SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.4

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

Test Date: Aug-2021
Hardware Availability: Jul-2021

Threads

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>16</td>
<td>8.11</td>
<td>10.1</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>16</td>
<td>10.5</td>
<td>20.0</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>16</td>
<td>7.34</td>
<td>13.8</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>16</td>
<td>4.99</td>
<td>17.0</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>16</td>
<td>6.06</td>
<td>17.7</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16</td>
<td>4.99</td>
<td>19.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>16</td>
<td>6.06</td>
<td>19.9</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>16</td>
<td>4.99</td>
<td>19.9</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16</td>
<td>4.99</td>
<td>19.9</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>16</td>
<td>4.99</td>
<td>19.9</td>
</tr>
</tbody>
</table>

---

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 (12 x 32 GB 2Rx8 PC4-3200AA-R; 4 x 32 GB 2Rx4 PC4-3200AA-R, running at 2933)
Storage: 225 GB on tmpfs
Other: None

---

Software

OS: Red Hat Enterprise Linux 8.4 (Ootpa)
4.18.0-305.7.1.el8_4.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.
Dell Inc. PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>16</td>
<td>251</td>
<td>7.06</td>
<td>16</td>
<td>251</td>
<td>7.07</td>
<td>16</td>
<td>218</td>
<td>8.13</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>16</td>
<td>390</td>
<td>10.2</td>
<td>16</td>
<td>395</td>
<td>10.1</td>
<td>16</td>
<td>379</td>
<td>10.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>16</td>
<td>236</td>
<td>20.0</td>
<td>16</td>
<td>236</td>
<td>20.0</td>
<td>16</td>
<td>235</td>
<td>20.1</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>16</td>
<td>219</td>
<td>7.46</td>
<td>16</td>
<td>222</td>
<td>7.34</td>
<td>16</td>
<td>219</td>
<td>7.46</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>16</td>
<td>103</td>
<td>13.8</td>
<td>16</td>
<td>103</td>
<td>13.8</td>
<td>16</td>
<td>103</td>
<td>13.8</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16</td>
<td>104</td>
<td>17.0</td>
<td>16</td>
<td>104</td>
<td>17.0</td>
<td>16</td>
<td>99.8</td>
<td>17.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>16</td>
<td>236</td>
<td>6.07</td>
<td>16</td>
<td>236</td>
<td>6.06</td>
<td>16</td>
<td>236</td>
<td>6.07</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16</td>
<td>148</td>
<td>19.8</td>
<td>16</td>
<td>148</td>
<td>19.8</td>
<td>16</td>
<td>148</td>
<td>19.8</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>16</td>
<td>310</td>
<td>19.9</td>
<td>16</td>
<td>310</td>
<td>19.9</td>
<td>16</td>
<td>310</td>
<td>19.9</td>
</tr>
</tbody>
</table>

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"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/mnt/ramdisk/cpu2017-1.1.8-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.8-ic2021.1/je5.0.1-64"
MALLOC_CONF = "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)
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
PCI ASPM L1 Link
- Power Management: Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-ic2021.1/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6fe4d
running on R750xs.9xbzd3.inside.dell.com Tue Aug 31 14:30:00 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 from util-linux 2.32.1:
- Architecture: x86_64
**SPEC CPU®2017 Integer Speed Result**

Dell Inc.  
PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>11.4</td>
</tr>
</tbody>
</table>

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

---

### Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU op-mode(s):</td>
<td>32-bit, 64-bit</td>
</tr>
<tr>
<td>Byte Order:</td>
<td>Little Endian</td>
</tr>
<tr>
<td>CPU(s):</td>
<td>16</td>
</tr>
<tr>
<td>On-line CPU(s) list:</td>
<td>0-15</td>
</tr>
<tr>
<td>Thread(s) per core:</td>
<td>1</td>
</tr>
<tr>
<td>Core(s) per socket:</td>
<td>8</td>
</tr>
<tr>
<td>Socket(s):</td>
<td>2</td>
</tr>
<tr>
<td>NUMA node(s):</td>
<td>2</td>
</tr>
<tr>
<td>Vendor ID:</td>
<td>GenuineIntel</td>
</tr>
<tr>
<td>BIOS Vendor ID:</td>
<td>Intel</td>
</tr>
<tr>
<td>CPU family:</td>
<td>6</td>
</tr>
<tr>
<td>Model:</td>
<td>106</td>
</tr>
<tr>
<td>Model name:</td>
<td>Intel(R) Xeon(R) Gold 5315Y CPU @ 3.20GHz</td>
</tr>
<tr>
<td>BIOS Model name:</td>
<td>Intel(R) Xeon(R) Gold 5315Y CPU @ 3.20GHz</td>
</tr>
<tr>
<td>Stepping:</td>
<td>6</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>1043.793</td>
</tr>
<tr>
<td>BogoMIPS:</td>
<td>6400.00</td>
</tr>
<tr>
<td>Virtualization:</td>
<td>VT-x</td>
</tr>
<tr>
<td>L1d cache:</td>
<td>48K</td>
</tr>
<tr>
<td>L1i cache:</td>
<td>32K</td>
</tr>
<tr>
<td>L2 cache:</td>
<td>1280K</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>12288K</td>
</tr>
<tr>
<td>NUMA node0 CPU(s):</td>
<td>0, 2, 4, 6, 8, 10, 12, 14</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
<td>1, 3, 5, 7, 9, 11, 13, 15</td>
</tr>
</tbody>
</table>

