**SPEC CPU®2017 Integer Rate Result**

**Fujitsu**

PRIMERGY TX1320 M5, Intel Xeon E-2388G, 3.20GHz

SPECrater®2017_int_base = 69.2

SPECrater®2017_int_peak = Not Run

---

**Hardware**

- **CPU Name:** Intel Xeon E-2388G
- **Max MHz:** 5100
- **Nominal:** 3200
- **Enabled:** 8 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **L2:** 512 KB I+D on chip per core
- **L3:** 16 MB I+D on chip per chip
- **Other:** None
- **Memory:** 32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E)
- **Storage:** 1 x SATA M.2 SSD, 240GB
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP3
  5.3.18-57-default
- **Compiler:** C/C++: Version 2021.1 of Intel oneAPI DPC++/C++
  Compiler Build 20201113 for Linux;
  Fortran: Version 2021.1 of Intel Fortran Compiler
  Classic Build 20201112 for Linux;
- **Parallel:** No
- **Firmware:** Fujitsu BIOS Version V5.0.0.22 R1.30.0 for
  D3931-A1x. Released Mar-2022 tested as V5.0.0.22 R1.15.0 for
  D3931-A1x Dec-2021
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** None
- **Power Management:** BIOS and OS set to prefer performance
  at the cost of additional power usage.

---

C.P.2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu
Test Date: Dec-2021
Hardware Availability: Mar-2022
Software Availability: Jun-2021

<table>
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---

500.perlbench_r
502.gcc_r
505.mcf_r
520.omnetpp_r
523.xalancbmk_r
525.x264_r
531.deepsjeng_r
541.leela_r
548.exchange2_r
557.xz_r

---

500.perlbench_r = 51.0
502.gcc_r = 45.8
505.mcf_r = 108
520.omnetpp_r = 33.5
523.xalancbmk_r = 91.5
525.x264_r = 158
531.deepsjeng_r = 58.7
541.leela_r = 58.3
548.exchange2_r = 157
557.xz_r = 38.3

---

Software Availability: Jun-2021
Test Date: Dec-2021
Test Sponsor: Fujitsu
Hardware Availability: Mar-2022
CPU2017 License: 19
Tested by: Fujitsu
Test Date: Dec-2021
Software Availability: Jun-2021
Test Sponsor: Fujitsu
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PRIMERGY TX1320 M5, Intel Xeon E-2388G, 3.20GHz

Copyright 2017-2022 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 69.2

SPECrate®2017_int_peak = Not Run

Results Table

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<tr>
<td>548.exchange2_r</td>
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<td>267</td>
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<td>557.xz_r</td>
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<td>451</td>
<td>38.3</td>
</tr>
</tbody>
</table>

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

Submit Notes

The config file option 'submit' was used.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
cpupower -c all frequency-set -g performance

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "~/home/PVT/speccpu-1.1.8_b/lib/intel64:/home/PVT/speccpu-1.1.8_b/lib/ia32:/home/PVT/speccpu-1.1.8_b/je5.0.1-32"
MALLOCONF = "retain:true"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1
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>

(Continued on next page)
Fujitsu

General Notes (Continued)

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:
Adjacent Cache Line Prefetch = Disabled
Package C-State limit = C6
Per Core P State OS control mode = Disabled
FAN Control = Full

Sysinfo program /home/PVT/speccpu-1.1.8_b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Tue Dec 14 20:31:03 2021

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) E-2388G CPU @ 3.20GHz
  1 "physical id"s (chips)
  16 "processors"
core, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7

From lscpu from util-linux 2.36.2:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 39 bits physical, 48 bits virtual
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6

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

**Fujitsu**

PRIMERGY TX1320 M5, Intel Xeon E-2388G, 3.20GHz

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>19</th>
<th>Test Date:</th>
<th>Dec-2021</th>
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<td>Fujitsu</td>
<td>Hardware Availability:</td>
<td>Mar-2022</td>
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<td>Tested by:</td>
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<td>Software Availability:</td>
<td>Jun-2021</td>
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</table>

