



SPEC CPU®2017 Integer Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant ML350 Gen11

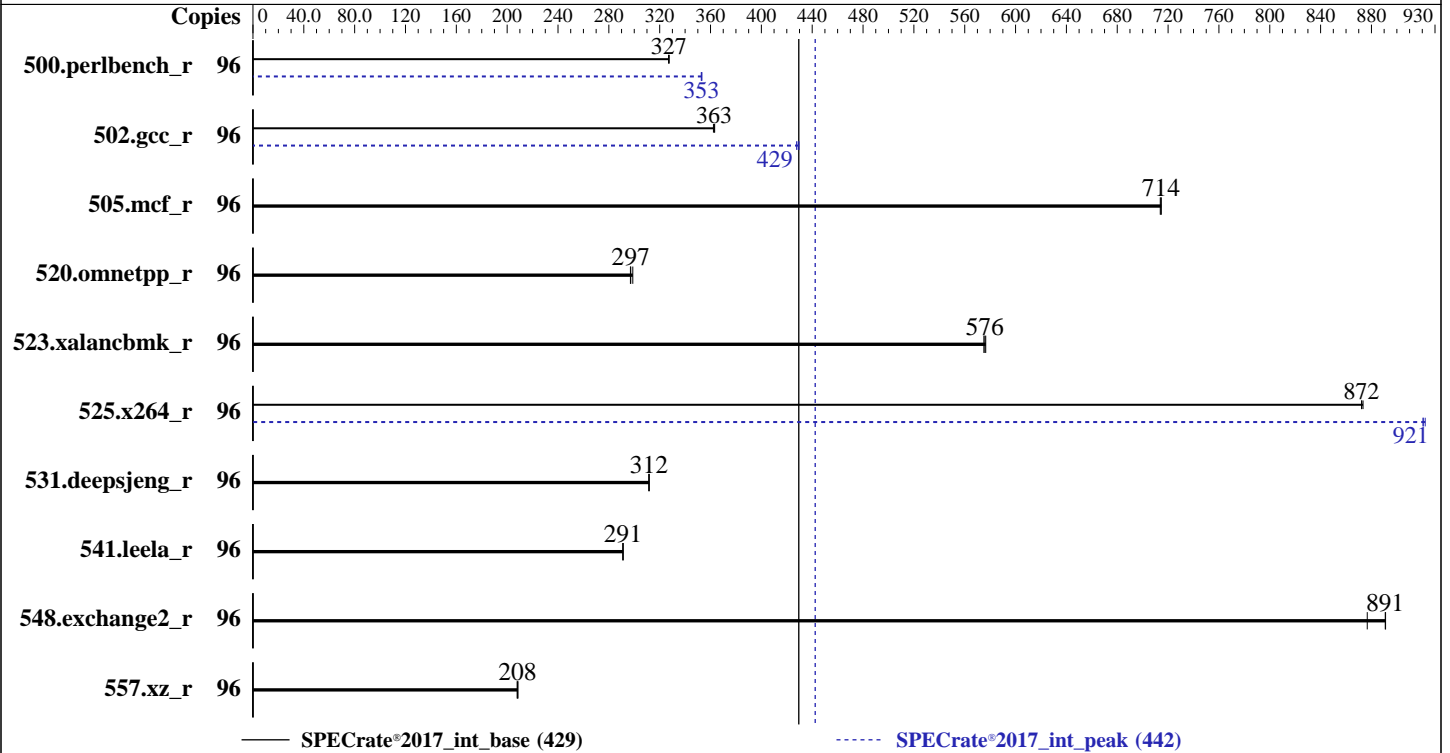
(2.20 GHz, Intel Xeon Silver 4516Y+)

SPECrate®2017_int_base = 429

SPECrate®2017_int_peak = 442

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

Test Date: Mar-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023



Hardware

CPU Name: Intel Xeon Silver 4516Y+
 Max MHz: 3700
 Nominal: 2200
 Enabled: 48 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: 45 MB I+D on chip per chip
 Other: None
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R, running at 4400)
 Storage: 1 x 480 GB SATA SSD
 Other: CPU Cooling: Air

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 v2.12 12/13/2023 released Dec-2023
 File System: xfs
 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	96	467	327	467	327	467	327	96	433	353	433	353	433	353
502.gcc_r	96	375	363	375	362	374	363	96	316	430	318	428	317	429
505.mcf_r	96	217	714	217	714	217	715	96	217	714	217	714	217	715
520.omnetpp_r	96	424	297	421	299	424	297	96	424	297	421	299	424	297
523.xalancbmk_r	96	176	577	176	576	176	575	96	176	577	176	576	176	575
525.x264_r	96	193	872	193	872	192	873	96	183	921	183	921	182	922
531.deepsjeng_r	96	353	312	353	311	353	312	96	353	312	353	311	353	312
541.leela_r	96	546	291	546	291	546	291	96	546	291	546	291	546	291
548.exchange2_r	96	282	891	287	877	282	891	96	282	891	287	877	282	891
557.xz_r	96	499	208	498	208	497	209	96	499	208	498	208	497	209

