Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8468H, 2.10GHz)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon Platinum 8468H</td>
<td><strong>OS:</strong> SUSE Linux Enterprise Server 15 SP4</td>
</tr>
<tr>
<td><strong>Max MHz:</strong> 3800</td>
<td><strong>5.14.21-150400.22-default</strong></td>
</tr>
<tr>
<td><strong>Nominal:</strong> 2100</td>
<td><strong>Compiler:</strong> C/C++; Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td><strong>Enabled:</strong> 96 cores, 2 chips, 2 threads/core</td>
<td><strong>Parallel:</strong> No</td>
</tr>
<tr>
<td><strong>Orderable:</strong> 1.2 Chips</td>
<td><strong>Firmware:</strong> Version 5.1.1b released Mar-2023</td>
</tr>
<tr>
<td><strong>Cache L1:</strong> 32 KB I + 48 KB D on chip per core</td>
<td><strong>File System:</strong> btrfs</td>
</tr>
<tr>
<td><strong>L2:</strong> 2 MB I+D on chip per core</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>L3:</strong> 105 MB I+D on chip per chip</td>
<td><strong>Base Pointers:</strong> 64-bit</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
<td><strong>Peak Pointers:</strong> 32/64-bit</td>
</tr>
<tr>
<td><strong>Memory:</strong> 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)</td>
<td><strong>Other:</strong> jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td><strong>Storage:</strong> 1 x 960 GB M.2 SSD SATA</td>
<td><strong>Power Management:</strong> BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
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<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
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<tr>
<td><strong>Test Date:</strong> May-2023</td>
<td><strong>CPU Name:</strong> Intel Xeon Platinum 8468H</td>
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<tr>
<td><strong>Hardware Availability:</strong> Mar-2023</td>
<td><strong>Max MHz:</strong> 3800</td>
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<td><strong>Software Availability:</strong> Dec-2022</td>
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<th>SPECrate®2017_int_peak (858)</th>
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<tr>
<th>192</th>
<th>perlbench_r 192</th>
<th>gcc_r 192</th>
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<td>477</td>
<td>mcf_r 192</td>
<td>omnetpp_r 192</td>
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SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: May-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

SPECrate®2017_int_base = 835
SPECrate®2017_int_peak = 858
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8468H, 2.10GHz)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Results Table

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<thead>
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<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Copies</th>
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</table>

**SPECrate®2017_int_base** = 835
**SPECrate®2017_int_peak** = 858

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), SPEC will no longer publish results using this optimization.

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

**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 = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8468H, 2.10GHz)

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 835
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: May-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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
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>
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS Settings:
Adjacent Cache Line Prefetcher set to Disabled
DCU streamer Prefetch set to Disabled
Enhanced CPU Performance set to Auto
LLC Dead Line set to Disabled
ADDCC Sparing set to Disabled
Processor C6 Report set to Enabled

sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Wed May 24 23:13:17 2023

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

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4. ulimit -a
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7. lscpu
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10. who -r
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12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
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

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Platform Notes (Continued)

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
   23:13:17 up 4 min, 1 user, load average: 0.20, 0.47, 0.24
   USER   TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root   tty1     -                23:12   13.00s  1.47s  0.31s -bash

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                 (-l) 4126753
   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) 4126753
   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
   -bash
   runcpu --action=build --action validate --define default-platform-flags --define numcopies=192 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define cores=96 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all --o all intrate
   runcpu --action build --action validate --define default-platform-flags --define numcopies=192 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define cores=96 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.019/tempplogs/preenv.intrate.019.0.log --lognum 019.0
   --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Platinum 8468H
   vendor_id : GenuineIntel

(Continued on next page)
Platform Notes (Continued)

```
cpu family      : 6
model           : 143
stepping        : 8
microcode       : 0x2b000190
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores       : 48
siblings        : 96
  2 physical ids (chips)
  192 processors (hardware threads)
  physical id 0: core ids 0-47
  physical id 1: core ids 0-47
  physical id 0: apicids 0-95
  physical id 1: apicids 128-223
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.
```

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):                          192
On-line CPU(s) list:             0-191
Vendor ID:                       GenuineIntel
Model name:                      Intel(R) Xeon(R) Platinum 8468H
CPU family:                      6
Model:                           143
Thread(s) per core:              2
Core(s) per socket:              48
Socket(s):                       2
Stepping:                        8
CPU max MHz:                     3800.000
CPU min MHz:                     800.000
BogoMIPS:                        4200.00
Flags:                           fpu vme de pse tsc msr pae mca cmov pat pse36
                                 cli flush dt sse dtsc pmouse cmp mtrr pge mca cmov pat pse36
                                 cli flush dt sc pi imissp se tsc art arch_perfmon pebs bts rep_good nopl xtopology
                                 nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                                 ds_cpl vm xsm ext tms smi dmb sdbg fma cx16 xtp pcid pconf dca sse4_1
                                 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
                                 lahf_lm abm 3nowprefetch cpuid_fault eb xat cat _l3 cat _l2 cd p_l2
                                 invpcid_single intel_pni cd p_l2 ssbd mba ibrs ibpb ibrs Enhanced
                                 tpr_shadow vni flexpriority ept vpid ept_ad fsgsbase tsc_adjust hil hle
                                 avx2 aemp bmi2 erms invpcid rtm cmq rd t_avx512f_avx512d rd sseed axd smap
                                 avx512fma clflushopt clwb intel pt avx512cd sha ni avx512bw avx512v1
                                 xsavesopt xsaveopt xgetbv xsaveopt xsaves qcm_llc qcm _occup _llc qcm _mbm_total
                                 qcm _mbm _local _split _lock _detect avx _vnni avx512_bf16 wbnoinvd dtherm imda
                                 arat pln pts hwp hwp _act _window hwp _epp hwp _pgk _req avx512vbmi umip puck
                                 ospe wairtkg avx512_vbmi2 gfnl vaes vpcm ulqdq avx512_vnni avx512_bitalg
                                 tme avx512_vpopcntdq lq 57 rdpid bus _lock _detect cidemote movdir64b
                                 enqcmd fasm md _clear _serialize txsltdtrk pconfig arch _lbr avx512_fp16
                                 amx _tile flush _lid arch _capabilities

