## xFusion

**FusionServer 2288H V7 (Intel Xeon Bronze 3408U)**

**SPEC CPU®2017 Floating Point Rate Result**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon Bronze 3408U</td>
<td><strong>OS:</strong> Red Hat Enterprise Linux release 9.0 (Plow) 5.14.0-70.13.1.el9_0.x86_64</td>
</tr>
<tr>
<td><strong>Max MHz:</strong> 1900</td>
<td><strong>Compiler:</strong> C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td><strong>Nominal:</strong> 1800</td>
<td><strong>Parallel:</strong> No</td>
</tr>
<tr>
<td><strong>Enabled:</strong> 8 cores, 1 chip</td>
<td><strong>Firmware:</strong> Version 2.00.55 Released Mar-2023</td>
</tr>
<tr>
<td><strong>Orderable:</strong> 1 chip</td>
<td><strong>File System:</strong> xfs</td>
</tr>
<tr>
<td><strong>Cache L1:</strong> 32 KB I + 48 KB D on chip per core</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>L2:</strong> 2 MB I+D on chip per core</td>
<td><strong>Base Pointers:</strong> 64-bit</td>
</tr>
<tr>
<td><strong>L3:</strong> 22.5 MB I+D on chip per chip</td>
<td><strong>Peak Pointers:</strong> 64-bit</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
<td><strong>Other:</strong> jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td><strong>Memory:</strong> 256 GB (8 x 32 GB 2Rx8 PC5-4800B-R, running at 4000)</td>
<td><strong>Power Management:</strong> BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
<tr>
<td><strong>Storage:</strong> 1 x 1920 GB SATA SSD</td>
<td></td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
<td></td>
</tr>
</tbody>
</table>

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Hardware Availability:** Jan-2023

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Software Availability:** Dec-2022

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Software Availability:** Dec-2022

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Software Availability:** Dec-2022

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Software Availability:** Dec-2022

**Test Date:** Aug-2023

**Test Sponsor:** xFusion

**Software Availability:** Dec-2022

### SPECrate®2017_fp_base = 76.4

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_peak = 76.8</th>
</tr>
</thead>
</table>

### SPECrate®2017_fp_base = 76.4

### SPECrate®2017_fp_peak = 76.8
xFusion
FusionServer 2288H V7 (Intel Xeon Bronze 3408U)

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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>8</td>
<td>250</td>
<td>321</td>
<td>250</td>
<td>321</td>
<td>250</td>
<td>321</td>
<td>8</td>
<td>250</td>
<td>321</td>
<td>250</td>
<td>321</td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>8</td>
<td>92.6</td>
<td>109</td>
<td>90.8</td>
<td>112</td>
<td>223</td>
<td>277</td>
<td>8</td>
<td>111</td>
<td>110</td>
<td>92.0</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>8</td>
<td>227</td>
<td>33.3</td>
<td>228</td>
<td>33.4</td>
<td>227</td>
<td>33.5</td>
<td>8</td>
<td>227</td>
<td>33.5</td>
<td>228</td>
<td>33.4</td>
<td>227</td>
<td>33.5</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>8</td>
<td>384</td>
<td>54.5</td>
<td>384</td>
<td>54.4</td>
<td>384</td>
<td>54.3</td>
<td>8</td>
<td>384</td>
<td>54.5</td>
<td>384</td>
<td>54.4</td>
<td>384</td>
<td>54.5</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>8</td>
<td>361</td>
<td>51.8</td>
<td>363</td>
<td>51.4</td>
<td>362</td>
<td>51.6</td>
<td>8</td>
<td>363</td>
<td>51.4</td>
<td>364</td>
<td>51.6</td>
<td>363</td>
<td>51.4</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>8</td>
<td>124</td>
<td>68.0</td>
<td>123</td>
<td>68.6</td>
<td>122</td>
<td>69.1</td>
<td>8</td>
<td>124</td>
<td>68.0</td>
<td>123</td>
<td>68.6</td>
<td>122</td>
<td>69.1</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>8</td>
<td>238</td>
<td>75.3</td>
<td>239</td>
<td>75.3</td>
<td>239</td>
<td>75.0</td>
<td>8</td>
<td>238</td>
<td>75.3</td>
<td>239</td>
<td>75.3</td>
<td>239</td>
<td>75.0</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>8</td>
<td>266</td>
<td>45.7</td>
<td>268</td>
<td>45.5</td>
<td>268</td>
<td>45.5</td>
<td>8</td>
<td>266</td>
<td>45.7</td>
<td>268</td>
<td>45.5</td>
<td>268</td>
<td>45.5</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>8</td>
<td>248</td>
<td>56.5</td>
<td>249</td>
<td>56.3</td>
<td>248</td>
<td>56.5</td>
<td>8</td>
<td>248</td>
<td>56.5</td>
<td>249</td>
<td>56.3</td>
<td>248</td>
<td>56.5</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>8</td>
<td>148</td>
<td>135</td>
<td>146</td>
<td>137</td>
<td>145</td>
<td>137</td>
<td>8</td>
<td>148</td>
<td>135</td>
<td>146</td>
<td>137</td>
<td>145</td>
<td>137</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>8</td>
<td>162</td>
<td>83.1</td>
<td>161</td>
<td>83.8</td>
<td>161</td>
<td>83.6</td>
<td>8</td>
<td>162</td>
<td>83.1</td>
<td>161</td>
<td>83.8</td>
<td>161</td>
<td>83.6</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>8</td>
<td>294</td>
<td>106</td>
<td>289</td>
<td>108</td>
<td>289</td>
<td>108</td>
<td>8</td>
<td>294</td>
<td>106</td>
<td>289</td>
<td>108</td>
<td>289</td>
<td>108</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>8</td>
<td>229</td>
<td>55.6</td>
<td>230</td>
<td>55.4</td>
<td>229</td>
<td>55.6</td>
<td>8</td>
<td>229</td>
<td>55.6</td>
<td>230</td>
<td>55.4</td>
<td>229</td>
<td>55.6</td>
</tr>
</tbody>
</table>

