NEC Corporation

Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECratenew_int_base = 315
SPECratenew_int_peak = 326

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>OS: Red Hat Enterprise Linux release 8.3 (Ootpa)</td>
</tr>
<tr>
<td></td>
<td>4.18.0-240.el8.x86_64</td>
</tr>
<tr>
<td>Max MHz:</td>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++</td>
</tr>
<tr>
<td></td>
<td>Fortran: Version 2021.1 of Intel Fortran Compiler</td>
</tr>
<tr>
<td></td>
<td>Classic Build 20201113 for Linux;</td>
</tr>
<tr>
<td></td>
<td>C/C++: Version 2021.1 of Intel C/C++ Compiler</td>
</tr>
<tr>
<td></td>
<td>Classic Build 20201112 for Linux;</td>
</tr>
<tr>
<td></td>
<td>Parallel: No</td>
</tr>
<tr>
<td></td>
<td>Firmware: NEC BIOS Version U46 v1.40 04/28/2021 released</td>
</tr>
<tr>
<td></td>
<td>File System: ext4</td>
</tr>
<tr>
<td></td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td></td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td></td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td></td>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td></td>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage.</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

<table>
<thead>
<tr>
<th>Performance</th>
<th>500.perlbench_r</th>
<th>502.gcc_r</th>
<th>505.mcf_r</th>
<th>520.omnetpp_r</th>
<th>523.xalancbmk_r</th>
<th>525.x264_r</th>
<th>531.deepsjeng_r</th>
<th>541.leela_r</th>
<th>548.exchange2_r</th>
<th>557.xz_r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copies</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>SPECrate®2017_int_base (315)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SPECrate®2017_int_peak (326)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- 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
- Other: None
- Memory: 1 TB (32 x 32 GB 2Rx4 PC4-3200AA-R)
- Storage: 1 x 800 GB SAS SSD, RAID 0
- Other: None

- 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;
- C/C++: Version 2021.1 of Intel C/C++ Compiler
- Classic Build 20201112 for Linux
- Parallel: No
- Firmware: NEC BIOS Version U46 v1.40 04/28/2021 released
- File System: ext4
- System State: Run level 3 (multi-user)
- Base Pointers: 64-bit
- Peak Pointers: 32/64-bit
- Other: jemalloc memory allocator V5.0.1
- Power Management: BIOS set to prefer performance at the cost of additional power usage.
NEC Corporation

Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECratenew_int_base = 315
SPECratenew_int_peak = 326

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>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perbench_r</td>
<td>72</td>
<td>538</td>
<td>213</td>
<td>537</td>
<td>214</td>
<td>537</td>
<td>214</td>
<td>537</td>
<td>214</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>72</td>
<td>391</td>
<td>261</td>
<td>391</td>
<td>261</td>
<td>393</td>
<td>260</td>
<td>391</td>
<td>261</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>72</td>
<td>219</td>
<td>532</td>
<td>218</td>
<td>533</td>
<td>220</td>
<td>530</td>
<td>219</td>
<td>530</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>72</td>
<td>478</td>
<td>198</td>
<td>477</td>
<td>198</td>
<td>475</td>
<td>199</td>
<td>478</td>
<td>198</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>72</td>
<td>187</td>
<td>407</td>
<td>187</td>
<td>407</td>
<td>188</td>
<td>404</td>
<td>187</td>
<td>407</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>72</td>
<td>197</td>
<td>640</td>
<td>197</td>
<td>639</td>
<td>197</td>
<td>639</td>
<td>197</td>
<td>639</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>72</td>
<td>344</td>
<td>240</td>
<td>344</td>
<td>240</td>
<td>344</td>
<td>240</td>
<td>344</td>
<td>240</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>72</td>
<td>506</td>
<td>235</td>
<td>505</td>
<td>236</td>
<td>506</td>
<td>236</td>
<td>506</td>
<td>236</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>72</td>
<td>292</td>
<td>646</td>
<td>293</td>
<td>645</td>
<td>291</td>
<td>649</td>
<td>292</td>
<td>646</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>72</td>
<td>454</td>
<td>171</td>
<td>454</td>
<td>171</td>
<td>453</td>
<td>172</td>
<td>454</td>
<td>171</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/lib/ia32:/home/cpu2017/je5.0.1-32"
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.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
NEC Corporation
Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECrate®2017_int_base = 315
SPECrate®2017_int_peak = 326

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)

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 numactl i.e.:
numactl --interleave=all runcpu <etc>
jemalloc, a general purpose malloc implementation

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
Enhanced Processor Performance: Enabled
XPT Prefetcher: Enabled
Intel UPI Link Enablement: Single Link Operation
Intel UPI Link Frequency: Min UPI Speed
Direct To UPI (D2K): Disabled
Workload Profile: Custom
Adjacent Sector Prefetch: Disabled
DCU Stream Prefetcher: Disabled
Intel UPI Link Power Management: Enabled
Energy Efficient Turbo: Enabled

(Continued on next page)
NEC Corporation
Express5800/R120i-1M (Intel Xeon Gold 6354)

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

SPECrates:
SPECrate®2017_int_base = 315
SPECrate®2017_int_peak = 326

Platform Notes (Continued)

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b5589ef0e16acac64d
running on r120i1m Thu Aug 26 09:32:33 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: 1406.820
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

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

Copyright 2017-2023 Standard Performance Evaluation Corporation

NEC Corporation

Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECRate®2017_int_base = 315
SPECRate®2017_int_peak = 326

