SPEC CPU®2017 Integer Rate Result

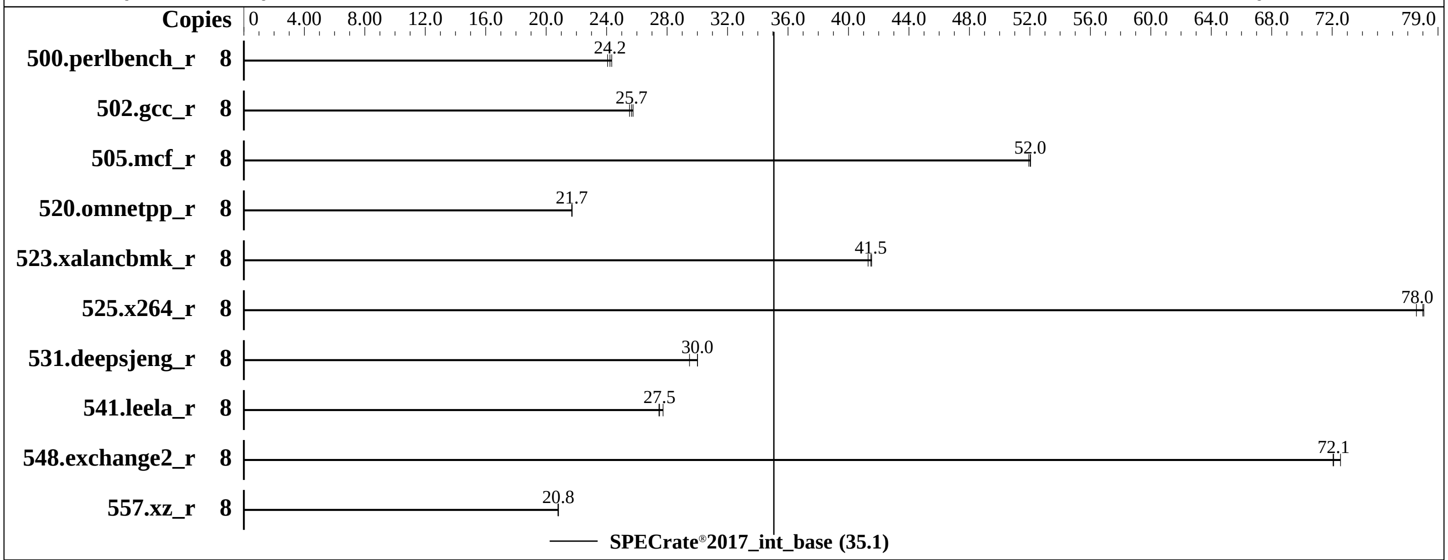
Fujitsu

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



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

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
Other:	binutils-gold 2.32-7.11.4
Power Management:	BIOS set to prefer performance at the cost of additional power usage

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	8	**526**	**24.2**	529	24.1	523	24.3							
502.gcc_r	8	**442**	**25.7**	440	25.7	444	25.5							
505.mcf_r	8	**248**	**52.0**	248	52.1	249	51.9							
520.omnetpp_r	8	483	21.7	**484**	**21.7**	484	21.7							
523.xalancbmk_r	8	203	41.5	205	41.3	**204**	**41.5**							
525.x264_r	8	181	77.6	**180**	**78.0**	179	78.1							
531.deepsjeng_r	8	**306**	**30.0**	305	30.0	311	29.5							
541.leela_r	8	482	27.5	**482**	**27.5**	478	27.7							
548.exchange2_r	8	289	72.6	**291**	**72.1**	291	72.1							
557.xz_r	8	416	20.8	415	20.8	**415**	**20.8**							

SPECrate®2017_int_base = 35.1
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

```
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/specc
     pu_intrate/icc19-lib/ia32:/home/benchmark/speccpu_intrate/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

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 295195f888a3d7edb1e6e46a485a0011
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)

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 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 pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
      xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx
      f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti ssbd ibrs
      ibpb stibp tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle
      avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt intel_pt xsaveopt
      xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp
      md_clear flush_l1d

 /proc/cpuinfo cache data
    cache size : 8192 KB

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

(Continued on next page)

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/lp-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/swapgs 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)

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:  YMJKXXXXXX

 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
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
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)

Compiler Version Notes (Continued)

```
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

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-ld=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-ld=gold -qopt-mem-layout-trans=4
```

(Continued on next page)

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/Intel-ic19.1u1-official-linux64_revA.html
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

Tested with SPEC CPU®2017 v1.1.0 on 2021-01-25 06:27:33-0500.
Report generated on 2021-02-16 16:26:04 by CPU2017 PS formatter v6255.
Originally published on 2021-02-16.