



# SPEC® CPU2017 Integer Rate Result

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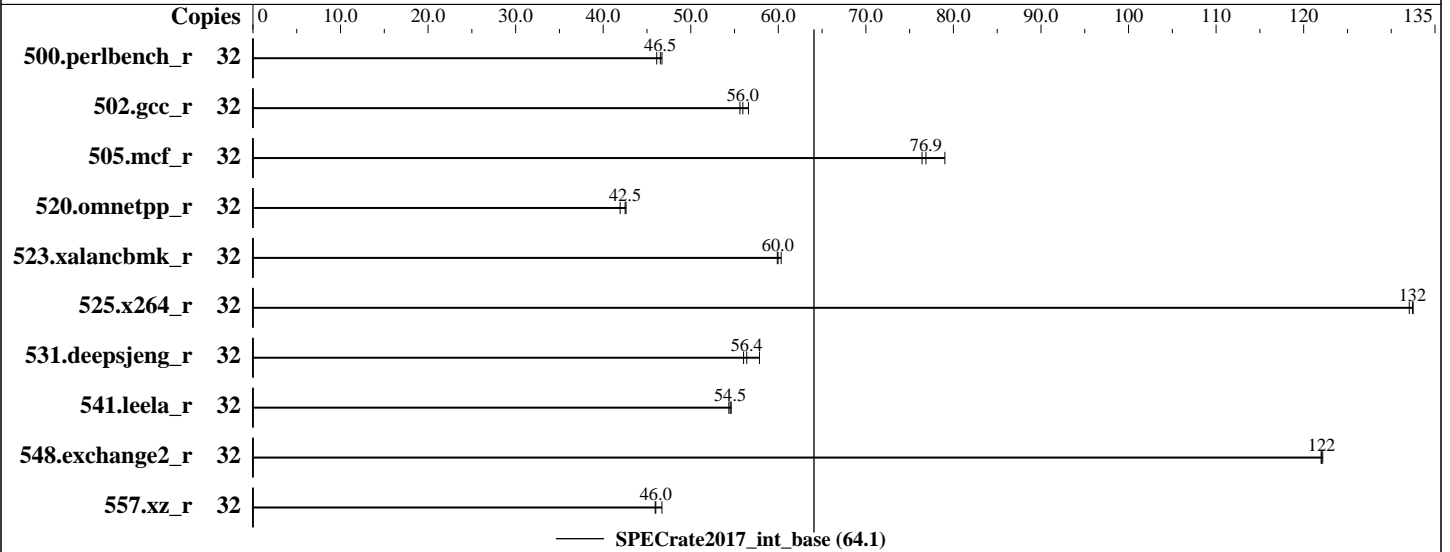
Format sp. z o.o.  
ASUS RS500-E8-RS4 v2

SPECrate2017\_int\_base = 64.1

SPECrate2017\_int\_peak = Not Run

CPU2017 License: 9032  
Test Sponsor: Format sp. z o.o.  
Tested by: Piotr Mankiewicz

Test Date: Aug-2018  
Hardware Availability: Aug-2018  
Software Availability: Apr-2018



## Hardware

CPU Name: Intel Xeon E5-2620 v4  
Max MHz.: 3000  
Nominal: 2100  
Enabled: 16 cores, 2 chips, 2 threads/core  
Orderable: 1-2 chip  
Cache L1: 32 KB I + 32 KB D on chip per core  
L2: 256 KB I+D on chip per core  
L3: 20 MB I+D on chip per chip  
Other: None  
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R, running at 2133)  
Storage: 1x 800 GB PCIe SSD  
Other: None

## Software

OS: Red Hat Enterprise Linux Server release 7.5 (Maipo)  
3.10.0-862.9.1.el7.x86\_64  
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;  
Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux  
Parallel: No  
Firmware: Version 3401 released Jun-2017  
File System: xfs  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: Not Applicable  
Other: jemalloc: jemalloc memory allocator library V5.0.1;



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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	32	1091	46.7	1105	46.1	<b>1095</b>	<b>46.5</b>							
502.gcc_r	32	801	56.6	<b>810</b>	<b>56.0</b>	815	55.6							
505.mcf_r	32	654	79.0	677	76.4	<b>673</b>	<b>76.9</b>							
520.omnetpp_r	32	985	42.6	<b>988</b>	<b>42.5</b>	1001	41.9							
523.xalancbmk_r	32	560	60.3	<b>564</b>	<b>60.0</b>	564	59.9							
525.x264_r	32	423	133	<b>423</b>	<b>132</b>	424	132							
531.deepsjeng_r	32	634	57.8	<b>650</b>	<b>56.4</b>	654	56.0							
541.leela_r	32	970	54.6	<b>972</b>	<b>54.5</b>	975	54.4							
548.exchange2_r	32	687	122	<b>687</b>	<b>122</b>	686	122							
557.xz_r	32	740	46.7	<b>751</b>	<b>46.0</b>	752	45.9							

