## Dell Inc.

### PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Sep-2021  
**Hardware Availability:** Sep-2021  
**Software Availability:** Feb-2021

### Hardware

<table>
<thead>
<tr>
<th>Software</th>
<th>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.18.0-240.15.1.el8_3.x86_64</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 2021.1 of Intel oneAPI DPC++/C++</td>
</tr>
<tr>
<td></td>
<td>Compiler Build 20201113 for Linux;</td>
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<tr>
<td></td>
<td>Fortran: Version 2021.1 of Intel Fortran Compiler</td>
</tr>
<tr>
<td></td>
<td>Classic Build 20201112 for Linux;</td>
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<td></td>
<td>Classic Build 20201112 for Linux;</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 1.3.8 released Aug-2021</td>
</tr>
<tr>
<td>File System:</td>
<td>tmpfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 5 (graphical multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

### SPEC CPU 2017 Floating Point Rate Result

**SPECraten2017_fp_base = 377**  
**SPECraten2017_fp_peak = 395**

### Test Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
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<tbody>
<tr>
<td>503.bwaves_r</td>
<td>128</td>
<td>528</td>
<td>710</td>
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<tr>
<td>507.cactuBSSN_r</td>
<td>128</td>
<td>502</td>
<td>721</td>
</tr>
<tr>
<td>508.namd_r</td>
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<tr>
<td>510.parest_r</td>
<td>128</td>
<td>502</td>
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<tr>
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<td>128</td>
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<td>519.lbm_r</td>
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<tr>
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<td>538.imagick_r</td>
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<tr>
<td>544.nab_r</td>
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<td>549.fotonik3d_r</td>
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<tr>
<td>554.roms_r</td>
<td>64</td>
<td>439</td>
<td>721</td>
</tr>
</tbody>
</table>

### Hardware Details

- **CPU Name:** Intel Xeon Platinum 8352M  
- **Max MHz:** 3500  
- **Nominal:** 2300  
- **Enabled:** 64 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:** 48 MB I+D on chip per chip  
- **Memory:** 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R)  
- **Storage:** 225 GB on tmpfs  
- **Other:** None  
- **Other:** None  
- **Memory:** 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R)  
- **Storage:** 225 GB on tmpfs  
- **Other:** None  
- **Other:** None  

### Software Details

- **OS:** Red Hat Enterprise Linux 8.3 (Ootpa)  
- **Compiler:** C/C++: Version 2021.1 of Intel oneAPI DPC++/C++  
- **Compiler:** Compiler Build 20201113 for Linux;  
- **Compiler:** Fortran: Version 2021.1 of Intel Fortran Compiler  
- **Compiler:** Classic Build 20201112 for Linux;  
- **Compiler:** C/C++: Version 2021.1 of Intel C/C++ Compiler  
- **Compiler:** Classic Build 20201112 for Linux;  
- **Parallel:** No  
- **Firmware:** Version 1.3.8 released Aug-2021  
- **File System:** tmpfs  
- **System State:** Run level 5 (graphical 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.
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.

PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

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

SPECrate®2017_fp_base = 377
SPECrate®2017_fp_peak = 395

Test Date: Sep-2021
Hardware Availability: Sep-2021
Software Availability: Feb-2021

Results Table

<table>
<thead>
<tr>
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<th>Seconds</th>
<th>Ratio</th>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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/cpu2017-1.1.5-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.5-ic2021.1/je5.0.1-64"
MALLOC_CONF = "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
Transparent Huge Pages enabled by default

(Continued on next page)
General Notes (Continued)

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 225 GB ramdisk created with the cmd: "mount -t tmpfs -o size=225G 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
- PCI ASPM L1 Link
- Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.5-ic2021.1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2fc
running on localhost.localdomain Wed Sep 15 21:03:29 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) Platinum 8352M CPU @ 2.30GHz

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

**Dell Inc.**

PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
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</tr>
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<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>395</td>
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</tbody>
</table>

- **CPU2017 License:** 55
- **Test Sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test Date:** Sep-2021
- **Hardware Availability:** Sep-2021
- **Software Availability:** Feb-2021

---

**Platform Notes (Continued)**

2 "physical id"s (chips)
128 "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 : 32
siblings : 64
physical 0: cores 0 1 2 3 4 5 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
physical 1: cores 0 1 2 3 4 5 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

From lscpu:
- **Architecture:** x86_64
- **CPU op-mode(s):** 32-bit, 64-bit
- **Byte Order:** Little Endian
- **CPU(s):** 128
- **On-line CPU(s) list:** 0-127
- **Thread(s) per core:** 2
- **Core(s) per socket:** 32
- **Socket(s):** 2
- **NUMA node(s):** 4
- **Vendor ID:** GenuineIntel
- **CPU family:** 6
- **Model:** 106
- **Model name:** Intel(R) Xeon(R) Platinum 8352M CPU @ 2.30GHz
- **Stepping:** 6
- **CPU MHz:** 2154.574
- **BogoMIPS:** 4600.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 49152K

NUMA node0 CPU(s):
0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76,80,84,88,92,96,100,104,108,112,116,120,124

NUMA node1 CPU(s):
2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90,94,98,102,106,110,114,118,122,126

