## SPEC CPU®2017 Floating Point Rate Result

**Dell Inc.**

### PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>104</td>
<td>52</td>
<td>360</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>104</td>
<td>52</td>
<td>471</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>104</td>
<td>52</td>
<td>267</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>104</td>
<td>183</td>
<td>397</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>104</td>
<td>52</td>
<td>240</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>104</td>
<td>243</td>
<td>458</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>104</td>
<td>52</td>
<td>303</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>104</td>
<td></td>
<td>369</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>104</td>
<td></td>
<td>363</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>104</td>
<td></td>
<td>910</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>104</td>
<td></td>
<td>607</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>104</td>
<td>52</td>
<td>205</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>104</td>
<td>139</td>
<td>172</td>
</tr>
</tbody>
</table>

---

**Hardware**

- **CPU Name:** Intel Xeon Gold 5320
- **Max MHz:** 3400
- **Nominal:** 2200
- **Enabled:** 52 cores, 2 chips, 2 threads/core
- **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:** 39 MB I+D on chip per chip
- **Other:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)
- **Storage:** 125 GB on tmpfs
- **Other:** None

---

**Software**

- **OS:** Red Hat Enterprise Linux 8.2 (Ootpa)
- **Version:** 4.18.0-193.el8.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:** No
- **Firmware:** Version 1.1.2 released Apr-2021
- **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 MX750c (Intel Xeon Gold 5320, 2.20 GHz)

SPEC CPU®2017 Floating Point Rate Result

Dell Inc.

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

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>Peak</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>104</td>
<td>1568</td>
<td>665</td>
<td>1568</td>
<td>665</td>
<td>52</td>
<td>781</td>
<td>667</td>
<td>52</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>104</td>
<td>278</td>
<td>473</td>
<td>280</td>
<td>471</td>
<td>104</td>
<td>278</td>
<td>471</td>
<td>104</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>104</td>
<td>370</td>
<td>267</td>
<td>369</td>
<td>268</td>
<td>104</td>
<td>370</td>
<td>267</td>
<td>104</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>104</td>
<td>1481</td>
<td>184</td>
<td>1489</td>
<td>183</td>
<td>52</td>
<td>590</td>
<td>231</td>
<td>52</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>104</td>
<td>611</td>
<td>397</td>
<td>608</td>
<td>399</td>
<td>104</td>
<td>530</td>
<td>458</td>
<td>104</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>104</td>
<td>451</td>
<td>243</td>
<td>451</td>
<td>243</td>
<td>104</td>
<td>451</td>
<td>243</td>
<td>104</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>104</td>
<td>760</td>
<td>307</td>
<td>758</td>
<td>307</td>
<td>52</td>
<td>385</td>
<td>303</td>
<td>52</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>104</td>
<td>429</td>
<td>369</td>
<td>429</td>
<td>369</td>
<td>104</td>
<td>429</td>
<td>369</td>
<td>104</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>104</td>
<td>500</td>
<td>363</td>
<td>499</td>
<td>364</td>
<td>104</td>
<td>500</td>
<td>363</td>
<td>104</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>104</td>
<td>284</td>
<td>910</td>
<td>280</td>
<td>923</td>
<td>104</td>
<td>284</td>
<td>910</td>
<td>104</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>104</td>
<td>286</td>
<td>611</td>
<td>289</td>
<td>607</td>
<td>104</td>
<td>284</td>
<td>617</td>
<td>104</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>104</td>
<td>1979</td>
<td>205</td>
<td>1980</td>
<td>205</td>
<td>104</td>
<td>1979</td>
<td>205</td>
<td>104</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>104</td>
<td>1186</td>
<td>139</td>
<td>1188</td>
<td>139</td>
<td>52</td>
<td>481</td>
<td>172</td>
<td>52</td>
</tr>
</tbody>
</table>

SPECrate®2017_fp_base = 344
SPECrate®2017_fp_peak = 360

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/je5.0.1-64"
MALLOCCONF = "retain:true"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1

(Continued on next page)
Dell Inc. PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

test Sponsor: Dell Inc. 
Tested by: Dell Inc.

CPU2017 License: 55
Test Date: May-2021

Hardware Availability: Apr-2021
Software Availability: Dec-2020

General Notes (Continued)

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.:
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

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.

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

Platform Notes

BIOS Settings:
Sub NUMA Cluster: 2-Way Clustering
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/ramdisk/cpu2017-1.1.7-ic2021.1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Mon May 3 04:07:25 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 5320 CPU @ 2.20GHz

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

**Dell Inc.**

**PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>344</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>360</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** May-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Dec-2020

---

**Platform Notes (Continued)**

2 "physical id"s (chips)  
104 "processors"  
(Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

- **cpu cores:** 26  
- **siblings:** 52  
- **physical 0:** cores 0 1 2 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25  
- **physical 1:** cores 0 1 2 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

From `lscpu`:

- **Architecture:** x86_64  
- **CPU op-mode(s):** 32-bit, 64-bit  
- **Byte Order:** Little Endian  
- **CPU(s):** 104  
- **On-line CPU(s) list:** 0-103  
- **Thread(s) per core:** 2  
- **Core(s) per socket:** 26  
- **Socket(s):** 2  
- **NUMA node(s):** 4  
- **Vendor ID:** GenuineIntel  
- **CPU family:** 6  
- **Model:** 106  
- **Model name:** Intel(R) Xeon(R) Gold 5320 CPU @ 2.20GHz  
- **Stepping:** 6  
- **CPU MHz:** 3050.921  
- **BogoMIPS:** 4400.00  
- **Virtualization:** VT-x  
- **L1d cache:** 48K  
- **L1i cache:** 32K  
- **L2 cache:** 1280K  
- **L3 cache:** 39936K  

NUMA node0 CPU(s):

0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100

NUMA node1 CPU(s):

2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 98, 102

NUMA node2 CPU(s):

1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 97, 101

NUMA node3 CPU(s):


**Flags:**

- fpu  
- vme  
- de  
- pse  
- tsc  
- msr  
- mcm  
- mce  
- cmo  
- pat  
- pse36  
- clflush  
- dts  
- acpi  
- mmx  
- fxsr  
- sse  
- sse2  
- ss  
- ht  
- tm  
- pe  
- syscall  
- nx  
- pdpe1gb  
- rdtps  
- rdtscp  
- lm  
- constant_tsc  
- arch_perfmon  
- pebs  
- bts  
- rep_good  
- nopl  
- xtopology  
- nonstop_tsc  
- cpuid  
- aperfmpref  
- pni  
- pclmulqdq  
- dtes64  
- monitor  
- ds_cpl  
- vmx  
- smx  
- est  
- tm2  
- ssse3  
- sdbg  
- fma  
- cx16  
- xtrr  
- pdcm  
- pcid  
- dca  
- sse4_1  
- sse4_2  
- x2apic  
- movbe  
- popcnt  
- tsc_deadline_timer  
- aes  
- xsave  
- avx  
- f16c  
- rdrand  
- lahf_lm  
- abm  
- 3dnowprefetch  
- cpuid_fault  
- epb  
- cat_l3  
- invpcid_single  
- ssbd  
- mba  
- ibrs  
- stibp  
- ibrs_enhanced  
- tpr_shadow  
- vmi  
- flexpriority  
- ept  
- fsgsbase  
- tsc_adjust  
- bmi1  
- hle  
- avx2  
- smp  
- bmi2  
- erms  
- invpcid  
- rtm  
- cqm  
- rdt_a  
- avx512f  
- avx512dq

(Continued on next page)
Platform Notes (Continued)

rdseed adx smap avx512ifma ciflushopt clwb intel_pt avx512cd sha_ni avx512bw
avx512vl xsaveopt xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local wbnoinvd dtherm ida arat pln pts avx512vbmi umip pku ospke
avx512_vbmi2 gfni vaes vpcmulqdq avx512_vnni avx512_bitalg tme avx512_vpoppntdq
la57 rdplid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size: 39936 KB

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 4 nodes (0-3)
    node 0 cpus: 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96
    node 0 size: 128412 MB
    node 0 free: 109332 MB
    node 1 cpus: 2 6 10 14 18 22 26 30 34 38 42 46 50 54 58 62 66 70 74 78 82 86 90 94 98
    node 1 size: 128990 MB
    node 1 free: 105058 MB
    node 2 cpus: 1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
    node 2 size: 129018 MB
    node 2 free: 114993 MB
    node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79 83 87 91 95 99
    node 3 size: 129015 MB
    node 3 free: 115018 MB
  node distances:
    node 0 1 2 3
    0: 10 11 20 20
    1: 11 10 20 20
    2: 20 20 10 11
    3: 20 20 11 10

From /proc/meminfo
  MemTotal: 527807260 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="8.2 (Ootpa)"

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)

SPECrater®2017_fp_base = 344
SPECrater®2017_fp_peak = 360

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: May-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Dec-2020</td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
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 prct 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): No status reported
CVE-2020-0543 (Special Register Buffer Data Sampling):
CVE-2019-11135 (TSX Asynchronous Abort):

run-level 3 Apr 30 23:55
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-ic2021.1
Filesystem     Type   Size  Used Avail Use% Mounted on
tmpfs     tmpfs  125G 63G  63G  51% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge MX750c
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.

