SPEC CPU®2017 Integer Rate Result

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Fujitsu

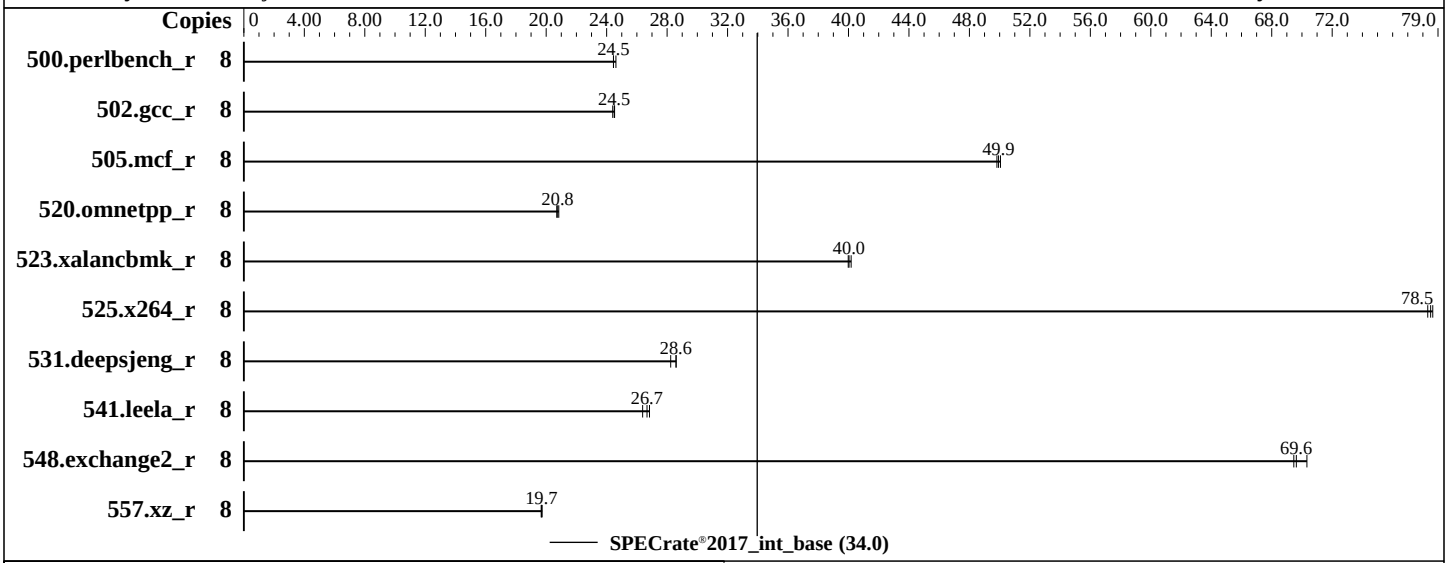
PRIMERGY TX1320 M4, Intel Xeon E-2134, 3.50GHz

SPECrate®2017_int_base = 34.0

SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2021
Hardware Availability: Nov-2018
Software Availability: Jun-2021



Hardware

CPU Name:	Intel Xeon E-2134
Max MHz:	4500
Nominal:	3500
Enabled:	4 cores, 1 chip, 2 threads/core
Orderable:	1 chip
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, 480GB
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 V5.0.0.13 R1.18.0 for D3673-A1x. Released Jul-2021
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

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	8	517	24.6	**521**	**24.5**	521	24.5							
502.gcc_r	8	462	24.5	**462**	**24.5**	464	24.4							
505.mcf_r	8	258	50.1	259	49.8	**259**	**49.9**							
520.omnetpp_r	8	507	20.7	**506**	**20.8**	504	20.8							
523.xalancbmk_r	8	211	40.0	210	40.2	**211**	**40.0**							
525.x264_r	8	178	78.7	**178**	**78.5**	179	78.3							
531.deepsjeng_r	8	321	28.6	325	28.2	**321**	**28.6**							
541.leela_r	8	502	26.4	494	26.8	**497**	**26.7**							
548.exchange2_r	8	302	69.5	**301**	**69.6**	298	70.3							
557.xz_r	8	**439**	**19.7**	439	19.7	438	19.7							

SPECrate®2017_int_base = 34.0

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

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/lib/intel64:/home/benchmark/speccpu/lib/ia32:/h
     ome/benchmark/speccpu/je5.0.1-32"
MALLOC_CONF = "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
```

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General Notes (Continued)

