## SPEC CPU®2017 Integer Rate Result

### ASUSTeK Computer Inc.

**ASUS RS720-E11-RS12U**

(2.40 GHz, Intel Xeon Gold 6448H)

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**CPU2017 License:** 9016  
**Test Sponsor:** ASUSTeK Computer Inc.  
**Tested by:** ASUSTeK Computer Inc.  
**Test Date:** Aug-2023  
**Hardware Availability:** Feb-2023  
**Software Availability:** Dec-2022

### Hardware

**CPU Name:** Intel Xeon Gold 6448H  
**Max MHz:** 4100  
**Nominal:** 2400  
**Enabled:** 64 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:** 60 MB I+D on chip per chip  
**Other:** None  
**Memory:** 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)  
**Storage:** 1 x 1.6 TB PCIe NVMe SSD  
**Other:** None

### Software

**OS:** SUSE Linux Enterprise Server 15 SP4 (x86_64)  
**Kernel:** 5.14.21-150400.22-default  
**Compiler:**  
- C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;  
- Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;  
**Parallel:** No  
**Firmware:** Version 0701 released May-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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## SPECrate®2017 Results

### SPECrate®2017_int_base = 649

<table>
<thead>
<tr>
<th>SPECrate®2017_int_peak = 670</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Tested</strong></th>
<th><strong>Copies</strong></th>
<th><strong>SPECrate®2017_int_base</strong></th>
<th><strong>SPECrate®2017_int_peak</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU2017</strong></td>
<td>500.perlbench_r</td>
<td>128</td>
<td>(670)</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>128</td>
<td>(649)</td>
<td></td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>128</td>
<td>(450)</td>
<td></td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>525.x264_r</td>
<td>128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>128</td>
<td>(445)</td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td>128</td>
<td>(425)</td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>128</td>
<td>(305)</td>
<td></td>
</tr>
</tbody>
</table>

---

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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"
OS set to performance mode via cpupower frequency-set -g performance

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/cpu119/lib/intel64:/cpu119/lib/ia32:/cpu119/je5.0.1-32"
MALLOC_CONF = "retain:true"
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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>

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 Configuration:
VT-d = Disabled
Patrol Scrub = Disabled
SNC = Enable SNC2 (2-clusters)
Engine Boost = Aggressive
SR-IOV Support = Disabled
BMC Configuration:
Fan mode = Full speed mode

Sysinfo program /cpu19/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Sat Aug 5 01:02:07 2023

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

Table of contents
1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/kludge
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id

(Continued on next page)
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Test Date: Aug-2023
Hardware Availability: Feb-2023
Software Availability: Dec-2022

Platform Notes (Continued)

21. dmidecode
22. BIOS

1. uname -a
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
   x86_64 x86_64 x86_64 GNU/Linux

2. w
   01:02:07 up 13:23,  2 users, load average: 30.67, 74.17, 99.39
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                Fri11   13:22m  0.84s  0.01s -bash
   root     tty2     -                Fri11   13:09m  0.02s  0.02s -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         (-i) 4126783
   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) 4126783
   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 --nobuild --action validate --define default-platform-flags --define numcopies=128 --c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --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=128 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --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/CPU2017.745/tempglogs/preenv.intrate.745.0.log --lognum 745.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /cpu119

6. /proc/cpuinfo
   model name      : Intel(R) Xeon(R) Gold 6448H

   (Continued on next page)
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SPECrater®2017_int_base = 649
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Platform Notes (Continued)

vendor_id : GenuineIntel
cpu family : 6
model : 143
stepping : 8
microcode : 0x2b000461
bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores : 32
siblings : 64
2 physical ids (chips)
128 processors (hardware threads)
physical id 0: core ids 0-31
physical id 1: core ids 0-31
physical id 0: apic ids 0-63
physical id 1: apic ids 128-191
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.37.2:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 128
On-line CPU(s) list: 0-127
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 6448H
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
Stepping: 8
CPU max MHz: 4100.0000
CPU min MHz: 800.0000
BogoMIPS: 4800.00

