# SPEC CPU®2017 Integer Rate Result

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8468)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux release 9.0 (Plow) 5.14.0-70.13.1.el9_0.x86_64</td>
<td>CPU Name: Intel Xeon Platinum 8468</td>
</tr>
<tr>
<td>Compiler: C/C++ Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
<td>Max MHz: 3800</td>
</tr>
<tr>
<td>Firmware: Version 2.00.55 Released Mar-2023</td>
<td>Nominal: 2100</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>Enabled: 96 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>Orderable: 1.2 chips</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
<td>L2: 2 MB I+D on chip per core</td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
<td>L3: 105 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage</td>
<td></td>
</tr>
</tbody>
</table>

Copies

<table>
<thead>
<tr>
<th>Test Date: Jun-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability: Jan-2023</td>
</tr>
<tr>
<td>Software Availability: Dec-2022</td>
</tr>
</tbody>
</table>

- **SPECrate®2017_int_base** = 896
- **SPECrate®2017_int_peak** = 927

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>192</td>
<td>692</td>
<td>743</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>192</td>
<td>684</td>
<td>845</td>
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<tr>
<td>505.mcf_r</td>
<td>192</td>
<td>542</td>
<td>1340</td>
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<tr>
<td>520.omnetpp_r</td>
<td>192</td>
<td>1780</td>
<td></td>
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<tr>
<td>523.xalancbmk_r</td>
<td>192</td>
<td>1870</td>
<td></td>
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<tr>
<td>525.x264_r</td>
<td>192</td>
<td>1880</td>
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<tr>
<td>531.deepsjeng_r</td>
<td>192</td>
<td>1780</td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td>192</td>
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<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>192</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>192</td>
<td>441</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Copies is a measure of how many times the benchmark was run.
- SPECrate®2017_int_base and SPECrate®2017_int_peak are performance metrics.
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CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

SPECrate®2017_int_base = 896
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Test Date: Jun-2023
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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>Base</th>
<th>Copies</th>
<th>Seconds</th>
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<th>Seconds</th>
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<th>Peak</th>
<th>Copies</th>
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<tr>
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<td>192</td>
<td>441</td>
<td>692</td>
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</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/spec2017-1.1.9-ic2023/lib/intel64:/home/spec2017-1.1.9-ic2023/lib/ia32:/home/spec2017-1.1.9-ic2023/jemalloc-5.0.1-32"
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
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 Jun 26 21:01:14 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/cpupinfo                                         |
| 7. lscpu                                                   |
| 8. numactl --hardware                                      |
| 9. /proc/meminfo                                          |
| 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/khugepaged         |
| 20. OS release                                             |
| 21. Disk information                                       |
| 22. /sys/devices/virtual/dmi/id                           |
| 23. dmidecode                                             |
| 24. BIOS                                                  |

(Continued on next page)
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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
   21:01:14 up 2 min,  1 user,  load average: 0.16, 0.14, 0.06
   USER     TTY       LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1      21:00    1:06   1.27s  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) 2060079
   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) 2060079
   virtual memory (kbytes, -v) unlimited
   file locks (-x) unlimited

5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 28
   login -- root
   -bash
   -bash
   runcpu --define default-platform-flags --copies 192 -c ic2023.0-lin-sapphirerapids-rate-20221201.cfg
   --define cores=96 --define physicalfirst --define invoke_with_interleave --define
   drop_caches --tune base,peak --iterations 2 -o all intrate
   runcpu --define default-platform-flags --copies 192 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --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/CPU2017.095/templogs/preenv.intrate.095.0.log --lognum 095.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/spec2017-1.1.9-ic2023

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Platinum 8468
   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**: 48
- **siblings**: 96
- **physical ids (chips)**: 2
- **192 processors (hardware threads)**: physical id 0: core ids 0-47, physical id 1: core ids 0-47, physical id 0: apicids 0-95, physical id 1: apicids 128-223

