Dell Inc. PowerEdge T40 (Intel Core i3-9100, 3.60GHz)  

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

SPECrate®2017_int_base = 25.5  
SPECrate®2017_int_peak = 26.4

Test Date: Apr-2019  
Hardware Availability: Apr-2019  
Software Availability: Feb-2019

<table>
<thead>
<tr>
<th>Copies</th>
<th>0</th>
<th>3.00</th>
<th>6.00</th>
<th>9.00</th>
<th>12.0</th>
<th>15.0</th>
<th>18.0</th>
<th>21.0</th>
<th>24.0</th>
<th>27.0</th>
<th>30.0</th>
<th>33.0</th>
<th>36.0</th>
<th>39.0</th>
<th>42.0</th>
<th>45.0</th>
<th>48.0</th>
<th>51.0</th>
<th>54.0</th>
<th>57.0</th>
<th>62.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbuch_r</td>
<td>4</td>
<td>22.0</td>
<td>22.0</td>
<td>25.7</td>
<td>25.7</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
<td>31.8</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>4</td>
<td>23.6</td>
<td>23.6</td>
<td>26.5</td>
<td>26.5</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
<td>31.6</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>4</td>
<td>14.8</td>
<td>14.8</td>
<td>14.9</td>
<td>14.9</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
<td>29.8</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
<td>59.5</td>
<td>59.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>4</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
<td>50.3</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>4</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
<td>18.6</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>4</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
<td>30.9</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>4</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>4</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
</tr>
</tbody>
</table>

--- SPECrate®2017_int_base (25.5) ---  
--- SPECrate®2017_int_peak (26.4) ---

**Hardware**

- **CPU Name:** Intel Core i3-9100
- **Max MHz:** 4200
- **Nominal:** 3600
- **Enabled:** 4 cores, 1 chip
- **Orderable:** 1 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 256 KB I+D on chip per core
- **L3:** 6 MB I+D on chip per chip
- **Other:** None
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)
- **Storage:** 1 x 960 GB SATA SSD
- **Other:** None

**Software**

- **OS:** Ubuntu 18.04.2 LTS
- **Compiler:** C/C++, Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux;
  Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux
- **Parallel:** No
- **Firmware:** Version 0.1.3 released Apr-2019
- **File System:** ext4
- **System State:** Run level 5 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** --
### Dell Inc. PowerEdge T40 (Intel Core i3-9100, 3.60GHz)

**SPEC CPU®2017 Integer Rate Result**

**CPU2017 License:** 55  
**Test Date:** Apr-2019  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Hardware Availability:** Apr-2019  
**Software Availability:** Feb-2019

#### 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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>4</td>
<td>288</td>
<td>22.1</td>
<td>289</td>
<td>22.0</td>
<td></td>
<td></td>
<td>4</td>
<td>248</td>
<td>25.7</td>
<td>248</td>
<td>25.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>4</td>
<td>239</td>
<td>23.7</td>
<td>240</td>
<td>23.6</td>
<td></td>
<td></td>
<td>4</td>
<td>214</td>
<td>26.5</td>
<td>214</td>
<td>26.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>4</td>
<td>203</td>
<td>31.8</td>
<td>204</td>
<td>31.8</td>
<td></td>
<td></td>
<td>4</td>
<td>205</td>
<td>31.6</td>
<td>204</td>
<td>31.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
<td>353</td>
<td>14.9</td>
<td>353</td>
<td>14.8</td>
<td></td>
<td></td>
<td>4</td>
<td>353</td>
<td>14.9</td>
<td>352</td>
<td>14.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>4</td>
<td>142</td>
<td>29.8</td>
<td>141</td>
<td>29.9</td>
<td></td>
<td></td>
<td>4</td>
<td>136</td>
<td>31.1</td>
<td>137</td>
<td>30.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>525.x264_r</td>
<td>4</td>
<td>118</td>
<td>59.5</td>
<td>117</td>
<td>59.8</td>
<td></td>
<td></td>
<td>4</td>
<td>114</td>
<td>61.5</td>
<td>114</td>
<td>61.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>4</td>
<td>211</td>
<td>21.7</td>
<td>211</td>
<td>21.7</td>
<td></td>
<td></td>
<td>4</td>
<td>211</td>
<td>21.7</td>
<td>211</td>
<td>21.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td>4</td>
<td>356</td>
<td>18.6</td>
<td>355</td>
<td>18.7</td>
<td></td>
<td></td>
<td>4</td>
<td>355</td>
<td>18.7</td>
<td>355</td>
<td>18.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>4</td>
<td>208</td>
<td>50.4</td>
<td>208</td>
<td>50.3</td>
<td></td>
<td></td>
<td>4</td>
<td>208</td>
<td>50.4</td>
<td>209</td>
<td>50.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>4</td>
<td>324</td>
<td>13.3</td>
<td>324</td>
<td>13.3</td>
<td></td>
<td></td>
<td>4</td>
<td>324</td>
<td>13.3</td>
<td>324</td>
<td>13.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 25.5**  
**SPECrate®2017_int_peak = 26.4**

