



# SPEC CPU®2017 Integer Rate Result

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## Fujitsu

PRIMERGY RX8770 M7, Intel Xeon Platinum 8460H, 2.20GHz

SPECrate®2017\_int\_base = 2820

SPECrate®2017\_int\_peak = Not Run

CPU2017 License: 19

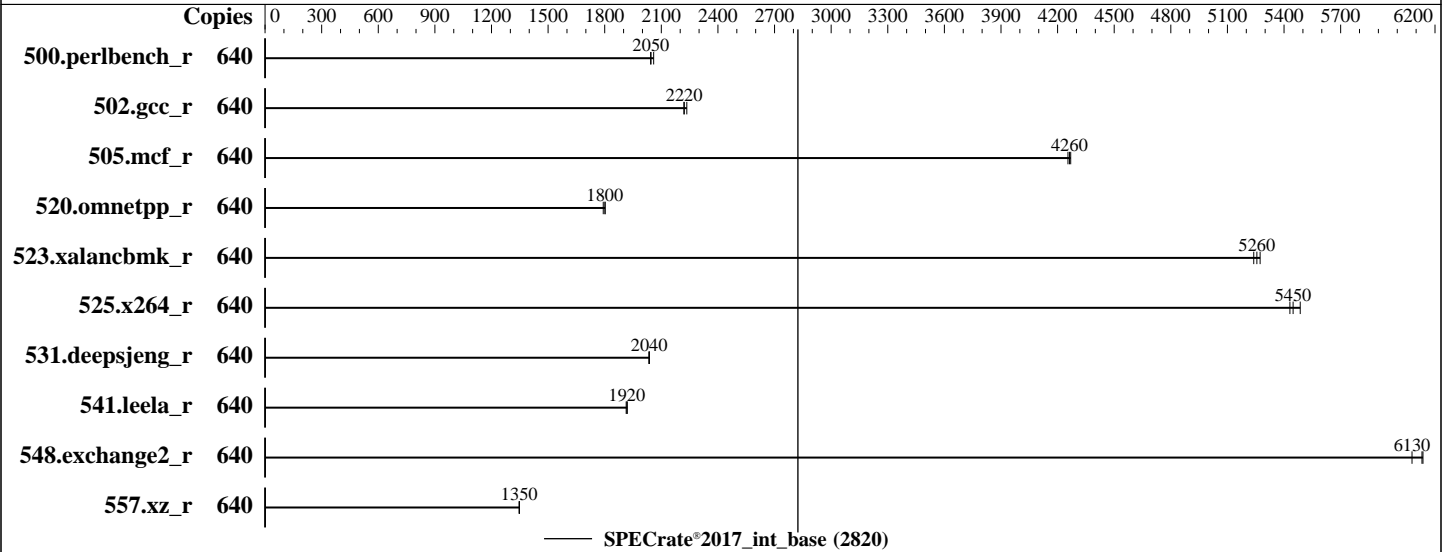
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Platinum 8460H  
 Max MHz: 3800  
 Nominal: 2200  
 Enabled: 320 cores, 8 chips, 2 threads/core  
 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: 105 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: None  
 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
500.perlbench_r	640	495	2060	<b><u>498</u></b>	<b><u>2050</u></b>	499	2040							
502.gcc_r	640	<b><u>408</u></b>	<b><u>2220</u></b>	405	2240	408	2220							
505.mcf_r	640	242	4270	243	4250	<b><u>243</u></b>	<b><u>4260</u></b>							
520.omnetpp_r	640	466	1800	<b><u>466</u></b>	<b><u>1800</u></b>	469	1790							
523.xalancbmk_r	640	128	5270	129	5240	<b><u>129</u></b>	<b><u>5260</u></b>							
525.x264_r	640	<b><u>206</u></b>	<b><u>5450</u></b>	204	5490	206	5430							
531.deepsjeng_r	640	361	2030	<b><u>360</u></b>	<b><u>2040</u></b>	360	2040							
541.leela_r	640	554	1910	552	1920	<b><u>553</u></b>	<b><u>1920</u></b>							
548.exchange2_r	640	<b><u>274</u></b>	<b><u>6130</u></b>	273	6140	276	6080							
557.xz_r	640	513	1350	513	1350	<b><u>513</u></b>	<b><u>1350</u></b>							

