SPEC CPU®2017 Integer Rate Result

Fujitsu

PRIMERGY TX1330 M5, Intel Pentium Gold G6405, 4.10GHz

SPECrate®2017_int_base = 16.3

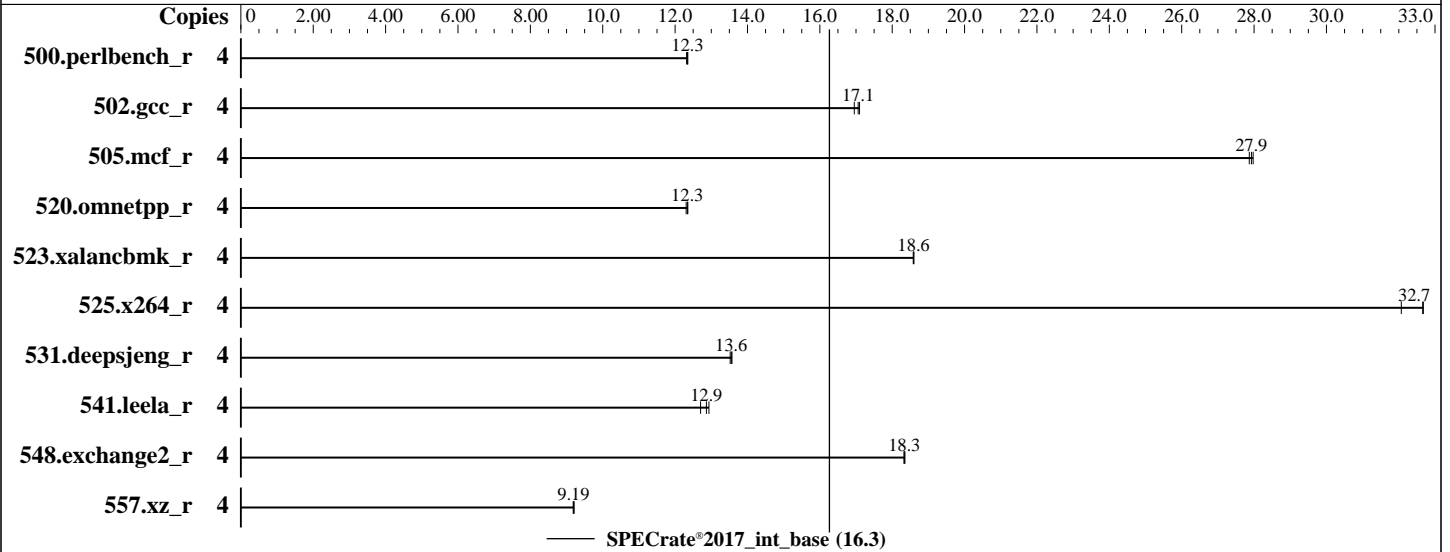SPECrate®2017_int_peak = Not Run

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Jun-2021

Benchmark	Copies	Score
500.perlbench_r	4	12.3
502.gcc_r	4	17.1
505.mcf_r	4	27.9
520.omnetpp_r	4	12.3
523.xalancbmk_r	4	18.6
525.x264_r	4	32.7
531.deepsjeng_r	4	13.6
541.leela_r	4	12.9
548.exchange2_r	4	18.3
557.xz_r	4	9.19

SPECrate®2017_int_base (16.3)

Hardware

CPU Name: Intel Pentium Gold G6405
 Max MHz: 4100
 Nominal: 4100
Enabled: 2 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: 4 MB I+D on chip per chip
 Other: None
Memory: 32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E, running at 2667)
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 R1.31.0 for D3931-A1x. Released Mar-2022
 tested as V5.0.0.22 R1.20.0 for D3931-A1x Jan-2022
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

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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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	4	**516**	**12.3**	517	12.3	516	12.3							
502.gcc_r	4	**332**	**17.1**	334	17.0	331	17.1							
505.mcf_r	4	232	27.9	**231**	**27.9**	231	28.0							
520.omnetpp_r	4	425	12.4	**425**	**12.3**	426	12.3							
523.xalancbmk_r	4	**227**	**18.6**	227	18.6	227	18.6							
525.x264_r	4	218	32.1	**214**	**32.7**	214	32.7							
531.deepsjeng_r	4	**338**	**13.6**	338	13.6	339	13.5							
541.leela_r	4	521	12.7	**515**	**12.9**	512	12.9							
548.exchange2_r	4	**572**	**18.3**	572	18.3	571	18.4							
557.xz_r	4	469	9.21	470	9.18	**470**	**9.19**							
SPECrate®2017_int_base =		**16.3**												
SPECrate®2017_int_peak =		**Not Run**												

