



SPEC CPU®2017 Floating Point Rate Result

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Fujitsu

PRIMERGY RX8770 M7, Intel Xeon Platinum 8454H, 2.10GHz

SPECrate®2017_fp_base = 2430

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 19

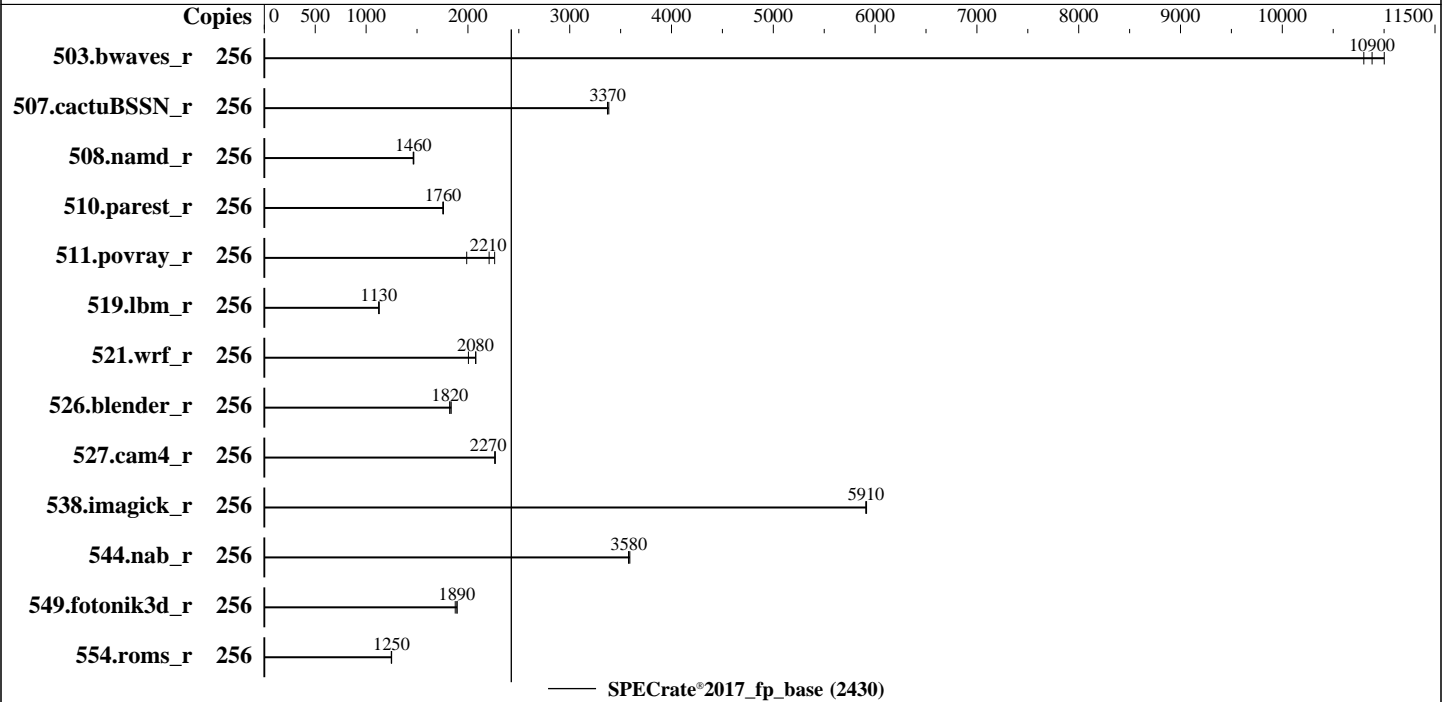
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022



Hardware

CPU Name: Intel Xeon Platinum 8454H
 Max MHz: 3400
 Nominal: 2100
 Enabled: 256 cores, 8 chips
 Orderable: 8 chips
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 82.5 MB I+D on chip per chip
 Other: None
 Memory: 4 TB (64 x 64 GB 2Rx4 PC5-4800B-R)
 Storage: 1 x SATA SSD, 3.84TB
 Other: 1 x Fujitsu PRAID EP740i Raid Card

Software

OS: SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default
 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: Fujitsu BIOS Version V1.0.0.0 R1.2.0 for D4029-C1x. Released Jun-2023 tested as V1.0.0.0 R0.11.0 for D4029-C1x Feb-2023
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: jemalloc memory allocator V5.0.1
 Power Management: BIOS set to prefer performance at the cost of additional power usage