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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](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/benchmark/speccpu/lib/intel64:/home/benchmark/speccpu/lib/ia32:/home/benchmark/speccpu/je5.0.1-32"
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>`  
 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)  
 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:  
 DCU Streamer Prefetcher = Disabled  
 Adjacent Cache Line Prefetch = Disabled  
 CPU CLE Support = Disabled  
 SNC (Sub NUMA) = Enable SNC4  
 LLC Dead Line Alloc = Disabled  
 FAN Control = Full

Sysinfo program /home/benchmark/speccpu/bin/sysinfo  
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
 running on localhost Thu May 18 12:44:11 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

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## Platform Notes (Continued)

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`  
12:44:12 up 5 min, 2 users, load average: 2.86, 20.80, 12.74  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root tty1 - 12:42 1:36 0.06s 0.06s -bash  
root pts/0 192.168.1.114 12:42 28.00s 3.31s 0.30s  
/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) 16509847  
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) 16509847  
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=640 -c  
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=320 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base -o all intrate  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=640 --configfile  
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=320 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base --output\_format all --nopower --runmode  
rate --tune base --size refrate intrate --nopreenv --note-preenv --logfile  
\$SPEC/tmp/CPU2017.001/templogs/preenv.intrate.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 8460H  
vendor\_id : GenuineIntel  
cpu family : 6

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## Platform Notes (Continued)

```

model          : 143
stepping       : 6
microcode      : 0x2b000161
bugs           : spectre_v1 spectre_v2 spec_store_bypass swappg
cpu cores      : 40
siblings       : 80
8 physical ids (chips)
640 processors (hardware threads)
physical id 0: core ids 0-39
physical id 1: core ids 0-39
physical id 2: core ids 0-39
physical id 3: core ids 0-39
physical id 4: core ids 0-39
physical id 5: core ids 0-39
physical id 6: core ids 0-39
physical id 7: core ids 0-39
physical id 0: apicids 0-79
physical id 1: apicids 128-207
physical id 2: apicids 256-335
physical id 3: apicids 384-463
physical id 4: apicids 512-591
physical id 5: apicids 640-719
physical id 6: apicids 768-847
physical id 7: apicids 896-975

```

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):                640
On-line CPU(s) list:   0-639
Vendor ID:             GenuineIntel
Model name:            Intel(R) Xeon(R) Platinum 8460H
CPU family:            6
Model:                 143
Thread(s) per core:   2
Core(s) per socket:   40
Socket(s):             8
Stepping:              6
CPU max MHz:           3800.0000
CPU min MHz:           800.0000
BogoMIPS:              4400.00
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 aperfperf 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
                        tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 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

```

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### Platform Notes (Continued)

cpm\_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\_llid arch\_capabilities

#### Virtualization:

VT-x  
L1d cache: 15 MiB (320 instances)  
L1i cache: 10 MiB (320 instances)  
L2 cache: 640 MiB (320 instances)  
L3 cache: 840 MiB (8 instances)

#### NUMA node(s):

32  
NUMA node0 CPU(s): 0-9,320-329  
NUMA node1 CPU(s): 10-19,330-339  
NUMA node2 CPU(s): 20-29,340-349  
NUMA node3 CPU(s): 30-39,350-359  
NUMA node4 CPU(s): 40-49,360-369  
NUMA node5 CPU(s): 50-59,370-379  
NUMA node6 CPU(s): 60-69,380-389  
NUMA node7 CPU(s): 70-79,390-399  
NUMA node8 CPU(s): 80-89,400-409  
NUMA node9 CPU(s): 90-99,410-419  
NUMA node10 CPU(s): 100-109,420-429  
NUMA node11 CPU(s): 110-119,430-439  
NUMA node12 CPU(s): 120-129,440-449  
NUMA node13 CPU(s): 130-139,450-459  
NUMA node14 CPU(s): 140-149,460-469  
NUMA node15 CPU(s): 150-159,470-479  
NUMA node16 CPU(s): 160-169,480-489  
NUMA node17 CPU(s): 170-179,490-499  
NUMA node18 CPU(s): 180-189,500-509  
NUMA node19 CPU(s): 190-199,510-519  
NUMA node20 CPU(s): 200-209,520-529  
NUMA node21 CPU(s): 210-219,530-539  
NUMA node22 CPU(s): 220-229,540-549  
NUMA node23 CPU(s): 230-239,550-559  
NUMA node24 CPU(s): 240-249,560-569  
NUMA node25 CPU(s): 250-259,570-579  
NUMA node26 CPU(s): 260-269,580-589  
NUMA node27 CPU(s): 270-279,590-599  
NUMA node28 CPU(s): 280-289,600-609  
NUMA node29 CPU(s): 290-299,610-619  
NUMA node30 CPU(s): 300-309,620-629  
NUMA node31 CPU(s): 310-319,630-639

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
L1d	48K	15M	12	Data	1	64	1	64
L1i	32K	10M	8	Instruction	1	64	1	64
L2	2M	640M	16	Unified	2	2048	1	64
L3	105M	840M	15	Unified	3	114688	1	64

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## Platform Notes (Continued)

-----  
8. numactl --hardware

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