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)

pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp
lm constant_tsc art perf_event pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperf perf pni pclmulqdq dtex64 monitor ds_cpl vmx smx est tm ssse3 sdbg fma cx16
xptr 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_13 invpcid_single ssbd
mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnumi flexprior ept vpid ept_ad
fsqsb tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq
rdseed adx smap avx512fma clflushopt clwb intel_pt avx512cd sha ni avx512bw
avx512vl xsaveopt xsavec xgetbv1 xsaves cmqm llc cmqm_occwp llc cmqm mbm_total
cmqm mbm_local splitlock detect wboinvd dtherm ida arat pln pts avx512v bmi umip pku
ospke avx512_vmbni2 gfni vrs pcimulqav axv512_vnni avx512_bitalg tse
avx512_vpopcntdq la57 rdpid 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 1 2 3 4 5 6 7 8 36 37 38 39 40 41 42 43 44
  node 0 size: 252640 MB
  node 0 free: 257058 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: 252841 MB
  node 1 free: 257594 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: 253071 MB
  node 2 free: 257645 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: 254043 MB
  node 3 free: 257799 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: 1056521632 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

(Continued on next page)
NEC Corporation
Express5800/R120i-1M (Intel Xeon Gold 6354)

**SPEC CPU®2017 Integer Rate Result**

Copyright 2017-2023 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 315
SPECrate®2017_int_peak = 326

---

**NEC Corporation**

**Express5800/R120i-1M (Intel Xeon Gold 6354)**

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

---

**Platform Notes (Continued)**

```plaintext
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
```

```plaintext
uname -a:
    Linux r120i1m 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:** 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/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 26 09:24**

**SPEC is set to:** /home/cpu2017

**Files and Directories:**

- **/dev/sda3** ext4 724G 173G 514G 26% /

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

**Vendor:** NEC  
**Product:** Express5800/R120i-1M  
**Product Family:** Express5800  
**Serial:** CN70450X8H

**Additional information from dmidecode 3.2 follows.** WARNINg: Use caution when you

(Continued on next page)
Platform Notes (Continued)

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 HMA84GR7CJR4N-XN 32 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       | 500.perlbench_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       | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version
2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
| 525.x264_r(base, peak) 557.xz_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       | 500.perlbench_r(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
(Continued on next page)
# NEC Corporation

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

## SPEC CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express5800/R120i-1M (Intel Xeon Gold 6354)</td>
<td>315</td>
<td>326</td>
</tr>
</tbody>
</table>

## Compiler Version Notes (Continued)

64, Version 2021.1 Build 20201112_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

<table>
<thead>
<tr>
<th>Compiler</th>
<th>Version</th>
<th>Build</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>502.gcc_r(peak)</td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(base, peak)</td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500.perlbench_r(peak)</td>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r(peak)</td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(base, peak)</td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Continued on next page)
NEC Corporation

Express5800/R120i-1M (Intel Xeon Gold 6354)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

SPECrater®2017_int_base = 315
SPECrater®2017_int_peak = 326

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

NEC Corporation

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

Compiler Version Notes (Continued)

C++

<table>
<thead>
<tr>
<th>520.omnetpp_r(base, peak)</th>
<th>523.xalancbmk_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>531.deepsjeng_r(base, peak)</td>
<td>541.leela_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.

Fortran

548.exchange2_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.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
NEC Corporation

Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECrater®2017_int_base = 315
SPECrater®2017_int_peak = 326

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

C benchmarks:
-w -std=c11 -m64 -Wl,-z,-muldefs -xCORE-AVX512 -O3 -ffast-math
-ffast-math=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -m64 -Wl,-z,-muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,-muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icx
500.perlbench_r.icc

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX

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

#### NEC Corporation

**Express5800/R120i-1M** (Intel Xeon Gold 6354)

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>NEC Corporation</th>
<th>Test Date:</th>
<th>Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>NEC Corporation</td>
<td>Hardware Availability:</td>
<td>Jul-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>NEC Corporation</td>
<td>Software Availability:</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 315**

**SPECrate®2017_int_peak = 326**

---

**Peak Portability Flags (Continued)**

- 525.x264_r: -DSPEC_LP64
- 531.deepsjeng_r: -DSPEC_LP64
- 541.leela_r: -DSPEC_LP64
- 548.exchange2_r: -DSPEC_LP64
- 557.xz_r: -DSPEC_LP64

---

**Peak Optimization Flags**

**C benchmarks:**

- 500.perlbench_r: -Wl, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2)
- -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4 -fno-strict-overflow
- -mbranches-within-32B-boundaries
- -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
  -Lqkmalloc
- 502.gcc_r: -m32
- -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/ia32_lin
  -std=gnu89 -Wl, -z, muldefs -fprofile-generate(pass 1)
  -fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
  -Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
  -mbranches-within-32B-boundaries
  -L/usr/local/jemalloc32-5.0.1/lib -ljemalloc
- 505.mcf_r: basepeak = yes
- 525.x264_r: -w -std=c11 -m64 -Wl, -z, muldefs -xCORE-AVX512 -flto
  -O3 -ffast-math -qopt-mem-layout-trans=4 -fno-alias
  -mbranches-within-32B-boundaries
  -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
  -Lqkmalloc
- 557.xz_r: basepeak = yes

**C++ benchmarks:**

- 520.omnetpp_r: basepeak = yes
- 523.xalancbmk_r: basepeak = yes
- 531.deepsjeng_r: basepeak = yes

---

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

NEC Corporation
Express5800/R120i-1M (Intel Xeon Gold 6354)

SPECrate®2017_int_base = 315
SPECrate®2017_int_peak = 326

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)

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-V1.2-R120i-RevE.html

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/NEC-Platform-Settings-V1.2-R120i-RevE.xml