SPEC CPU®2017 Integer Rate Result

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8444H)

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

SPECrater®2017_int_base = 337
SPECrater®2017_int_peak = 346

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

Copies
500.perlbench_r 64
502.gcc_r 64
505.mcf_r 64
520.omnetpp_r 64
523.xalancbmk_r 64
525.x264_r 64
531.deepsjeng_r 64
541.leela_r 64
548.exchange2_r 64
557.xz_r 64

SPECrater®2017_int_base (337)
SPECrater®2017_int_peak (346)

Hardware
CPU Name: Intel Xeon Platinum 8444H
Max MHz: 4000
Nominal: 2900
Enabled: 32 cores, 2 chips, 2 threads/core
Orderable: 1.2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 45 MB I+D on chip per chip
Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 1920 GB SATA SSD
Other: None

Software
OS: Red Hat Enterprise Linux release 9.0 (Plow) 5.14.0-70.13.1.el9_0.x86_64
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 2.00.55 Released Mar-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>
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<th>Ratio</th>
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<tr>
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<tr>
<td>548.exchange2_r</td>
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<td>64</td>
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<td>637</td>
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<td>441</td>
<td>157</td>
<td></td>
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</tr>
</tbody>
</table>

**Compiler Notes**

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalanchmk_r / 623.xalanchmk_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/spec2017-1.1.9-ic2023/lib/intel64:/home/spec2017-1.1.9-ic2023/lib/ia32:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/gnu64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:/home/spec2017-1.1.9-ic2023/lib/ia64:
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>
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.
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:
Performance Profile Set to Performance
SNC Set to Enable SNC4 (4-clusters)

Sysinfo program /home/spec2017-1.1.9-ic2023/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Mon Jul 17 17:37:01 2023

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

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3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
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10. who -r
11. Systemd service manager version: systemd 250 (250-6.e19_0)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/transparent
20. OS release
21. Disk information
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23. dmidecode
24. BIOS

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<td></td>
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</tbody>
</table>

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`
   ```
   17:37:01 up 8 min,  1 user,  load average: 0.01, 0.05, 0.05
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1      17:35    1:09   1.24s  0.07s -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) 2060221
   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) 2060221
   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
   ```

6. `./proc/cpuinfo`
   ```
   model name      : Intel(R) Xeon(R) Platinum 8444H
   vendor_id       : GenuineIntel
   cpu family      : 6
   model           : 143
   stepping        : 6
   microcode       : 0x2b000011
   ```

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Platform Notes (Continued)

bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores       : 16
siblings        : 32
physical ids (chips)
2 physical ids (chips)
64 processors (hardware threads)
physical id 0: core ids 0-15
physical id 1: core ids 0-15
physical id 0: apicids 0-31
physical id 1: apicids 128-159

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 lsctcpu 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): 64
On-line CPU(s) list: 0-63
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation
Model name: Intel(R) Xeon(R) Platinum 8444H
BIOS Model name: Intel(R) Xeon(R) Platinum 8444H
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
Stepping: 6
BogoMIPS: 5800.00

Flags:
fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pse36
clflush dtc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 ds_cpl
time vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2
x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm
abm 3dnowprefetch cpuid_fault ebpx cat_l3 cat_l2 cdp cdp_invpcid_single
intel_pinn cdp_d2 sxbd mba ibrs ibpit ibrs_dnibms enhanced_tpr_shadow vmvx
klexfpnum info vpid ept ad fsqsb mset brc2 2m6 6m7 6m8 6m9
emu

Virtualization:
VT-x
L1d cache: 1.5 MiB (32 instances)
L1i cache: 1 MiB (32 instances)
L2 cache: 64 MiB (32 instances)
L3 cache: 90 MiB (2 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-3,32-35
NUMA node1 CPU(s): 4-7,36-39
NUMA node2 CPU(s): 8-11,40-43
NUMA node3 CPU(s): 12-15,44-47

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</tr>
</tbody>
</table>

### Platform Notes (Continued)

- NUMA node4 CPU(s): 16-19, 48-51
- NUMA node5 CPU(s): 20-23, 52-55
- NUMA node6 CPU(s): 24-27, 56-59
- NUMA node7 CPU(s): 28-31, 60-63
- Vulnerability Itlb multihit: Not affected
- Vulnerability L1t#: 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:

