ASUSTeK Computer Inc.
ASUS ESC4000-E11
(2.10 GHz, Intel Xeon Gold 6430)

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

SPECrate®2017_int_base = 528
SPECrate®2017_int_peak = 545

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

500.perlbench_r  128
520.omnetpp_r  128
523.xalancbmk_r  128
525.x264_r  128
531.deepsjeng_r  128
541.leela_r  128
548.exchange2_r  128
557.xz_r  128

Hardware
CPU Name: Intel Xeon Gold 6430
Max MHz: 3400
Nominal: 2100
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, running at 4400)
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 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 2101 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.
Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>523.xalancbmk_r</td>
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<td>525.x264_r</td>
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<td>991</td>
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<td>128</td>
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<td>321</td>
<td>1050</td>
<td>321</td>
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<td>1050</td>
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<tr>
<td>557.xz_r</td>
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<td>269</td>
<td>520</td>
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<td>128</td>
<td>514</td>
<td>269</td>
<td>520</td>
<td>266</td>
<td>518</td>
<td>267</td>
<td>518</td>
<td>267</td>
</tr>
</tbody>
</table>

SPECrate®2017_int_base = 528
SPECrate®2017_int_peak = 545

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"
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 = "/ic23u2/lib/intel64:/ic23u2/lib/ia32:/ic23u2/je5.0.1-32"
MALLOC_CONF = "retain:true"

General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>/proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

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.

(Continued on next page)
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SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

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CPU2017 License: 9016
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Tested by: ASUSTeK Computer Inc.
Test Date: Feb-2024
Hardware Availability: Jul-2023
Software Availability: Dec-2023

General Notes (Continued)

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

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

BIOS Configuration:
VT-d = Disabled
Patrol Scrub = Disabled
SNC = Enable SNC4 (4-clusters)
LLC dead line allc = Disabled
Engine Boost = Aggressive
SR-IOV Support = Disabled
BMC Configuration:
Fan mode = Full speed mode

Sysinfo program /lc23u2/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Tue Feb 20 09:03:38 2024

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

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4. ulimit -a
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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. tuned-adm active
16. sysct1
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

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

(Continued on next page)
## Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:03:38</td>
<td>up 15:33, 2 users, load average: 27.55, 70.54, 97.86</td>
</tr>
<tr>
<td>USER</td>
<td>TTY</td>
</tr>
<tr>
<td>root</td>
<td>tty1</td>
</tr>
<tr>
<td>root</td>
<td>tty2</td>
</tr>
</tbody>
</table>

3. Username

From environment variable $USER: root

4. ulimit -a

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>core file size</td>
<td>(blocks, -c) unlimited</td>
</tr>
<tr>
<td>data seg size</td>
<td>(kbytes, -d) unlimited</td>
</tr>
<tr>
<td>scheduling priority</td>
<td>(-e) 0</td>
</tr>
<tr>
<td>file size</td>
<td>(blocks, -f) unlimited</td>
</tr>
<tr>
<td>pending signals</td>
<td>(-l) 4126764</td>
</tr>
<tr>
<td>max locked memory</td>
<td>(kbytes, -l) 64</td>
</tr>
<tr>
<td>max memory size</td>
<td>(kbytes, -m) unlimited</td>
</tr>
<tr>
<td>open files</td>
<td>(-n) 1024</td>
</tr>
<tr>
<td>pipe size</td>
<td>(512 bytes, -p) 8</td>
</tr>
<tr>
<td>POSIX message queues</td>
<td>(bytes, -q) 819200</td>
</tr>
<tr>
<td>real-time priority</td>
<td>(-r) 0</td>
</tr>
<tr>
<td>stack size</td>
<td>(kbytes, -s) unlimited</td>
</tr>
<tr>
<td>cpu time</td>
<td>(seconds, -t) unlimited</td>
</tr>
<tr>
<td>max user processes</td>
<td>(-u) 4126764</td>
</tr>
<tr>
<td>virtual memory</td>
<td>(kbytes, -v) unlimited</td>
</tr>
<tr>
<td>file locks</td>
<td>(-x) unlimited</td>
</tr>
</tbody>
</table>

5. sysinfo process ancestry

```
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
login -- root
-bash
/bin/bash ./rate.sh
```

6. /proc/cpuinfo

```
model name      : Intel(R) Xeon(R) Gold 6430
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
```
SPEC CPU®2017 Integer Rate Result

