# SPEC CPU®2017 Integer Rate Result

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## Fujitsu

PRIMERGY CX2550 M7, Intel Xeon Platinum 8468, 2.10GHz

SPECrate®2017_int_base = 853

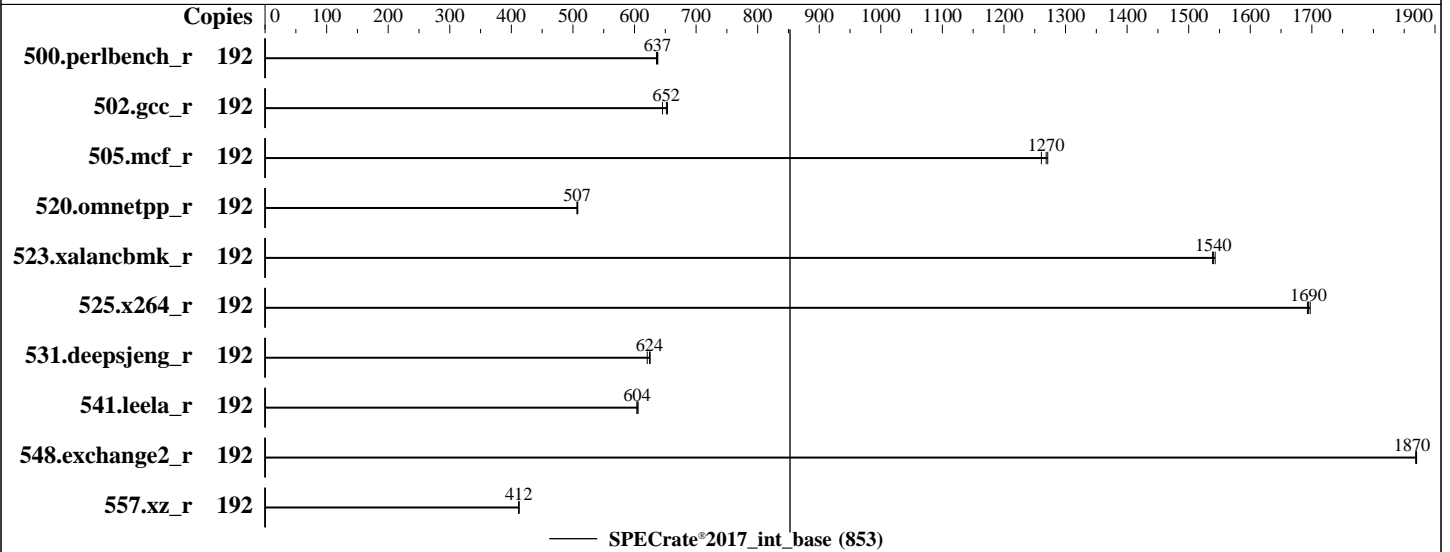SPECrate®2017_int_peak = Not Run

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

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

| Benchmark | Copies | Result |
|---|---|---|
| 500.perlbench_r | 192 | 637 |
| 502.gcc_r | 192 | 652 |
| 505.mcf_r | 192 | 1270 |
| 520.omnetpp_r | 192 | 507 |
| 523.xalancbmk_r | 192 | 1540 |
| 525.x264_r | 192 | 1690 |
| 531.deepsjeng_r | 192 | 624 |
| 541.leela_r | 192 | 604 |
| 548.exchange2_r | 192 | 1870 |
| 557.xz_r | 192 | 412 |

SPECrate®2017_int_base (853)

## Hardware

CPU Name: Intel Xeon Platinum 8468
 Max MHz: 3800
 Nominal: 2100
Enabled: 96 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x SATA M.2 SSD, 480GB
Other: None

## Software

OS: SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.24.33-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 R1.10.0 for D3988-A1x. Released May-2023
 tested as V1.0.0.0 R1.1.0 for D3988-A1x Apr-2023
File System: btrfs
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 ofadditional power usage

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

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## Results Table

| Benchmark | Base Copies | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Peak Copies | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500.perlbench_r | 192 | 481 | 636 | 479 | 638 | **480** | **637** | | | | | | | |
| 502.gcc_r | 192 | **417** | **652** | 416 | 653 | 421 | 645 | | | | | | | |
| 505.mcf_r | 192 | **245** | **1270** | 244 | 1270 | 246 | 1260 | | | | | | | |
| 520.omnetpp_r | 192 | **497** | **507** | 496 | 508 | 497 | 507 | | | | | | | |
| 523.xalancbmk_r | 192 | **132** | **1540** | 131 | 1540 | 132 | 1540 | | | | | | | |
| 525.x264_r | 192 | 198 | 1700 | **198** | **1690** | 199 | 1690 | | | | | | | |
| 531.deepsjeng_r | 192 | 352 | 625 | 355 | 621 | **352** | **624** | | | | | | | |
| 541.leela_r | 192 | **526** | **604** | 526 | 604 | 525 | 606 | | | | | | | |
| 548.exchange2_r | 192 | 269 | 1870 | **269** | **1870** | 269 | 1870 | | | | | | | |
| 557.xz_r | 192 | 503 | 412 | **503** | **412** | 503 | 413 | | | | | | | |
| **SPECrate®2017_int_base =** | **853** | | | | | | | | | | | | | |
| **SPECrate®2017_int_peak =** | **Not Run** | | | | | | | | | | | | | |

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/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
Package C State limit = C0
LLC Dead Line Alloc = Disabled
CPU Performance Boost = Aggressive
SNC (Sub NUMA) = Enable SNC4

Sysinfo program /home/Benchmark/speccpu/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Mon Jun 12 20:16:44 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
-----------------------------------------------------------