<table>
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<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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<td>64</td>
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<tr>
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<td>1M</td>
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<td>64</td>
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<td>L3</td>
<td>45M</td>
<td>90M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>49152</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: 0-3, 32-35
node 0 size: 63571 MB
node 0 free: 63286 MB
node 1 cpus: 4-7, 36-39
node 1 size: 64510 MB
node 1 free: 63002 MB
node 2 cpus: 8-11, 40-43
node 2 size: 64510 MB
node 2 free: 64178 MB
node 3 cpus: 12-15, 44-47
node 3 size: 64510 MB
node 3 free: 64279 MB
node 4 cpus: 16-19, 48-51
node 4 size: 64510 MB
node 4 free: 64315 MB
node 5 cpus: 20-23, 52-55
node 5 size: 64510 MB
node 5 free: 64321 MB
node 6 cpus: 24-27, 56-59
node 6 size: 64473 MB
node 6 free: 61282 MB
node 7 cpus: 28-31, 60-63
node 7 size: 64499 MB
node 7 free: 64279 MB

node distances:

<table>
<thead>
<tr>
<th>node distances:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: 10 12 12 12 21 21 21 21</td>
</tr>
<tr>
<td>1: 12 10 12 12 21 21 21 21</td>
</tr>
<tr>
<td>2: 12 12 10 12 21 21 21 21</td>
</tr>
<tr>
<td>3: 12 12 12 10 21 21 21 21</td>
</tr>
<tr>
<td>4: 21 21 21 21 10 12 12 12</td>
</tr>
<tr>
<td>5: 21 21 21 21 12 10 12 12</td>
</tr>
<tr>
<td>6: 21 21 21 21 12 12 10 12</td>
</tr>
<tr>
<td>7: 21 21 21 21 12 12 12 10</td>
</tr>
</tbody>
</table>

(Continued on next page)
Platform Notes (Continued)

9. /proc/meminfo
   MemTotal:       527457680 kB

10. who -r
    run-level 3 Jul 17 17:28

11. Systemd service manager version: systemd 250 (250-6.e19_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 chronyd crond
               dbus-broker getty@ irqbalance ldms-monitor mdmonitor microcode nis-domainname
               rshmdc rsyslog selinux-autorelabel-mark sep5 sshd ssdss 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 firewalld
               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
               ssd-autofs ssd-kcm ssd-md ssd-pac ssd-pam ssd-ash ssd-sudo
    indirect

14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.e19_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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Software Availability: Dec-2022

Platform Notes (Continued)

vm.dirty_background_ratio  10
vm.dirty_bytes  0
vm.dirty_expire_centisecs  3000
vm.dirty_ratio  40
vm.dirty_writeback_centisecs  500
vm.dirtytime_expire_seconds  43200
vm.extrfrag_threshold  500
vm.min_unmapped_ratio  1
vm.nr_hugepages  0
vm.nr_hugepages_mempolicy  0
vm.nr_overcommit_hugepages  0
vm.swappiness  10
vm.watermark_boost_factor  15000
vm.watermark_scale_factor  10
vm.zone_reclaim_mode  0

-----------------------------------------------
18. /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

-----------------------------------------------
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/spec2017-1.1.9-ic2023
   Filesystem  Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs  1.7T  87G  1.6T  6% /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 8444H)

SPECrate®2017_int_base = 337
SPECrate®2017_int_peak = 346

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

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

Platform Notes (Continued)

16x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800

------------------------------------------------------------
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: XFUSION
BIOS Version: 2.00.55
BIOS Date: 03/07/2023
BIOS Revision: 0.55

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++     | 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
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
SPEC CPU®2017 Integer Rate Result

xFusion

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SPECrate®2017_int_base = 337
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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.xalanchbm_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 -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
## SPEC CPU®2017 Integer Rate Result

**xFusion**  
FusionServer 2288H V7 (Intel Xeon Platinum 8444H)

| SPECrate®2017_int_base = 337 |
| SPECrate®2017_int_peak = 346 |

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

| Test Date: | Jul-2023 |
| Hardware Availability: | Jan-2023 |
| Software Availability: | Dec-2022 |

### 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 -W1, -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  
- -ljgkmalloc

- 502.gcc_r: -m32  
- -L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin  
- -std=gnu89 -W1, -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

*(Continued on next page)*
Peak Optimization Flags (Continued)

505.mcf_r: basepeak = yes

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