# SPEC CPU®2017 Integer Rate Result

**xFusion**

**FusionServer 2288H V7 (Intel Xeon Platinum 8460Y+)**

### SPECrate®2017 Int Base = 718

### SPECrate®2017 Int Peak = 741

<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>xFusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability</td>
<td>Jan-2023</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Dec-2022</td>
</tr>
</tbody>
</table>

## Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name</strong></td>
<td>Intel Xeon Platinum 8460Y+</td>
</tr>
<tr>
<td><strong>Max MHz</strong></td>
<td>3700</td>
</tr>
<tr>
<td><strong>Nominal</strong></td>
<td>2000</td>
</tr>
<tr>
<td><strong>Enabled</strong></td>
<td>80 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable</strong></td>
<td>1.2 chips</td>
</tr>
<tr>
<td><strong>Cache L1</strong></td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td><strong>L2</strong></td>
<td>2 MB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3</strong></td>
<td>105 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>1 x 1920 GB SATA SSD</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OS</strong></td>
<td>Red Hat Enterprise Linux release 9.0 (Plow)</td>
</tr>
<tr>
<td></td>
<td>5.14.0-70.13.1.el9_0.x86_64</td>
</tr>
<tr>
<td><strong>Compiler</strong></td>
<td>C/C++ Version 2023.0 of Intel oneAPI DPC++/C++</td>
</tr>
<tr>
<td></td>
<td>Compiler for Linux;</td>
</tr>
<tr>
<td></td>
<td>Fortran Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td><strong>Parallel</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Firmware</strong></td>
<td>Version 2.00.55 Released Mar-2023</td>
</tr>
<tr>
<td><strong>File System</strong></td>
<td>xfs</td>
</tr>
<tr>
<td><strong>System State</strong></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Base Pointers</strong></td>
<td>64-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers</strong></td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td><strong>Power Management</strong></td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

### Copy Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>531</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>592</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>710</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>495</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>1130</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>1390</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>1350</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>1430</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>1410</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>348</td>
</tr>
</tbody>
</table>

SPECrater®2017 Int Peak (741)
xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8460Y+)

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Jun-2023
Hardware Availability: Jan-2023
Software Availability: Dec-2022

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>160</td>
<td>480</td>
<td>531</td>
<td>480</td>
<td>531</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>160</td>
<td>382</td>
<td>592</td>
<td>381</td>
<td>595</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>505.mcf_r</td>
<td>160</td>
<td>229</td>
<td>1130</td>
<td>230</td>
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</tr>
<tr>
<td>520.omnetpp_r</td>
<td>160</td>
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<td>495</td>
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</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>160</td>
<td>207</td>
<td>1350</td>
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</tr>
<tr>
<td>525.x264_r</td>
<td>160</td>
<td>371</td>
<td>494</td>
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</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>160</td>
<td>577</td>
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<td>583</td>
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</tr>
<tr>
<td>541.leela_r</td>
<td>160</td>
<td>297</td>
<td>1410</td>
<td>297</td>
<td>1410</td>
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</tr>
</tbody>
</table>

SPECrate®2017_int_base = 718
SPECrate®2017_int_peak = 741

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.xalanchbmk_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/spec2017-ic2023/lib/intel64:/home/spec2017-ic2023/lib/ia32:/home/spec2017-ic2023/je5.0.1-32"
MALLOC_CONF = "retain:true"
SPEC CPU®2017 Integer Rate Result

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8460Y+)

SPECrate®2017_int_base = 718
SPECrate®2017_int_peak = 741

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Jun-2023
Hardware Availability: Jan-2023
Software Availability: Dec-2022

General Notes

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

Platform Notes

- BIOS configuration:
  - Performance Profile Set to Performance
  - SNC Set to Enable SNC4 (4-clusters)
- Sysinfo program /home/spec2017-ic2023/bin/sysinfo
  - Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
  - running on localhost.localdomain Tue Jun 20 09:26:43 2023
- SUT (System Under Test) info as seen by some common utilities.