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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 service was stopped using "systemctl stop tuned"
```

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

BIOS Configuration:

Workload Profile set to General Throughput Compute
Thermal Configuration set to Maximum Cooling
Memory Patrol Scrubbing set to Disabled
Enhanced Processor Performance Profile set to Aggressive
Last Level Cache (LLC) Dead Line Allocation set to Disabled
Workload Profile set to Custom
Adjacent Sector Prefetch set to Disabled
DCU Stream Prefetcher set to Disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Mon Mar 11 11:20:54 2024

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

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6. /proc/cpuinfo
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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
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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)
x86_64 x86_64 x86_64 GNU/Linux

2. w
11:20:54 up 1 min, 0 users, load average: 0.17, 0.07, 0.02

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Platform Notes (Continued)

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) 2062747
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) 2062747
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=96 -c
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=48 --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=96 --configfile
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=48 --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) SILVER 4516Y+
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      : 24
siblings       : 48
2 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-23
physical id 1: core ids 0-23
physical id 0: apicids 0-47
physical id 1: apicids 128-175
```

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for

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Platform Notes (Continued)

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):                 96
On-line CPU(s) list:   0-95
Vendor ID:              GenuineIntel
Model name:             INTEL(R) XEON(R) SILVER 4516Y+
CPU family:             6
Model:                  207
Thread(s) per core:    2
Core(s) per socket:    24
Socket(s):              2
Stepping:               2
BogoMIPS:               4400.00
Flags:                  fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                        clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                        lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                        nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                        ds_cpl 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 hfi
                        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:             2.3 MiB (48 instances)
L1i cache:             1.5 MiB (48 instances)
L2 cache:              96 MiB (48 instances)
L3 cache:              90 MiB (2 instances)
NUMA node(s):         4
NUMA node0 CPU(s):    0-11,48-59
NUMA node1 CPU(s):    12-23,60-71
NUMA node2 CPU(s):    24-35,72-83
NUMA node3 CPU(s):    36-47,84-95
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
Vulnerability Spectre v1: Mitigation; usercopy/swapgs 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

```

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Platform Notes (Continued)

From `lscpu --cache:`

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	2.3M	12	Data	1	64	1	64
L1i	32K	1.5M	8	Instruction	1	64	1	64
L2	2M	96M	16	Unified	2	2048	1	64
L3	45M	90M	15	Unified	3	49152	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: 0-11,48-59
node 0 size: 128711 MB
node 0 free: 128242 MB
node 1 cpus: 12-23,60-71
node 1 size: 129017 MB
node 1 free: 128543 MB
node 2 cpus: 24-35,72-83
node 2 size: 129017 MB
node 2 free: 128579 MB
node 3 cpus: 36-47,84-95
node 3 size: 128962 MB
node 3 free: 128129 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: 528087000 kB

10. `who -r`

run-level 3 Mar 11 11:20

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
purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4
wickedd-dhcp6 wickedd-nanny
enabled-runtime systemd-remount-fs
disabled blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell
grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load lunmask
rpmconfigcheck serial-getty@ systemd-boot-check-no-failures systemd-network-generator
systemd-sysexit systemd-time-wait-sync systemd-timesyncd tuned
indirect wickedd

```

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

BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default

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Platform Notes (Continued)

```
root=UUID=4ccef2cd-b32f-4b9b-bff5-7836c4f7ec60
splash=silent
resume=/dev/disk/by-uuid/812398c6-312b-4436-8363-5af4d15d5dc3
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
It seems that tuned daemon is not running, preset profile is not activated.
Preset 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                    60
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
scan_sleep_millisecs    10000
-----
```

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Platform Notes (Continued)

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 xfs 381G 133G 248G 35% /home

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

Vendor: HPE
Product: ProLiant ML350 Gen11
Product Family: ProLiant
Serial: CNX20800N3

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, configured at 4400

23. BIOS

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

BIOS Vendor: HPE
BIOS Version: 2.12
BIOS Date: 12/13/2023
BIOS Revision: 2.12
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)

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.

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Compiler Version Notes (Continued)

```

=====
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++       | 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
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
-----

```

```

=====
Fortran   | 548.exchange2_r(base, peak)
=====

```

```

-----
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
-----

```

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



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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
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
```

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SPEC CPU®2017 Integer Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant ML350 Gen11

(2.20 GHz, Intel Xeon Silver 4516Y+)

SPECrate®2017_int_base = 429

SPECrate®2017_int_peak = 442

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

Test Date: Mar-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Peak Portability Flags (Continued)

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

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_r: basepeak = yes

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Peak Optimization Flags (Continued)

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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