## NEC Corporation

**Express5800/R120h-1E (Intel Xeon Gold 6234)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>57.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>58.2</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon Gold 6234</td>
</tr>
<tr>
<td>Max MHz</td>
<td>4000</td>
</tr>
<tr>
<td>Nominal</td>
<td>3300</td>
</tr>
<tr>
<td>Enabled</td>
<td>8 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>24.75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>96 GB (6 x 16 GB 2Rx8 PC4-2933Y-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 1 TB SATA, 7200 RPM, RAID 0</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Power Management</td>
<td>BIOS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>Red Hat Enterprise Linux Server release 7.7</td>
</tr>
<tr>
<td></td>
<td>(Maipo)</td>
</tr>
<tr>
<td></td>
<td>Kernel 3.10.0-1062.1.1.el7.x86_64</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux;</td>
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<tr>
<td></td>
<td>Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux</td>
</tr>
<tr>
<td>Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware</td>
<td>NEC BIOS Version U31 v2.22 11/13/2019 released Mar-2020</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>64-bit</td>
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<tr>
<td>Other</td>
<td>None</td>
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### Benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed®2017_fp_peak</th>
<th>SPECspeed®2017_fp_base</th>
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</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>61.6</td>
<td>61.6</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>41.1</td>
<td>41.1</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>58.7</td>
<td>58.7</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>66.3</td>
<td>66.3</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>32.5</td>
<td>32.5</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>52.3</td>
<td>52.3</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>37.8</td>
<td>37.8</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>69.8</td>
<td>69.8</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>46.2</td>
<td>46.4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>52.7</td>
<td>52.7</td>
</tr>
</tbody>
</table>

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### Test Details

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License</td>
<td>9006</td>
</tr>
<tr>
<td>Test Sponsor</td>
<td>NEC Corporation</td>
</tr>
<tr>
<td>Tested by</td>
<td>NEC Corporation</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Sep-2019</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Jun-2019</td>
</tr>
<tr>
<td>Test Date</td>
<td>Mar-2020</td>
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<tr>
<td>Hardware Availability</td>
<td>Jul-2019</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Sep-2019</td>
</tr>
</tbody>
</table>

---

### Note

Test Sponsor: NEC Corporation

Hardware Availability: Jul-2019

Software Availability: Sep-2019

Test Date: Mar-2020

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### Additional Notes

- CPU: Intel Xeon Gold 6234
- Max MHz: 4000
- Nominal: 3300
- Enabled: 8 cores, 1 chip
- Orderable: 1.2 chips
- Cache L1: 32 KB I + 32 KB D on chip per core
- L2: 1 MB I+D on chip per core
- L3: 24.75 MB I+D on chip per chip
- Other: None
- Memory: 96 GB (6 x 16 GB 2Rx8 PC4-2933Y-R)
- Storage: 1 x 1 TB SATA, 7200 RPM, RAID 0
- Other: None
- Power Management: BIOS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Floating Point Speed Result

NEC Corporation

Express5800/R120h-1E (Intel Xeon Gold 6234)