```
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.
```

Platform Notes

```
BIOS configuration:
Hardware Prefetcher = Disabled
Adjacent Cache Line Prefetch = Disabled
VT-d = Disabled
Fan Control = Full
Race To Halt (RTH) = Disabled
DMI Link ASPM Control = L0s
REFRESH_2X_MODE = 2- Enabled HOT only

Sysinfo program /home/benchmark/speccpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost Tue Dec 21 01:06:30 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-2134 CPU @ 3.50GHz
      1  "physical id"s (chips)
      8 "processors"
   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 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):                          8
     On-line CPU(s) list:             0-7
     Thread(s) per core:              2
     Core(s) per socket:              4
     Socket(s):                       1
```

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Platform Notes (Continued)

```
      NUMA node(s):                    1
      Vendor ID:                       GenuineIntel
      CPU family:                      6
      Model:                           158
      Model name:                      Intel(R) Xeon(R) E-2134 CPU @ 3.50GHz
      Stepping:                        10
      CPU MHz:                         4378.182
      CPU max MHz:                     4500.0000
      CPU min MHz:                     800.0000
      BogoMIPS:                        6999.82
      Virtualization:                  VT-x
      L1d cache:                       128 KiB
      L1i cache:                       128 KiB
      L2 cache:                        1 MiB
      L3 cache:                        8 MiB
      NUMA node0 CPU(s):               0-7
      Vulnerability Itlb multihit:     KVM: Mitigation: VMX disabled
      Vulnerability L1tf:              Mitigation; PTE Inversion; VMX conditional cache
      flushes, SMT vulnerable
      Vulnerability Mds:               Mitigation; Clear CPU buffers; SMT vulnerable
      Vulnerability Meltdown:          Mitigation; PTI
      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; Full generic retpoline, IBPB
      conditional, IBRS_FW, STIBP conditional, RSB filling
      Vulnerability Srbds:             Mitigation; Microcode
      Vulnerability Tsx async abort:   Mitigation; Clear CPU buffers; SMT vulnerable
      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

 From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL SETS PHY-LINE COHERENCY-SIZE
      L1d       32K     128K    8 Data            1   64        1             64
      L1i       32K     128K    8 Instruction     1   64        1             64
      L2       256K       1M    4 Unified         2 1024        1             64
      L3         8M       8M   16 Unified         3 8192        1             64
```

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Platform Notes (Continued)

```
/proc/cpuinfo cache data
   cache size : 8192 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
  node 0 size: 128303 MB
  node 0 free: 127817 MB
  node distances:
  node   0
    0:  10

From /proc/meminfo
   MemTotal:       131383072 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

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

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/lp-5d9e8aa) x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):                    KVM: Mitigation: VMX disabled
CVE-2018-3620 (L1 Terminal Fault):                 Mitigation: PTE Inversion; VMX:
                                                   conditional cache flushes, SMT
                                                   vulnerable
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
```

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Platform Notes (Continued)

```
                                                    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
 CVE-2020-0543 (Special Register Buffer Data Sampling): Mitigation: Microcode
 CVE-2019-11135 (TSX Asynchronous Abort):          Mitigation: Clear CPU buffers; SMT
                                                    vulnerable

 run-level 3 Dec 21 01:04

 SPEC is set to: /home/benchmark/speccpu
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda8      xfs   121G   19G  103G  16% /home

 From /sys/devices/virtual/dmi/id
     Vendor:         FUJITSU
     Product:        PRIMERGY TX1320 M4
     Product Family: SERVER
     Serial:         YMJKXXXXXX

 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:
     4x Samsung M391A4G43MB1-CTD 32 GB 2 rank 2667

 BIOS:
    BIOS Vendor:       FUJITSU // American Megatrends Inc.
    BIOS Version:      V5.0.0.13 R1.18.0 for D3673-A1x
    BIOS Date:         07/12/2021
    BIOS Revision:     1.18

 (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,
```

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Compiler Version Notes (Continued)

```
  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)
------------------------------------------------------------------------------
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.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

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Base Portability Flags (Continued)

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
-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-AVX2 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-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-AVX2 -O3 -ipo -no-prec-div
-qopt-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
http://www.spec.org/cpu2017/flags/Intel-ic2021-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-ic2021-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 v1.1.8 on 2021-12-20 11:06:29-0500.
Report generated on 2022-01-05 13:33:25 by CPU2017 PS formatter v6442.
Originally published on 2022-01-04.