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 pse tsc msr pae mce cx8
  sr0call nx pms effic rdtscl
  lm constant tsc arch_perfmon pebs bts rep_good nxopt xtopology
  nonstop tsc cpuuid aperfinf perf mon freq pni pclmulqdq dtes64 monitor
d s cp l vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca ssse4
  lssse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
  lahf_lm abm 3dnowprefetch cpuid fault epb cat lah cat 12 cat 12 cpd 13
  invpcid_single intel_pinn cdp l2 ssbd mba ibrs ibpb stibp ibrs enabled
  tpr_shadow vmmi flexpriority ept vpid ept ad fsconsbase tsc_adjust bni1 hle
  avx2 smep bmi2 emms invcpicd rtm cm t d t a avx512f avx512dq rdseed adx
  smap avx512ifma cflusheopt clwb intel_pt avx512cd sha ni avx512bw avx512vl
  xsaveopt xsaves xgetbv1 xsavees cqm 12c cm qm cqp cqu cqm mm total
  cqm_mm local split lock detect avx vnni avx512 bf16 wnmoinvd dtherm ida
  arat pln pts hwp hwp act window hwp epp hwp pkg req avx512v bmi umip kpu
  ospke waitpkg avx512 vbmi2 gfnl vaes vpclmulqdq avx512 vnni avx512 bitalg
  tme avx512 vpopcntlq 1a57 rdpid bus lock detect cldmote movdird movdir64b
  enqmcd srm md_clear serialize txzldtrk pconfig arch lbr avx512 fp16
  amx tile flush ld arch capabilities

Virtualization: VT-x
L1d cache: 3 MiB (64 instances)
L1i cache: 2 MiB (64 instances)
L2 cache: 128 MiB (64 instances)

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Test Date: Aug-2023
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Platform Notes (Continued)

L3 cache: 120 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-15,64-79
NUMA node1 CPU(s): 16-31,80-95
NUMA node2 CPU(s): 32-47,96-111
NUMA node3 CPU(s): 48-63,112-127
Vulnerability Itlb multihit: Not affected
Vulnerability Lft: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsa async abort: Not affected

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d  48K    3M  12 Data  1  64     1             64
L1i  32K    2M   8 Instruction 1  64     1             64
L2   2M   128M  16 Unified 2 2048    1             64
L3   60M  120M 15 Unified 3 65536   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: 0-15,64-79
node 0 size: 257681 MB
node 0 free: 255558 MB
node 1 cpus: 16-31,80-95
node 1 size: 258039 MB
node 1 free: 256630 MB
node 2 cpus: 32-47,96-111
node 2 size: 258039 MB
node 2 free: 256588 MB
node 3 cpus: 48-63,112-127
node 3 size: 257958 MB
node 3 free: 256544 MB
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: 1056481152 kB

10. who -r
run-level 3 Aug 4 11:39

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

(Continued on next page)
Platform Notes (Continued)

12. Services, from systemctl list-unit-files

<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ havedeg</td>
</tr>
<tr>
<td></td>
<td>irqbalance issue-generator kbdsettings klog livm2-monitor nscd nvmfc-boot-connections</td>
</tr>
<tr>
<td></td>
<td>postfix purge-kernels rollback rsyslog systemd sshd wicked wickedd-auto4 wickedd-dhcp4</td>
</tr>
<tr>
<td></td>
<td>wickedd-dhcp6 wickedd-nanny</td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
<tr>
<td>disabled</td>
<td>autos autostart-ntscs blk-availability boot-pyscti ca-certificates chrony okhttpd firewalld grub2 once havedeg-switch-root hwloc-dump-hwdata ipmi ipmienv</td>
</tr>
<tr>
<td></td>
<td>issue-addr-ssh-keys kexec-load lvm2stat man-db-create multipathd nfs nfs-bkmap</td>
</tr>
<tr>
<td></td>
<td>nvmf-autoconnect rdisc rdpcmd rpmconfigcheck rsyncd smartd smartd_generate_opts</td>
</tr>
<tr>
<td></td>
<td>smnpd snmptrapd svnserv systemd-boot-check-no-failures systemd-network-generator</td>
</tr>
<tr>
<td></td>
<td>systemd-sysexect systemd-time-wait-sync systemd-timesyncd udisks2</td>
</tr>
<tr>
<td></td>
<td>wickedd</td>
</tr>
</tbody>
</table>

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

BOOT_IMAGE=//boot/vmlinuz-5.14.21-150400.22-default  
root=UUID=1821a225-9785-4821-9a33-99bd3ded8cae  
splash=silent  
migrations=auto
quiet
security=apparmor

