Dell Inc.  
(Test Sponsor: Dell Inc)

PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)  

specified®2017_int_base = 9.54  
specified®2017_int_peak = 9.77

SPECspeed®2017_int_base = 9.54
SPECspeed®2017_int_peak = 9.77

CPU2017 License: 55  
Test Date: Sep-2020
Test Sponsor: Dell Inc  
Hardware Availability: Jul-2020
Tested by: Dell Inc.  
Software Availability: Apr-2020

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<td>623.xalancbmk_s 24</td>
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<td>625.x264_s 24</td>
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<td>648.exchange2_s 24</td>
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<td></td>
</tr>
<tr>
<td>657.xz_s 24</td>
<td>19.7</td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

- CPU Name: Intel Xeon Silver 4214R
- Max MHz: 3500
- Nominal: 2400
- Enabled: 24 cores, 2 chips
- Orderable: 1, 2
- Cache L1: 32 KB I + 32 KB D on chip per core
- L2: 1 MB I+D on chip per core
- L3: 16.5 MB I+D on chip per chip
- Other: None
- Memory: 384 GB (12 x 32 GB 2Rx4 PC4-3200AA-R, running at 2400)
- Storage: 1 x 1.92TB SATA SSD
- Other: None
- OS: Red Hat Enterprise Linux 8.1
- kernel 4.18.0-147.el8.x86_64
- Compiler: C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
- Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- Parallel: Yes
- Firmware: Version 2.8.1 released Jun-2020
- File System: xfs
- 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 set to prefer performance at the cost of additional power usage
**SPEC CPU®2017 Integer Speed Result**

Dell Inc.
(Test Sponsor: Dell Inc)

PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)  

SPECspeed®2017_int_base = 9.54  
SPECspeed®2017_int_peak = 9.77

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<td>314</td>
<td>19.7</td>
<td>24</td>
<td>315</td>
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</tbody>
</table>

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

**Compiler Notes**

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux. The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux.

**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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOCP_CONF = "retain: true"
OMP_STACKSIZE = "192M"
Dell Inc.  
(Test Sponsor: Dell Inc)

PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)

<table>
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<td>9.77</td>
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</tbody>
</table>

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

**General Notes**

Binaries compiled on a system with 1x Intel Core i9–7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0

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.


**Platform Notes**

BIOS settings:
Virtualization Technology disabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C States set to Autonomous
C1E disabled
Uncore Frequency set to Dynamic
Energy Efficiency Policy set to Performance
Memory Patrol Scrub set to standard
Logical Processor disabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
UPI Prefetch enabled
LLC Prefetch disabled
Dead Line LLC Alloc enabled
Directory AtoS disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on localhost.localdomain Tue Sep 15 07:36:58 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) Silver 4214R CPU @ 2.40GHz
- 2 "physical id"s (chips)
- 24 "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 : 12

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

Dell Inc.  
(Test Sponsor: Dell Inc)

PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)

| SPECspeed®2017_int_base = 9.54 |
| SPECspeed®2017_int_peak = 9.77 |

CPU2017 License: 55  
Test Sponsor: Dell Inc  
Test Date: Sep-2020  
Hardware Availability: Jul-2020  
Tested by: Dell Inc.  
Software Availability: Apr-2020

Platform Notes (Continued)

siblings : 12  
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13  
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 24  
On-line CPU(s) list: 0-23  
Thread(s) per core: 1  
Core(s) per socket: 12  
Socket(s): 2  
NUMA node(s): 2  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Silver 4214R CPU @ 2.40GHz  
Stepping: 7  
CPU MHz: 2377.332  
CPU max MHz: 3500.0000  
CPU min MHz: 1000.0000  
BogoMIPS: 4800.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 16896K  
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22  
NUMA nodel CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23  
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcltv dca sse4_1 mce pxrsvts mtms rum ts mxrm aem64 cmov sterc mmx cdtes64 ht sgtmu tpr_shadow vnmi flexpriority vmptrld clflushopt clwb intel_pt nopt��相 shadow mcmss cmtdqm kcm_video intel_pme intel_pt intel_pta intel_pt_cp clflushopt xgsave xsaveopt xsaveas cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts pkup ospke avx512_vnni md_clear flush_lld arch_capabilities