```

available: 32 nodes (0-31)
node 0 cpus: 0-9,320-329
node 0 size: 128467 MB
node 0 free: 127214 MB
node 1 cpus: 10-19,330-339
node 1 size: 129018 MB
node 1 free: 128732 MB
node 2 cpus: 20-29,340-349
node 2 size: 129018 MB
node 2 free: 128779 MB
node 3 cpus: 30-39,350-359
node 3 size: 129018 MB
node 3 free: 128777 MB
node 4 cpus: 40-49,360-369
node 4 size: 129018 MB
node 4 free: 128663 MB
node 5 cpus: 50-59,370-379
node 5 size: 129018 MB
node 5 free: 128615 MB
node 6 cpus: 60-69,380-389
node 6 size: 129018 MB
node 6 free: 128712 MB
node 7 cpus: 70-79,390-399
node 7 size: 128984 MB
node 7 free: 128589 MB
node 8 cpus: 80-89,400-409
node 8 size: 129018 MB
node 8 free: 128723 MB
node 9 cpus: 90-99,410-419
node 9 size: 129018 MB
node 9 free: 128702 MB
node 10 cpus: 100-109,420-429
node 10 size: 129018 MB
node 10 free: 128696 MB
node 11 cpus: 110-119,430-439
node 11 size: 129018 MB
node 11 free: 128697 MB
node 12 cpus: 120-129,440-449
node 12 size: 129018 MB
node 12 free: 128760 MB
node 13 cpus: 130-139,450-459
node 13 size: 129018 MB
node 13 free: 128759 MB
node 14 cpus: 140-149,460-469
node 14 size: 129018 MB
node 14 free: 128771 MB
node 15 cpus: 150-159,470-479
node 15 size: 129018 MB
node 15 free: 128802 MB
node 16 cpus: 160-169,480-489
node 16 size: 129018 MB
node 16 free: 127816 MB
node 17 cpus: 170-179,490-499
node 17 size: 129018 MB
node 17 free: 127900 MB
node 18 cpus: 180-189,500-509

```

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### Platform Notes (Continued)

```

node 18 size: 129018 MB
node 18 free: 128040 MB
node 19 cpus: 190-199,510-519
node 19 size: 129018 MB
node 19 free: 127652 MB
node 20 cpus: 200-209,520-529
node 20 size: 129018 MB
node 20 free: 128714 MB
node 21 cpus: 210-219,530-539
node 21 size: 129018 MB
node 21 free: 128680 MB
node 22 cpus: 220-229,540-549
node 22 size: 129018 MB
node 22 free: 128573 MB
node 23 cpus: 230-239,550-559
node 23 size: 129018 MB
node 23 free: 128704 MB
node 24 cpus: 240-249,560-569
node 24 size: 129018 MB
node 24 free: 128671 MB
node 25 cpus: 250-259,570-579
node 25 size: 129018 MB
node 25 free: 128679 MB
node 26 cpus: 260-269,580-589
node 26 size: 129018 MB
node 26 free: 128710 MB
node 27 cpus: 270-279,590-599
node 27 size: 129018 MB
node 27 free: 128706 MB
node 28 cpus: 280-289,600-609
node 28 size: 129018 MB
node 28 free: 128666 MB
node 29 cpus: 290-299,610-619
node 29 size: 129018 MB
node 29 free: 128763 MB
node 30 cpus: 300-309,620-629
node 30 size: 129018 MB
node 30 free: 128762 MB
node 31 cpus: 310-319,630-639
node 31 size: 128488 MB
node 31 free: 128260 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	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	21	31	31	31	31	31	31	31	31	21	21	21	21	21
21	21	21	31	31	31	31																			
2:	12	12	10	12	21	21	21	21	21	21	21	21	31	31	31	31	31	31	31	31	21	21	21	21	21
21	21	21	31	31	31	31																			
3:	12	12	12	10	21	21	21	21	21	21	21	21	31	31	31	31	31	31	31	31	21	21	21	21	21
21	21	21	31	31	31	31																			
4:	21	21	21	21	10	12	12	12	31	31	31	31	21	21	21	21	21	21	21	21	31	31	31	31	31
31	31	31	31	21	21	21																			
5:	21	21	21	21	12	10	12	12	31	31	31	31	21	21	21	21	21	21	21	21	31	31	31	31	31
31	31	31	21	21	21	21																			
6:	21	21	21	21	12	12	10	12	31	31	31	31	21	21	21	21	21	21	21	21	31	31	31	31	31
31	31	31	21	21	21	21																			
7:	21	21	21	21	12	12	12	10	31	31	31	31	21	21	21	21	21	21	21	21	31	31	31	31	31
31	31	31	21	21	21	21																			