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>8</td>
<td>252</td>
<td>234</td>
<td>252</td>
<td>235</td>
<td>253</td>
<td>233</td>
<td>8</td>
<td>252</td>
<td>234</td>
<td>252</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>8</td>
<td>273</td>
<td>61.1</td>
<td>270</td>
<td>61.6</td>
<td>271</td>
<td>61.6</td>
<td>8</td>
<td>273</td>
<td>61.1</td>
<td>270</td>
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<tr>
<td>619.lbm_s</td>
<td>8</td>
<td>128</td>
<td>41.0</td>
<td>127</td>
<td>41.1</td>
<td>127</td>
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<td>8</td>
<td>128</td>
<td>41.0</td>
<td>127</td>
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<tr>
<td>621.wrf_s</td>
<td>8</td>
<td>223</td>
<td>59.2</td>
<td>226</td>
<td>58.6</td>
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<td>8</td>
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<td>59.2</td>
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<tr>
<td>627.cam4_s</td>
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<td>32.6</td>
<td>8</td>
<td>272</td>
<td>32.5</td>
<td>273</td>
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<tr>
<td>628.pop2_s</td>
<td>8</td>
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<tr>
<td>638.imagick_s</td>
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<td>37.8</td>
<td>381</td>
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<td>382</td>
<td>37.8</td>
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<td>382</td>
<td>37.8</td>
<td>382</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>8</td>
<td>250</td>
<td>69.8</td>
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<td>250</td>
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<td>250</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>8</td>
<td>197</td>
<td>46.2</td>
<td>196</td>
<td>46.6</td>
<td>198</td>
<td>46.1</td>
<td>8</td>
<td>196</td>
<td>46.4</td>
<td>196</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>8</td>
<td>302</td>
<td>52.1</td>
<td>299</td>
<td>52.7</td>
<td>299</td>
<td>52.9</td>
<td>8</td>
<td>298</td>
<td>52.8</td>
<td>299</td>
</tr>
</tbody>
</table>

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:
KMP_AFFINITY = "granularity=fin,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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

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.
SPEC CPU®2017 Floating Point Speed Result

NEC Corporation

Express5800/R120h-1E (Intel Xeon Gold 6234)

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Test Date: Mar-2020
Tested by: NEC Corporation
Hardware Availability: Jul-2019
Software Availability: Sep-2019

Platform Notes

BIOS Settings:
Thermal Configuration: Maximum Cooling
Workload Profile: General Peak Frequency Compute
Intel Hyper-Threading: Disabled
Memory Patrol Scrubbing: Disabled
LLC Dead Line Allocation: Disabled
LLC Prefetch: Enabled
Enhanced Processor Performance: Enabled
Workload Profile: Custom
Advanced Memory Protection: Advanced ECC Support
NUMA Group Size Optimization: Flat

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbl1e6e46a485a0011
running on r120h1e Sat Mar 21 09:53:11 2020

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 6234 CPU @ 3.30GHz
  1 "physical id"s (chips)
  8 "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 : 8
siblings : 8
physical 0: cores 2 8 17 18 19 20 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6234 CPU @ 3.30GHz
Stepping: 7
CPU MHz: 3300.000
BogoMIPS: 6600.00

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

NEC Corporation

Express5800/R120h-1E (Intel Xeon Gold 6234)

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Test Date: Mar-2020
Tested by: NEC Corporation
Hardware Availability: Jul-2019
Software Availability: Sep-2019

Platform Notes (Continued)

Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s): 0-7
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 rdtsscp
lm constant_tsc art arch_perfmon pebs bts rep_good nop1 xtopology nonstop_tcb
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpmr pcid dca sse4_1_l1e sse4_2_x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 invpcid_single
intel_pinn intel_pt ssbd mba ibrs ibpb stibp ibs Enhanced tpr_shadow vnuma
flexpriority vpid fsgsbase tsc_adjust bmis hle avx2 smep bmi2 erms invpcid rtm
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw
avx512vl xsaveopt xsaves xgetbv1 cqm_llc cqm_occup llc cqm_mbm_total cqm_mbm_local
dtherm ida arat pia ptt pkgk ospke avx512_veni md_clear spec_ctrl intel_stibp
flush_l1d arch_capabilities

From /proc/cpuinfo cache data
    cache size: 25344 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
    physical chip.
    available: 1 nodes (0)
    node 0 cpus: 0 1 2 3 4 5 6 7
    node 0 size: 97960 MB
    node 0 free: 95282 MB
    node distances:
        node 0
            0: 10

From /proc/meminfo
    MemTotal: 98657512 KB
    HugePages_Total: 0
    Hugepagesize: 2048 KB

From /etc/*release*/etc/*version*
    os-release:
        NAME="Red Hat Enterprise Linux Server"
        VERSION="7.7 (Maipo)"
        ID="rhel"
        ID_LIKE="fedora"
        VARIANT="Server"
        VARIANT_ID="server"
        VERSION_ID="7.7"
        PRETTY_NAME="Red Hat Enterprise Linux Server 7.7 (Maipo)"