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/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
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
```

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Test Date: Feb-2022
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Software Availability: Jun-2021

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/Benchmark/speccpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost Mon Feb 14 10:07:49 2022


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) Pentium(R) Gold G6405 CPU @ 4.10GHz
      1  "physical id"s (chips)
      4 "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 : 2
      siblings  : 4
      physical 0: cores 0 1

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):                   4
   On-line CPU(s) list:      0-3
   Thread(s) per core:       2
   Core(s) per socket:       2
   Socket(s):                1
   NUMA node(s):             1
   Vendor ID:                GenuineIntel
   CPU family:               6
```

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Fujitsu
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CPU2017 License: 19

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Tested by: Fujitsu

Test Date: Feb-2022

Hardware Availability: Mar-2022

Software Availability: Jun-2021

Platform Notes (Continued)

```
       Model:                          165
       Model name:                     Intel(R) Pentium(R) Gold G6405 CPU @ 4.10GHz
       Stepping:                       3
       CPU MHz:                        3902.944
       CPU max MHz:                    4100.0000
       CPU min MHz:                    800.0000
       BogoMIPS:                       8199.79
       Virtualization:                 VT-x
       L1d cache:                      64 KiB
       L1i cache:                      64 KiB
       L2 cache:                       512 KiB
       L3 cache:                       4 MiB
       NUMA node0 CPU(s):              0-3
       Vulnerability Itlb multihit:    KVM: Mitigation: VMX disabled
       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:                          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 est tm2 ssse3
       sdbg cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
       xsave rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb
       stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust
       smep erms invpcid mpx rdseed smap clflushopt intel_pt xsaveopt xsavec xgetbv1 xsaves
       dtherm arat pln pts hwp hwp_notify hwp_act_window hwp_epp md_clear flush_l1d
       arch_capabilities

 From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL SETS PHY-LINE COHERENCY-SIZE
     L1d       32K      64K    8 Data          1   64         1             64
     L1i       32K      64K    8 Instruction   1   64         1             64
     L2       256K     512K    4 Unified       2 1024         1             64
     L3        4M       4M    16 Unified       3 4096         1             64

 /proc/cpuinfo cache data
   cache size : 4096 KB

 From numactl --hardware
```

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Platform Notes (Continued)

```
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0 1 2 3
   node 0 size: 31545 MB
   node 0 free: 31110 MB
   node distances:
   node   0
     0:  10

 From /proc/meminfo
    MemTotal:        32303016 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/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):                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/swapgs
                                                   barriers and __user pointer
                                                   sanitization
 CVE-2017-5715 (Spectre variant 2):                Mitigation: Enhanced IBRS, IBPB:
                                                   conditional, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
```

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SPECrate®2017_int_base =   16.3

SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

```
  CVE-2019-11135 (TSX Asynchronous Abort):                  Not affected


  run-level 3 Feb 14 10:07


  SPEC is set to: /home/Benchmark/speccpu
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda4       xfs   180G   44G  137G  24% /home


  From /sys/devices/virtual/dmi/id
      Vendor:           FUJITSU
      Product:          PRIMERGY TX1330 M5
      Product Family: SERVER
      Serial:           EWBUxxxxxx


  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, configured at 2667


  BIOS:
     BIOS Vendor:       FUJITSU // American Megatrends International, LLC.
     BIOS Version:      V5.0.0.22 R1.20.0 for D3931-A1x
     BIOS Date:         01/11/2022
     BIOS Revision:     1.20


  (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)
--------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.1 Build 20201113
```

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Compiler Version Notes (Continued)

```
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
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xSSE4.2 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries

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CPU2017 License: 19		**Test Date:**	Feb-2022
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Tested by: Fujitsu		**Software Availability:**	Jun-2021

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -m64 -Wl,-z,muldefs -xSSE4.2 -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 -xSSE4.2 -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/Fujitsu-Platform-Settings-V1.0-RKL-RevD.html
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html

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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-RevD.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.

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