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Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
503.bwaves_r	256	233	11000	236	10900	238	10800									
507.cactuBSSN_r	256	95.8	3380	96.1	3370	96.1	3370									
508.namd_r	256	166	1460	166	1470	166	1460									
510.parest_r	256	381	1760	381	1760	382	1750									
511.povray_r	256	264	2260	271	2210	301	1990									
519.lbm_r	256	239	1130	240	1120	240	1130									
521.wrf_r	256	286	2000	276	2080	276	2080									
526.blender_r	256	214	1820	214	1820	212	1840									
527.cam4_r	256	197	2270	198	2260	198	2270									
538.imagick_r	256	108	5920	108	5910	108	5910									
544.nab_r	256	120	3590	120	3580	120	3580									
549.fotonik3d_r	256	532	1880	527	1890	527	1890									
554.roms_r	256	325	1250	326	1250	325	1250									

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

Submit Notes

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

Operating System Notes

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

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/benchmark/speccpu/lib/intel64:/home/benchmark/speccpu/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.

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General Notes (Continued)

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
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

Platform Notes

BIOS configuration:
Hyper-Threading = Disabled
SNC (Sub NUMA) = Enable SNC4

Sysinfo program /home/benchmark/speccpu/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Wed May 31 10:07:44 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 249 (249.11+suse.124.g2bc0b2c447)
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. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS

```
1. uname -a
Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
10:07:44 up 6 min,  2 users,  load average: 0.19, 3.88, 2.99
USER   TTY      FROM             LOGIN@   IDLE   JCPU   PCPU   WHAT
root   tty1    -                10:03    2:52   0.13s  0.13s  -bash
root   pts/0   10.118.163.62    10:05    15.00s 2.87s  0.20s
```

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Platform Notes (Continued)

```
/home/benchmark/ptu_v4.0/UNIFIED_SERVER_PTAT_V4.0.0_20230110/ptat -mon -i 5000000 -filter 0x3f -y -ts -csv -log
```

3. Username

From environment variable \$USER: root

4. ulimit -a

```

core file size          (blocks, -c) unlimited
data seg size          (kbytes, -d) unlimited
scheduling priority    (-e) 0
file size              (blocks, -f) unlimited
pending signals        (-i) 16510516
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) 16510516
virtual memory         (kbytes, -v) unlimited
file locks             (-x) unlimited

```

5. sysinfo process ancestry

```

/usr/lib/systemd/systemd --switched-root --system --deserialize 30
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root@pts/0
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 -c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=128 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base -o all fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=128 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base --output_format all --nopower --runmode
rate --tune base --size refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templogs/preenv.fprate.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/benchmark/speccpu

```

6. /proc/cpuinfo

```

model name      : Intel(R) Xeon(R) Platinum 8454H
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping       : 6
microcode      : 0x2b000161
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 32
siblings       : 32
8 physical ids (chips)
256 processors (hardware threads)
physical id 0: core ids 0-31
physical id 1: core ids 0-31
physical id 2: core ids 0-31

```

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Platform Notes (Continued)

```

physical id 3: core ids 0-31
physical id 4: core ids 0-31
physical id 5: core ids 0-31
physical id 6: core ids 0-31
physical id 7: core ids 0-31
physical id 0: apicids
0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62
physical id 1: apicids
128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190
physical id 2: apicids
256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318
physical id 3: apicids
384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446
physical id 4: apicids
512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574
physical id 5: apicids
640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702
physical id 6: apicids
768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830
physical id 7: apicids
896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958