NUMA node2 CPU(s):
1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101,105,109,113,117,121,125

NUMA node3 CPU(s):

**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

(Continued on next page)
Dell Inc.
PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

**SPECrate®2017_fp_base = 377**

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**CPU2017 License:** 55

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---

**Platform Notes (Continued)**

```plaintext
lm constant_tsc art 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 xtpr 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 intel_pni ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cgx rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xgetbv1 xsaves cgx_occ Loc mem_total cgx_mmb_total cgx_mmb_local split_lock_detect wbnoinvd dtf ther ida arat pln pts avx512vmbi umip pkp ospek avx512vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_lid arch_capabilities

From /proc/cpuinfo cache data
cache size : 49152 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
100 104 108 112 116 120 124
node 0 size: 124169 MB
node 0 free: 127502 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
102 106 110 114 118 122 126
node 1 size: 124471 MB
node 1 free: 127795 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
101 105 109 113 117 121 125
node 2 size: 125156 MB
node 2 free: 122928 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
103 107 111 115 119 123 127
node 3 size: 125680 MB
node 3 free: 112975 MB
dnode 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: 527793960 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
/sbin/tuned-adm active
```

(Continued on next page)
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Platform Notes (Continued)

Current active profile: throughput-performance

From /etc/*release* /etc/*version*

os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.3 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.3"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.15.1.el8_3.x86_64 #1 SMP Wed Feb 3 03:12:15 EST 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/swapgs barriers and __user pointer sanitation
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling):
CVE-2019-11135 (TSX Asynchronous Abort):
run-level 5 Sep 15 15:10

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.5-ic2021.1

Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 225G 6.9G 219G 4% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge R750xa
Product Family: PowerEdge

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

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.

Memory:
16x 002C069D002C 18ASF4G72PDZ-3G2E1 32 GB 2 rank 3200 16x Not Specified Not Specified

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 1.3.8
BIOS Date: 08/31/2021
BIOS Revision: 1.3

(End of data from sysinfo program)

**Compiler Version Notes**

```plaintext
C | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)

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.
```

```plaintext
C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)

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.
```

```plaintext
C++, C | 511.povray_r(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.
```

(Continued on next page)
Compiler Version Notes (Continued)

------------------------------------------------------------------------------
| C++, C               | 511.povray_r(base) 526.blender_r(base, peak) |
------------------------------------------------------------------------------
| 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) 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. |
------------------------------------------------------------------------------

------------------------------------------------------------------------------
| C++, C               | 511.povray_r(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. |
| Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
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------------------------------------------------------------------------------

------------------------------------------------------------------------------
| C++, C               | 511.povray_r(base) 526.blender_r(base, peak) |
------------------------------------------------------------------------------
| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113 |
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------------------------------------------------------------------------------

------------------------------------------------------------------------------
| C++, C, Fortran      | 507.cactuBSSN_r(base, peak) |
------------------------------------------------------------------------------
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| 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) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
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------------------------------------------------------------------------------

(Continued on next page)
Compiler Version Notes (Continued)

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

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
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------------------------------------------------------------------------------
| 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
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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
64, Version 2021.1 Build 20201112_000000
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------------------------------------------------------------------------------
| 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
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Version 2021.1 Build 20201113
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------------------------------------------------------------------------------
| 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
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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
64, Version 2021.1 Build 20201112_000000
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------------------------------------------------------------------------------
| Fortran, C        | 521.wrf_r(base) 527.cam4_r(base, peak) |
------------------------------------------------------------------------------
(Continued on next page)
Dell Inc.  
PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)  

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<thead>
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<th>SPECrate®2017_fp_base</th>
<th>377</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>395</td>
</tr>
</tbody>
</table>

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test Date: Sep-2021  
Hardware Availability: Sep-2021  
Software Availability: Feb-2021

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.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
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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.ibm_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
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.
PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 377
SPECrate®2017_fp_peak = 395

Dell Inc.

GHz)

SPECrate

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TEST SCHEDULE

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

Test Date: Sep-2021
Hardware Availability: Sep-2021
Software Availability: Feb-2021

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 -m64 -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 -m64 -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 -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
- 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
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.
PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

SPECrate®2017_fp_base = 377
SPECrate®2017_fp_peak = 395

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

Test Date: Sep-2021
Hardware Availability: Sep-2021
Software Availability: Feb-2021

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 -gopt-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)
Dell Inc.
PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)

**SPECrate®2017_fp_base = 377**

**SPECrate®2017_fp_peak = 395**

Peak Optimization Flags (Continued)

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: -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:

503.bwaves_r: -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 -mbranches-within-32B-boundaries
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib

549.fotonik3d_r: basepeak = yes

554.roms_r: Same as 503.bwaves_r

Benchmarks using both Fortran and C:

521.wrf_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

(Continued on next page)
Dell Inc. PowerEdge R750xa (Intel Xeon Platinum 8352M, 2.30 GHz)  

SPECrater®2017_fp_base = 377  
SPECrater®2017_fp_peak = 395

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: Sep-2021  
Tested by: Dell Inc.  
Hardware Availability: Sep-2021  
Software Availability: Feb-2021

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

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