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Platform Notes (Continued)

 physical id 1: core ids 0-31
 physical id 0: apicids 0-63
 physical id 1: apicids 128-191
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): 128
On-line CPU(s) list: 0-127
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 6430
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
Stepping: 8
CPU max MHz: 3400.000
CPU min MHz: 800.000
BogoMIPS: 4200.00
Flags:
  fpu vme de pse tsc msr pae mca cmov pat pse36
  clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
  rdtsscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
  nonstop_tsc cpuid aperf perfctr tsc_known_freq pni pclmulqdq dtes64
  monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtr Cipher pcid
  dca sse4_1 mtrr pge mca cmov pat pse36
  cx16 xtpr pdcm pcid dca sse4_1
  ssse2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
  lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_12 cd 13 cd 13
  invpcid_single intel_pni cd p12 asbd mba lbr btlb lrs_enhanced
  trp_shadow vsmi flexpriority ept vpd ept_ad fsgsbase tsc_adjust bmi1
  hle
  avx2 aemv bmi2 erms invpcid rtm cmq rdt_a avx512f avx512dq rdseed adx
  smap
  avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
  avx512vld xsaves xsaveopt xsave xsetbv1 xsaves cmq_llc cmq_occup_llc
  cmq_mmm_total cmq_mbb_local split_lock_detect avx_vnni avx512bfd
  wbinvd dtherm ida arat pio pts hwp hwp_act_window hwp_mie hwp_pkg
  key avx512vbm umip pku
  ospkg wai tpgk avx512_vlmsi gfnl vsaes vpclmulqdq avx512_vnni
  avx512_bitalg
  tme avx512_vpopcntd q la57 rdpid bus_lock_detect cidemote movdiri movdir64b
  enqcmd fasm md_clear serialize tsx_waitr r pconfig arch_lbr avx512_fp16
  amx_tlm flush_l1d arch_capabilities

Virtualization: VT-x
L1d cache: 3 MiB (64 instances)
L1i cache: 2 MiB (64 instances)
L2 cache: 128 MiB (64 instances)
L3 cache: 128 MiB (64 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-7,64-71
NUMA node1 CPU(s): 8-15,72-79
NUMA node2 CPU(s): 16-23,80-87
NUMA node3 CPU(s): 24-31,98-95
NUMA node4 CPU(s): 32-39,96-103
NUMA node5 CPU(s): 40-47,104-111
NUMA node6 CPU(s): 48-55,112-119
NUMA node7 CPU(s): 56-63,120-127
Vulnerability Itlb multihit: Not affected

(Continued on next page)
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**Platform Notes (Continued)**

<table>
<thead>
<tr>
<th>Vulnerability</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1tf</td>
<td>Not affected</td>
</tr>
<tr>
<td>Mds</td>
<td>Not affected</td>
</tr>
<tr>
<td>Meltdown</td>
<td>Not affected</td>
</tr>
<tr>
<td>Spec store bypass</td>
<td>Mitigation; Speculative Store Bypass disabled via prctl and seccomp</td>
</tr>
<tr>
<td>Spectre v1</td>
<td>Mitigation; usercopy/swapgs barriers and __user pointer sanitization</td>
</tr>
<tr>
<td>Spectre v2</td>
<td>Mitigation; Enhanced IBRS, IBPB conditional, RSB filling</td>
</tr>
<tr>
<td>Srbds</td>
<td>Not affected</td>
</tr>
<tr>
<td>Tax async abort</td>
<td>Not affected</td>
</tr>
</tbody>
</table>

---

**From lscpu --cache:**

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
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</thead>
<tbody>
<tr>
<td>L1d</td>
<td>48K</td>
<td>3M</td>
<td>12</td>
<td>Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>2M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L2</td>
<td>2M</td>
<td>128M</td>
<td>16</td>
<td>Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>60M</td>
<td>120M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>65536</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

---

**8. numactl --hardware**

**NOTE:** a numactl 'node' might or might not correspond to a physical chip.

available: 8 nodes (0-7)  
node 0 cpus: 0-7,64-71  
node 0 size: 128658 MB  
node 0 free: 127228 MB  
node 1 cpus: 8-15,72-79  
node 1 size: 129019 MB  
node 1 free: 128231 MB  
node 2 cpus: 16-23,80-87  
node 2 size: 129019 MB  
node 2 free: 128239 MB  
node 3 cpus: 24-31,88-95  
node 3 size: 129019 MB  
node 3 free: 128233 MB  
node 4 cpus: 32-39,96-103  
node 4 size: 128985 MB  
node 4 free: 128073 MB  
node 5 cpus: 40-47,104-111  
node 5 size: 129019 MB  
node 5 free: 128211 MB  
node 6 cpus: 48-55,112-119  
node 6 size: 129019 MB  
node 6 free: 128219 MB  
node 7 cpus: 56-63,120-127  
node 7 size: 128972 MB  
node 7 free: 128114 MB  
node distances:  
node 0 1 2 3 4 5 6 7  
0: 10 12 12 12 21 21 21 21  
1: 12 10 12 12 21 21 21 21  
2: 12 12 10 12 21 21 21 21  
3: 12 12 12 10 21 21 21 21  
4: 21 21 21 21 10 12 12 12  
5: 21 21 21 21 12 10 12 12  
6: 21 21 21 21 12 12 10 12  
7: 21 21 21 21 12 12 12 10  

