# SPEC CPU®2017 Integer Rate Result

## Fujitsu

**PRIMERGY RX1330 M5, Intel Xeon E-2388G, 3.20GHz**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 69.7</th>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak = Not Run</td>
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</table>

### CPU2017 License: 19

**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu

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<tr>
<th>Test Date: Dec-2021</th>
<th>Hardware Availability: Mar-2022</th>
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<td>Software Availability: Jun-2021</td>
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**Fujitsu**

**PRIMERGY RX1330 M5, Intel Xeon E-2388G, 3.20GHz**

### 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, 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 V5.0.0.22 R1.30.0 for D3929-B1x. Released Mar-2022 tested as V5.0.0.22 R1.15.0 for D3929-B1x Dec-2021  
- **File System:** xfs  
- **System State:** Run level 5 (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.

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### SPECrate Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_int_base (69.7)</th>
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<tbody>
<tr>
<td>500.perlbench_r</td>
<td>16</td>
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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"
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.:
umactl --interleave=all runcpu <etc>

(Continued on next page)
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**CPU2017 License:** 19  
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**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 Sun Dec 12 15:17:57 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"
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 : 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)
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Software Availability: Jun-2021

Platform Notes (Continued)

Model: 167
Model name: Intel(R) Xeon(R) E-2388G CPU @ 3.20GHz
Stepping: 1
CPU MHz: 1462.399
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 swapping barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbd: 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 arch_perfmon pebs bts rep_good nopl xapic Kenny xtmove movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid fpept ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 3rms lnpb emms invpcid mpx avx512f avx512dq rdseed adx smap avx512ifma clflushopt intel_pt avx512cd sha_ni axv512bw avx512vl xsaves xsaveopt xsaveopt xsaveopt xgetbv1 xsaves dtherm ida arat pln pts hwp_notify hwp_act_window hwp_epp hwp_pkg_req avx512vbm1 umip pku ospke avx512_vbm1 2gfi vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq rdpid fscmd ccuart flush_l1d arch_capabilities

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 48K 384K 12 Data 1 64 1 64
L1i 32K 256K 8 Instruction 1 64 1 64
L2 512K 4M 8 Unified 2 1024 1 64
L3 16M 16M 16 Unified 3 16384 1 64

/proc/cpuinfo cache data

(Continued on next page)
Platform Notes (Continued)

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: 31582 MB
node 0 free: 30656 MB
node distances:
node 0
0: 10

From /proc/meminfo
MemTotal: 32340116 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
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 5 Dec 12 12:03

SPEC is set to: /home/PVT/speccpu-1.1.8_b
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda6 xfs 325G 61G 264G 19% /home

From /sys/devices/virtual/dmi/id
Vendor: FUJITSU
Product: PRIMERGY RX1330 M5
Product Family: SERVER
Serial: EWBVxxxxxx

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 D3929-B1x
BIOS Date: 12/03/2021
BIOS Revision: 1.15

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)</th>
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<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
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<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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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.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
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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`
- `-lgkmallocl`

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`
- `-lgkmallocl`

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`
- `-lgkmallocl`

---

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:


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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.