Epsylon Sp. z o.o. Sp. Komandytowa

terio 220 RF0 Type2 (Intel Xeon E5-2620 v4, 2.10 GHz)

Epsylon Sp. z o.o. Sp. Komandytowa

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

SGE

**SPEC® CPU2017 Floating Point Rate Result**

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECrater2017_fp_base = 55.7
SPECrater2017_fp_peak = 56.7

**Hardware**

CPU Name: Intel Xeon E5-2620 v4
Max MHz.: 3000
Nominal: 2100
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1.2 chips
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 (4 x 32 GB 2Rx4 PC4-2666V-R, running at 2133)
Storage: 4 x 2 TB SAS3 configured as RAID5 volume
Other: None

**Software**

OS: CentOS Linux release 7.5.1804 (Core)
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++
Parallel: No
Firmware: Version BIOS 4E4C206G released Oct-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
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Results Table

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<td>27.4</td>
</tr>
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SPECrate2017_fp_base = 55.7
SPECrate2017_fp_peak = 56.7

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 = "/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.

(Continued on next page)
General Notes (Continued)

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>

Submitted by: <stanislaw.rejowski@eterio.eu>
Submitted: Mon Nov 5 12:16:09 EST 2018
Submission: cpu2017-20181105-09476.sub

Platform Notes

BIOS Default + NUMA = Enabled
Sysinfo program /cpu2017.1.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bce091c0f
running on SUT Mon Oct 29 23:48:53 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

(Continued on next page)
The SPEC CPU2017 Floating Point Rate Result

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**Tested by:** Epsylon Sp. z o.o. Sp. Komandytowa
**Test Date:** Oct-2018
**Hardware Availability:** Sep-2017
**Software Availability:** Sep-2018

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<tbody>
<tr>
<td><strong>CPU family:</strong> 6</td>
</tr>
<tr>
<td><strong>Model:</strong> 79</td>
</tr>
<tr>
<td><strong>Model name:</strong> Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz</td>
</tr>
<tr>
<td><strong>Stepping:</strong> 1</td>
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<tr>
<td><strong>CPU MHz:</strong> 2098.974</td>
</tr>
<tr>
<td><strong>CPU max MHz:</strong> 2100.000</td>
</tr>
<tr>
<td><strong>CPU min MHz:</strong> 1200.000</td>
</tr>
<tr>
<td><strong>BogoMIPS:</strong> 4190.18</td>
</tr>
<tr>
<td><strong>Virtualization:</strong> VT-x</td>
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<tr>
<td><strong>L1d cache:</strong> 32K</td>
</tr>
<tr>
<td><strong>L1i cache:</strong> 32K</td>
</tr>
<tr>
<td><strong>L2 cache:</strong> 256K</td>
</tr>
<tr>
<td><strong>L3 cache:</strong> 20480K</td>
</tr>
<tr>
<td><strong>NUMA node0 CPU(s):</strong> 0-7,16-23</td>
</tr>
<tr>
<td><strong>NUMA node1 CPU(s):</strong> 8-15,24-31</td>
</tr>
</tbody>
</table>
| **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 xSaving opno nolam err crm 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 xSaving opno nolam err crm cmov

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

| node 0 cpus: | 0 1 2 3 4 5 6 7 16 17 18 19 20 21 22 23 |
| node 0 size: | 65429 MB |
| node 0 free: | 52541 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: | 56369 MB |

From `/proc/meminfo`

| MemTotal: | 131752272 kB |
| HugePages_Total: | 0 |
| Hugepagesize: | 2048 kB |

(Continued on next page)
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SPECrate2017_fp_base = 55.7
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Platform Notes (Continued)

From /etc/*release* /etc/*version*
centos-release: CentOS Linux release 7.5.1804 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.5 (Source)

os-release:
  NAME="CentOS Linux"
  VERSION="7 (Core)"
  ID="centos"
  ID_LIKE="rhel fedora"
  VERSION_ID="7"
  PRETTY_NAME="CentOS Linux 7 (Core)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:centos:centos:7"

redhat-release: CentOS Linux release 7.5.1804 (Core)
system-release: CentOS Linux release 7.5.1804 (Core)
system-release-cpe: cpe:/o:centos:centos:7

uname -a:
    Linux SUT 3.10.0-862.14.4.el7.x86_64 #1 SMP Wed Sep 26 15:12:11 UTC 2018 x86_64 x86_64 GNU/Linux

run-level 3 Oct 29 10:12

SPEC is set to: /cpu2017.1.0

Filesystem  Type Size  Used Avail Use% Mounted on
/dev/mapper/centos-root xfs   5.5T   29G  5.5T   1% /

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. 4E4C206G 10/15/2018
Memory:
  12x NO DIMM NO DIMM
  4x Samsung M393A4K40CB2-CTD 32 GB 2 rank 2667, configured at 2133

Compiler Version Notes

==============================================================================
 CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

(Continued on next page)
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| SPECrate2017_fp_peak = 56.7 |

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Compiler Version Notes (Continued)

CC  519.lbm_r(peak)  544.nab_r(peak)
| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

CXXC  508.namd_r(base)  510.parest_r(base)
| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

CXXC  508.namd_r(peak)  510.parest_r(peak)
| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

CC  511.povray_r(base)  526.blender_r(base)
| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

| icpc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

CC  511.povray_r(peak)  526.blender_r(peak)
| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

| icpc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

FC  507.cactuBSSN_r(base)
| icpc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

| icc (ICC) 18.0.0 20170811 |
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

ifort (IFORT) 18.0.0 20170811
| Copyright (C) 1985-2017 Intel Corporation. All rights reserved. |

(Continued on next page)
Compiler Version Notes (Continued)

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

==============================================================================
FC  507.cactuBSSN_r(peak)

-----
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC  503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base)

-----
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==============================================================================
FC  554.roms_r(peak)

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

==============================================================================
CC  521.wrf_r(base) 527.cam4_r(base)

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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC  521.wrf_r(peak) 527.cam4_r(peak)

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icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
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Software Availability: Sep-2018

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsinged-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

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Hardware Availability: Sep-2017

Software Availability: Sep-2018

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**Base Optimization Flags (Continued)**

C++ benchmarks (continued):
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

---

**Base Other Flags**

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

Benchmarks using both Fortran and C:
-m64 -std=c11

Benchmarks using both C and C++:
-m64 -std=c11

Benchmarks using Fortran, C, and C++:
-m64 -std=c11
SPEC CPU2017 Floating Point Rate Result

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Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3

544.nab_r: Same as 519.lbm_r

C++ benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:

(Continued on next page)
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**Peak Optimization Flags (Continued)**

503.bwaves_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3
-nostandard-realloc-lhs -align array32byte

549.fotonik3d_r: Same as 503.bwaves_r

554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-align array32byte

Benchmarks using both Fortran and C:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-align array32byte

Benchmarks using both C and C++:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-align array32byte

**Peak Other Flags**

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

Benchmarks using both Fortran and C:
-m64 -std=c11

Benchmarks using both C and C++:
-m64 -std=c11

(Continued on next page)
SPEC CPU2017 Floating Point Rate Result

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<th>SPECrate2017_fp_base = 55.7</th>
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<td>SPECrate2017_fp_peak = 56.7</td>
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<td>Software Availability: Sep-2018</td>
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### Peak Other Flags (Continued)

Benchmarks using Fortran, C, and C++:

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

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.

Tested with SPEC CPU2017 v1.0.2 on 2018-10-29 23:48:52-0400.


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