---

**9. /proc/meminfo**

| MemTotal: | 1056477044 kB |

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(Continued on next page)
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<td>Test Date:</td>
<td>Feb-2024</td>
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</tr>
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<td>Dec-2023</td>
</tr>
</tbody>
</table>

---

### Platform Notes (Continued)

10. `who -r`
   - `run-level 3 Feb 19 17:31`

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

12. Services, from `systemctl list-unit-files`
    - STATE: `UNIT FILES`
    - enabled:
      - YaST2-Firstboot
      - YaST2-Second-Stage
      - apparmor
      - auditd
      - cron
      - display-manager
      - getty@
      - haveged
      - irqbalance
      - issue-generator
      - kbdsettings
      - klog
      - lvm2-monitor
      - nsd
      - nvme-fc-boot-connections
      - postfix
      - purge-kernels
      - rollback
      - rsyslog
      - smartd
      - sshd
      - wicked
      - wickedd-auto4
      - wickedd-dhcp4
      - wickedd-nanny
    - enabled-runtime:
      - systemd-remount-fs
    - disabled:
      - autofs
      - autoyast-initscripts
      - blk-availability
      - boot-sysctl
      - ca-certificates
      - chrony
      - console-getty
      - cups
      - cups-browsed
      - debug-shell
      - ebtables
      - exchange-bmc-os-info
      - firewalld
      - gpm
      - grub2-once
      - haveged-switch-root
      - hwloc-dump-hwdata
      - ipmi
      - ipmirov
      - issue-add-ssh-keys
      - kexec-load
      - lunmask
      - man-db-create
      - multipathd
      - nfs
      - nfs-blkmap
      - nvmf-autoconnect
      - rdisc
      - rpcbind
      - rpmconfigcheck
      - sshd
      - systemd-boot-check-no-failures
      - systemd-network-generator
      - systemd-sysext
      - systemd-timesyncd
      - tuned
      - udisks2
      - wicked

13. Linux kernel boot-time arguments, from `/proc/cmdline`
    - `BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default`
    - `root=UUID=9bcf0374-b29f-4a4c-932e-9c0e90fc0803`
    - `splash=silent`
    - `mitigations=auto`
    - `quiet`

14. `cpupower frequency-info`
    - analyzing CPU 0:
      - current policy: frequency should be within 800 MHz and 3.40 GHz.
        - The governor "performance" may decide which speed to use within this range.
      - 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_proactive 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`

(Continued on next page)
ASUSTeK Computer Inc.  
ASUS ESC4000-E11  
(2.10 GHz, Intel Xeon Gold 6430)

SPEC CPU®2017 Integer Rate Result  
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SPECrate®2017_int_base = 528  
SPECrate®2017_int_peak = 545

CPU2017 License: 9016  
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.  
Hardware Availability: Jul-2023  
Software Availability: Dec-2023

Test Date: Feb-2024

Platform Notes (Continued)

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+madvise [madvise] never  
   enabled        [always] madvise 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

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

------------------------------------------------------------
20. Disk information
   SPEC is set to: /ic23u2
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/nvme0n1p8 xfs   500G  296G  205G  60% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
   Vendor:      ASUSTeK COMPUTER INC.
   Product:     ESC4000-E11
   Product Family: Server
   Serial:      /psn/

------------------------------------------------------------
22. 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-CQKVG 64 GB 2 rank 4800, configured at 4400

------------------------------------------------------------
23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor: American Megatrends Inc.
   BIOS Version: 2101

(Continued on next page)
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Platform Notes (Continued)

BIOS Date: 12/12/2023
BIOS Revision: 21.1

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)
--------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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C | 502.gcc_r(peak)
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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)
--------------------------------------------
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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
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Base Compiler Invocation

C benchmarks:
icx

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

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Base Compiler Invocation (Continued)

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-w -std=gnu11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Il/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -std=gnu++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Il/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
-Il/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
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Hardware Availability: Jul-2023

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-ffile=generate(pass 1)
-ffile=use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-ffunroll-loops -gopt-mem-layout-trans=4
-ffno-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 -ffile=generate(pass 1)
-ffile=use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-ffunroll-loops -gopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

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ASUSTeK Computer Inc.  
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<td>Tested by: ASUSTeK Computer Inc.</td>
<td>Software Availability: Dec-2023</td>
</tr>
</tbody>
</table>

## Peak Optimization Flags (Continued)

```
505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -ftlo -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

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-ic2023p2-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-V1.3.xml

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