(Continued on next page)
Dell Inc. PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 344</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 360</td>
</tr>
</tbody>
</table>

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test Date: May-2021  
Hardware Availability: Apr-2021  
Software Availability: Dec-2020

Platform Notes (Continued)

Memory:  
1x 002C00B3002C 18ASF4G72PD2-3G2E1 32 GB 2 rank 3200, configured at 2933  
15x 0OAD063200AD HM1A4GR7A8R8N-XN 32 GB 2 rank 3200, configured at 2933  
16x Not Specified Not Specified

BIOS:  
- BIOS Vendor: Dell Inc.  
- BIOS Version: 1.1.2  
- BIOS Date: 04/09/2021  
- BIOS Revision: 1.1

(End of data from sysinfo program)

Compiler Version Notes

<table>
<thead>
<tr>
<th>Compiler</th>
<th>Compilation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)</td>
</tr>
</tbody>
</table>
|          | 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. |

<table>
<thead>
<tr>
<th>Compiler</th>
<th>Compilation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C++</td>
<td>508.namd_r(base, peak) 510.parest_r(base, peak)</td>
</tr>
</tbody>
</table>
|          | 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. |

<table>
<thead>
<tr>
<th>Compiler</th>
<th>Compilation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C++, C</td>
<td>511.povray_r(peak)</td>
</tr>
</tbody>
</table>
|          | 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. |

<table>
<thead>
<tr>
<th>Compiler</th>
<th>Compilation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C++, C</td>
<td>511.povray_r(base) 526.blender_r(base, peak)</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.

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.

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.

Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
| 554.roms_r(base, peak)  

(Continued on next page)
Dell Inc.  
PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)  

SPECCPU®2017 Floating Point Rate Result  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_peak = 360</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_base = 344</td>
</tr>
</tbody>
</table>

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: May-2021  
Tested by: Dell Inc.  
Hardware Availability: Apr-2021  
Software Availability: Dec-2020

Compiler Version Notes (Continued)

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.

Fortran, C      | 521.wrf_r(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.
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.

Fortran, C      | 521.wrf_r(base) 527.cam4_r(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.
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, C      | 521.wrf_r(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.
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.

Fortran, C      | 521.wrf_r(base) 527.cam4_r(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.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)

SPECrate®2017_fp_base = 344
SPECrate®2017_fp_peak = 360

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

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx
C++ benchmarks:
icpx
Fortran benchmarks:
ifort
Benchmarks using both Fortran and C:
ifort icx
Benchmarks using both C and C++:
icpx icx
Benchmarks using Fortran, C, and C++:
icpx icx ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64
## Base Optimization Flags

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

**C++ benchmarks:**
- `-w`  
- `-m64`  
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-Ofast`  
- `-ffast-math`  
- `-flto`  
- `-mfpmath=sse`  
- `-funroll-loops`  
- `-qopt-mem-layout-trans=4`  
- `-mbranches-within-32B-boundaries`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`

**Fortran benchmarks:**
- `-w`  
- `-m64`  
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-O3`  
- `-ipo`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-multiple-gather-scatter-by-shuffles`  
- `-qopt-mem-layout-trans=4`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`  
- `-auto`  
- `-mbranches-within-32B-boundaries`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`

**Benchmarks using both Fortran and C:**
- `-w`  
- `-std=c11`  
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-Ofast`  
- `-ffast-math`  
- `-flto`  
- `-mfpmath=sse`  
- `-funroll-loops`  
- `-qopt-mem-layout-trans=4`  
- `-O3`  
- `-ipo`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-multiple-gather-scatter-by-shuffles`  
- `-mbranches-within-32B-boundaries`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`  
- `-auto`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`

**Benchmarks using both C and C++:**
- `-w`  
- `-std=c11`  
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-Ofast`  
- `-ffast-math`  
- `-flto`  
- `-mfpmath=sse`  
- `-funroll-loops`  
- `-qopt-mem-layout-trans=4`  
- `-mbranches-within-32B-boundaries`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`

**Benchmarks using Fortran, C, and C++:**
- `-w`  
- `-std=c11`  
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-Ofast`  
- `-ffast-math`  
- `-flto`  
- `-mfpmath=sse`  
- `-funroll-loops`  
- `-qopt-mem-layout-trans=4`  
- `-O3`  
- `-ipo`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-multiple-gather-scatter-by-shuffles`  
- `-mbranches-within-32B-boundaries`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`  
- `-auto`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`
Dell Inc.
PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)  

SPECrater®2017_fp_base = 344
SPECrater®2017_fp_peak = 360

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

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
521.wrf_r: ifort icc
527.cam4_r: ifort icx

Benchmarks using both C and C++:
511.povray_r: icpc icc
526.blender_r: icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: basepeak = yes
538.imagick_r: basepeak = yes
544.nab_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-Ofast -qopt-mem-layout-trans=4
-fimf-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

(Continued on next page)
Peak Optimization Flags (Continued)

C++ benchmarks:

508.namd_r: basepeak = yes


Fortran benchmarks:


549.fotonik3d_r: basepeak = yes

554.roms_r: Same as 503.bwaves_r

Benchmarks using both Fortran and C:


527.cam4_r: basepeak = yes

Benchmarks using both C and C++:


526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

(Continued on next page)
Dell Inc.  
PowerEdge MX750c (Intel Xeon Gold 5320, 2.20 GHz)  

SPECrate®2017_fp_base = 344  
SPECrate®2017_fp_peak = 360

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

Test Date: May-2021  
Hardware Availability: Apr-2021  
Software Availability: Dec-2020

Peak Optimization Flags (Continued)

507.cactuBSSN_r: 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

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 v1.1.7 on 2021-05-03 05:07:22-0400.  
Originally published on 2021-05-25.