### Dell Inc.

PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

**SPEC speed2017_int_base = 6.89**

**SPEC speed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Threads</th>
<th>0</th>
<th>1.00</th>
<th>2.00</th>
<th>3.00</th>
<th>4.00</th>
<th>5.00</th>
<th>6.00</th>
<th>7.00</th>
<th>8.00</th>
<th>9.00</th>
<th>10.0</th>
<th>11.0</th>
<th>12.0</th>
<th>13.0</th>
<th>14.0</th>
<th>15.0</th>
<th>16.0</th>
<th>17.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>32</td>
<td>4.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Hardware

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Silver 4109T</td>
</tr>
<tr>
<td>Max MHz.:</td>
<td>3000</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2000</td>
</tr>
<tr>
<td>Enabled:</td>
<td>16 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1, 2 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)</td>
</tr>
<tr>
<td>Storage:</td>
<td>960GB SATA SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OS:</td>
<td>SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 1.0.0 released Aug-2017</td>
</tr>
<tr>
<td>File System:</td>
<td>btrfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc: jemalloc memory allocator library V5.0.1;</td>
</tr>
</tbody>
</table>
SPEC CPU2017 Integer Speed Result

Dell Inc.
PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

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

SPECspeed2017_int_base = 6.89
SPECspeed2017_int_peak = Not Run

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>32</td>
<td>365</td>
<td>4.86</td>
<td>364</td>
<td>4.88</td>
<td>366</td>
<td>4.84</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>32</td>
<td>538</td>
<td>7.40</td>
<td>536</td>
<td>7.43</td>
<td>544</td>
<td>7.32</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>32</td>
<td>521</td>
<td>9.07</td>
<td>505</td>
<td>9.34</td>
<td>508</td>
<td>9.30</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>32</td>
<td>417</td>
<td>3.91</td>
<td>389</td>
<td>4.19</td>
<td>417</td>
<td>3.91</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>32</td>
<td>187</td>
<td>7.59</td>
<td>185</td>
<td>7.66</td>
<td>187</td>
<td>7.59</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>32</td>
<td>193</td>
<td>9.15</td>
<td>193</td>
<td>9.13</td>
<td>193</td>
<td>9.14</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>32</td>
<td>338</td>
<td>4.24</td>
<td>338</td>
<td>4.24</td>
<td>338</td>
<td>4.24</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>32</td>
<td>487</td>
<td>3.50</td>
<td>487</td>
<td>3.50</td>
<td>488</td>
<td>3.50</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>32</td>
<td>270</td>
<td>10.9</td>
<td>270</td>
<td>10.9</td>
<td>269</td>
<td>10.9</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>32</td>
<td>378</td>
<td>16.4</td>
<td>380</td>
<td>16.3</td>
<td>378</td>
<td>16.3</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 6.89
SPECspeed2017_int_peak = Not Run

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

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:
KMP_AFFINITY = "granularity=fine,scatter"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
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: configured and built at default for
32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4,
and the system compiler gcc 4.8.5;
jemalloc: sources available via jemalloc.net

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: 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.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) (Continued on next page)
Dell Inc.
PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

General Notes (Continued)

is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS settings:
Virtualization Technology disabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost enabled
C States disabled
Memory Patrol Scrub disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b091c0f
running on linux-bek4 Mon Nov 6 04:34:03 2017

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 4109T CPU @ 2.00GHz
  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

(Continued on next page)
SPEC CPU2017 Integer Speed Result

Dell Inc.

PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

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

SPECspeed2017_int_base = 6.89
SPECspeed2017_int_peak = Not Run

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Platform Notes (Continued)

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
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4109T CPU @ 2.00GHz
Stepping: 4
CPU MHz: 2000.095
BogoMIPS: 4000.19
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 11264K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31
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 rdtsscp
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 ida arat epb pln pts dtherm intel_pt
tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512v1 xsaveopt xsavec xgetbv1 cqm_1llc cqm_occupa_llc pku ospke

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 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
node 0 size: 95341 MB
node 0 free: 94131 MB
node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
node 1 size: 96736 MB
node 1 free: 95929 MB
node distances:

(Continued on next page)
Dell Inc.
PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

SPECsped2017_int_base = 6.89
SPECsped2017_int_peak = Not Run

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

Platform Notes (Continued)

node  0  1
0:  10  21
1:  21  10

From /proc/meminfo
MemTotal: 196687956 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
- SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 3
  # This file is deprecated and will be removed in a future service pack or release.
  # Please check /etc/os-release for details about this release.
os-release:
- NAME="SLES"
  VERSION="12-SP3"
  VERSION_ID="12.3"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
Linux linux-bek4 4.4.70-2-default #1 SMP Wed Jun 7 15:12:06 UTC 2017 (4502c76) x86_64
x86_64 x86_64 GNU/Linux
run-level 3 Nov 4 04:41

SPEC is set to: /root/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda7 btrfs 855G 25G 831G 3% /

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. 1.0.0 08/10/2017
Memory:
- 12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666, configured at 2400
- 4x Not Specified Not Specified

(End of data from sysinfo program)
SPEC CPU2017 Integer Speed Result

Dell Inc.
PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

SPECspeed2017_int_base = 6.89
SPECspeed2017_int_peak = Not Run

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

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Compiler Version Notes

==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
657.xz_s(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
641.leela_s(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  648.exchange2_s(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
(Continued on next page)
SPEC CPU2017 Integer Speed Result

Dell Inc.
PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

SPECspeed2017_int_base = 6.89
SPECspeed2017_int_peak = Not Run

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Base Portability Flags (Continued)

641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

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:
## Dell Inc.

PowerEdge FC640 (Intel Xeon Silver 4109T, 2.00 GHz)

| SPECspeed2017_int_base = 6.89  |
| SPECspeed2017_int_peak = Not Run |

| CPU2017 License: 55 | Test Date: Nov-2017 |
| Test Sponsor: Dell Inc. | Hardware Availability: Sep-2017 |
| Tested by: Dell Inc. | Software Availability: Sep-2017 |

SPEC is a registered trademark 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 CPU2017 v1.0.2 on 2017-11-06 05:34:03-0500.
Originally published on 2018-02-27.