Fujitsu
PRIMERGY TX1330 M6, Intel Xeon E-2478, 2.8 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 92.1</th>
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<tbody>
<tr>
<td>Test Date: Apr-2024</td>
</tr>
<tr>
<td>Hardware Availability: Apr-2024</td>
</tr>
<tr>
<td>Software Availability: Dec-2023</td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Intel Xeon E-2478  
**Max MHz:** 5200  
**Nominal:** 2800  
**Enabled:** 8 cores, 1 chip, 2 threads/core  
**Orderable:** 1 chip  
**Cache L1:** 32 KB I + 48 KB D on chip per core  
**L2:** 2 MB I+D on chip per core  
**L3:** 24 MB I+D on chip per chip  
**Other:** None  
**Memory:** 64 GB (2 x 32 GB 2Rx8 PC5-4800B-E, running at 4400)  
**Storage:** 1 x SATA M.2 SSD, 960 GB  
**Other:** CPU Cooling: Air  

### Software

**OS:** SUSE Linux Enterprise Server 15 SP5  
**Compiler:** C/C++: Version 2024.0.2 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2024.0.2 of Intel Fortran Compiler for Linux;  
**Parallel:** No  
**Firmware:** Fujitsu BIOS Version V5.0.0.27 R1.5.0 for D4132-A1x. Released Jul-2024 tested as V5.0.0.27 R1.0.0 for D4132-A1x Mar-2024  
**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

### Results

<table>
<thead>
<tr>
<th>Test</th>
<th>Copies</th>
<th>SPECrate®2017_int_base</th>
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<tbody>
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<td>70.3</td>
</tr>
<tr>
<td>502.gcc_r</td>
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<td>505.mcf_r</td>
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<td>548.exchange2_r</td>
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<tr>
<td>557.xz_r</td>
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SPEC CPU®2017 Integer Rate Result
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Fujitsu
PRIMERGY TX1330 M6,
Intel Xeon E-2478, 2.8 GHz

CPU2017 License: 19
Test Sponsor: Fujitsu
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Results Table

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<td>45.0</td>
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<td></td>
</tr>
</tbody>
</table>

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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.ic2024.0.2/lib/intel64:/home/Benchmark/speccpu.ic2024.0.2/lib/ia32:/home/Benchmark/speccpu.ic2024.0.2/je5.0.1-32"
MALLOC_CONF = "retain:true"

General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
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.
**Fujitsu**

PRIMERGY TX1330 M6, Intel Xeon E-2478, 2.8 GHz

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<td>Hardware Availability:</td>
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<td>Fujitsu</td>
<td>Software Availability:</td>
<td>Dec-2023</td>
</tr>
</tbody>
</table>

**SPEC CPU®2017 Integer Rate Result**

| SPECrate®2017_int_base = | 92.1 |
| SPECrate®2017_int_peak = | Not Run |

---

**Platform Notes**

BIOS configuration:
Fan Control = Full
Intel(R) Turbo Boost Max Technology 3.0 = Disabled
Total Memory Encryption = Disabled

Sysinfo program /home/Benchmark/speccpu.ic2024.0.2/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Tue Apr 23 14:36:40 2024

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. numacl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad071f15)
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/klhugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS

---

1. uname -a

Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043) x86_64 x86_64 x86_64 GNU/Linux

---

2. w

<table>
<thead>
<tr>
<th>USER</th>
<th>TTY</th>
<th>FROM</th>
<th>LOGIN%</th>
<th>IDLE</th>
<th>JCPU</th>
<th>PCPU</th>
<th>WHAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>tty1</td>
<td>-</td>
<td>09:40</td>
<td>4:50m</td>
<td>1.19s</td>
<td>0.12s</td>
<td>-bash</td>
</tr>
<tr>
<td>root</td>
<td>pts/0</td>
<td>10.8.33.219</td>
<td>09:40</td>
<td>4:06m</td>
<td>0.09s</td>
<td>0.09s</td>
<td>-bash</td>
</tr>
</tbody>
</table>

---

3. Username

From environment variable $USER: root

---

4. ulimit -a

| core file size | (blocks, -c) unlimited |

(Continued on next page)
Platform Notes (Continued)

data seg size  (kbytes, -d) unlimited
scheduling priority  (-e) 0
file size  (blocks, -f) unlimited
pending signals  (-l) 254848
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) 254848
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=16 -c
ic2024.0.2-lin-core-avx2-rate-20231213.cfg --define smt-on --define cores=16 --define physicallogical
--define no numa --tune base --o all --define drop_caches intrate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=16 --configure
ic2024.0.2-lin-core-avx2-rate-20231213.cfg --define smt-on --define cores=16 --define physicallogical
--define no numa --tune base --output_format all --define drop_caches --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.ic2024.0.2

------------------------------------------------------------
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) E E-2478
vendor_id       : GenuineIntel
cpu family      : 6
model           : 183
stepping        : 1
microcode       : 0x121
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores       : 8
siblings        : 16
1 physical ids (chips)
16 processors (hardware threads)
physical id 0: core ids 0-7
physical id 0: apicids 0-15
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.