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

## 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"

## General Notes

Environment variables set by runcpu before the start of the run:

LD\_LIBRARY\_PATH = "/usr/cpu2017/lib/ia32:/usr/cpu2017/lib/intel64:/usr/cpu2017/je5.0.1-32:/usr/cpu2017/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.4  
Transparent Huge Pages enabled by default

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.  
jemalloc: configured and built at default for 32bit (i686) and 64bit (x86\_64) targets; built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5  
sources available via jemalloc.net;



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## Platform Notes

BIOS Configuration:  
Hardware Prefetch: Enabled  
Power Technology: Custom  
Config TDP: Enabled  
Config TDP Level: Nominal  
Energy Performance BIAS setting.: Balanced Performance  
Workload Configuration: I/O Sensitive  
Power Boost: Enable  
CPU C3 report: Disable  
CPU C6 report: Enable  
Hyper-Threading: Enable  
Sysinfo program /usr/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on localhost.localdomain Tue Aug 7 10:01:00 2018

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) CPU E5-2620 v4 @ 2.10GHz  
2 "physical id"s (chips)  
32 "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  
physical 1: cores 0 1 2 3 4 5 6 7

From lscpu:  
Architecture: x86\_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 32  
On-line CPU(s) list: 0-31  
Thread(s) per core: 2  
Core(s) per socket: 8  
Socket(s): 2  
NUMA node(s): 2  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 79  
Model name: Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz  
Stepping: 1  
CPU MHz: 2095.126  
BogoMIPS: 4190.25

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## Platform Notes (Continued)

```

Virtualization:      VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           256K
L3 cache:           20480K
NUMA node0 CPU(s):  0-7,16-23
NUMA node1 CPU(s):  8-15,24-31
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 xtopology nonstop_tsc aperfmperf
eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 intel_ppin intel_pt ssbd
ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle
avx2 smep bmi2 erms invpcid rtm cqm rdt_a rdseed adx smap xsaveopt cqm_llc
cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts spec_ctrl
intel_stibp

```

```

/proc/cpuinfo cache data
cache size : 20480 KB

```

```

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

```

```

available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 16 17 18 19 20 21 22 23
node 0 size: 65436 MB
node 0 free: 63391 MB
node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
node 1 size: 65536 MB
node 1 free: 63951 MB
node distances:
node    0    1
 0:    10   21
 1:    21   10

```

```

From /proc/meminfo
MemTotal:      131759840 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"

```

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## Platform Notes (Continued)

```
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="Red Hat Enterprise Linux"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server
```

```
uname -a:
Linux localhost.localdomain 3.10.0-862.9.1.el7.x86_64 #1 SMP Wed Jun 27 04:30:39 EDT
2018 x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences
CVE-2017-5715 (Spectre variant 2): Mitigation: Full retpoline
```

```
run-level 3 Aug 7 10:00
```

```
SPEC is set to: /usr/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs 50G 35G 16G 69% /
```

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.

```
BIOS American Megatrends Inc. 3401 06/22/2017
Memory:
8x <BAD INDEX> <BAD INDEX> 16 GB 2 rank 2400, configured at 2133
8x NO DIMM NO DIMM
```

(End of data from sysinfo program)

## Compiler Version Notes

```
=====
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
557.xz_r(base)
-----
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----
=====
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
=====
```

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## Compiler Version Notes (Continued)

541.leela\_r(base)

-----  
icpc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
-----

=====  
FC 548.exchange2\_r(base)

-----  
ifort (IFORT) 18.0.0 20170811

Copyright (C) 1985-2017 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:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div

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## Base Optimization Flags (Continued)

C benchmarks (continued):

```
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
```

C++ benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
```

Fortran benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte  
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

## Base Other Flags

C benchmarks:

```
-m64 -std=c11
```

C++ benchmarks:

```
-m64
```

Fortran benchmarks:

```
-m64
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/FORMAT-RS500-E8-RS4-v2-Platform-Settings.html>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/FORMAT-RS500-E8-RS4-v2-Platform-Settings.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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