**Nettrix**

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)

<table>
<thead>
<tr>
<th>Thread</th>
<th>603.bwaves_s</th>
<th>607.cactuBSSN_s</th>
<th>619.lbm_s</th>
<th>621.wrf_s</th>
<th>627.cam4_s</th>
<th>628.pop2_s</th>
<th>638.imagick_s</th>
<th>644.nab_s</th>
<th>649.fotonik3d_s</th>
<th>654.roms_s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
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<tr>
<td>SPECspeed®2017_fp_base = 271</td>
<td></td>
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<tr>
<td>SPECspeed®2017_fp_peak = 276</td>
<td></td>
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</tbody>
</table>

### SPEC CPU®2017 Floating Point Speed Result

**CPU2017 License:** 6138  
**Test Sponsor:** Nettrix  
**Tested by:** Nettrix  
**Test Date:** May-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Apr-2021

<table>
<thead>
<tr>
<th>Software</th>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 SP2 Kernel 5.3.18-24.61-default</th>
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</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Firmware:</td>
<td>Nettrix BIOS Version 0PYH001029 released Apr-2021</td>
<td></td>
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<tr>
<td>File System:</td>
<td>ext4</td>
<td></td>
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<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>64-bit</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
<td></td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Platinum 8380  
- **Max MHz:** 3400  
- **Nominal:** 2300  
- **Enabled:** 80 cores, 2 chips  
- **Orderable:** 1, 2 chip(s)  
- **Cache L1:** 32 KB I + 48 KB D on chip per core  
- **L2:** 1.25 MB I+D on chip per core  
- **L3:** 60 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 4 TB (32 x 128 GB 4Rx4 PC4-3200AA-L)  
- **Storage:** 1x 2 TB SATA HDD, 7200RPM  
- **Other:** None
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>603.bwaves_s</td>
<td>80</td>
<td>70.4</td>
<td><strong>838</strong></td>
<td>70.1</td>
<td>842</td>
<td>71.4</td>
<td>826</td>
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<td><strong>440</strong></td>
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<td>386</td>
<td>440</td>
<td>379</td>
<td>43.1</td>
<td>386</td>
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<tr>
<td>619.lbm_s</td>
<td>80</td>
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<tr>
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<td>43.4</td>
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<tr>
<td>628.pop2_s</td>
<td>80</td>
<td>113</td>
<td>105</td>
<td><strong>110</strong></td>
<td>108</td>
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<td>638.imagick_s</td>
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<td>50.2</td>
<td>288</td>
<td>51.0</td>
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<tr>
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<tr>
<td>649.fotonik3d_s</td>
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<td>79.0</td>
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<tr>
<td>654.roms_s</td>
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<td>329</td>
<td>45.5</td>
<td>346</td>
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<td>345</td>
<td>45.5</td>
<td>346</td>
<td><strong>457</strong></td>
<td>345</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Tuning Kernel Parameters:
- sched_migration_cost_ns=600000
- sched_rt_runtime_us=950000
- sched_latency_ns=24000000
- sched_min_granularity_ns=8000000
- dirty_background_ratio=10
- dirty_ratio=20
- dirty_writeback_centisecs=400
- dirty_expire_centisecs=5000
- swappiness=10
- numa_balancing=0

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/home/admin/benchmarks/SPECcpu2017/lib/intel64:/home/admin/benchmarks/SPECcpu2017/je5.0.1-64"
- MALLOC_CONF = "retain:true"
- OMP_STACKSIZE = "192M"
Nettrix

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz) SPEC

SPECspeed®2017_fp_base = 271
SPECspeed®2017_fp_peak = 276

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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.
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

Platform Notes

The system ROM used for this result contains Intel microcode version 0D000280 for
the Intel Xeon Platinum 8380 processor.
BIOS Configuration:
   Application Performance Profile Set to Computing Latency Mode
   Hyper-Threading set to Disabled
   SNC set to Disabled
   DCU Streamer Prefetcher set to Disabled
   XPT Prefetch set to Enabled
   KTI Prefetch set to Disabled
   Stale AtoS set to Enabled
   Patrol Scrub set to Disabled
   LLC Dead Line Allocation set to Disabled
BMC Settings:
   Cooling Policy set to Manual Mode
   Fan Duty set to 95

Sysinfo program /home/admin/benchmarks/SPECcpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Wed May 19 20:48:53 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 8380 CPU @ 2.30GHz
   2 "physical id"s (chips)
   80 "processors"

(Continued on next page)
**Nettrix**

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)

| SPECspeed®2017_fp_base = 271 |
| SPECspeed®2017_fp_peak = 276 |

---

**Platform Notes (Continued)**

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 : 40
- siblings : 40

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

From lscpu from util-linux 2.33.1:

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- Address sizes: 46 bits physical, 57 bits virtual
- CPU(s): 80
- On-line CPU(s) list: 0-79
- Thread(s) per core: 1
- Core(s) per socket: 40
- Socket(s): 2
- NUMA node(s): 2
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 106
- Model name: Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
- Stepping: 6
- CPU MHz: 1013.953
- CPU max MHz: 3400.0000
- CPU min MHz: 800.0000
- BogoMIPS: 4600.00
- Virtualization: VT-x
- L1d cache: 48K
- L1i cache: 32K
- L2 cache: 1280K
- L3 cache: 61440K
- NUMA node0 CPU(s): 0-39
- NUMA node1 CPU(s): 40-79
- Flags: fpu vme de pse tsc msr pae mce cx8 apo 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 3dnowprefetch cpuid_fault ebpx cat_l3 invpcid_single ssbd mba ibrs ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3rms invpcid rdpm c rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavevc xsavec xSAVE xsv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local wbnoinvd dtherm ida arat pln pts avx512vmbmi umip pkp ospe