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

1. `uname -a`

   ```
   Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
   x86_64 x86_64 GNU/Linux
   ```

2. `w`

   ```
   09:26:43 up 6 min,  1 user, load average: 0.08, 0.08, 0.05
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1      09:25    1:07   1.33s  0.04s -bash
   ```

3. `Username`  
   From environment variable `$USER`: root

4. `ulimit -a`

   ```
   real-time non-blocking time (microseconds, -R) unlimited
   core file size (blocks, -c) 0
   data seg size (kbytes, -d) unlimited
   scheduling priority (-e) 0
   file size (blocks, -f) unlimited
   pending signals (-i) 2060107
   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) 2060107
   virtual memory (kbytes, -v) unlimited
   file locks (-x) unlimited
   ```

5. `sysinfo process ancestry`

   ```
   /usr/lib/systemd/systemd --switched-root --system --deserialize 18
   login -- root
   -bash
   ```

   ```
   runcpu --define default-platform-flags --copies 160 --ic2023.0-lin-sapphirerapids-rate-20221201.cfg
   --define smt-on --define cores=80 --define physicalfirst --define invoke_with_interleave --define
   drop_caches --tune base,peak --iterations 2 --all intrate
   runcpu --define default-platform-flags --copies 160 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=80 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base,peak --iterations 2 --output_format all
   --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.055/templogs/preenv.intrate.055.0.log --lognum 055.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/spec2017-ic2023
   ```

6. `/proc/cpuinfo`

   ```
   model name : Intel(R) Xeon(R) Platinum 8460Y+
   vendor_id : GenuineIntel
   cpu family : 6
   model : 143
   stepping : 8
   microcode : 0x2b000111
   ```

   (Continued on next page)
Platform Notes (Continued)

bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 40
siblings       : 80
2 physical ids (chips)
160 processors (hardware threads)
  physical id 0: core ids 0-39
  physical id 1: core ids 0-39
  physical id 0: apic ids 0-79
  physical id 1: apic ids 128-207
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):                160
On-line CPU(s) list:   0-159
Vendor ID:             GenuineIntel
BIOS Vendor ID:        Intel(R) Corporation
Model name:            Intel(R) Xeon(R) Platinum 8460Y+
BIOS Model name:       Intel(R) Xeon(R) Platinum 8460Y+
CPU family:            6
Model:                 143
Thread(s) per core:    2
Core(s) per socket:    40
Socket(s):             2
Stepping:              8
BogoMIPS:              4000.00
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 rdtsdp
                       lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                       nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64
                       mmm Mutliple instruction encoded debugging instruction set extensions
                       abm arch_capabilities
Virtualization:        VT-x
L1d cache:             3.8 MiB (80 instances)
L1i cache:             2.5 MiB (80 instances)
L2 cache:              160 MiB (80 instances)
L3 cache:              210 MiB (2 instances)
NUMA node(s):          8
NUMA node0 CPU(s):     0-9,80-89
NUMA node1 CPU(s):     10-19,90-99
NUMA node2 CPU(s):     20-29,100-109
NUMA node3 CPU(s):     30-39,110-119

(Continued on next page)
xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8460Y+)

CPU2017 License: 6488
Test Sponsor: xFusion
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SPECRate®2017_int_base = 718
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Platform Notes (Continued)

NUMA node4 CPU(s): 40-49,120-129
NUMA node5 CPU(s): 50-59,130-139
NUMA node6 CPU(s): 60-69,140-149
NUMA node7 CPU(s): 70-79,150-159
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tax async abort: Not affected

From lscpu --cache:

NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d  48K   3.8M   12 Data         1  64  1       64
L1i  32K   2.5M    8 Instruction  1  64  1       64
L2   2M    160M   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: 8 nodes (0-7)
node 0 cpus: 0-9,80-89
node 0 size: 63569 MB
node 0 free: 62884 MB
node 1 cpus: 10-19,90-99
node 1 size: 64507 MB
node 1 free: 64219 MB
node 2 cpus: 20-29,100-109
node 2 size: 64507 MB
node 2 free: 64100 MB
node 3 cpus: 30-39,110-119
node 3 size: 64471 MB
node 3 free: 61347 MB
node 4 cpus: 40-49,120-129
node 4 size: 64507 MB
node 4 free: 64168 MB
node 5 cpus: 50-59,130-139
node 5 size: 64507 MB
node 5 free: 64224 MB
node 6 cpus: 60-69,140-149
node 6 size: 64507 MB
node 6 free: 60895 MB
node 7 cpus: 70-79,150-159
node 7 size: 64487 MB
node 7 free: 64180 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

