## Dell Inc.

**PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed\textsuperscript{2017_int_peak}</th>
<th>SPECspeed\textsuperscript{2017_int_base}</th>
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<tr>
<td>xz</td>
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### Hardware

- **CPU Name:** Intel Xeon Gold 5315Y
- **Max MHz:** 3600
- **Nominal:** 3200
- **Enabled:** 16 cores, 2 chips
- **Orderable:** 1.2 chips
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **L2:** 1.25 MB I+D on chip per core
- **L3:** 12 MB I+D on chip per chip
- **Other:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)
- **Storage:** 225 GB on tmpfs
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux 8.3 (Ootpa)
  - 4.18.0-240.15.1.el8_3.x86_64
- **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;
  - C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux
- **Parallel:** Yes
- **Firmware:** Version 1.2.1 released May-2021
- **File System:** tmpfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Integer Speed Result

Dell Inc.
PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.3

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Results Table

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</tbody>
</table>

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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/mnt/ramdisk2/cpu2017-1.1.5-ic2021.1/lib/intel64:/mnt/ramdisk2/cpu2017-1.1.5-ic2021.1/je5.0.1-64"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

(Continued on next page)
**SPEC CPU®2017 Integer Speed Result**

**Dell Inc.**

PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

| SPECspeed®2017_int_base = 11.1 |
| SPECspeed®2017_int_peak = 11.3 |

| CPU2017 License: 55 | Test Date: May-2021 |
| Test Sponsor: Dell Inc. | Hardware Availability: May-2021 |
| Tested by: Dell Inc. | Software Availability: Feb-2021 |

**General Notes (Continued)**

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.

Benchmark run from a 225 GB ramdisk created with the cmd: "mount -t tmpfs -o size=225G tmpfs /mnt/ramdisk"

**Platform Notes**

**BIOS Settings:**
- Logical Processor : Disabled
- Virtualization Technology : Disabled

**System Profile:** Custom
- CPU Power Management : Maximum Performance
- C1E : Disabled
- C States : Autonomous
- Memory Patrol Scrub : Disabled
- Energy Efficiency Policy : Performance
- CPU Interconnect Bus Link
  - Power Management : Disabled

**Sysinfo program** /mnt/ramdisk2/cpu2017-1.1.5-ic2021.1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Thu May 20 12:57:03 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) Gold 5315Y CPU @ 3.20GHz
  - 2 "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 : 8
  - 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

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

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SPECspeed®2017_int_peak = 11.3

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: May-2021
Hardware Availability: May-2021
Software Availability: Feb-2021

Platform Notes (Continued)

CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 5315Y CPU @ 3.20GHz
Stepping: 6
CPU MHz: 3486.331
BogoMIPS: 6400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 12288K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15
Flags: fpu vme de pse tsc msr pae mce 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 nop1 xtopology nonstop_tsc cpuid aperfforf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrm pdcm pclid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abmh_lbm abm 3nowprefetch cpuid_fault epb cat_l3 invpcid_single intel_pmp ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsxvopt xsxvec xgetbv1 xsavec cqm_llc cqm_occup_l1c cqm_mbm_total cqm_mbm_local split_lock Detect wbinvd dtorm ida arat pln pts avx512vbm1 umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq 1a57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
size: 12288 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
aavailable: 2 nodes (0-1)
node 0 cpus: 0 2 4 6 8 10 12 14
node 0 size: 254652 MB
node 0 free: 241777 MB
node 1 cpus: 1 3 5 7 9 11 13 15
node 1 size: 255271 MB
node 1 free: 256628 MB
node distances:
SPEC CPU®2017 Integer Speed Result

Dell Inc.
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CPU2017 License: 55
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Software Availability: Feb-2021

Platform Notes (Continued)

node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal:       527819028 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

