### NEC Corporation

**Express5800/R120i-2M (Intel Xeon Gold 6354)**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>72</td>
<td>430</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>72</td>
<td>234</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>72</td>
<td>189</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>36</td>
<td>239</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>72</td>
<td>344</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>72</td>
<td>258</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>72</td>
<td>319</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>72</td>
<td>318</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>72</td>
<td>328</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>72</td>
<td>810</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>72</td>
<td>528</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>72</td>
<td>215</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>36</td>
<td>146</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6354
- **Max MHz:** 3600
- **Nominal:** 3000
- **Enabled:** 36 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
- **Memory:** 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 800 GB SAS SSD, RAID 0
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux release 8.3 (Ootpa) 4.18.0-240.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;
- **Parallel:** No
- **Firmware:** NEC BIOS Version U46 v1.40 04/28/2021 released Jul-2021
- **File System:** ext4
- **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 set to prefer performance at the cost of additional power usage.

---

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation  
**Test Date:** Aug-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020
## NEC Corporation

### Express5800/R120i-2M (Intel Xeon Gold 6354)

**SPECrate®2017_fp_base = 329**  
**SPECrate®2017_fp_peak = 342**

### 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>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>72</td>
<td>1023</td>
<td>706</td>
<td>1025</td>
<td>704</td>
<td>1023</td>
<td>706</td>
<td>72</td>
<td>1023</td>
<td>706</td>
<td>1025</td>
<td>704</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>72</td>
<td>212</td>
<td>431</td>
<td>213</td>
<td>429</td>
<td>212</td>
<td>430</td>
<td>72</td>
<td>212</td>
<td>431</td>
<td>213</td>
<td>429</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>72</td>
<td>293</td>
<td>234</td>
<td>292</td>
<td>234</td>
<td>294</td>
<td>233</td>
<td>72</td>
<td>293</td>
<td>234</td>
<td>292</td>
<td>234</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>72</td>
<td>997</td>
<td>189</td>
<td>999</td>
<td>188</td>
<td>995</td>
<td>189</td>
<td>36</td>
<td>411</td>
<td>229</td>
<td>411</td>
<td>229</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>72</td>
<td>488</td>
<td>344</td>
<td>488</td>
<td>345</td>
<td>488</td>
<td>344</td>
<td>72</td>
<td>431</td>
<td>390</td>
<td>426</td>
<td>394</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>72</td>
<td>294</td>
<td>258</td>
<td>295</td>
<td>258</td>
<td>294</td>
<td>258</td>
<td>72</td>
<td>294</td>
<td>258</td>
<td>295</td>
<td>258</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>72</td>
<td>518</td>
<td>311</td>
<td>504</td>
<td>320</td>
<td>506</td>
<td>319</td>
<td>72</td>
<td>518</td>
<td>311</td>
<td>504</td>
<td>320</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>72</td>
<td>346</td>
<td>317</td>
<td>344</td>
<td>318</td>
<td>345</td>
<td>318</td>
<td>72</td>
<td>346</td>
<td>317</td>
<td>344</td>
<td>318</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>72</td>
<td>384</td>
<td>328</td>
<td>383</td>
<td>329</td>
<td>384</td>
<td>328</td>
<td>72</td>
<td>384</td>
<td>328</td>
<td>383</td>
<td>329</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>72</td>
<td>219</td>
<td>816</td>
<td>221</td>
<td>810</td>
<td>222</td>
<td>810</td>
<td>72</td>
<td>219</td>
<td>816</td>
<td>222</td>
<td>810</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>72</td>
<td>229</td>
<td>528</td>
<td>231</td>
<td>524</td>
<td>228</td>
<td>533</td>
<td>72</td>
<td>225</td>
<td>540</td>
<td>225</td>
<td>539</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>72</td>
<td>1304</td>
<td>215</td>
<td>1304</td>
<td>215</td>
<td>1304</td>
<td>215</td>
<td>72</td>
<td>1304</td>
<td>215</td>
<td>1304</td>
<td>215</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>72</td>
<td>785</td>
<td>146</td>
<td>783</td>
<td>146</td>
<td>786</td>
<td>146</td>
<td>36</td>
<td>339</td>
<td>169</td>
<td>336</td>
<td>170</td>
</tr>
</tbody>
</table>

### 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 = "/home/cpu2017/lib/intel64:/home/cpu2017/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

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)
NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329
SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

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.

This benchmark result is intended to provide perspective on past performance using the historical software and/or firmware 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 software and firmware available as of the publication date.

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 numacli i.e.:
  numacli --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

Platform Notes

BIOS Settings:
  Thermal Configuration: Maximum Cooling
  Workload Profile: General Throughput Compute
  Advanced Memory Protection: Advanced ECC Support
  Memory Patrol Scrubbing: Disabled
  Minimum Processor Idle Power Core C-State: C6 State
  LLC Dead Line Allocation: Disabled
  LLC Prefetch: Enabled
  Enhanced Processor Performance: Enabled
  XPT Prefetcher: Enabled
  Workload Profile: Custom
  DCU Stream Prefetcher: Disabled
  Energy/Performance Bias: Balanced Performance

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d

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

running on r120i2m Mon Aug 30 20:00:22 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 6354 CPU @ 3.00GHz
  2 "physical id"s (chips)
  72 "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 : 18
siblings : 36
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
```

From lscpu from util-linux 2.32.1:

```
Architecture:        x86_64
CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
CPU(s):              72
On-line CPU(s) list: 0-71
Thread(s) per core:  2
Core(s) per socket:  18
Socket(s):           2
NUMA node(s):        4
Vendor ID:           GenuineIntel
CPU family:          6
Model:               106
Model name:          Intel(R) Xeon(R) Gold 6354 CPU @ 3.00GHz
Stepping:            6
CPU MHz:             800.373
BogoMIPS:            6000.00
Virtualization:      VT-x
L1d cache:           48K
L1i cache:           32K
L2 cache:            1280K
L3 cache:            39936K
NUMA node0 CPU(s):   0-8,36-44
NUMA node1 CPU(s):   9-17,45-53
NUMA node2 CPU(s):   18-26,54-62
NUMA node3 CPU(s):   27-35,63-71
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 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmperf pni pclmulqdq dtc64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
```

(Continued on next page)
### NEC Corporation

**Express5800/R120i-2M (Intel Xeon Gold 6354)**

| SPECrate®2017_fp_base = 329 |
| SPECrate®2017_fp_peak = 342 |

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation  
**Test Date:** Aug-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020

### Platform Notes (Continued)

```
xtp rdc 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 ibpb stibp ibrs_enhanced tpr_shadow vmni flexpriority ept vpid ept_ad
fsqsbases tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqmdt_a avx512f avx512dq
rdseed adx smap avx512idfma clflushopt clwb intel_pt avx512cd sha ni avx512bw
avx512vl xsaveopt xsavec xgetbv1 xsave avx512vmbmi2 gfni vaes vpclmulqdq avx512vnni
amx vpu avx512_vbmi2 avx512_vnni avx512bf128 avx512_vpopcntdq avx512_vpopcntdq
```

/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 1 2 3 4 5 6 7 8 36 37 38 39 40 41 42 43 44  
node 0 size: 504658 MB  
node 0 free: 515268 MB  
node 1 cpus: 9 10 11 12 13 14 15 16 17 45 46 47 48 49 50 51 52 53  
node 1 size: 505449 MB  
node 1 free: 515602 MB  
node 2 cpus: 18 19 20 21 22 23 24 25 26 54 55 56 57 58 59 60 61 62  
node 2 size: 505039 MB  
node 2 free: 515657 MB  
node 3 cpus: 27 28 29 30 31 32 33 34 35 63 64 65 66 67 68 69 70 71  
node 3 size: 504814 MB  
node 3 free: 515677 MB  
node distances:

node 0 1 2 3  
0: 10 20 30 30  
1: 20 10 30 30  
2: 30 30 10 20  
3: 30 30 20 10  

From /proc/meminfo  
MemTotal: 2113485108 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="8.3 (Ootpa)"
```

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

NEC Corporation
Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECraten®2017_fp_base = 329
SPECraten®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Platform Notes (Continued)

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 r120i2m 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 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:
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/swapgs 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 Aug 30 19:58
SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id
Vendor: NEC
Product: Express5800/R120i-2M
Product Family: Express5800
Serial: CN705114NH

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.

(Continued on next page)
NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Copyright 2017-2023 Standard Performance Evaluation Corporation

NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329

SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Platform Notes (Continued)

Memory:
32x Hynix HMAA8GR7AJR4N-XN 64 GB 2 rank 3200

BIOS:
BIOS Vendor: NEC
BIOS Version: U46
BIOS Date: 04/28/2021
BIOS Revision: 1.40
Firmware Revision: 2.44

(End of data from sysinfo program)

Compiler Version Notes

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.

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.

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.

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

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

NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECraten®2017_fp_base = 329
SPECraten®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Compiler Version Notes (Continued)

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 20201112_000000
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.

==============================================================================
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 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C, Fortran | 507.cactuBSSN_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 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)
NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329
SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-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(base, peak) 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.

---

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

(Continued on next page)
NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329
SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Base Portability Flags (Continued)

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 -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

(Continued on next page)
NEC Corporation

Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329
SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation
Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-\texttt{-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math}
-\texttt{-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3}
-\texttt{-no-prec-div -qopt-prefetch -ffinite-math-only}
-\texttt{-qopt-multiple-gather-scatter-by-shuffles}
-\texttt{-mbranches-within-32B-boundaries -nostandard-realloc-lhs}
-\texttt{-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib}

Peak Compiler Invocation

C benchmarks:
\texttt{icx}

C++ benchmarks:
\texttt{icpx}

Fortran benchmarks:
\texttt{ifort}

Benchmarks using both Fortran and C:
\texttt{ifort icx}

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

Benchmarks using Fortran, C, and C++:
\texttt{icpx icx ifort}

Peak Portability Flags

Same as Base Portability Flags
SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

NEC Corporation
Express5800/R120i-2M (Intel Xeon Gold 6354)

SPECrate®2017_fp_base = 329
SPECrate®2017_fp_peak = 342

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation
Test Date: Aug-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

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

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: basepeak = yes
549.fotonik3d_r: basepeak = yes
554.roms_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 -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:

521.wrf_r: basepeak = yes
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
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries

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

### NEC Corporation

**Express5800/R120i-2M (Intel Xeon Gold 6354)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>329</td>
<td>342</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation  
**Test Date:** Aug-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020

### Peak Optimization Flags (Continued)

511.povray

```bash
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

526.blender

```bash
basepeak = yes
```

Benchmarks using Fortran, C, and C++:

507.cactuBSSN

```bash
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/NEC-Platform-Settings-V1.2-R120i-RevE.xml](http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-V1.2-R120i-RevE.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 v1.1.8 on 2021-08-30 07:00:22-0400.  
Report generated on 2023-03-02 11:19:39 by CPU2017 PDF formatter v6442.  
Originally published on 2023-02-28.