SPEC CPU®2017 Integer Rate Result

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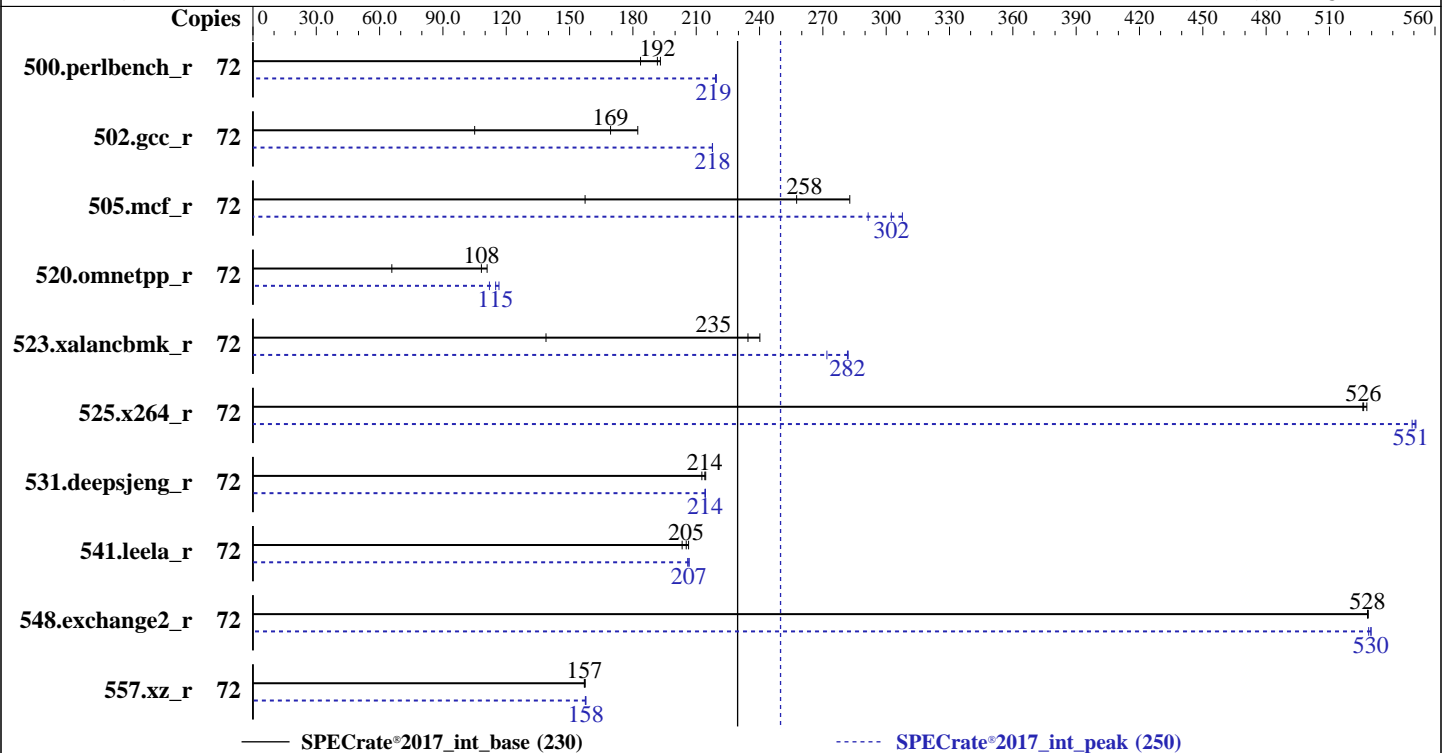
Tyrone Systems

(Test Sponsor: Netweb Pte Ltd)

(3.10 GHz,Intel Xeon Gold 6254)

DS4A0TR-28R

$SPECrate^®2017\_int\_base = 230$

$SPECrate^®2017\_int\_peak = 250$

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Netweb

Test Date: Jan-2020

Hardware Availability: Sep-2019

Software Availability: Aug-2019

Copies — scale: 0, 30.0, 60.0, 90.0, 120, 150, 180, 210, 240, 270, 300, 330, 360, 390, 420, 450, 480, 510, 560