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/je5.0.1-64"
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)

(Continued on next page)
General Notes (Continued)

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 SNC2 (2-clusters)

Sysinfo program /home/spec2017-ic2023/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Fri Aug 4 11:11:44 2023

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

Table of contents

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 250 (250-6.el9_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
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS

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 GNU/Linux

2. w
   11:11:45 up 5:26, 1 user, load average: 2.04, 6.05, 7.29
   USER     TTY      LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1      05:59  5:12m  1.69s  0.03s -bash
Platform Notes (Continued)

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) 1028082
   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) 1028082
   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 8 -c ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define
   smt-on --define cores=4 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune
   base,peak --iterations 3 --output_format all fprate
   runcpu --define default-platform-flags --copies 8 --configfile ic2023.0-lin-sapphirerapids-rate-20221201.cfg
   --define smt-on --define cores=4 --define physicalfirst --define invoke_with_interleave --define
   drop_caches --tune base,peak --iterations 3 --output_format all --nopower --runmode rate --tune base:peak
   --size refrate fprate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.174/templogs/preenv.fprate.174.0.log --lognum 174.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/spec2017-ic2023

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Bronze 3408U
   vendor_id : GenuineIntel
   cpu family : 6
   model : 143
   stepping : 7
   microcode : 0x2b000111
   bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
   cpu cores : 8
   siblings : 8
   1 physical ids (chips)
   8 processors (hardware threads)
   physical id 0: core ids 0-7
   physical id 0: apicids 0,2,4,6,8,10,12,14
   Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
   virtualized systems. Use the above data carefully.

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

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):** 8
- **On-line CPU(s) list:** 0-7
- **Vendor ID:** GenuineIntel
- **BIOS Vendor ID:** Intel(R) Corporation
- **Model name:** Intel(R) Xeon(R) Bronze 3408U
- **BIOS Model name:** Intel(R) Xeon(R) Bronze 3408U
- **CPU family:** 6
- **Model:** 143
- **Thread(s) per core:** 1
- **Core(s) per socket:** 8
- **Socket(s):** 1
- **Stepping:** 7
- **BogoMIPS:** 3600.00

**Flags:**

```text
fpu vme de pse tsc msr pae mca cmov pat pse36
clflush dtc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb dtes64 msr pae mce cx8 apic
cpu architectonics tsc_known_freq pni pclmulqdq dtes64 msr pae mce cx8 apic
vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca ssse3 l sse4_1
sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm
3dnowprefetch cpuid_fault ebf cat13 cat12 cpd13 invpcid_single intel_pipn intel_pipn
sbb mha ibrs ibbp stibp ibrs enhanced_tpr_shadow vmx
flexpriority ept_vpid ept_ad fsgsbase_tsc_adjust bmi1 avx2 smep bmi2 erms
invpcid qm rdt_a avx512f avx512dq rdseed adx smap avx512sm mclwb intel_pt_avx512cd sha_ni
avx512bw avx512vl xsaves_copt xsaves_xtg xorbit_l1c qm_occup_l1c qm_mbb_total qm_mbb_local split
lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ids arat pln pts avx512vlmi umip
kpu ospke waitpkg avx512_vlmi gfnl vaes vpclmulqdq avx512_vnni avx512_bitalg
rmtm avx512_vpopcntdq a57 rdpid bus_lock_detect clidemt movdir movdir64b
engcmd mtdm_clear serialize tswltdm pxgcnt pconfig arch_lbr avx512_fp16
flush_lld arch_capabilities
```

**Virtualization:**

- VT-x
- L1d cache: 384 KIB (8 instances)
- L1i cache: 256 KIB (8 instances)
- L2 cache: 16 MIB (8 instances)
- L3 cache: 22.5 MIB (1 instance)
- NUMA node(s): 2
- NUMA node0 CPU(s): 0-3
- NUMA node1 CPU(s): 4-7

**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/swapsgs barriers and __user pointer sanitization

**Vulnerability Spectre v2:**

- Mitigation: Enhanced IBRS, IBPB conditional, RSB filling

**Vulnerability Srbdts:** Not affected

**Vulnerability Tex async abort:** Not affected

**From lscpu --cache:**

```
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 48K 384K 12 Data 1 64 1 64
L1i 32K 256K 8 Instruction 1 64 1 64
L2 2M 16M 16 Unified 2 2048 1 64
```