-----------------------------------------------------------
```

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## Platform Notes (Continued)

```
 1. uname -a
   Linux localhost 5.14.21-150400.24.33-default #1 SMP PREEMPT_DYNAMIC Fri Nov 4 13:55:06 UTC 2022 (76cfe60)
   x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
    20:16:44 up 3 min,  1 user,  load average: 2.66, 5.57, 2.67
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                20:16   12.00s  2.38s  0.14s /home/Benchmark/PTU/ptat -mon -i 5000000
   -filter 0x3f -ts -y


 ------------------------------------------------------------
 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) 4125166
   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) 4125166
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


 ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 30
  login -- root
  -bash
  -bash
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base -o all intrate
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=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 --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 8468
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 6
     microcode       : 0x2b000161
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
```

**(Continued on next page)**

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# Platform Notes (Continued)

```
     cpu cores      : 48
     siblings       : 96
     2 physical ids (chips)
     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 2.37.2:
  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):                192
  On-line CPU(s) list:   0-191
  Vendor ID:             GenuineIntel
  Model name:            Intel(R) Xeon(R) Platinum 8468
  CPU family:            6
  Model:                 143
  Thread(s) per core:    2
  Core(s) per socket:    48
  Socket(s):             2
  Stepping:              6
  CPU max MHz:           3800.0000
  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
                         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
                         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_l1d arch_capabilities
  Virtualization:        VT-x
  L1d cache:             4.5 MiB (96 instances)
  L1i cache:             3 MiB (96 instances)
  L2 cache:              192 MiB (96 instances)
  L3 cache:              210 MiB (2 instances)
  NUMA node(s):          8
  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 Mmio stale data:  Not affected
  Vulnerability Retbleed:         Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  Vulnerability Spectre v1:       Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:       Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-eIBRS SW
                                  sequence
  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     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: 128598 MB
    node 0 free: 127993 MB
    node 1 cpus: 12-23,108-119
    node 1 size: 129017 MB
    node 1 free: 128539 MB
    node 2 cpus: 24-35,120-131
    node 2 size: 129017 MB
    node 2 free: 128553 MB
    node 3 cpus: 36-47,132-143
    node 3 size: 129017 MB
    node 3 free: 128544 MB
    node 4 cpus: 48-59,144-155
    node 4 size: 129017 MB
    node 4 free: 128542 MB
    node 5 cpus: 60-71,156-167
    node 5 size: 128983 MB
    node 5 free: 128488 MB
    node 6 cpus: 72-83,168-179
    node 6 size: 129017 MB
    node 6 free: 128495 MB
    node 7 cpus: 84-95,180-191
    node 7 size: 128645 MB
    node 7 free: 128191 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
```

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## Platform Notes (Continued)

```
      6:  21  21  21  21  12  12  10  12
      7:  21  21  21  21  12  12  12  10


   ------------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       1056068816 kB


   ------------------------------------------------------------
   10. who -r
     run-level 3 Jun 12 20:14


   ------------------------------------------------------------
   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


   ------------------------------------------------------------
   13. Services, from systemctl list-unit-files
     STATE              UNIT FILES
     enabled            ModemManager 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 wpa_supplicant
     enabled-runtime    systemd-remount-fs
     disabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online 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 dmraid-activation dnsmasq ebtables exchange-bmc-os-info firewalld gpm
                        grub2-once haveged-switch-root ipmi ipmievd iscsi-init iscsid iscsiuio issue-add-ssh-keys
                        kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nm-cloud-setup nmb openvpn@
                        ostree-remount pppoe pppoe-server 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 wpa_supplicant@
     indirect           pcscd saned@ wickedd

   ------------------------------------------------------------
   14. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.24.33-default
     root=UUID=d977c1aa-2de5-45da-b4b1-9732e87ed311
     splash=silent
     mitigations=auto
     quiet
     security=apparmor
     crashkernel=325M,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
```

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## Platform Notes (Continued)

```
        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
      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/sda2      btrfs  445G   72G  373G  17% /home


    -------------------------------------------------------------
    21. /sys/devices/virtual/dmi/id
        Vendor:        FUJITSU
        Product:       PRIMERGY CX2550 M7
        Product Family: SERVER
        Serial:        BBBB000001

    -------------------------------------------------------------
```

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## Platform Notes (Continued)

```
   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:
       14x Samsung M321R8GA0BB0-CQKEG 64 GB 2 rank 4800
       2x Samsung M321R8GA0BB0-CQKVG 64 GB 2 rank 4800


     ----------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       FUJITSU
     BIOS Version:      V1.0.0.0 R0.30.0 for D3988-A1x
     BIOS Date:         02/11/2023
     BIOS Revision:     0.30
     Firmware Revision: 2.20
```

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


==============================================================================================
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

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https://www.spec.org/

# SPEC CPU®2017 Integer Rate Result

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## Fujitsu

PRIMERGY CX2550 M7, Intel Xeon Platinum 8468, 2.10GHz

SPECrate®2017_int_base =         853

SPECrate®2017_int_peak = Not Run

| | | | |
|---|---|---|---|
| **CPU2017 License:** 19 | | **Test Date:** | Jun-2023 |
| **Test Sponsor:** Fujitsu | | **Hardware Availability:** | May-2023 |
| **Tested by:** Fujitsu | | **Software Availability:** | Dec-2022 |

## 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
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

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/Fujitsu-Platform-Settings-V1.0-SPR-RevB.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/Fujitsu-Platform-Settings-V1.0-SPR-RevB.xml

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# SPEC CPU®2017 Integer Rate Result

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## Fujitsu

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