

Last Level Cache (LLC) Dead Line Allocation set to Disabled

Enhanced Processor Performance Profile set to Aggressive

Thermal Configuration set to Maximum Cooling

Intel UPI Link Enablement set to Single Link Operation

Sub-NUMA Clustering (SNC) set to Enable SNC2(2-clusters)

Workload Profile set to Custom

DCU Stream Prefetcher set to Disabled

Adjacent Sector Prefetch set to Disabled

Intel UPI Link Power Management set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost Sun Jan 7 05:20:30 2024

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 (249.16+suse.171.gdad0071f15)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent\_hugepage
18. /sys/kernel/mm/transparent\_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS

-----  
1. uname -a  
Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT\_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)

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## Platform Notes (Continued)

x86\_64 x86\_64 x86\_64 GNU/Linux

-----  
2. w  
05:20:30 up 3 min, 0 users, load average: 0.10, 0.07, 0.03  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT

-----  
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) 2062374  
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) 2062374  
virtual memory (kbytes, -v) unlimited  
file locks (-x) unlimited

-----  
5. sysinfo process ancestry  
/usr/lib/systemd/systemd --switched-root --system --deserialize 29  
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups  
sshd: root@notty  
bash -c cd \$SPEC/ && \$SPEC/intrate.sh  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 -c  
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=128 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base,peak -o all intrate  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 --configfile  
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=128 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base,peak --output\_format all --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 = /home/cpu2017

-----  
6. /proc/cpuinfo  
model name : INTEL(R) XEON(R) PLATINUM 8592+  
vendor\_id : GenuineIntel  
cpu family : 6  
model : 207  
stepping : 2  
microcode : 0x21000200  
bugs : spectre\_v1 spectre\_v2 spec\_store\_bypass swapgs eibrs\_pbrsb  
cpu cores : 64  
siblings : 128  
2 physical ids (chips)  
256 processors (hardware threads)

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## Platform Notes (Continued)

physical id 0: core ids 0-63  
physical id 1: core ids 0-63  
physical id 0: apicids 0-127  
physical id 1: apicids 128-255

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):                 256
On-line CPU(s) list:   0-255
Vendor ID:              GenuineIntel
Model name:             INTEL(R) XEON(R) PLATINUM 8592+
CPU family:             6
Model:                  207
Thread(s) per core:    2
Core(s) per socket:    64
Socket(s):              2
Stepping:               2
BogoMIPS:               3800.00
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
                        invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                        vnmi 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 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

Virtualization:        VT-x
L1d cache:             6 MiB (128 instances)
L1i cache:             4 MiB (128 instances)
L2 cache:               256 MiB (128 instances)
L3 cache:               640 MiB (2 instances)
NUMA node(s):          4
NUMA node0 CPU(s):     0-31,128-159
NUMA node1 CPU(s):     32-63,160-191
NUMA node2 CPU(s):     64-95,192-223
NUMA node3 CPU(s):     96-127,224-255
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:    Not affected
Vulnerability Mds:     Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp

```

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## Platform Notes (Continued)

Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBR SB-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      | 6M       | 12   | Data        | 1     | 64     | 1        | 64             |
| L1i  | 32K      | 4M       | 8    | Instruction | 1     | 64     | 1        | 64             |
| L2   | 2M       | 256M     | 16   | Unified     | 2     | 2048   | 1        | 64             |
| L3   | 320M     | 640M     | 20   | Unified     | 3     | 262144 | 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: 0-31,128-159
node 0 size: 128701 MB
node 0 free: 127990 MB
node 1 cpus: 32-63,160-191
node 1 size: 128973 MB
node 1 free: 128534 MB
node 2 cpus: 64-95,192-223
node 2 size: 129008 MB
node 2 free: 128473 MB
node 3 cpus: 96-127,224-255
node 3 size: 128933 MB
node 3 free: 128432 MB
node distances:
node 0 1 2 3
0: 10 20 30 30
1: 20 10 30 30
2: 30 30 10 20
3: 30 30 20 10

```

9. /proc/meminfo

MemTotal: 527991276 kB

10. who -r

run-level 3 Jan 7 05:19

11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)

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

12. Services, from systemctl list-unit-files

| STATE           | UNIT FILES   |
|-----------------|--|
| enabled         | apparmor auditd cron getty@ irqbalance issue-generator kbdsettings lvm2-monitor postfix<br>purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4<br>wickedd-dhcp6 wickedd-nanny  |
| enabled-runtime | systemd-remount-fs   |
| disabled        | blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell<br>grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load lunmask<br>rpmconfigcheck serial-getty@ systemd-boot-check-no-failures systemd-network-generator<br>systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned |

(Continued on next page)



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indirect            wickedd

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

```
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
root=UUID=930f8b53-ff67-403e-9053-e3aa4fef0050
splash=silent
mitigations=auto
quiet
security=apparmor
```

-----  
14. cpupower frequency-info

```
analyzing CPU 0:
  Unable to determine current policy
  boost state support:
    Supported: yes
    Active: yes
```

-----  
15. tuned-adm active

```
Current active profile: throughput-performance
```

-----  
16. 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                    10
vm.watermark_boost_factor       15000
vm.watermark_scale_factor       10
vm.zone_reclaim_mode            0
```

-----  
17. /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
```

-----  
18. /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
```

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## Platform Notes (Continued)

scan\_sleep\_millisecs 10000

### 19. OS release

From /etc/\*-release /etc/\*-version  
os-release SUSE Linux Enterprise Server 15 SP5

### 20. Disk information

SPEC is set to: /home/cpu2017  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda3 btrfs 446G 199G 247G 45% /home

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

Vendor: HPE  
Product: ProLiant ML350 Gen11  
Product Family: ProLiant  
Serial: CNX20800P4

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

Memory:  
16x Hynix HMC88AGBRA193N 32 GB 2 rank 5600

### 23. BIOS

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

BIOS Vendor: HPE  
BIOS Version: 2.10  
BIOS Date: 11/28/2023  
BIOS Revision: 2.10  
Firmware Revision: 1.54

## Compiler Version Notes

C | 502.gcc\_r(peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x  
Copyright (C) 1985-2023 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 2023.2.3 Build x  
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.

C | 502.gcc\_r(peak)

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## Compiler Version Notes (Continued)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x  
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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)  
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x  
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=====  
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 2023.2.3 Build x  
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=====  
Fortran | 548.exchange2\_r(base, peak)  
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x  
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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

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# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant ML350 Gen11**

(1.90 GHz, Intel Xeon Platinum 8592+)

**SPECrate®2017\_int\_base = 1090**

**SPECrate®2017\_int\_peak = 1120**

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

**Test Date:** Jan-2024  
**Hardware Availability:** Feb-2024  
**Software Availability:** Dec-2023

## Base Portability Flags (Continued)

548.exchange2\_r: -DSPEC\_LP64  
557.xz\_r: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
```

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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-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

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**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Jan-2024

**Hardware Availability:** Feb-2024

**Software Availability:** Dec-2023

## Peak Portability Flags (Continued)

```
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.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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
```

```
502.gcc_r: -m32
-L/home/specdev/new_compilers/ic2023.2.3/compiler/lib/ia32_lin
-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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
```

557.xz\_r: basepeak = yes

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

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**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Jan-2024

**Hardware Availability:** Feb-2024

**Software Availability:** Dec-2023

## Peak Optimization Flags (Continued)

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/HPE-Platform-Flags-Intel-EMR-rev1.0.html>

<http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html>

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

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-EMR-rev1.0.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml>

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