Benchmark	Copies	Base	Peak
500.perlbench_r	72	192	219
502.gcc_r	72	169	218
505.mcf_r	72	258	302
520.omnetpp_r	72	108	115
523.xalancbmk_r	72	235	282
525.x264_r	72	526	551
531.deepsjeng_r	72	214	214
541.leela_r	72	205	207
548.exchange2_r	72	528	530
557.xz_r	72	157	158

—— SPECrate®2017_int_base (230)   ------ SPECrate®2017_int_peak (250)

Hardware

CPU Name: Intel Xeon Gold 6254

 Max MHz: 4000

 Nominal: 3100

Enabled: 36 cores, 2 chips, 2 threads/core

Orderable: 1, 2 (chip)s

Cache L1: 32 KB I + 32 KB D on chip per core

 L2: 1 MB I+D on chip per core

 L3: 24.75 MB I+D on chip per chip

 Other: None

Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2933Y-R)

Storage: 1 x 480 GB SSD

Other: None

Software

OS: CentOS Linux release 7.7.1908 (Core)

 3.10.0-1062.el7.x86_64

Compiler: C/C++: Version 19.0.4.243 of Intel C/C++

 Compiler Build 20190416 for Linux;

 Fortran: Version 19.0.4.243 of Intel Fortran

 Compiler Build 20190416 for Linux

Parallel: No

Firmware: Version 5.14 released May-2019

File System: xfs

System State: Run level 3 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 32/64-bit

Other: jemalloc memory allocator V5.0.1

Power Management: Default

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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	72	624	184	**598**	**192**	594	193	72	**522**	**219**	523	219	522	219
502.gcc_r	72	971	105	**602**	**169**	559	182	72	**468**	**218**	468	218	468	218
505.mcf_r	72	739	157	**452**	**258**	411	283	72	**385**	**302**	378	308	399	291
520.omnetpp_r	72	1436	65.8	**873**	**108**	852	111	72	**822**	**115**	810	117	843	112
523.xalancbmk_r	72	548	139	**324**	**235**	317	240	72	280	272	270	282	**270**	**282**
525.x264_r	72	240	526	239	528	**240**	**526**	72	**229**	**551**	229	551	230	549
531.deepsjeng_r	72	388	213	**385**	**214**	385	214	72	385	214	**385**	**214**	385	214
541.leela_r	72	586	203	**581**	**205**	578	206	72	**577**	**207**	579	206	577	207
548.exchange2_r	72	**357**	**528**	357	528	357	528	72	356	530	**356**	**530**	357	529
557.xz_r	72	494	157	**495**	**157**	495	157	72	494	157	**493**	**158**	493	158
SPECrate®2017_int_base =		**230**												
SPECrate®2017_int_peak =		**250**												

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

Compiler Notes

```
SPEC has learned that this result, which used an evaluation compiler, was submitted
contrary to the compiler license terms.
Intel has granted a one-time waiver for this result.
```

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"
```

Environment Variables Notes

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

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Software Availability: Aug-2019

General Notes

```
Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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>
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
running on NODE4 Mon Jan 20 02:08:32 2020

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) Gold 6254 CPU @ 3.10GHz
      2  "physical id"s (chips)
      72 "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 : 18
      siblings  : 36
      physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Byte Order:            Little Endian
      CPU(s):                72
      On-line CPU(s) list:   0-71
```

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Platform Notes (Continued)

```
      Thread(s) per core:    2
      Core(s) per socket:    18
      Socket(s):             2
      NUMA node(s):          2
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Gold 6254 CPU @ 3.10GHz
      Stepping:              7
      CPU MHz:               1199.963
      CPU max MHz:           4000.0000
      CPU min MHz:           1200.0000
      BogoMIPS:              6200.00
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              25344K
      NUMA node0 CPU(s):     0-17,36-53
      NUMA node1 CPU(s):     18-35,54-71
      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 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 mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept
    vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a
    avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt
    xsavec xgetbv1 cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln
    pts pku ospke avx512_vnni md_clear spec_ctrl intel_stibp flush_l1d arch_capabilities