(Continued on next page)
NEC Corporation
Express5800/R120h-1E (Intel Xeon Gold 6234)

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

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

Platform Notes (Continued)

redhat-release: Red Hat Enterprise Linux Server release 7.7 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.7 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.7:ga:server

uname -a:
    Linux r120hle 3.10.0-1062.1.1.el7.x86_64 #1 SMP Tue Aug 13 18:39:59 UTC 2019 x86_64
    x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

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: Load fences, usercopy/swapgs barriers and __user pointer sanitation
CVE-2017-5715 (Spectre variant 2): Mitigation: Full ret poline, IBPB

run-level 3 Mar 21 09:47

SPEC is set to: /home/cpu2017
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda3      ext4 908G 42G 821G 5% /

From /sys/devices/virtual/dmi/id
   BIOS:     NEC U31 11/13/2019
   Vendor:   NEC
   Product:  Express5800/R120h-1E
   Serial:   7CE721P1MV

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:
   6x HPE P03050-091 16 GB 2 rank 2933
   10x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C  | 619.lbm_s(base, peak) 638.imagick_s(base, peak) |
|    | 644.nab_s(base, peak) |
==============================================================================

(Continued on next page)
NEC Corporation

Express5800/R120h-1E (Intel Xeon Gold 6234)

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

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

Test Date: Mar-2020
Hardware Availability: Jul-2019
Software Availability: Sep-2019

Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

C++, C, Fortran | 607.cactuBSSN_s(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

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

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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 for applications running on Intel(R)
64, Version 19.0.4.227 Build 20190416
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Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
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Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

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

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| SPECspeed®2017_fp_base = 57.3 |
| SPECspeed®2017_fp_peak = 58.2 |

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

**Test Date:** Mar-2020  
**Hardware Availability:** Jul-2019  
**Software Availability:** Sep-2019

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**Base Compiler Invocation (Continued)**

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

---

**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  
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:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp  
-nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

(Continued on next page)
NEC Corporation

Express5800/R120h-1E (Intel Xeon Gold 6234)

SPECspeed®2017_fp_base = 57.3
SPECspeed®2017_fp_peak = 58.2

CPU2017 License: 9006
Test Sponsor: NEC Corporation
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Test Date: Mar-2020
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Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
-nostandard-realloc-lhs

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11
Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: basepeak = yes
638.imagick_s: -xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP
644.nab_s: Same as 638.imagick_s

Fortran benchmarks:
603.bwaves_s: basepeak = yes
649.fotonik3d_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -03
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=4

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

### NEC Corporation

**Express5800/R120h-1E (Intel Xeon Gold 6234)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 57.3</th>
<th>SPECspeed®2017_fp_peak = 58.2</th>
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<tr>
<td><strong>CPU2017 License:</strong> 9006</td>
<td><strong>Test Date:</strong> Mar-2020</td>
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<tr>
<td><strong>Test Sponsor:</strong> NEC Corporation</td>
<td><strong>Hardware Availability:</strong> Jul-2019</td>
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<tr>
<td><strong>Tested by:</strong> NEC Corporation</td>
<td><strong>Software Availability:</strong> Sep-2019</td>
</tr>
</tbody>
</table>

### Peak Optimization Flags (Continued)

649.fotonik3d_s (continued):
- `-qopenmp -nostandard-realloc-lhs`

654.roms_s:
- `-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4`
- `-qopenmp -nostandard-realloc-lhs`

Benchmarks using both Fortran and C:

621.wrf_s:
- `-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512`
- `-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div`
- `-qopt-mem-layout-trans=4 -DSPEC_SUPPRESS_OPENMP -qopenmp`
- `-DSPEC_OPENMP -nostandard-realloc-lhs`

627.cam4_s:
- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp`
- `-DSPEC_OPENMP -nostandard-realloc-lhs`

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: `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:

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