14. cpupower frequency-info

analyzing CPU 0:
current policy: frequency should be within 800 MHz and 4.10 GHz.
The governor "performance" may decide which speed to use
within this range.
boost state support:
  Supported: yes
  Active: yes

15. sysctl

<table>
<thead>
<tr>
<th>NAME</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>kernel.numa_balancing</td>
<td>1</td>
</tr>
<tr>
<td>kernel.randomize_va_space</td>
<td>2</td>
</tr>
<tr>
<td>vm.compaction_proactiveness</td>
<td>20</td>
</tr>
<tr>
<td>vm.dirty_background_bytes</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_background_ratio</td>
<td>10</td>
</tr>
<tr>
<td>vm.dirty_background</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_expire_centisecs</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_ratio</td>
<td>30000</td>
</tr>
<tr>
<td>vm.dirty_writeback_centisecs</td>
<td>20</td>
</tr>
<tr>
<td>vm.dirtytime_expire_seconds</td>
<td>500</td>
</tr>
<tr>
<td>vm.extfrac_threshold</td>
<td>43200</td>
</tr>
<tr>
<td>vm.min_unmapped_ratio</td>
<td>500</td>
</tr>
<tr>
<td>vm.nr_hugepages</td>
<td>1</td>
</tr>
<tr>
<td>vm.nr_hugepages_mempolicy</td>
<td>0</td>
</tr>
<tr>
<td>vm.nr_overcommit_hugepages</td>
<td>0</td>
</tr>
<tr>
<td>vm.swappiness</td>
<td>10</td>
</tr>
<tr>
<td>vm.watermark_boost_factor</td>
<td>15000</td>
</tr>
<tr>
<td>vm.watermark_scale_factor</td>
<td>10</td>
</tr>
<tr>
<td>vm.zone_reclaim_mode</td>
<td>0</td>
</tr>
</tbody>
</table>

16. /sys/kernel/mm/transparent_hugepage

defrag      always defer defer+madvises [madvises] never

(Continued on next page)
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Platform Notes (Continued)

enabled [always] madvise never
hpave_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force

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

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

19. Disk information
SPEC is set to: /cpu119
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p8 xfs 1.3T 24G 1.2T 2% /

20. /sys/devices/virtual/dmi/id
Vendor: ASUSTeK COMPUTER INC.
Product: RS720-E11-RS12U
Product Family: Server
Serial: R1S0MD000002

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 Samsung M321R8GA0BB0-CKKVG 64 GB 2 rank 4800

22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends Inc.
BIOS Version: 0701
BIOS Date: 05/02/2023
BIOS Revision: 7.1

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.

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</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2022 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
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<tr>
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<td>Copyright (C) 1985-2022 Intel Corporation. All rights reserved.</td>
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<td>-------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>C++</td>
<td>520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)</td>
</tr>
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<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201</td>
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<tr>
<td>Fortran</td>
<td>548.exchange2_r(base, peak)</td>
</tr>
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</tbody>
</table>

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifix
ASUSTeK Computer Inc.

ASUS RS720-E11-RS12U
(2.40 GHz, Intel Xeon Gold 6448H)

SPEC CPU®2017 Integer Rate Result

SPECrate®2017_int_base = 649
SPECrate®2017_int_peak = 670

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Aug-2023
Hardware Availability: Feb-2023
Tested by: ASUSTeK Computer Inc.
Software Availability: Dec-2022

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.leea_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/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
SPEC CPU®2017 Integer Rate Result

ASUSTeK Computer Inc.
ASUS RS720-E11-RS12U
(2.40 GHz, Intel Xeon Gold 6448H)

SPECrate®2017_int_base = 649
SPECrate®2017_int_peak = 670

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

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
    -L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
    -lqkmalloc

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 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
    -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
    -lqkmalloc

557.xz_r: basepeak = yes

C++ benchmarks:

(Continued on next page)
**SPEC CPU®2017 Integer Rate Result**  
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### ASUSTeK Computer Inc.  
ASUS RS720-E11-RS12U  
(2.40 GHz, Intel Xeon Gold 6448H)

<table>
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<th>CPU2017 License: 9016</th>
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<td>SPECrate®2017_int_peak = 670</td>
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<td>Tested by: ASUSTeK Computer Inc.</td>
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</tbody>
</table>

#### Peak Optimization Flags (Continued)

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/ASUSTekPlatform-Settings-z13-V1.2.html  
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/ASUSTekPlatform-Settings-z13-V1.2.xml  
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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