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### Platform Notes (Continued)

```

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 12 10 12 12 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
10: 21 21 21 21 31 31 31 31 12 12 10 12 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
11: 21 21 21 21 31 31 31 31 12 12 12 10 21 21 21 21 21 21 21 31 31 31 31 31
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13: 31 31 31 31 21 21 21 21 21 21 21 12 10 12 12 31 31 31 31 21 21 21 21 21
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14: 31 31 31 31 21 21 21 21 21 21 21 12 12 10 12 31 31 31 31 21 21 21 21 21
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15: 31 31 31 31 21 21 21 21 21 21 21 12 12 12 10 31 31 31 31 21 21 21 21 21
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16: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 10 12 12 12 21 21 21 21 21
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17: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 12 10 12 12 21 21 21 21 21
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18: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 12 12 10 12 21 21 21 21 21
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12 12 12 21 21 21 21
25: 21 21 21 21 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 31 31 31 31 12
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27: 21 21 21 21 31 31 31 31 31 31 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
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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:      4226546608 kB

```

```

-----
10. who -r
    run-level 3 May 18 12:41

```

```

-----
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target Status

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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## Fujitsu

PRIMERGY RX8770 M7, Intel Xeon Platinum 8460H, 2.20GHz

SPECrate®2017\_int\_base = 2820

SPECrate®2017\_int\_peak = Not Run

**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu

**Test Date:** May-2023  
**Hardware Availability:** Jun-2023  
**Software Availability:** Dec-2022

### Platform Notes (Continued)

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
* systemd-udev-settle.service	loaded	failed	failed	Wait for udev To Complete Device Initialization

-----  
13. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	YaST2-Firstboot YaST2-Second-Stage apparmor auditd bluetooth cron display-manager getty@ havedged irqbalance iscsi issue-generator kbdsettings kdump kdump-early klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog sep5 smartd sshd wickedd wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime	systemd-remount-fs
disabled	accounts-daemon appstream 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 havedged-switch-root ipmi ipmievdev iscsi-init iscsid iscsiui 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 3.80 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
vm.dirty_ratio	20
vm.dirty_writeback_centisecs	500
vm.dirtytime_expire_seconds	43200

(Continued on next page)



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Tested by: Fujitsu

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Dec-2022

### Platform Notes (Continued)

```

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+madvice [madvice] never
enabled         [always] madvice 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

```

```

-----
23. BIOS
(This section combines info from /sys/devices and dmidecode.)

```

(Continued on next page)



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## Platform Notes (Continued)

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: 2.0

## Compiler Version Notes

=====  
C | 500.perlbench\_r(base) 502.gcc\_r(base) 505.mcf\_r(base) 525.x264\_r(base) 557.xz\_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++ | 520.omnetpp\_r(base) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base) 541.leela\_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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=====

=====  
Fortran | 548.exchange2\_r(base)  
=====

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

## 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

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## Base Portability Flags (Continued)

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
-lqkmallo
```

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
-lqkmallo
```

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
-lqkmallo
```

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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