**Fujitsu**
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 35.1</th>
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</table>

<table>
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<th>SPECrate®2017_int_peak = Not Run</th>
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**CPU2017 License:** 19  |  **Test Date:** Jan-2021  
**Test Sponsor:** Fujitsu  |  **Hardware Availability:** Oct-2019  
**Tested by:** Fujitsu  |  **Software Availability:** Jul-2020  

| Copies | 0 | 4.00 | 8.00 | 12.0 | 16.0 | 20.0 | 24.0 | 28.0 | 32.0 | 36.0 | 40.0 | 44.0 | 48.0 | 52.0 | 56.0 | 60.0 | 64.0 | 68.0 | 72.0 | 76.0 |
|--------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 500.perlbench_r | 8 | 242 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 502.gcc_r | 8 | 257 | 520 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 505.mcf_r | 8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 520.omnetpp_r | 8 | 217 | 41.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 523.xalancbmk_r | 8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 525.x264_r | 8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 531.deepsjeng_r | 8 | 30.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 541.leela_r | 8 | 27.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 548.exchange2_r | 8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 557.xz_r | 8 | 20.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

---

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **Firmware:** Fujitsu BIOS Version V5.0.0.13 R1.17.0 for D3673-A1x. Released Dec-2020
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage

---

**Hardware**

- **CPU Name:** Intel Xeon E-2234
- **Max MHz:** 4800
- **Nominal:** 3600
- **Enabled:** 4 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 256 KB I+D on chip per core
- **L3:** 8 MB I+D on chip per chip
- **Other:** None
- **Memory:** 128 GB (4 x 32 GB 2Rx8 PC4-2666V-E)
- **Storage:** 1 x SATA M.2 SSD, 480 GB
- **Other:** None
Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>8</td>
<td>526</td>
<td>24.2</td>
<td>529</td>
<td>24.1</td>
<td>523</td>
<td>24.3</td>
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<tr>
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<td>20.8</td>
<td>415</td>
<td>20.8</td>
<td>415</td>
<td>20.8</td>
</tr>
</tbody>
</table>

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

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

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_intrate/icc19-lib/intel64:/home/benchmark/speccpu_intrate/icc19-lib/ia32:/home/benchmark/speccpu_intrate/je5.0.1-32"
MALLOCONF = "retain:true"
SPEC CPU®2017 Integer Rate Result

Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>35.1</th>
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<td>SPECrate®2017_int_peak</td>
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</tr>
</tbody>
</table>

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

General Notes

Binaries compiled on a system with 4x Intel Xeon Platinum 8360H CPU + 1536GB RAM
memory using SUSE Linux Enterprise Server 15 SP2
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>
Yes: 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.
binutils-gold, an ELF linker
package available from https://software.opensuse.org/package/binutils-gold as follows:
- Click "Show bunutils-gold for other distributions"
- Click "Show community packages" of SUSE SLE-15-SP2
- Click "Expert Download" selecting package corresponding to 2.32 release identified by "home:gabrielftg:ulp-preview"
- Click "Grab binary packages directly"
- Click "binutils-gold-xxxx.rpm"
package was installed with rpm command i.e.:
rpm -i --nodeps bunutils-gold-xxxx.rpm

Platform Notes

BIOS configuration:
Adjacent Cache Line Prefetch = Disabled
C-states = Disabled
Fan Control = Full
Hardware Prefetcher = Disabled
Intel Virtualization Technology = Disabled
Intel Speed Shift Technology = Disabled

Sysinfo program /home/benchmark/speccpu_intrate/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbble6e46a485a0011
running on localhost Mon Jan 25 20:27:34 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-2234 CPU @ 3.60GHz
  1 "physical id"s (chips)
  8 "processors"

(Continued on next page)
Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

 SPECrate®2017_int_base = 35.1
 SPECrate®2017_int_peak = Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Jan-2021
Tested by: Fujitsu
Hardware Availability: Oct-2019
Software Availability: Jul-2020

Platform Notes (Continued)
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 4
siblings : 8
physical 0: cores 0 1 2 3

From lscpu:
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): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 2
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) E-2234 CPU @ 3.60GHz
Stepping: 10
CPU MHz: 4200.286
CPU max MHz: 4800.0000
CPU min MHz: 800.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-7
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 rdtsc

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a

(Continued on next page)
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

SPECrater®2017_int_base = 35.1
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CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Jan-2021
Hardware Availability: Oct-2019
Software Availability: Jul-2020

Platform Notes (Continued)

physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0 1 2 3 4 5 6 7
   node 0 size: 128306 MB
   node 0 free: 127865 MB
   node distances:
      node 0
      0: 10

From /proc/meminfo
   MemTotal:       131385440 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP2"
      VERSION_ID="15.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
   Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020
   (720aeba/1p-1a956f1) x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

   itlb_multihit:       KVM: Vulnerable
   CVE-2018-3620 (L1 Terminal Fault):  Mitigation: PTE Inversion
   Microarchitectural Data Sampling: Mitigation: Clear CPU buffers; SMT vulnerable
   CVE-2017-5754 (Meltdown): Mitigation: PTI
   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
   CVE-2017-5715 (Spectre variant 2): Mitigation: Full generic retpoline, IBPB:
      conditional, IBRS_FW, STIBP: conditional, RSB
      filling
   srbds:             Mitigation: Microcode
   tsx_async_abort:    Mitigation: Clear CPU buffers; SMT vulnerable

run-level 3 Jan 25 20:24

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

Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

**SPECrate®2017_int_base = 35.1**

**SPECrate®2017_int_peak = Not Run**

**CPU2017 License:** 19  |  **Test Date:** Jan-2021
**Test Sponsor:** Fujitsu  |  **Hardware Availability:** Oct-2019
**Tested by:** Fujitsu  |  **Software Availability:** Jul-2020

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**Platform Notes (Continued)**

SPEC is set to: /home/benchmark/speccpu_intrate

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   344G   37G  308G  11% /home

From /sys/devices/virtual/dmi/id

BIOS: FUJITSU // American Megatrends Inc. V5.0.0.13 R1.17.0 for D3673-A1x
12/07/2020

Vendor: FUJITSU
Product: PRIMERGY TX1320 M4
Product Family: SERVER
Serial: YMJKXXXXX

Additional information from dmidecode 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:
4x Samsung M391A4G43MB1-CTD 32767 MB 2 rank 2667

(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) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
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)

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

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
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----------------------------------------

Fortran | 548.exchange2_r(base)

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

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306

(Continued on next page)
Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

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

Compiler Version Notes (Continued)

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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

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.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:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-linker-after=gold -qopt-mem-layout-trans=4
-L/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse
-funroll-loops -fuse-linker-after=gold -qopt-mem-layout-trans=4

(Continued on next page)
Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2234, 3.60 GHz

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CPU2017 License: 19
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Test Date: Jan-2021
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Software Availability: Jul-2020

Base Optimization Flags (Continued)

C++ benchmarks (continued):
- -L/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
  -lqkmalloc

Fortran benchmarks:
- -m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
  -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
  -nostandard-realloc-lhs -align array32byte -auto
  -mbranches-within-32B-boundaries
  -L/opt/intel/compilers_and_libraries_2020.1.217/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/Fujitsu-Platform-Settings-V1.0.2-CFL-RevD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevD.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 v1.1.0 on 2021-01-25 06:27:33-0500.
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