Virtualization:                  VT-x
L1d cache:                       4.5 MiB (96 instances)
L1i cache:                       3 MiB (96 instances)
L2 cache:                        192 MiB (96 instances)
L3 cache:                        210 MiB (2 instances)
```

(Continued on next page)
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
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SPEC CPU®2017 Integer Rate Result

spec

SPECrate®2017_int_base = 835
SPECrate®2017_int_peak = 858

Platform Notes (Continued)

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       32K     3M      8 Instruction 1     64        1             64
L2         2M      192M   16 Unified  2   2048       1             64
L3       105M     210M   15 Unified  3 114688       1             64
```

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0-47,96-143
node 0 size: 515721 MB
node 0 free: 513822 MB
node 1 cpus: 48-95,144-191
node 1 size: 515990 MB
node 1 free: 514665 MB
node distances:
node   0   1
0: 10  21
1: 21  10

9. /proc/meminfo
MemTotal: 1056473044 kB

10. who -r
run-level 3 May 24 23:09

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

12. Services, from systemctl list-unit-files
STATE   UNIT FILES
enabled YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ havedeg
irogbalance issue-generator kbdsettings klog lvm2-monitor nsd postfix purrge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime systemd-remount-fs
disabled autosfs autostart-Initscripts blk-availability boot-sysctl ca-certificates chrony-wait
chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
firewalld gpm grub2-once havedeg-switch-root ipmi ipmiievd issue-add-ssh-keys kexec-load
lunmask man-db-create multipathd nfs nfs-bikmap rdisc rpsbind rpmconfigcheck rsyncd

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SPECrate®2017_int_base = 835
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CPU2017 License: 9019
Test Date: May-2023
Test Sponsor: Cisco Systems
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Hardware Availability: Mar-2023
Software Availability: Dec-2022

Platform Notes (Continued)

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
wicked
------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=155d53d1-2428-4816-a80b-8d0438d0586b
   splash=silent
   mitigations=auto
   quiet
   security=apparmor
   ...
   ...

14. cpupower frequency-info
   analyzing CPU 0:
   current policy: frequency should be within 800 MHz and 3.80 GHz.
   The governor *performance* may decide which speed to use
   within this range.
   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
   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 1
   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
   ...
   ...

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8468H, 2.10GHz)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Specrate®2017_int_base = 835
Specrate®2017_int_peak = 858

Test Date: May-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Platform Notes (Continued)

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

19. Disk information
   SPEC is set to: /home/cpu2017
   /dev/sdb2       btrfs  892G  9.3G  882G   2% /home

20. /sys/devices/virtual/dmi/id
   Vendor: Cisco Systems Inc
   Product: UCSX-210C-M7
   Serial: FCH270978F5

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 0xAD00 HMCG94MEBRA109N 64 GB 2 rank 4800

22. BIOS
   BIOS Vendor: Cisco Systems, Inc.
   BIOS Version: X210M7.5.1.1b.0.0308231534
   BIOS Date: 03/08/2023
   BIOS Revision: 5.29

Compiler Version Notes

C | 502 gcc_r(peak)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

C | 502 gcc_r(peak)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
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Compiler Version Notes (Continued)

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<th>Fortran</th>
<th>548.exchange2_r(base, peak)</th>
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<tr>
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</tr>
<tr>
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<tr>
<td>541.leela_r: -DSPEC_LP64</td>
</tr>
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<td>548.exchange2_r: -DSPEC_LP64</td>
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<tr>
<td>557.xz_r: -DSPEC_LP64</td>
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**SPEC CPU®2017 Integer Rate Result**

**Cisco Systems**
Cisco UCS X210c M7 (Intel Xeon Platinum 8468H, 2.10GHz)

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**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** May-2023  
**Hardware Availability:** Mar-2023  
**Software Availability:** Dec-2022

### 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/usr/local/intel/compiler/2023.0.0/linux/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/usr/local/intel/compiler/2023.0.0/linux/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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

### Peak Compiler Invocation

C benchmarks:
- `icx`

C++ benchmarks:
- `icpx`

Fortran benchmarks:
- `ifx`

### Peak Portability Flags

```plaintext
500.perlibench_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
```

(Continued on next page)
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Peak Portability Flags (Continued)

557.xz_r: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-ffast-math -fprofile-generate(pass l)
-fprofile-use=default.proffdata(pass 2) -xCORE-AVX2(pass l)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-1qkmalloc

502.gcc_r: -m32
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass l)
-fprofile-use=default.proffdata(pass 2) -xCORE-AVX2(pass l)
-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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-1qkmalloc

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/Intel-ic2023-official-linux64.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

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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