From /etc/*release* /etc/*version*
  os-release:
   NAME="Red Hat Enterprise Linux"
   VERSION="8.3 (Ootpa)"
   ID="rhel"
   ID_LIKE="fedora"
   VERSION_ID="8.3"
   PLATFORM_ID="platform:el8"
   PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
   ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga
uname -a:
Linux localhost.localdomain 4.18.0-240.15.1.el8_3.x86_64 #1 SMP Wed Feb 3 03:12:15 EST 2021 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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2): Not affected
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

(Continued on next page)
Dell Inc. PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.3

Platform Notes (Continued)

SPEC is set to: /mnt/ramdisk2/cpu2017-1.1.5-ic2021.1

Filesystem  Type  Size  Used  Avail  Use%  Mounted on
    tmpfs    tmpfs  225G  6.9G  219G  4%  /mnt/ramdisk2

From /sys/devices/virtual/dmi/id

Vendor: Dell Inc.
Product: PowerEdge R750
Product Family: PowerEdge
Serial: 1234567

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:
12x 002C069D002C 18ASF4G72PDZ-3G2E1 32 GB 2 rank 3200, configured at 2933
4x 00AD063200AD HMAA4GR7AR8N-XN 32 GB 2 rank 3200, configured at 2933
16x Not Specified Not Specified

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 1.2.1
BIOS Date: 05/06/2021
BIOS Revision: 1.2

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(peak)
------------------------------------------------------------------------------
Intel(R) C 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.
------------------------------------------------------------------------------

==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
          | 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
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.
------------------------------------------------------------------------------

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

```plaintext
==============================================================================
C       | 600.perlbench_s(peak)
-------|------------------------
Intel(R) C 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.
------------------------------------------------------------------------------

==============================================================================
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 
       | 625.x264_s(base, peak) 657.xz_s(base, peak)
-------|-----------------------------------------------
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.
------------------------------------------------------------------------------

==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 
       | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
-------|-----------------------------------------------
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 | 648.exchange2_s(base, peak)
---------|------------------------
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
Dell Inc.

PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.3

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: May-2021
Hardware Availability: May-2021
Software Availability: Feb-2021

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/
-lqkmalloc

Fortran benchmarks:
-m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries

Peak Compiler Invocation

C benchmarks (except as noted below):
icx

600.perlbench_s: icc

C++ benchmarks:
icpx

(Continued on next page)
## Dell Inc.

### PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)

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<td>Tested by:</td>
<td>Dell Inc.</td>
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### SPEC CPU®2017 Integer Speed Result

| SPECspeed®2017_int_base | 11.1 |
| SPECspeed®2017_int_peak | 11.3 |

| CPU2017 License | 55 |
| Test Sponsor | Dell Inc. |
| Test Date | May-2021 |
| Hardware Availability | May-2021 |
| Software Availability | Feb-2021 |

### Peak Compiler Invocation (Continued)

**Fortran benchmarks:**

ifort

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

**C benchmarks:**

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-<L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-<L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -DSPEC_OPENMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs
-xCORE-AVX512 -flto -O3 -ffast-math
-qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-<L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

**C++ benchmarks:**

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

(Continued on next page)
Dell Inc.  
PowerEdge R750 (Intel Xeon Gold 5315Y, 3.20 GHz)  

<table>
<thead>
<tr>
<th>SPECspeed\textsuperscript{\textregistered}2017\textunderscore int\textunderscore peak</th>
<th>SPECspeed\textsuperscript{\textregistered}2017\textunderscore int\textunderscore base</th>
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- **CPU2017 License**: 55  
- **Test Sponsor**: Dell Inc.  
- **Tested by**: Dell Inc.  
- **Test Date**: May-2021  
- **Hardware Availability**: May-2021  
- **Software Availability**: Feb-2021  

**Peak Optimization Flags (Continued)**

- 641.leela\_s: basepeak = yes  
- Fortran benchmarks:  
  - 648.exchange2\_s: basepeak = yes

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 CPU\textsuperscript{\textregistered}2017 v1.1.5 on 2021-05-20 13:57:03-0400.  
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