```

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 2.37.2:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:          46 bits physical, 57 bits virtual
Byte Order:             Little Endian
CPU(s):                 256
On-line CPU(s) list:   0-255
Vendor ID:              GenuineIntel
Model name:             Intel(R) Xeon(R) Platinum 8454H
CPU family:             6
Model:                 143
Thread(s) per core:    1
Core(s) per socket:    32
Socket(s):              8
Stepping:              6
CPU max MHz:           3400.0000
CPU min MHz:           800.0000
BogoMIPS:              4200.00
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 rdtscp
                        lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                        nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                        ds_cpl 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 epb cat_l3 cat_l2 cdp_l3
                        invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced

```

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Platform Notes (Continued)

tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bml hle
avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku
ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr avx512_fp16
amx_tile flush_lld arch_capabilities

Virtualization:

VT-x
L1d cache: 12 MiB (256 instances)
L1i cache: 8 MiB (256 instances)
L2 cache: 512 MiB (256 instances)
L3 cache: 660 MiB (8 instances)

NUMA node(s): 32
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
NUMA node2 CPU(s): 16-23
NUMA node3 CPU(s): 24-31
NUMA node4 CPU(s): 32-39
NUMA node5 CPU(s): 40-47
NUMA node6 CPU(s): 48-55
NUMA node7 CPU(s): 56-63
NUMA node8 CPU(s): 64-71
NUMA node9 CPU(s): 72-79
NUMA node10 CPU(s): 80-87
NUMA node11 CPU(s): 88-95
NUMA node12 CPU(s): 96-103
NUMA node13 CPU(s): 104-111
NUMA node14 CPU(s): 112-119
NUMA node15 CPU(s): 120-127
NUMA node16 CPU(s): 128-135
NUMA node17 CPU(s): 136-143
NUMA node18 CPU(s): 144-151
NUMA node19 CPU(s): 152-159
NUMA node20 CPU(s): 160-167
NUMA node21 CPU(s): 168-175
NUMA node22 CPU(s): 176-183
NUMA node23 CPU(s): 184-191
NUMA node24 CPU(s): 192-199
NUMA node25 CPU(s): 200-207
NUMA node26 CPU(s): 208-215
NUMA node27 CPU(s): 216-223
NUMA node28 CPU(s): 224-231
NUMA node29 CPU(s): 232-239
NUMA node30 CPU(s): 240-247
NUMA node31 CPU(s): 248-255

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 and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE

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Platform Notes (Continued)

L1d	48K	12M	12 Data	1	64	1	64
L1i	32K	8M	8 Instruction	1	64	1	64
L2	2M	512M	16 Unified	2	2048	1	64
L3	82.5M	660M	15 Unified	3	90112	1	64

8. numactl --hardware

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

available: 32 nodes (0-31)

```

node 0 cpus: 0-7
node 0 size: 128471 MB
node 0 free: 127296 MB
node 1 cpus: 8-15
node 1 size: 129021 MB
node 1 free: 128841 MB
node 2 cpus: 16-23
node 2 size: 129021 MB
node 2 free: 128770 MB
node 3 cpus: 24-31
node 3 size: 129021 MB
node 3 free: 128802 MB
node 4 cpus: 32-39
node 4 size: 129021 MB
node 4 free: 128751 MB
node 5 cpus: 40-47
node 5 size: 129021 MB
node 5 free: 128734 MB
node 6 cpus: 48-55
node 6 size: 129021 MB
node 6 free: 128701 MB
node 7 cpus: 56-63
node 7 size: 129021 MB
node 7 free: 128748 MB
node 8 cpus: 64-71
node 8 size: 129021 MB
node 8 free: 128810 MB
node 9 cpus: 72-79
node 9 size: 129021 MB
node 9 free: 128717 MB
node 10 cpus: 80-87
node 10 size: 129021 MB
node 10 free: 128791 MB
node 11 cpus: 88-95
node 11 size: 129021 MB
node 11 free: 128781 MB
node 12 cpus: 96-103
node 12 size: 129021 MB
node 12 free: 128796 MB
node 13 cpus: 104-111
node 13 size: 129021 MB
node 13 free: 128837 MB
node 14 cpus: 112-119
node 14 size: 128987 MB
node 14 free: 128753 MB
node 15 cpus: 120-127
node 15 size: 129021 MB
node 15 free: 128837 MB
node 16 cpus: 128-135
node 16 size: 129021 MB
node 16 free: 128796 MB

```

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Platform Notes (Continued)