 /proc/cpuinfo cache data
    cache size : 25344 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 8 9 10 11 12 13 14 15 16 17 36 37 38 39 40 41 42 43 44 45
   46 47 48 49 50 51 52 53
   node 0 size: 261543 MB
   node 0 free: 255472 MB
   node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 54 55 56 57 58 59 60
   61 62 63 64 65 66 67 68 69 70 71
   node 1 size: 262144 MB
   node 1 free: 256047 MB
   node distances:
```

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Hardware Availability: Sep-2019

Software Availability: Aug-2019

Platform Notes (Continued)

```
   node   0   1
     0:  10  21
     1:  21  10

 From /proc/meminfo
    MemTotal:       527747556 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    centos-release: CentOS Linux release 7.7.1908 (Core)
    centos-release-upstream: Derived from Red Hat Enterprise Linux 7.7 (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 7.7.1908 (Core)
    system-release: CentOS Linux release 7.7.1908 (Core)
    system-release-cpe: cpe:/o:centos:centos:7

 uname -a:
    Linux NODE4 3.10.0-1062.el7.x86_64 #1 SMP Wed Aug 7 18:08:02 UTC 2019 x86_64 x86_64
    x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 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: Load fences, __user pointer
                                           sanitization
 CVE-2017-5715 (Spectre variant 2):        Mitigation: Full retpoline, IBPB

 run-level 3 Jan 20 01:58

 SPEC is set to: /home/cpu2017
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/centos-home xfs   392G  208G  185G  53% /home

 From /sys/devices/virtual/dmi/id
```

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Platform Notes (Continued)

```
     BIOS:     American Megatrends Inc. 5.14 05/16/2019

 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.
   Memory:
     8x NO DIMM NO DIMM
     16x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version
  19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
         | 525.x264_r(base, peak) 557.xz_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
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==============================================================================
C        | 502.gcc_r(peak)
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------------------------------------------------------------------------------


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

(Continued on next page)

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Compiler Version Notes (Continued)

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  Version 19.0.4.243 Build 20190416
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icc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
C++     | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version
  19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icpc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
        | 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icpc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
C++     | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version
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Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icpc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
        | 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
icpc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
```

(Continued on next page)

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Compiler Version Notes (Continued)

```
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
ifort: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.
-----------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc -m64 -std=c11`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

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-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc
```

C++ benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc
```

Fortran benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc
```

Peak Compiler Invocation

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

502.gcc_r: `icc -m32 -std=c11 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/ia32_lin`

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

523.xalancbmk_r: `icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/ia32_lin`

Fortran benchmarks:
```
ifort -m64
```

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`

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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=4`
`-fno-strict-overflow`
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`
`-lqkmalloc`

 502.gcc_r: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-ipo`
`-xCORE-AVX512` `-O3` `-no-prec-div` `-qopt-mem-layout-trans=4`
`-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=4`
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`
`-lqkmalloc`

 525.x264_r: `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
`-qopt-mem-layout-trans=4` `-fno-alias`
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`
`-lqkmalloc`

 557.xz_r: `Same as 505.mcf_r`

C++ benchmarks:

 520.omnetpp_r: `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
`-qopt-mem-layout-trans=4`
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`
`-lqkmalloc`

 523.xalancbmk_r: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-ipo`
`-xCORE-AVX512` `-O3` `-no-prec-div` `-qopt-mem-layout-trans=4`
`-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:
`-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
`-qopt-mem-layout-trans=4` `-nostandard-realloc-lhs` `-align array32byte`
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`
`-lqkmalloc`

SPEC CPU®2017 Integer Rate Result
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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
(3.10 GHz,Intel Xeon Gold 6254)
DS4A0TR-28R

SPECrate®2017_int_base = 230

SPECrate®2017_int_peak = 250

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Netweb

Test Date: Jan-2020

Hardware Availability: Sep-2019

Software Availability: Aug-2019

The flags files that were used to format this result can be browsed at
```
http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-15.html
http://www.spec.org/cpu2017/flags/Default-Platform-Flags.html
```

You can also download the XML flags sources by saving the following links:
```
http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-15.xml
http://www.spec.org/cpu2017/flags/Default-Platform-Flags.xml
```

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-01-20 02:08:32-0500.
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