**SPECrate®2017_int_base = 69.2**

**SPECrate®2017_int_peak = Not Run**

**Platform Notes (Continued)**

- **Model:** 167
- **Model name:** Intel(R) Xeon(R) E-2388G CPU @ 3.20GHz
- **Stepping:** 1
- **CPU MHz:** 4900.153
- **CPU max MHz:** 5100.0000
- **CPU min MHz:** 800.0000
- **BogoMIPS:** 6384.00
- **Virtualization:** VT-x
- **L1d cache:** 384 KiB
- **L1i cache:** 256 KiB
- **L2 cache:** 4 MiB
- **L3 cache:** 16 MiB
- **NUMA node0 CPU(s):** 0-15
- **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 swapgs 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
- **Flags:** fs b3 g x m c p a e t r d s i n e x l i a m c m o p n t o v m e d e p s e t s c m r s m c e c x 8 a p i c s e p m t r p g e m c a c m o v a t p s e 3 6 c l f l u s h d t s a c p i m x f x s r s s e s e 2 s s h t t m p b e s y s c a l l n x p d p e l g b r d t s c p l m x t c l e q d f h m p e b s t s o n n o g o d e f x a c t o p y c l c l p d c s p c i d s s e 4 1 s s e 4 2 x 2 a p i c m o v b e p o p c n t t s c_d e a d l i n e_t i m e r a e s x s a v e a v x f 1 6 c r d r a n d l a h f l m a b m d n o w p r e f e c h c p u i d_f a u l t e b p i n v p c i d_s i n g l e s s b d i b r s i b p b s t i b p i b r s_e n h a n c e d t p r_s h a d o w v n m i f l e x p r i o r i t y e p t v p i d e p t_a d f s g b a s e t s c_a d j u s t b m i a v x 2 s m e p b m i 2 e r m s l n v p c i 2 m p x a v x 5 1 2 f a v x 5 1 2 d q r s e e d a d x s m a p a v x 5 1 2 f m a c l f l u s h o p t i n t e l_p t a v x 5 1 2 c d s a h _ n i a v x 5 1 2 b w a v x 5 1 2 v l x s a v e o p t x s a v e c x g e t b v x s a v e s d t h e r m i d a a r a t p l n p t s h w h w p_n o t i f y h w p_a c t_w i n d o w h w p_e p p h w p_p k g_r e q a v x 5 1 2 v b m i u m i p p k u o s k e a v x 5 1 2_v b m i 2 g f n i v a e s v p c l m u l q d q a v x 5 1 2_v n n i a v x 5 1 2_b i t a l g a v x 5 1 2_v p o p c n t d q r d p i d f s r m m d_c l e a r f l u s h_l i d a r c_h a p i l i a b i l i t i e s

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME ONE-SIZE ALL-SIZE WAYS TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
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</thead>
<tbody>
<tr>
<td>L1d 48K 384K 12 Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1i 32K 256K 8 Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L2 512K 4M 8 Unified</td>
<td>2</td>
<td>1024</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3 16M 16M 16 Unified</td>
<td>3</td>
<td>16384</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

/proc/cpuinfo cache data

(Continued on next page)
Fujitsu

PRIMERGY TX1320 M5, Intel Xeon E-2388G, 3.20GHz

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

cache size : 16384 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   node 0 size: 31511 MB
   node 0 free: 30993 MB
   node distances:
   node 0
     0:  10

From /proc/meminfo
   MemTotal:       32267400 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP3"
      VERSION_ID="15.3"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15:sp3"

uname -a:
   Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021
      (ba3c2e9/1p-5d9e8aa) x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):
   Not affected
CVE-2018-3620 (L1 Terminal Fault):
   Not affected
Microarchitectural Data Sampling:
   Not affected
CVE-2017-5754 (Meltdown):
   Not affected
CVE-2018-3639 (Speculative Store Bypass):
   Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):
   Mitigation: usercopy/swaps barriers and __user pointer sanitization

(Continued on next page)
Fujitsu
PRIMERGY TX1320 M5, Intel Xeon E-2388G, 3.20GHz

SPECrater®2017_int_base = 69.2
SPECrater®2017_int_peak = Not Run

CPU2017 License: 19
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Test Date: Dec-2021
Hardware Availability: Mar-2022
Software Availability: Jun-2021

Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2):
   Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):
   Not affected
CVE-2019-11135 (TSX Asynchronous Abort):
   Not affected

run-level 3 Dec 14 10:40

SPEC is set to: /home/PVT/speccpu-1.1.8_b
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda5      xfs   140G   64G   76G  46% /home

From /sys/devices/virtual/dmi/id
  Vendor:         FUJITSU
  Product:        PRIMERGY TX1320 M5
  Product Family: SERVER
  Serial:         EWBTxxxxxx

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:
  2x Samsung M391A2K43DB1-CWE 16 GB 2 rank 3200

BIOS:
  BIOS Vendor:    FUJITSU // American Megatrends International, LLC.
  BIOS Version:   V5.0.0.22 R1.15.0 for D3931-A1x
  BIOS Date:      12/03/2021
  BIOS Revision:  1.15

(End of data from sysinfo program)

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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
   | 541.leela_r(base)

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CPU2017 License: 19
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Test Date: Dec-2021
Hardware Availability: Mar-2022
Software Availability: Jun-2021

Compiler Version Notes (Continued)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran | 548.exchange2_r(base)

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

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.xalanchmk_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
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Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -gopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -gopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-gopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

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

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-RKL-RevC.xml
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.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 v1.1.8 on 2021-12-14 06:31:03-0500.
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