(Continued on next page)
<table>
<thead>
<tr>
<th><strong>Nettrix</strong></th>
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<tbody>
<tr>
<td><strong>CPU2017 License:</strong></td>
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<tr>
<td><strong>Test Sponsor:</strong></td>
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<tr>
<td><strong>Tested by:</strong></td>
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**SPECspeed®2017_fp_base = 271**

**SPECspeed®2017_fp_peak = 276**

<table>
<thead>
<tr>
<th><strong>Test Date:</strong></th>
<th>May-2021</th>
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<tbody>
<tr>
<td><strong>Hardware Availability:</strong></td>
<td>Apr-2021</td>
</tr>
<tr>
<td><strong>Software Availability:</strong></td>
<td>Apr-2021</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

```plaintext
avx512_vbmi2_gfni vaes vpcimuldq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdplid md_clear pconfig flush_l1d arch_capabilities
```

```
/proc/cpuinfo cache data
  cache size : 61440 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 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
    node 0 size: 2063962 MB
    node 0 free: 2058966 MB
    node 1 cpus: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
    node 1 size: 2064335 MB
    node 1 free: 2058367 MB
    node distances:
      node 0 1
      0: 10 20
      1: 20 10

From /proc/meminfo
  MemTotal:       4227376976 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has ondemand
```

```
From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15-SP2"
    VERSION_ID="15.2"
    PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
    ID="sles"
    ID_LIKE="suse"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
  Linux localhost 5.3.18-24.61-default #1 SMP Wed Apr 14 10:10:07 UTC 2021 (c41a65c)
  x86_64 x86_64 x86_64 GNU/Linux
```

**Kernel self-reported vulnerability status:**
Nettrix

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)

| SPECspeed®2017_fp_base = 271 |
| SPECspeed®2017_fp_peak = 276 |

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

**Platform Notes (Continued)**

- CVE-2018-12207 (iTLB Multihit): Not affected
- CVE-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: Not affected
- CVE-2017-5754 (Meltdown): Not affected
- CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
- CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 May 19 16:15 last=5

SPEC is set to: /home/admin/benchmarks/SPECcpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc1 ext4 1.4T 71G 1.3T 6% /home/admin/benchmarks/SPECcpu2017

From /sys/devices/virtual/dmi/id
Vendor: Nettrix
Product: N/A
Product Family: Family
Serial: N/A

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:
32x Hynix HMABAGL7ABR4N-XN 128 GB 4 rank 3200

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 0PYH001029
BIOS Date: 04/14/2021
BIOS Revision: 0.29

(End of data from sysinfo program)

---

**Compiler Version Notes**

C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)

(Continued on next page)
Nettrix

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)

SPECspeed®2017_fp_base = 271
SPECspeed®2017_fp_peak = 276

Compiler Version Notes (Continued)

<table>
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<tr>
<th>644.nab_s(base)</th>
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<tbody>
<tr>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
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<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
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<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<td>------------------------------------------------------------------------------</td>
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CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

SPECspeed®2017_fp_base = 271
SPECspeed®2017_fp_peak = 276

Compiler Version Notes (Continued)

Fortran  | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(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.

Fortran, C  | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)
             |----------------------------------------------------------------------

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
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.

Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl

(Continued on next page)
Nettrix

R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)

SPECspeed®2017_fp_base = 271
SPECspeed®2017_fp_peak = 276

Base Portatility Flags (Continued)

638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icc

644.nab_s: icx

Fortran benchmarks:
ifort

(Continued on next page)
Nettrix
R620 G40(Intel Xeon Platinum 8380 CPU @ 2.30GHz)  SPECspeed®2017_fp_base = 271
SPECspeed®2017_fp_peak = 276

CPU2017 License: 6138  Test Date: May-2021
Test Sponsor: Nettrix  Hardware Availability: Apr-2021
Tested by: Nettrix  Software Availability: Apr-2021

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: basepeak = yes
638.imagick_s: basepeak = yes

644.nab_s: -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -fopenmp
-DSPEC_OPENMP -qopt-mem-layout-trans=4
-fimf-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:
603.bwaves_s: basepeak = yes

649.fotonik3d_s: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512
-03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:
621.wrf_s: basepeak = yes

(Continued on next page)
## SPEC CPU®2017 Floating Point Speed Result

**Nettrix**

R620 G40 (Intel Xeon Platinum 8380 CPU @ 2.30GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 271</th>
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<tbody>
<tr>
<td>SPECspeed®2017_fp_peak = 276</td>
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</table>

| CPU2017 License: | 6138 |
|-------------------------------|
| Test Sponsor: | Nettrix |
| Tested by: | Nettrix |
| Test Date: | May-2021 |
| Hardware Availability: | Apr-2021 |
| Software Availability: | Apr-2021 |

### Peak Optimization Flags (Continued)

<table>
<thead>
<tr>
<th>Flag</th>
<th>Value</th>
</tr>
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<tr>
<td>627.cam4_s:basepeak</td>
<td>yes</td>
</tr>
<tr>
<td>628.pop2_s:basepeak</td>
<td>yes</td>
</tr>
</tbody>
</table>

Benchmarks using Fortran, C, and C++:

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>607.cactuBSSN_s:basepeak</td>
<td>yes</td>
</tr>
</tbody>
</table>

The flags files that were used to format this result can be browsed at:

- [Intel-ic2021-official-linux64_revA.html](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html)

You can also download the XML flags sources by saving the following links:

- [Intel-ic2021-official-linux64_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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