(Continued on next page)
Platform Notes (Continued)

9. /proc/meminfo
   MemTotal: 527428144 kB

10. who -r
    run-level 3 Jun 20 09:20

11. Systemd service manager version: systemd 250 (250-6.el9_0)
    Default Target Status
    multi-user degraded

12. Failed units, from systemctl list-units --state=failed
    UNIT LOAD ACTIVE SUB DESCRIPTION
    * sep5.service loaded failed failed systemd script to load sep5 driver at boot time

13. Services, from systemctl list-unit-files
    STATE UNIT FILES
    enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chrony dcrond
             dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode
             nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sep5 sshd sssd sysstat
             systemd-network-generator tuned udisks2 upower
    enabled-runtime systemd-remount-fs
    disabled arp-ethers blk-availability canberra-system-bootup canberra-system-shutdown
             canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell kvm_stat
             man-db-restart-cache-update nftables powertop rdisc rhsm rhsm-facts rpmdb-rebuild
             serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
    indirect sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
    root=/dev/mapper/rhel-root
    ro
    crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
    resume=/dev/mapper/rhel-swap
    rd.lvm.lv=rhel/root
    rd.lvm.lv=rhel/swap

15. cpupower frequency-info
    analyzing CPU 0:
    Unable to determine current policy
    boost state support:
    Supported: yes
    Active: yes

16. tuned-adm active
    Current active profile: throughput-performance

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xFusion

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SPECrate®2017_int_base = 718

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Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>vm.dirty_background_ratio</td>
<td>10</td>
</tr>
<tr>
<td>vm.dirty_bytes</td>
<td>0</td>
</tr>
<tr>
<td>vm.dirty_expire_centisecs</td>
<td>3000</td>
</tr>
<tr>
<td>vm.dirty_ratio</td>
<td>40</td>
</tr>
<tr>
<td>vm.dirty_writeback_centisecs</td>
<td>500</td>
</tr>
<tr>
<td>vm.dirtytime_expire_seconds</td>
<td>43200</td>
</tr>
<tr>
<td>vm.extrfrag_threshold</td>
<td>500</td>
</tr>
<tr>
<td>vm.min_unmapped_ratio</td>
<td>1</td>
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<tr>
<td>vm.nr_hugepages</td>
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<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>
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<tr>
<td>vm.watermark_scale_factor</td>
<td>10</td>
</tr>
<tr>
<td>vm.zone_reclaim_mode</td>
<td>0</td>
</tr>
</tbody>
</table>

18. /sys/kernel/mm/transparent_hugepage
   defrag always defer+madvise [madvise] never
   enabled [always] madvise never
   hpage_pmd_size 2097152
   shmem_enabled always within_size advise [never] deny force

19. /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

20. OS release
    From /etc/*-release /etc/*-version
    os-release Red Hat Enterprise Linux 9.0 (Plow)
    redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
    system-release Red Hat Enterprise Linux release 9.0 (Plow)

21. Disk information
    SPEC is set to: /home/spec2017-ic2023
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs 1.7T 286G 1.4T 17% /home

22. /sys/devices/virtual/dmi/id
    Vendor: XFUSION
    Product: 2288H V7
    Product Family: Eagle Stream
    Serial: serial

23. dmidecode
    Additional information from dmidecode 3.3 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:

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

xFusion
FusionServer 2288H V7 (Intel Xeon Platinum 8460Y+)

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

SPECrate®2017_int_base = 718
SPECrate®2017_int_peak = 741

Test Date: Jun-2023
Hardware Availability: Jan-2023
Software Availability: Dec-2022

Platform Notes (Continued)

16x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800

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
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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 2023.0.0 Build 20221201
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============================================================================================================
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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============================================================================================================
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 2023.0.0 Build 20221201
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============================================================================================================
Fortran | 548.exchange2_r(base, peak)
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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**SPEC CPU®2017 Integer Rate Result**

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<table>
<thead>
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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
- `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` 
  `-gopt-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` 
  `-gopt-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` 
  `-gopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs` 
  `-align array32byte` 
  `-auto`
- `-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`
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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.xalancbk_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 -gopt-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 -gopt-mem-layout-trans=4
    -L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

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Peak Optimization Flags (Continued)

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:
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-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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