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

---

### 7. lscpu

From lscpu from util-linux 2.37.4:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>x86_64</td>
</tr>
<tr>
<td>CPU op-mode(s)</td>
<td>32-bit, 64-bit</td>
</tr>
<tr>
<td>Address sizes</td>
<td>46 bits physical, 57 bits virtual</td>
</tr>
<tr>
<td>Byte Order</td>
<td>Little Endian</td>
</tr>
<tr>
<td>CPU(s)</td>
<td>192</td>
</tr>
<tr>
<td>On-line CPU(s) list</td>
<td>0-191</td>
</tr>
<tr>
<td>Vendor ID</td>
<td>GenuineIntel</td>
</tr>
<tr>
<td>BIOS Vendor ID</td>
<td>Intel(R) Corporation</td>
</tr>
<tr>
<td>Model name</td>
<td>Intel(R) Xeon(R) Platinum 8468</td>
</tr>
<tr>
<td>BIOS Model name</td>
<td>Intel(R) Xeon(R) Platinum 8468</td>
</tr>
<tr>
<td>CPU family</td>
<td>6</td>
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<tr>
<td>Model</td>
<td>143</td>
</tr>
<tr>
<td>Thread(s) per core</td>
<td>2</td>
</tr>
<tr>
<td>Core(s) per socket</td>
<td>48</td>
</tr>
<tr>
<td>Socket(s)</td>
<td>2</td>
</tr>
<tr>
<td>Stepping</td>
<td>8</td>
</tr>
<tr>
<td>BogoMIPS</td>
<td>4200.00</td>
</tr>
</tbody>
</table>

**Flags:**

fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36_cclflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nopl nonpipp gstea see ept vpid fsgsbase tsc_adjust sm m bez tsc_wait faults

**Virtualization:**

VT-x

**L1d cache:**

- 4.5 MiB (96 instances)
- 3 MiB (96 instances)
- 192 MiB (96 instances)
- 210 MiB (96 instances)

**NUMA node(s):**

- 6

**NUMA node0 CPU(s):**

- 0-11, 96-107

**NUMA node1 CPU(s):**

- 12-23, 108-119

**NUMA node2 CPU(s):**

- 24-35, 120-131

**NUMA node3 CPU(s):**

- 36-47, 132-143

(Continued on next page)
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Platform Notes (Continued)
NUMA node4 CPU(s): 48-59,144-155
NUMA node5 CPU(s): 60-71,156-167
NUMA node6 CPU(s): 72-83,168-179
NUMA node7 CPU(s): 84-95,180-191
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     4.5M   12 Data            1     64        1             64
L1i     32K       3M    8 Instruction     1     64        1             64
L2      2M     192M   16 Unified         2   2048        1             64
L3      105M     210M   15 Unified         3 114688        1             64

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0-11,96-107
node 0 size: 63568 MB
node 0 free: 62745 MB
node 1 cpus: 12-23,108-119
node 1 size: 64506 MB
node 1 free: 64127 MB
node 2 cpus: 24-35,120-131
node 2 size: 64470 MB
node 2 free: 64096 MB
node 3 cpus: 36-47,132-143
node 3 size: 64506 MB
node 3 free: 64119 MB
node 4 cpus: 48-59,144-155
node 4 size: 64506 MB
node 4 free: 64196 MB
node 5 cpus: 60-71,156-167
node 5 size: 64506 MB
node 5 free: 61083 MB
node 6 cpus: 72-83,168-179
node 6 size: 64506 MB
node 6 free: 60768 MB
node 7 cpus: 84-95,180-191
node 7 size: 64486 MB
node 7 free: 64162 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)
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Platform Notes (Continued)

9. /proc/meminfo
   MemTotal: 527421276 kB

10. who -r
    run-level 3 Jun 26 20:59

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 kdump lvm2-monitor mdmonitor microcode nis-domainname
               rhsmcertd raysilog selinux-autorelabel-mark sep5 sshd ssd sssd systat
               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-aysext
    indirect     sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-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
    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

(Continued on next page)
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.extr frag 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+advise [advise] never
   enabled         [always] advise 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
   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   74G  1.7T   5% /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)
xFusion
FusionServer 2288H V7 (Intel Xeon Platinum 8468)

SPECRate\textsuperscript{\textregistered}2017\textsubscript{\textregistered}\textsubscript{\textregistered}\textsuperscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\rightleftharpoons\textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} \textsubscript{\textregistered} = 896

SPECRate\textsuperscript{\textregistered}2017\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered}\textsubscript{\textregistered} = 927

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion
Test Date: Jun-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
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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.xx_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
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SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

xFusion
FusionServer 2288H V7 (Intel Xeon Platinum 8468)

SPECrate®2017_int_base = 896
SPECrate®2017_int_peak = 927

CPU2017 License: 6488
Test Sponsor: xFusion
Test Date: Jun-2023
Tested by: xFusion
Hardware Availability: Jan-2023
Software Availability: Dec-2022

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
-ffloat -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
-ffloat -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 8468)**

**SPECrater®2017_int_base = 896**

**SPECrater®2017_int_peak = 927**

<table>
<thead>
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<td>Dec-2022</td>
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</tbody>
</table>

### 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

(Continued on next page)

### 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

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

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8468)

<table>
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<td>Software Availability: Dec-2022</td>
</tr>
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</table>

Peak Optimization Flags (Continued)

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsaphhirerapids -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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