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 = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
```

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5

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:

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

runcpu command invoked through numactl i.e.:

(Continued on next page)
Dell Inc.  
PowerEdge T40 (Intel Core i3-9100, 3.60GHz)  

SPECrate®2017_int_base = 25.5  
SPECrate®2017_int_peak = 26.4

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test Date: Apr-2019  
Hardware Availability: Apr-2019  
Software Availability: Feb-2019

General Notes (Continued)

numactl --interleave=all runcpu <etc>
jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  

Platform Notes

BIOS settings:
CPU Performance set to Maximum Performance  
C States set to Autonomous  
C1E disabled  
Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcd8f2999c33d6f64985e45859ea9  
runtime on intel-sut Fri Apr 26 14:20:24 2019

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) Core(TM) i3-9100 CPU @ 3.60GHz  
1 "physical id"s (chips)  
4 "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: 4  
physical 0: cores 0 1 2 3

From lscpu:

Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 4  
On-line CPU(s) list: 0-3  
Thread(s) per core: 1  
Core(s) per socket: 4  
Socket(s): 1  
NUMA node(s): 1  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 158  
Model name: Intel(R) Core(TM) i3-9100 CPU @ 3.60GHz  
Stepping: 11  
CPU MHz: 4069.571  
CPU max MHz: 4200.000

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

Dell Inc.

PowerEdge T40 (Intel Core i3-9100, 3.60GHz)

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

Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

SPECrate®2017_int_base = 25.5
SPECrate®2017_int_peak = 26.4

Platform Notes (Continued)

CPU min MHz: 800.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 6144K
NUMA node0 CPU(s): 0-3
Flags:
   fpu  vme  de  pse  tsc  msr  pae  mce  cx8  apic  sep  mtrr  pge  mca  cmov
   pat  pse36  clflush  dtsc  acpi  mmx  fxsr  sse  sse2  ss  ht  tm  pbe  syscall
   nx  pdpe1gb  rdtscp  lm  constant_tsc  art  arch_perfmon  pebs  bts  rep_good
   noapic  nonstop_tsc  vme  pat  pmca  cx8  extable  fpu_exception
   cpuid  mmxext  pier  sse2  movmd_64bit  popcmd_64bit  mtrr_64bit
   pge_64bit  mca_64bit  pxgmsem_64bit

/proc/cpuinfo cache data
   cache size: 6144 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
   node 0 size: 64255 MB
   node 0 free: 63678 MB
   node distances:
      node 0
      0: 10

From /proc/meminfo
   MemTotal: 65797688 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
   Ubuntu 18.04.2 LTS

From /etc/*release*/etc/*version*
   debian_version: buster/sid
   os-release:
      NAME=Ubuntu
      VERSION=18.04.2 LTS (Bionic Beaver)
      ID=ubuntu
      ID_LIKE=debian

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

Dell Inc.

PowerEdge T40 (Intel Core i3-9100, 3.60GHz)

SPECrater®2017_int_base = 25.5
SPECrater®2017_int_peak = 26.4

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

Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

Platform Notes (Continued)

PRETTY_NAME="Ubuntu 18.04.2 LTS"
VERSION_ID="18.04"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/

uname -a:
Linux intel-sut 4.15.0-45-generic #48-Ubuntu SMP Tue Jan 29 16:28:13 UTC 2019 x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full generic retpoline, IBPB, IBRS_FW

run-level 5 Apr 26 13:32
SPEC is set to: /home/cpu2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda2      ext4  439G   19G  398G   5% /

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 Dell Inc. 0.1.3 04/22/2019
Memory:
4x 80CE000080CE M391A2K43BB1-CTD 16 GB 2 rank 2666, configured at 2400

(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
19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
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,
Compiler Version Notes (Continued)

Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
C       | 502.gcc_r(peak)
Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
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 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
C++     | 523.xalancbmk_r(peak)
Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
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 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
C++     | 523.xalancbmk_r(peak)
Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================

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

### Dell Inc.

**PowerEdge T40 (Intel Core i3-9100, 3.60GHz)**

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Apr-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Feb-2019</td>
</tr>
</tbody>
</table>

- **SPECrate®2017_int_base = 25.5**
- **SPECrate®2017_int_peak = 26.4**

### Compiler Version Notes (Continued)

#### 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 19.0.1.144 Build 20181018 |
| Copyright (C) 1985-2018 Intel Corporation. All rights reserved. |

#### Fortran

| | 548.exchange2_r(base, peak) |
|-------------------------------|
| Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.1.144 Build 20181018 |
| Copyright (C) 1985-2018 Intel Corporation. All rights reserved. |

### 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`
SPEC CPU®2017 Integer Rate Result

Dell Inc.
PowerEdge T40 (Intel Core i3-9100, 3.60GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>25.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>26.4</td>
</tr>
</tbody>
</table>

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

**Base Optimization Flags**

C benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/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_2019.1.144/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_2019.1.144/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`

(Continued on next page)
Dell Inc.

PowerEdge T40 (Intel Core i3-9100, 3.60GHz)

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

SPECrater®2017_int_base = 25.5
SPECrater®2017_int_peak = 26.4

Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

Peak Portability Flags (Continued)

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-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

502.gcc_r: -Wl, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -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-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

525.x264_r: -Wl, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: -Wl, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

523.xalancbmk_r: -Wl, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -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

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

**Dell Inc.**

PowerEdge T40 (Intel Core i3-9100, 3.60GHz)  

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 25.5</th>
<th>SPECrate®2017_int_peak = 26.4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Apr-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Feb-2019</td>
</tr>
</tbody>
</table>

### Peak Optimization Flags (Continued)

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout=trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

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:

---

SPEC CPU and SPECrate are registered trademarks 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 CPU®2017 v1.0.5 on 2019-04-26 10:20:23-0400.
Originally published on 2019-09-17.