**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 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 pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault ebpx cat_l3 invpcid_single intel_ppn ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erms invpcid cmq rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_hin avx512bw avx512lv1 xsaveopt xsavec xgetbv1 xsaveavs cmq_llc cmq_occupa_llic cmq_mbb_total cmq_mbb_local split_lock_detect wbinvd dtherm idar pln pts avx512vbmi uint pku ospke avx512_vbmi2 gfni vaes vpcmtdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrm md_clear pconflic 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.  
available: 2 nodes (0-1)  
node 0 cpus: 0 2 4 6 8 10 12 14  
node 0 size: 257146 MB  
node 0 free: 254928 MB  

---

(Continued on next page)
Dell Inc.

PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.4

CPU2017 License: 55
Test Date: Aug-2021
Test Sponsor: Dell Inc.
Hardware Availability: Jul-2021
Tested by: Dell Inc.
Software Availability: Jun-2021

Platform Notes (Continued)

node 1 cpus: 1 3 5 7 9 11 13 15
node 1 size: 258043 MB
node 1 free: 249645 MB
node distances:
node 0 1
0:  10  20
1:  20  10

From /proc/meminfo
MemTotal:       527555136 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

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

From /etc/*release* /etc/*version*
o-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.4 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.4"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="Red Hat Enterprise Linux 8.4 (Ootpa)"
  ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.4 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.4 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.4:ga

uname -a:
  Linux R750xs.9xbztd3.inside.dell.com 4.18.0-305.7.1.el8_4.x86_64 #1 SMP Mon Jun 14 17:25:42 EDT 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/swaps barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1):
  Mitigation: Enhanced IBRS, IBPB:
CVE-2017-5715 (Spectre variant 2):

(Continued on next page)
### Platform Notes (Continued)

Conditional, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

**run-level 3 Aug 31 13:46**

**SPEC is set to**: /mnt/ramdisk/cpu2017-1.1.8-ic2021.1

**Filesystem** | **Type** | **Size** | **Used** | **Avail** | **Use%** | **Mounted on**
--- | --- | --- | --- | --- | --- | ---
tmpfs | tmpfs | 225G | 4.4G | 221G | 2% | /mnt/ramdisk

**From /sys/devices/virtual/dmi/id**

**Vendor**: Dell Inc.
**Product**: PowerEdge R750xs
**Product Family**: PowerEdge
**Serial**: 9XBZTD3

Additional information from dmidecode 3.2 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 HMA84GR7DJR4N-XN 32 GB 2 rank 3200, configured at 2933

**BIOS**

**BIOS Vendor**: Dell Inc.
**BIOS Version**: 1.2.1
**BIOS Date**: 05/28/2021
**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)
```

(Continued on next page)
Dell Inc.

PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>Test Sponsor:</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by:</td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

**Compiler Version Notes (Continued)**

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.

Base Compiler Invocation

C benchmarks:
- icx

C++ benchmarks:
- icpx

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

Dell Inc.
PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

| SPECspeed®2017_int_base = 11.1 |
| SPECspeed®2017_int_peak = 11.4 |

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

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Jun-2021

Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

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 -fioopenmp -Wl,-z,muldefs -xCORE-AVX512
-03 -ffast-math
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-ipo
-no-prec-div
-qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -03 -ffast-math
-ffast-math
-qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -xCORE-AVX512 -03 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries
Dell Inc.

PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Spec Speed®2017_int_base</th>
<th>Spec Speed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>11.4</td>
</tr>
</tbody>
</table>

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

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Jun-2021

Peak Compiler Invocation

C benchmarks (except as noted below):

icx
600.perlbench_s: icc

C++ benchmarks:

icpx

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

(Continued on next page)
Dell Inc.

PowerEdge R750xs (Intel Xeon Gold 5315Y, 3.20 GHz)

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Jul-2021</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Jun-2021</td>
</tr>
</tbody>
</table>

**SPEC CPU®2017 Integer Speed Result**

**SPECspeed®2017_int_base = 11.1**

**SPECspeed®2017_int_peak = 11.4**

Peak Optimization Flags (Continued)

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:

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml

http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-ICX-rev1.4.xml

SPEC CPU and SPECspeed 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 v1.1.8 on 2021-08-31 15:30:00-0400.

Report generated on 2021-11-10 10:14:34 by CPU2017 PDF formatter v6442.

Originally published on 2021-11-09.