/proc/cpuinfo cache data  
cache size : 16896 KB

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

(Continued on next page)
Platform Notes (Continued)

physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0 2 4 6 8 10 12 14 16 18 20 22
  node 0 size: 192049 MB
  node 0 free: 191219 MB
  node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23
  node 1 size: 193532 MB
  node 1 free: 192617 MB
  node distances:
  node 0 1
  0: 10 21
  1: 21 10

From /proc/meminfo
  MemTotal: 394836832 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.1 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.1"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"
    ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga

uname -a:
  Linux localhost.localdomain 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 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: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

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

Dell Inc.  
(Test Sponsor: Dell Inc)  
PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)

<table>
<thead>
<tr>
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</thead>
</table>

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

**Platform Notes (Continued)**

run-level 3 Sep 15 07:31 last=5

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 1.7T 23G 1.7T 2% /home

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 2.8.1 06/30/2020
Vendor: Dell Inc.
Product: PowerEdge R440
Product Family: PowerEdge
Serial: F9TD613

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 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
4x Not Specified Not Specified

(End of data from sysinfo program)

Memory running at 2400

**Compiler Version Notes**

---------------------------------------------------------------------------------------------------------------------
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) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---------------------------------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------------------------------
C | 600.perlbench_s(peak)
---------------------------------------------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---------------------------------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------------------------------
C | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
---------------------------------------------------------------------------------------------------------------------
(Continued on next page)
**Compiler Version Notes (Continued)**

| C | 625.x264_s(base, peak) 657.xz_s(base, peak) |
|---------------------------------------------|
| Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 | NextGen Build 20200304 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. | |

| C | 600.perlbench_s(peak) |
|---------------------------------------------|
| Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306 | |
| 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) C++ Compiler for applications running on Intel(R) 64, Version 2021.1 | NextGen Build 20200304 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. | |

| Fortran | 648.exchange2_s(base, peak) |
|---------------------------------------------|
| Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306 | |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. | |

**Base Compiler Invocation**

C benchmarks:
- icc

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort
SPEC CPU®2017 Integer Speed Result

Dell Inc. (Test Sponsor: Dell Inc)

PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)

SPECspeed®2017_int_base = 9.54
SPECspeed®2017_int_peak = 9.77

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

Test Date: Sep-2020
Hardware Availability: Jul-2020
Software Availability: Apr-2020

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.ommnetpp_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:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldef -CORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -CORE-AVX2
-O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-mbranches-within-32B-boundaries

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

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

**Dell Inc.**
(Test Sponsor: Dell Inc)

**PowerEdge R440** (Intel Xeon Silver 4214R, 2.4 GHz)

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

**Test Date:** Sep-2020  
**Hardware Availability:** Jul-2020  
**Software Availability:** Apr-2020

---

**Peak Compiler Invocation (Continued)**

Fortran benchmarks:

```fortran
ifort
```

---

**Peak Portability Flags**

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64  
602.gcc_s: -DSPEC_LP64(*) -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

(* )Indicates a portability flag that was found in a non-portability variable.

---

**Peak Optimization Flags**

C benchmarks:

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2 -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 -qnextgen -std=c11 -fuse-ld=gold -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs -fprofile-generate(pass 1) -fprofile-use=default.profdata(pass 2) -xCORE-AVX2 -flto -Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc  
605.mcf_s: basepeak = yes  
625.x264_s: -m64 -qnextgen -std=c11 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs -xCORE-AVX2 -flto -O3 -ffast-math -fuse-ld=gold -qopt-mem-layout-trans=4 -fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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

**Dell Inc.**  
(Test Sponsor: Dell Inc)  

**PowerEdge R440 (Intel Xeon Silver 4214R, 2.4 GHz)**

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<td>Software Availability:</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

### Peak Optimization Flags (Continued)

- 657.xz_s: basepeak = yes  
  
- C++ benchmarks:  
  - 620.omnetpp_s: basepeak = yes  
  - 623.xalancbmk_s: basepeak = yes  
  - 631.deepsjeng_s: basepeak = yes  
  - 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®2017 v1.1.0 on 2020-09-15 08:36:57-0400.  
Originally published on 2020-10-13.