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

xFusion

FusionServer 2288H V7 (Intel Xeon Bronze 3408U)

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

SPECrate®2017_fp_base = 76.4
SPECrate®2017_fp_peak = 76.8

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

Platform Notes (Continued)

L3 22.5M 22.5M 15 Unified 3 24576 1 64

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0-3
node 0 size: 128048 MB
node 0 free: 121262 MB
node 1 cpus: 4-7
node 1 size: 129012 MB
node 1 free: 125526 MB
node distances:
node 0 0 1
0: 10 12
1: 12 10

9. /proc/meminfo
MemTotal: 263229760 kB

10. who -r
run-level 3 Aug 4 05:45

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
* dnf-makecache.service loaded failed failed dnf makecache
* 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 firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode
nis-domainname rhsmcertd syslog selinux-autorelabel-mark sep5 sshd ssd sssd sysstat
systemd-network-generator tuned udisks2 upower
disabled-runtime systemd-remount-fs
indirect ssd-autos ssd-kcm ssd-ns ssd-pac ssd-pam ssd-ssh ssd-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=IG-4G:192M,4G-64G:256M,64G-:512M
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/sdap

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

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

17. 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                     40
   vm.dirty_writeback_centisecs      500
   vm.dirtytime_expire_seconds       43200
   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                     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+madvice [madvice] never
   enabled [always] madvice 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

(Continued on next page)
Platform Notes (Continued)

SPEC is set to: /home/spec2017-ic2023
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 1.7T 71G 1.7T 5% /home

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

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:
8x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800, configured at 4000

24. BIOS
(BThis 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               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_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++             | 508.namd_r(base, peak) 510.parest_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++, C          | 511.povray_r(base, peak) 526.blender_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++, C, Fortran | 507.cactusBSN_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.
xFusion

FusionServer 2288H V7 (Intel Xeon Bronze 3408U)

| SPECrate®2017_fp_base = 76.4 |
| SPECrate®2017_fp_peak = 76.8 |

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

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

Compiler Version Notes (Continued)

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.

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.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Benchmarks using both Fortran and C:
ifx icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifx

Base Portability Flags

503.bwaves_r -DSPEC_LP64
507.cactuBSSN_r -DSPEC_LP64
508.namd_r -DSPEC_LP64

(Continued on next page)
xFusion
FusionServer 2288H V7 (Intel Xeon Bronze 3408U)

**SPEC CPU®2017 Floating Point Rate Result**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 76.4</th>
<th>SPECrate®2017_fp_peak = 76.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 6488</td>
<td>Test Date: Aug-2023</td>
</tr>
<tr>
<td>Test Sponsor: xFusion</td>
<td>Hardware Availability: Jan-2023</td>
</tr>
<tr>
<td>Tested by: xFusion</td>
<td>Software Availability: Dec-2022</td>
</tr>
</tbody>
</table>

Base Portability Flags (Continued)

510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
- w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -Wno-implicit-int -mprefer-vector-width=512 -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:
- w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
- -ffast-math -flto -mfpmath=sse -funroll-loops
- -qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
- w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto
- -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs -align array32byte -auto -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
- w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
- -align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
- w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
- -ffast-math -flto -mfpmath=sse -funroll-loops
- -qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
- -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

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

xFusion
FusionServer 2288H V7 (Intel Xeon Bronze 3408U)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>76.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>76.8</td>
</tr>
</tbody>
</table>

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

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

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
- w -m64 -std=c++14 -std=cl1 -Wl,-z,muldefs -xsapphirerapids -Ofast
- ffast-math -flto -mfpmath=sse -funroll-loops
- qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
- nostandard-realloc-lhs -align array32byte -auto -ljemalloc
- L/usr/local/jemalloc64-5.0.1/lib

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Benchmarks using both Fortran and C:
ifx icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifx

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r:basepeak = yes
538.imagick_r:basepeak = yes

(Continued on next page)
## SPEC CPU®2017 Floating Point Rate Result

### xFusion

**FusionServer 2288H V7 (Intel Xeon Bronze 3408U)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>76.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>76.8</td>
</tr>
</tbody>
</table>

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

### Peak Optimization Flags (Continued)

544.nab_r: basepeak = yes

C++ benchmarks:

508.namd_r: basepeak = yes


Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

554.roms_r: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2)  
-xCORE-AVX2(pass 1)  
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse  
-funroll-loops -qopt-mem-layout-trans=4 -Wno-implicit-int  
-mprefer-vector-width=512 -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

- w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512  
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib
# SPEC CPU®2017 Floating Point Rate Result

## xFusion

**FusionServer 2288H V7 (Intel Xeon Bronze 3408U)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_peak</th>
<th>SPECrate®2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.8</td>
<td>76.4</td>
</tr>
</tbody>
</table>

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

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](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](http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml)

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.1.9 on 2023-08-04 11:11:44-0400.  
Report generated on 2023-08-30 09:37:58 by CPU2017 PDF formatter v6716.  
Originally published on 2023-08-29.