```

node 17 cpus: 136-143
node 17 size: 129021 MB
node 17 free: 128799 MB
node 18 cpus: 144-151
node 18 size: 129021 MB
node 18 free: 128827 MB
node 19 cpus: 152-159
node 19 size: 129021 MB
node 19 free: 128842 MB
node 20 cpus: 160-167
node 20 size: 129021 MB
node 20 free: 128864 MB
node 21 cpus: 168-175
node 21 size: 129021 MB
node 21 free: 128885 MB
node 22 cpus: 176-183
node 22 size: 129021 MB
node 22 free: 128875 MB
node 23 cpus: 184-191
node 23 size: 129021 MB
node 23 free: 128874 MB
node 24 cpus: 192-199
node 24 size: 129021 MB
node 24 free: 128880 MB
node 25 cpus: 200-207
node 25 size: 129021 MB
node 25 free: 128839 MB
node 26 cpus: 208-215
node 26 size: 129021 MB
node 26 free: 128885 MB
node 27 cpus: 216-223
node 27 size: 129021 MB
node 27 free: 128882 MB
node 28 cpus: 224-231
node 28 size: 129021 MB
node 28 free: 128835 MB
node 29 cpus: 232-239
node 29 size: 129021 MB
node 29 free: 128804 MB
node 30 cpus: 240-247
node 30 size: 129021 MB
node 30 free: 128813 MB
node 31 cpus: 248-255
node 31 size: 128563 MB
node 31 free: 128350 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31
 0: 10 12 12 12 21 21 21 21 21 21 21 31 31 31 31 31 31 31 31 21 21 21 21 21
 1: 12 10 12 12 21 21 21 21 21 21 21 31 31 31 31 31 31 31 31 21 21 21 21 21
 2: 12 12 10 12 21 21 21 21 21 21 21 31 31 31 31 31 31 31 31 21 21 21 21 21
 3: 12 12 12 10 21 21 21 21 21 21 21 31 31 31 31 31 31 31 31 21 21 21 21 21
 4: 21 21 21 21 10 12 12 12 31 31 31 21 21 21 21 21 21 21 21 21 31 31 31 31 31
 5: 21 21 21 21 12 10 12 12 31 31 31 21 21 21 21 21 21 21 21 21 31 31 31 31 31
 6: 31 31 31 21 21 21 21

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Platform Notes (Continued)

```

6:  21  21  21  21  12  12  10  12  31  31  31  31  21  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
7:  21  21  21  21  21  12  12  12  10  31  31  31  31  21  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
8:  21  21  21  21  31  31  31  31  10  12  12  12  21  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
9:  21  21  21  21  31  31  31  31  31  31  12  10  12  12  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
10: 21  21  21  21  21  31  31  31  31  31  12  12  10  12  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
11: 21  21  21  21  21  31  31  31  31  12  12  12  10  21  21  21  21  21  21  21  31  31  31  31  31
31  31  31  21  21  21  21
12: 31  31  31  31  31  21  21  21  21  21  21  10  12  12  12  31  31  31  31  21  21  21  21  21
21  21  21  31  31  31  31
13: 31  31  31  31  21  21  21  21  21  21  12  10  12  12  31  31  31  31  21  21  21  21  21
21  21  21  31  31  31  31
14: 31  31  31  31  21  21  21  21  21  21  12  12  10  12  31  31  31  31  21  21  21  21  21
21  21  21  31  31  31  31
15: 31  31  31  31  21  21  21  21  21  21  12  12  12  10  31  31  31  31  21  21  21  21  21
21  21  21  31  31  31  31
16: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  10  12  12  12  21  21  21  21  21
21  21  21  31  31  31  31
17: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  12  10  12  12  21  21  21  21  21
21  21  21  31  31  31  31
18: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  12  12  10  12  21  21  21  21  21
21  21  21  31  31  31  31
19: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  12  12  12  10  21  21  21  21  21
21  21  21  31  31  31  31
20: 21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  10  12  12  12  31
31  31  31  21  21  21  21
21: 21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  12  10  12  12  31
31  31  31  21  21  21  21
22: 21  21  21  21  31  31  31  31  31  31  21  21  21  21  21  21  21  21  12  12  10  12  31
31  31  31  21  21  21  21
23: 21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  12  12  12  10  31
31  31  31  21  21  21  21
24: 21  21  21  21  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  10
12  12  12  21  21  21  21
25: 21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21  21  21  31  31  31  31  12
10  12  12  21  21  21  21
26: 21  21  21  21  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12
12  10  12  21  21  21  21
27: 21  21  21  21  31  31  31  31  31  31  21  21  21  21  21  21  21  21  31  31  31  31  12
12  12  10  21  21  21  21
28: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
21  21  21  10  12  12  12
29: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
21  21  21  12  10  12  12
30: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
21  21  21  12  12  10  12
31: 31  31  31  31  21  21  21  21  21  21  31  31  31  31  31  31  31  31  21  21  21  21  21
21  21  21  12  12  12  10