------------------------------------------------------------
7. lscpu
From lscpu from util-linux 2.37.4:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 48 bits virtual
Byte Order: Little Endian
CPU(s): 16

(Continued on next page)
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Platform Notes (Continued)

On-line CPU(s) list: 0-15
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) E E-2478
CPU family: 6
Model: 183
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 1
Stepping: 1
CPU max MHz: 6700.0000
CPU min MHz: 800.0000
BogoMIPS: 506.0640

Flags: fpu vme de pse tsc msr pae 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 aperfmpref tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single srad ibrs ibbp ibrs_enhanced tpr_shadow vmmx flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bbmi2 erms invpcid rdseed adx smap clflushopt clwb intel_pt sha_ni xsaveopt xsavec xgetbv1 xsavec xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt

Virtualization: VT-x
L1d cache: 384 KiB (8 instances)
L1i cache: 256 KiB (8 instances)
L2 cache: 16 MiB (8 instances)
L3 cache: 24 MiB (1 instance)
NUMA node(s): 1
NUMA node0 CPU(s): 0-15
Vulnerability Itlb multihit: Not affected
Vulnerability Lttf: 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/swappgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, FBRSB-eIBRS SW sequence
Vulnerability Srbds: Not affected
Vulnerability Tax async abort: Not affected

From lscpu --cache:

<table>
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<tr>
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<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
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<th>SETS</th>
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<td>384K</td>
<td>12</td>
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<td>1</td>
<td>64</td>
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<tr>
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<td>32K</td>
<td>256K</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L2</td>
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<td>3</td>
<td>32768</td>
<td>1</td>
<td>64</td>
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</tbody>
</table>

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 1 nodes (0)
node 0 cpus: 0-15
node 0 size: 63745 MB
node 0 free: 63238 MB

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

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PRIMERGY TX1330 M6, Intel Xeon E-2478, 2.8 GHz

SPECrate®2017_int_base = 92.1
SPECrate®2017_int_peak = Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Apr-2024
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Platform Notes (Continued)

node distances:
node 0
0: 10

9. /proc/meminfo
MemTotal: 65275744 kB

10. who -r
run-level 3 Apr 23 09:39

11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
   Default Target Status
   multi-user degraded

12. Failed units, from systemctl list-units --state=failed
   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 YaST2-Firstboot YaST2-Second-Stage apparmor auditd chronyd cron display-manager getty@
   heavedg irqbalance issue-generator kbdsettings kdump kdump-early klog lvm2-monitor nscd
   postfix purge-kernels rollback rsyslog sep5 smartd sshd systemd-pstore wicked
   wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
   enabled-runtime systemd-remount-fs
   disabled autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
   console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info firewallld gpm
   grub2-once haveged-switch-root ipmi ipmihevld issue-add-ssh-keys kexec-load lvmmask
   man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@
   systemd-generate_opts snmpd snmptrapd systemd-boot-check-no-failures
   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
   udisks2 vncserver@
   indirect pcscd wicked

14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
   root=UUID=7d6282e3-8e21-4b62-ab94-5941e54159d1
   splash=silent
   mitigations=auto
   quiet
   security=apparmor
   crashkernel=235M,high
   crashkernel=72M,low

15. cpupower frequency-info
   analyzing CPU 0:
   current policy: frequency should be within 800 MHz and 6.40 GHz.
   The governor "powersave" may decide which speed to use
   within this range.
   boost state support:
   Supported: yes
   Active: yes

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

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Platform Notes (Continued)

16. tuned-adm active
   Current active profile: balanced

17. sysctl
   kernel.numa_balancing          0
   kernel.randomize_va_space      2
   vm.compression_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

18. /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

19. /sys/kernel/mm/transparent_hugepage/klugepaged
   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 SUSE Linux Enterprise Server 15 SP5

21. Disk information
   SPEC is set to: /home/Benchmark/speccpu.ic2024.0.2
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda2 xfs 223G 98G 126G 44% /

22. /sys/devices/virtual/dmi/id
   Vendor: FUJITSU
   Product: PRIMERGY TX1330 M6
   Product Family: SERVER
   Serial: xxxxxxxxxxx

(Continued on next page)
## Fujitsu

**PRIMERGY TX1330 M6, Intel Xeon E-2478, 2.8 GHz**

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- **SPECr@te®2017_int_base** = 92.1
- **SPECr@te®2017_int_peak** = Not Run

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### Platform Notes (Continued)

23. **dmidecode**

Additional information from dmidecode 3.4 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:**

2x Samsung M324R4GA3BB0-CQKOD 32 GB 2 rank 4800, configured at 4400

---

24. **BIOS**

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

- BIOS Vendor: FUJITSU // American Megatrends International, LLC.
- BIOS Version: V5.0.0.27 R1.0.0 for D4132-A1x
- BIOS Date: 03/13/2024
- BIOS Revision: 1.0

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### 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 2024.0.2 Build 20231213

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**C++**

| 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base) |

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**Fortran**

| 548.exchange2_r(base) |

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### Base Compiler Invocation

**C benchmarks:**

- icx

**C++ benchmarks:**

- icpx

**Fortran benchmarks:**

- ifx
Fujitsu
PRIMERGY TX1330 M6,
Intel Xeon E-2478, 2.8 GHz

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

SPEC Rate 2017 Integer Rate Result

SPECrate®2017_int_base = 92.1
SPECrate®2017_int_peak = Not Run

Test Date: Apr-2024
Hardware Availability: Apr-2024
Software Availability: Dec-2023

Base Portability Flags

500.perlb  -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r  -DSPEC_LP64
505.mcf_r  -DSPEC_LP64
520.omnetpp_r -DSPEC_LP64
523.xalanbmk_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 -xCORE-AVX2 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-noautomatic -nostandard-realloc-lhs -align array32byte auto
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-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-RPL-RevA.xml
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml

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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 2024-04-23 01:36:40-0400.
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Page 9