Epsylon Sp. z o.o. Sp. Komandytowa

Epsylon Sp. z o.o. Sp. Komandytowa
eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa
Test Date: Apr-2018
Hardware Availability: Sep-2017
Software Availability: Mar-2018

---

**Hardware**

- **CPU Name:** Intel Xeon Silver 4112
- **Max MHz.:** 3000
- **Nominal:** 2600
- **Enabled:** 4 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 8.25 MB I+D on chip per chip
- **Other:** None
- **Memory:** 128 GB (8 x 16 GB 2Rx4 PC4-2666V-R, running at 2400)
- **Storage:** 1 x 960 GB SSD SATA III
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux Server release 7.4 (Maipo) 3.10.0-693.21.1.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 BIOS 2.0b released Feb-2018
- **File System:** ext4
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc memory allocator library V5.0.1
SPEC CPU2017 Integer Rate Result

Epsylon Sp. z o.o. Sp. Komandytowa

Epsylon Sp. z o.o. Sp. Komandytowa
eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>8</td>
<td>749</td>
<td>17.0</td>
<td>750</td>
<td>17.0</td>
<td>756</td>
<td>16.8</td>
<td>8</td>
<td>616</td>
<td>20.7</td>
<td>615</td>
<td>20.7</td>
<td>619</td>
<td>20.6</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>8</td>
<td>568</td>
<td>20.0</td>
<td>568</td>
<td>20.0</td>
<td>565</td>
<td>20.0</td>
<td>8</td>
<td>488</td>
<td>23.2</td>
<td>489</td>
<td>23.1</td>
<td>488</td>
<td>23.2</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>8</td>
<td>450</td>
<td>28.7</td>
<td>439</td>
<td>29.5</td>
<td>443</td>
<td>29.2</td>
<td>8</td>
<td>440</td>
<td>29.4</td>
<td>453</td>
<td>28.5</td>
<td>452</td>
<td>28.6</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>8</td>
<td>685</td>
<td>15.3</td>
<td>686</td>
<td>15.3</td>
<td>687</td>
<td>15.3</td>
<td>8</td>
<td>685</td>
<td>15.3</td>
<td>684</td>
<td>15.3</td>
<td>687</td>
<td>15.3</td>
</tr>
<tr>
<td>523.xalanbmk_r</td>
<td>8</td>
<td>337</td>
<td>25.1</td>
<td>335</td>
<td>25.2</td>
<td>337</td>
<td>25.1</td>
<td>8</td>
<td>297</td>
<td>28.5</td>
<td>296</td>
<td>28.6</td>
<td>297</td>
<td>28.5</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>8</td>
<td>326</td>
<td>43.0</td>
<td>325</td>
<td>43.2</td>
<td>321</td>
<td>43.6</td>
<td>8</td>
<td>314</td>
<td>44.6</td>
<td>310</td>
<td>45.2</td>
<td>314</td>
<td>44.6</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>8</td>
<td>488</td>
<td>18.8</td>
<td>489</td>
<td>18.8</td>
<td>488</td>
<td>18.8</td>
<td>8</td>
<td>487</td>
<td>18.8</td>
<td>488</td>
<td>18.8</td>
<td>488</td>
<td>18.8</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>8</td>
<td>757</td>
<td>17.5</td>
<td>749</td>
<td>17.7</td>
<td>751</td>
<td>17.6</td>
<td>8</td>
<td>742</td>
<td>17.8</td>
<td>741</td>
<td>17.9</td>
<td>741</td>
<td>17.9</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>8</td>
<td>512</td>
<td>40.9</td>
<td>509</td>
<td>41.2</td>
<td>506</td>
<td>41.4</td>
<td>8</td>
<td>510</td>
<td>41.1</td>
<td>512</td>
<td>41.0</td>
<td>505</td>
<td>41.5</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>8</td>
<td>537</td>
<td>16.1</td>
<td>536</td>
<td>16.1</td>
<td>535</td>
<td>16.1</td>
<td>8</td>
<td>536</td>
<td>16.1</td>
<td>536</td>
<td>16.1</td>
<td>537</td>
<td>16.1</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

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"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/cpu2017.1.0/lib/ia32:/cpu2017.1.0/lib/intel64:/cpu2017.1.0/je5.0.1-32:/cpu2017.1.0/je5.0.1-64"

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

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.

Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Epsylon Sp. z o.o. Sp. Komandytowa
etio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrater2017_int_base = 22.7
SPECrater2017_int_peak = 23.8

General Notes (Continued)

sync; echo 3> /proc/sys/vm/drop_caches

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 or https://github.com/jemalloc/jemalloc/releases

Platform Notes

BIOS Settings:
Power Technology = Custom
Turbo Mode = Enable
Enhanced Halt State (C1E) = Disable
CPU C6 report = Disabled
Package C State = No limit
Software Controlled T-States = Disable
Hyper-Threading (All) = Enable
Enable POR = Disable
Memory Frequency = Auto
Patrol Scrub = Disabled
IMC Interleaving = Auto
SNC = Disabled

Sysinfo program /cpu2017.1.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on SUT Fri Apr 27 15:51:26 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) Silver 4112 CPU @ 2.60GHz
  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 1 2 4 5

From lscpu:
  Architecture:      x86_64
  CPU op-mode(s):   32-bit, 64-bit
SPEC CPU2017 Integer Rate Result

Epsylon Sp. z o.o. Sp. Komandytowa

etherio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa
Test Date: Apr-2018
Hardware Availability: Sep-2017
Software Availability: Mar-2018

Platform Notes (Continued)

Byte Order: Little Endian
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: 85
Model name: Intel(R) Xeon(R) Silver 4112 CPU @ 2.60GHz
Stepping: 4
CPU MHz: 2601.000
CPU max MHz: 2601.0000
CPU min MHz: 800.0000
BogoMIPS: 5200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
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
aperfmperf eagerfpu pnpi pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 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_13 cdp_13 invvpid_single
intel_pt spec_ctrl ibpb_support tpr_shadow vnmi flexpriority ept vpid fsgsbase
tsc_adjust bmi1 hle avx2 smep bmi2 erva invpcid rtm cqm mpx rdt_a avx512f avx512dq
rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xgetbv1
cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts

From /proc/cpuinfo cache data
  cache size: 8448 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: 129712 MB
  node 0 free: 126105 MB
  node distances:
    node 0
      0: 10

From /proc/meminfo

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Epsylon Sp. z o.o. Sp. Komandytowa

eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa

Platform Notes (Continued)

<table>
<thead>
<tr>
<th>MemTotal:</th>
<th>130433032 kB</th>
</tr>
</thead>
<tbody>
<tr>
<td>HugePages_Total:</td>
<td>0</td>
</tr>
<tr>
<td>Hugepagesize:</td>
<td>2048 kB</td>
</tr>
</tbody>
</table>

From /etc/*release* /etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.4 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VARIANT="Server"
  VARIANT_ID="server"
  VERSION_ID="7.4"
  PRETTY_NAME="Red Hat Enterprise Linux"
redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server

uname -a:
Linux SUT 3.10.0-693.21.1.el7.x86_64 #1 SMP Fri Feb 23 18:54:16 UTC 2018 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 27 15:48

SPEC is set to: /cpu2017.1.0
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda1      ext4  825G   68G  716G   9% /

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. 2.0b 02/26/2018
Memory:
  8x Samsung M393A2G40EB2-CTD 16 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak) |
| 525.x264_r(base, peak) 557.xz_r(base, peak) |
==============================================================================

icc (ICC) 18.0.0 20170811
Copyright (C) 1985–2017 Intel Corporation. All rights reserved.
Epsylon Sp. z o.o. Sp. Komandytowa
eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort
## SPEC CPU2017 Integer Rate Result

<table>
<thead>
<tr>
<th>Epsylon Sp. z o.o. Sp. Komandytowa</th>
<th>SPECrate2017_int_base = 22.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>etero 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)</td>
<td>SPECrate2017_int_peak = 23.8</td>
</tr>
</tbody>
</table>

### CPU2017 License: 9081
- Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
- Tested by: Epsylon Sp. z o.o. Sp. Komandytowa
- Test Date: Apr-2018
- Hardware Availability: Sep-2017
- Software Availability: Mar-2018

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

#### C benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc`

#### C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -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-AVX512 -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`
SPEC CPU2017 Integer Rate Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Epsylon Sp. z o.o. Sp. Komandytowa
eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Test Date: Apr-2018
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa
Hardware Availability: Sep-2017
Software Availability: Mar-2018

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib
-ljemalloc

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -fno-alias

(Continued on next page)
Epsylon Sp. z o.o. Sp. Komandytowa
Teterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Test Date: Apr-2018
Hardware Availability: Sep-2017
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa
Software Availability: Mar-2018

Peak Optimization Flags (Continued)

525.x264_r (continued):
-L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: -W1,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc

523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-W1,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:
-W1,-z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Other Flags

C benchmarks (except as noted below):
-m64 -std=c11

502.gcc_r: -m32 -std=c11

C++ benchmarks (except as noted below):
-m64

523.xalancbmk_r: -m32

Fortran benchmarks:
-m64

The flags files that were used to format this result can be browsed at
Epsylon Sp. z o.o. Sp. Komandytowa

Eterio 115 RE1 (Intel Xeon Silver 4112, 2.60 GHz)

SPECrate2017_int_base = 22.7
SPECrate2017_int_peak = 23.8

CPU2017 License: 9081
Test Sponsor: Epsylon Sp. z o.o. Sp. Komandytowa
Tested by: Epsylon Sp. z o.o. Sp. Komandytowa

Test Date: Apr-2018
Hardware Availability: Sep-2017
Software Availability: Mar-2018

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

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2017 v1.0.2 on 2018-04-27 09:51:26-0400.
Originally published on 2018-05-23.