```

```

-----
9. /proc/meminfo
   MemTotal:      4226717740 kB

```

```

-----
10. who -r
    run-level 3 May 31 10:02

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

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Software Availability: Dec-2022

Platform Notes (Continued)

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
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
* smartd.service loaded failed failed Self Monitoring and Reporting Technology (SMART) Daemon

13. Services, from systemctl list-unit-files
STATE UNIT FILES
enabled YaST2-Firstboot YaST2-Second-Stage apparmor auditd bluetooth cron display-manager getty@
haveged irqbalance iscsi issue-generator kbdsettings kdump kdump-early klog lvm2-monitor
nscd postfix purge-kernels rollback rsyslog sep5 smartd sshd wicked wickedd-auto4
wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime systemd-remount-fs
disabled accounts-daemon appstream-sync-cache autofs autoyast-initscripts blk-availability
bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd console-getty cups
cups-browsed debug-shell ebttables exchange-bmc-os-info firewallld gpm grub2-once
haveged-switch-root ipmi ipmievd iscsi-init iscsid iscsiuiio issue-add-ssh-keys kexec-load
lunmask man-db-create multipathd nfs nfs-blkmap nmb ostree-remount rdisc rpcbind
rpmconfigcheck rsyncd rtkit-daemon serial-getty@ smartd_generate_opts smb snmpd snmptrapd
speech-dispatcherd systemd-boot-check-no-failures systemd-network-generator systemd-sysext
systemd-time-wait-sync systemd-timesyncd udisks2 upower
indirect wickedd

14. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=UUID=c13187e0-8b8c-4db9-ba32-defae6232c
splash=silent
mitigations=auto
quiet
security=apparmor
crashkernel=375M,high
crashkernel=72M,low

15. cpupower frequency-info
analyzing CPU 0:
current policy: frequency should be within 800 MHz and 3.40 GHz.
The governor "powersave" may decide which speed to use
within this range.
boost state support:
Supported: yes
Active: yes

16. sysctl
kernel.numa_balancing 1
kernel.randomize_va_space 2
vm.compaction_proactiveness 20
vm.dirty_background_bytes 0
vm.dirty_background_ratio 10
vm.dirty_bytes 0
vm.dirty_expire_centisecs 3000

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Platform Notes (Continued)

```

vm.dirty_ratio                20
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                  60
vm.watermark_boost_factor     15000
vm.watermark_scale_factor     10
vm.zone_reclaim_mode          0

```

```

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

```

```

-----
18. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs  60000
defrag                  1
max_ptes_none           511
max_ptes_shared         256
max_ptes_swap           64
pages_to_scan           4096
scan_sleep_millisecs   10000

```

```

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

```

```

-----
20. Disk information
SPEC is set to: /home/benchmark/speccpu
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdb2       xfs   3.5T  46G  3.5T   2% /

```

```

-----
21. /sys/devices/virtual/dmi/id
Vendor:          FUJITSU
Product:         n/a
Product Family: SERVER
Serial:          n/a

```

```

-----
22. dmidecode
Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you interpret this section.
The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
"DMTF SMBIOS" standard.
Memory:
  7x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800
  31x Samsung M321R8GA0BB0-CQKEG 64 GB 2 rank 4800
  26x Samsung M321R8GA0BB0-CQKVG 64 GB 2 rank 4800

```

(Continued on next page)



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Platform Notes (Continued)

23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: FUJITSU
BIOS Version: V1.0.0.0 R0.11.0 for D4029-Clx
BIOS Date: 02/28/2023
BIOS Revision: 0.11
Firmware Revision: 1.0

Compiler Version Notes

=====
C | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
=====

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) 510.parest_r(base)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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=====

=====
C++, C | 511.povray_r(base) 526.blender_r(base)
=====

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=====

=====
C++, C, Fortran | 507.cactuBSSN_r(base)
=====

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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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=====

=====
Fortran | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
=====

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=====

=====
Fortran, C | 521.wrf_r(base) 527.cam4_r(base)
=====

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Software Availability: Dec-2022

Compiler Version Notes (Continued)

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
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

(Continued on next page)



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Base Optimization Flags (Continued)

C benchmarks (continued):

```
-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
```

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
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-SPR-RevB.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/Fujitsu-Platform-Settings-V1.0-SPR-RevB.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml>



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